CDN
Centre de Données de Nançay
(Nançay Data Centre)

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CDN

- CDN Scope: **manage storage and computing facilities** for Nançay science and instrument teams

- Data from NenuFAR, LOFAR-FR606, NDA, NRH, NSA and ORFEES are stored and processed at CDN.

- The CDN collaborates with the station's instrumental teams in order to prepare, if possible upstream, the complete life cycle of the data produced.

- The **CDN is supported by PADC** (Paris Astronomical Data Centre, https://padc.obspm.fr), which brings its expertise on the valorisation of scientific data.

CDN Facilities

- ***Nancep* servers**: computing

  - nancep[1-2]: automatic processing (contact us)

  - nancep[3-7]: data processing

- ***Databf* servers**: storage

  - databf: (soon decommissioned) 320 TB; 100% full

  - databf2: 770 TB; 88% full

  - databf3: (coming soon): ~3 PB

- Access: ssh, scp

CDN Users

- CDN user account applications must be submitted by a team member (not the user itself)

- Online form:
  - [EN] https://support.obs-nancay.fr/open.php?lang=en_US
    + select "CDN Account Request" topic
  - [FR] https://support.obs-nancay.fr/open.php
    + select "Demande de Compte CDN"

- Needs: institutional email, fixed IP address (for firewall rules)…

- CDN accounts must be approved by USN direction.

- Each user is working on 1 predefined computing nodes.
  Access to storage nodes is managed independently.
  Quota can be adjusted on demand.

- Accounts are renewed every year, if an extension is needed.

Open Science at CDN

- CDN is fostering FAIR and Open Science through recommendations:

  - **Open Data** with a licence that only requires the citation

  - **Use of Standard Data Format** FITS, CDF, MS, HDF5-LOFAR…

  - **Use of Persistent identifiers** ORCID, DOI…

  - **Rich Data Publication** metadata, documentation.

  - **Automated and standardised access interfaces** Virtual Observatory…

- The CDN also implements **data management plans** for each project, in order to support the teams, anticipate their needs and develop the CDN accordingly.

Publications

- When a publication has been prepared using CDN facilities (data processing, storage…), the following statement must be included in the acknowledgement:

  We acknowledge the use of the Nançay Data Center computing facility (CDN - Centre de Données de Nançay). The CDN is hosted by the Station de Radioastronomie de Nançay in partnership with Observatoire de Paris, Université d'Orléans, OSUC and the CNRS. The CDN is supported by the Region Centre Val de Loire, département du Cher.

- Reduced and derived data associated to the publication should be also openly shared (preferably through institutional, open or community repositories / NOT IN THE EDITORS' REPOSITORIES). *Contact CDN for questions (*<u>contact_cdn@obs-nancay.fr</u>*).*

CDN & NenuFAR
Data directories

- NenuFAR data are (currently) stored on *Databf2* in various directories:
  - /databf2/nenufar => BST data (low resolution)
  - /databf2/nenufar-pulsar => Pulsar data
  - /databf2/nenufar-tf => Undysputed TF data
  - /databf2/nenufar-nri => NICKEL imaging data

  etc…

- In each directory, the data are organised with a predefined directory structure **/databf2/nenufar/ESxx/YYYY/MM/OBS_ID** with:
  - ESxx = the Early Science project id (e.g. ES00)
  - YYYY/MM = the year and month of the observation (e.g., 2020/01)
  - OBS_ID = the NenuFAR observation ID (e.g., 20191116_102100_20191116_102300_3C295_TRANSIT)

CDN & NenuFAR Data Management

- **DO NOT ERASE NenuFAR DATA**

- There is a script to do so (keeping track of what is removed) => contact_cdn@obs-nancay.fr for details.

- During (better) or after (ok) data pipeline development, described the data pipeline, data products in your corresponding NenuFAR Data Management Plan Section https://confluence2.obs-nancay.fr/display/NEN/ NenuFAR+Data+Management+Plan

- Reduced data products must be placed in the same OBS_ID directory, with a new L1, L2 or L3 sub-directory (depending on processing level).

CDN & NenuFAR
NenuFAR-DC

- In the future (hopefully not far): NenuFAR-DC

- Hosted in Orléans, by BRGM.

- Cloud-based model.

- NenuFAR-DC:
  - will host NenuFAR data collections.
  - will access and computing to NenuFAR users.
  - will implement search interfaces (incl. virtual observatories)
  - will implement a repository for derived data

- Prototyping should start soon.