

Wuppertal Report

Mustafa Schmidt
on behalf of the Wuppertal Group

Annual Meeting of the BMBF-funded Research Compound

February 27, 2023



BERGISCHE
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WUPPERTAL

Introduction

- Topics covered within the project
 - ▶ ATLAS-D-Cloud: operation, user support, local group disk monitoring
 - ▶ Development and maintenance of the JEM/Paver project (automatized validation of ATLAS simulations)
 - ▶ Contributions to the development and maintenance of central software components of the ATLAS experiment (topic changed wrt proposal)
- Involved people by topic
 - ▶ ATLAS-D-Cloud: Marisa Sandhoff, Torsten Harenberg
 - ▶ JEM/Paver: Joshua Reidelstürz, Johanna Kraus, Jens Roggel (until 31.12.22), Dominic Hirschbühl, Frank Ellinghaus
 - ▶ ATLAS central software: Mustafa Schmidt (since April 2022)
- Hardware for the ATLAS-Tier-2
 - ▶ Federated Tier-2 together with Freiburg
 - ▶ Up to now €133k spent to fulfill the pledge to the Worldwide LHC Computing Grid (WLCG) for 2023

Wuppertal ATLAS Cloud Operations

- Marisa Sandhoff / Torsten Harenberg -

- Running an integrated uni-wide HPC + ATLAS Tier-2 center (Pleiades)
 - ▶ 17152 CPU cores, 3635 TB dCache storage, 931 TB fast, parallel cluster file system (BeeGFS)
 - ▶ providing official pledge + “opportunistic” resources to ATLAS
 - ▶ most grid services available as Ansible scripts (tool for orchestration), and/or are already running containerized
 - ▶ available on GitHub, common effort with DESY (who provides Puppet recipes)
- Chairing (T. H. with Günter Duckeck, LMU) ATLAS DE cloud computing group
 - ▶ weekly, monthly meetings
 - ▶ data management for the cloud (clean-up etc.)
 - ▶ central CRIC (“Computing Resources Information Catalog”) operations (special catalog from WLCG)
- DE dCache Support group
- First ideas generating a federated dCache storage (with Thomas Hartmann and Christian Voss (DESY))

ATLAS LOCALGROUPDISK monitoring

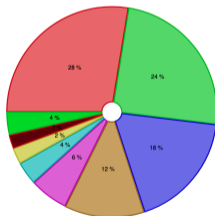
- Marisa Sandhoff / Torsten Harenberg -

- <https://localgroupdisk.pleiades.uni-wuppertal.de/>
- Daily usage overview of local - rucio integrated - storage resources
- Used by many sites, still growing

WUPPERTALPROD_LOCALGROUPDISK disc usage overview

[back to LOCALGROUPDISKs overview](#)

user	Usage
total	289 TB
avsrland	78 TB
awabdan	69 TB
ircidels	52 TB
jktraus	35 TB
frschroe	17 TB
moyvik	18 TB
libeumke	8.9 TB
dhirsch	6.0 TB
wawstzup	5.9 TB
moles	3.7 TB
iroguel	1.4 TB
mneusann	1.1 TB



user



Welcome to the ATLAS LOCALGROUDISK Monitor

DE cloud LOCALGROUPDISKS

- [CSCS-LCG2](#)
- [CYFRONET-LCG2](#)
- [DESY-HH](#)
- [DESY-ZN](#)
- [EMPHI-UNIBA](#)
- [FZK-LCG2](#)
- [GOEGRID](#)
- [HEPHY-UIBK](#)
- [IEPAS-KOSICE](#)
- [LRZ-LMU](#)
- [MAINZ](#)
- [MPPMU](#)
- [PRAGUELCG2](#)
- [TUDRESIDN-ZIH](#)
- [UNI-BONN](#)
- [UNI-FREIBURG](#)
- [UNI-SIEGEN-HEP](#)
- [WUPPERTALPROD](#)

