

National institute of nuclear and particles physics

Computing and data

Global multi-site infrastructure CIN2P3 llon / CC IN2P3 / CNRS PH WLCG Worldwide LHC Computing Grid Providing the computing resources to process, simulate and analyse LHC data

Scientific leader: Laurent Duflot (IJCLab) *

Laboratories involved: CC-IN2P3 (Lvon), CPPM (Marseille), IJCLab (Orsay), IPHC (Strasbourg), IP2I (Lyon), LAPP (Annecy), LLR (Palaiseau), LPCA (Clermont-Ferrand), LPNHE (Paris), LPSC (Grenoble), Subatech (Nantes)

Nature: distributed computing and storage infrastructure

Status: project in operation, coordinated by CERN

Website: https://wlcg.web.cern.ch/

Scientific objectives

WLCG, the Large Hadron Collider (CERN) Global Computing Grid, is a distributed computing infrastructure that allows more than 12 000 physicists around the world to access data from the LHC detectors in near-real time. It provides seamless and secure access to all the computing resources (computation and storage) needed to process, simulate and analyse LHC data.

Resources deployed

2001

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European Datagrid (EDG)

computing infrastructure

project for a prototype

- The LHC experiments generate 15 Petabytes of data per year, the equivalent of 20 million CDs, processed by WLCG.
- The LHC computing grid comprises 170 computing centres in more than 40 countries linked together by a powerful internet network.
- The sites are divided into levels: the CERN computing centre (level 0) collects the raw data produced by the detectors, stores it, carries out initial processing and redistributes it to the level 1 sites. The level 1 sites are made up of 11 computing centres, known as "nerve centre", which are available 24 hours a day. These carry out the maintenance and reprocessing of the data and, together with the level 2 and 3 centres, the simulations and analyses that produce the physics results.

2003

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First data recorded

and transferred

1M computing cores	40 participating countries
20 years of operation	€ 100M per year (2.5 for France)
2Eb/year of processed data after filtering	6 main contributors: CERN Germany, France, Italy, U USA

IN2P3 CONTRIBUTIONS

- A level 1 centre, the IN2P3-CC, equipped with 4 700 processors and 145 million Go.
- Eight level 2 (Ile de France, Clermont-Ferrand, Grenoble, Lyon, Nantes, Annecy, Strasbourg, Marseille) and level 3 (Lyon) sites participate in the computing grid.
- Participation in the organisation and smooth running of data processing within experimental collaborations.
- Supporting R&D to prepare the computing resources for the next phases of LHC data collection.

Other french laboratories involved

Irfu (CEA Saclay)

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2004

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European EGEE

project to establish a

global computing grid

infrastructure for science

2009

Start-up of the LHC

2010-2020

Computing and disk storage resources are increased by a factor of 5 and tape storage by a factor of 10

of the LHC റ

1994

approves

construction

CERN Council

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comes into play with 100 centres in 31 countries

2005 The WLCG computing grid