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# ATLAS Analytics

## Overview

The ATLAS Analytics effort is focused on creating systems which provide ATLAS Distributed Computing (ADC) with new capabilities for understanding distributed systems and overall operational performance.

These capabilities include:

- Correlate information from multiple systems (PanDA, Rucio, FTS, Dashboards, Tier0, PilotFactory, ...)
- Predictive Analytics: Execute arbitrary data mining or machine learning algorithms over raw and aggregated data
- Ability to host new third party analytics services on a scalable compute platform
- Satisfy variety of use cases for different user roles for ad-hoc analytics
- Provide an open platform with documented collections and tools to broaden participation in ADC Analytics.

## Organisation

- Meeting: ADC Analytics Weekly (Indico) [↗](#), usually Wednesdays 16:00-18:00 CEST (40-R-402) - on a biweekly basis: one week is dedicated to Monitoring, the following week to Analytics
- Vidyo: ADC\_Analytics [↗](#)
- General purpose e-group: atlas-adc-data-analytics [↗](#)
- Machine learning e-group: atlas-adc-machine-learning [↗](#)
- Ticketing: ATLASMINER JIRA [↗](#)
- Code repository: Github [↗](#)

## Clusters and Resources

- analytix cluster at CERN, access to hadoop: In order to get the access you have to be in ai-hadoop-users e-group which is managed by CERN-IT. To get access you need to open a Snow ticket to Hadoop Service, providing your lxplus user name.
- Elasticsearch at UChicago. Kibana can be accessed at <https://atlas-kibana.mwt2.org:5601> [↗](#) . To get access, please send a preferred user name to Ilija Vukotic. A subset of Kibana spaces has open access and it is accessed at <https://atlas-kibana.mwt2.org> [↗](#).

## Data collection

- Sources
  - ◆ PanDA
  - ◆ PandaService
  - ◆ Rucio
  - ◆ xAOD monitoring
  - ◆ XrootD & FTS
  - ◆ PilotFactory
  - ◆ Data Knowledge Catalog
- Sinks
  - ◆ Hadoop
  - ◆ ElasticSearch

## Data visualization

- UChicago Kibana [↗](#)
- CERN ITES Kibana [↗](#)
- UC ES visualizations [↗](#) - google doc with list of links and explanations of all the kibana dashboards and Jupyter notebooks at UC.

## Data analysis

- Go here to see all notebooks of the ATLASMINER JIRA tickets
  - ◆ ADC Analytics Notebooks: <http://uct3-lx2.mwt2.org:9999/tree/ADC%20Analytics> [↗](#)
- Other available general purpose Jupyter servers
  - ◆ High-Performance Jupyter server <http://uct3-lx2.mwt2.org:9999/> [↗](#) (master)
  - ◆ GPU-enabled Jupyter server <https://shodan.cern.ch:7643/notebooks/> [↗](#) (playground)
  - ◆ SWAN Jupyter <https://swan002.cern.ch/> [↗](#) (in beta, will become next master)

## Completed notebooks

- For a given RSE, show the size vs. age distribution [Link](#) [↗](#)

## Dedicated projects

- Data Management Metrics
- Network Analytics Service
- Group Space Overview
- Reports for Scrutiny Group
- Distributed Analysis Analytics
- Data Knowledge Catalog
- Dashboards for Sites: General [↗](#), specific for LRZ [↗](#), Storage element overview [↗](#).

## Tutorials and How-To's

- Getting the data into and out of Hadoop
- Correctly indexing data in ES
- ElasticSearch access using API example
- Recording of the Vidyo tutorial part 1 [↗](#), sqoop, flume, pig, ES indexing [↗](#), ES+kibana [↗](#).
- How to develop analytics notebooks with Jupyter

## Related efforts

- WLCG Machine Learning Demonstrator Indico [↗](#)
- IT Analytics Working Group Indico [↗](#), TWiki
- WLCG Analytics Platform TWiki

## Attic

Historical information goes into the ATLASAnalyticsAttic.

**Major updates:**

- IlijaVukotic - 2014-11-11
- MarioLassnig - 2016-06-08

Responsible: IlijaVukotic, MarioLassnig

Last reviewed by: **Never reviewed**

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