DE cloud LOCALGROUPTAPEs

- [FZK-LCG2_LOCALGROUPTAPE](#)
- [PRAGUELCG2_LOCALGROUPTAPE](#)

DE cloud SCRATCHDISKS

- [CSCS-LCG2](#)
- [CYFRONET-LCG2](#)
- [DESY-HH](#)
- [DESY-ZN](#)
- [EMPHI-UNIBA](#)
- [FZK-LCG2](#)
- [GOEGRID](#)
- [HEPHY-UIBK](#)
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- [UNI-BONN](#)
- [UNI-FREIBURG](#)
- [UNI-SIEGEN-HEP](#)
- [WUPPERTALPROD](#)

NL cloud LOCALGROUPDISKS

- [NIKHEF-ELPROD](#)
- [TECHNION-HEP](#)
- [IL-TAU-HEP](#)
- [WEIZMANN-LCG2](#)

ND cloud DISKS

- [NDGE-T1_SCRATCHDISK](#)
- [SE-SNIC-T2_LUND](#)
- [SE-SNIC-T2_STHLM](#)
- [SE-SINC-T2_UPPSALA](#)
- [UNIBE-LHEP](#)
- [UNIBE-LHEP_SCRATCHDISK](#)
- [UNICPH-NBI](#)
- [UNIGE-DPNC](#)
- [UNIGE-DPNC_SCRATCHDISK](#)



- Validation of MC generators using the production system
- Production of 20B evgen events in 2022
- Main developments done by QTs (transition from JEM to PAVER): Switch to PMG systematic tools (Jens), improving validation layout (Joshua), adding custom labels (Johanna) etc.
- MC validation with PAVER:
 - ▶ Finding hidden issues with generators, processes, distributions etc.
 - ▶ Used for generator studies: 8 main generator setups
 - ▶ Focus on validation for run 3: Change to HepMC3, updates to core event data model, validation of physics as extracted from the HepMC3 record

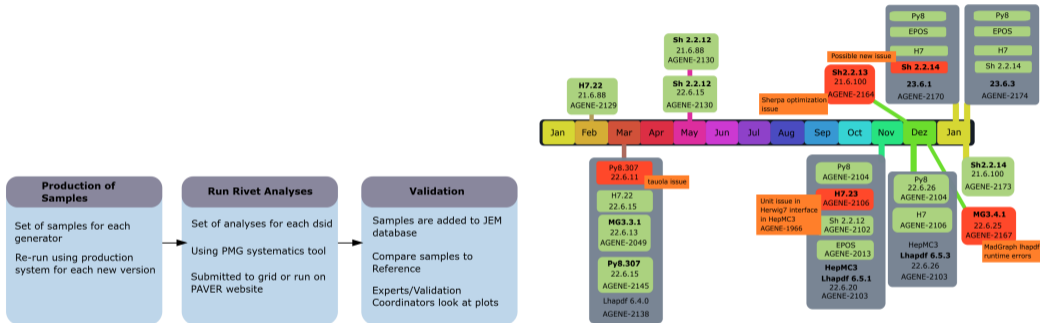


- New logo designed by Johanna:

JEM-PAVER

– Frank Ellinghaus / Dominic Hirschbühl –

Validation workflow and overview of 2022 validations:



- Twiki: <https://twiki.cern.ch/twiki/bin/view/AtlasProtected/GeneratorValidationPage>
- PAVER website: <https://jem.cern.ch>



- Main focus on simulation part of Athena
- Geant4 optimizations (Voxel density optimization, GPU implementation, ISF particle killer etc.)
- Feedback to Geant4 developers
- Implementation of Geant4 v11 into Athena
- Additionally bug fixing:
 - ▶ Monopole propagation issue
 - ▶ Floating-point warnings
- Working on job transform:
 - ▶ Fixing issues in log files related to YODA files

Optimizing voxel density with respect to CPU time and memory consumption

