

# Virtual Computer Hall tour

Training course: High Performance Computing – Atos

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# The ECMWF Data Centre in Bologna



- Located in the Tecnopolo di Bologna
  - a former tobacco factory
  - designed by Pier Luigi Nervi
  - built in 1949 and closed in 1998

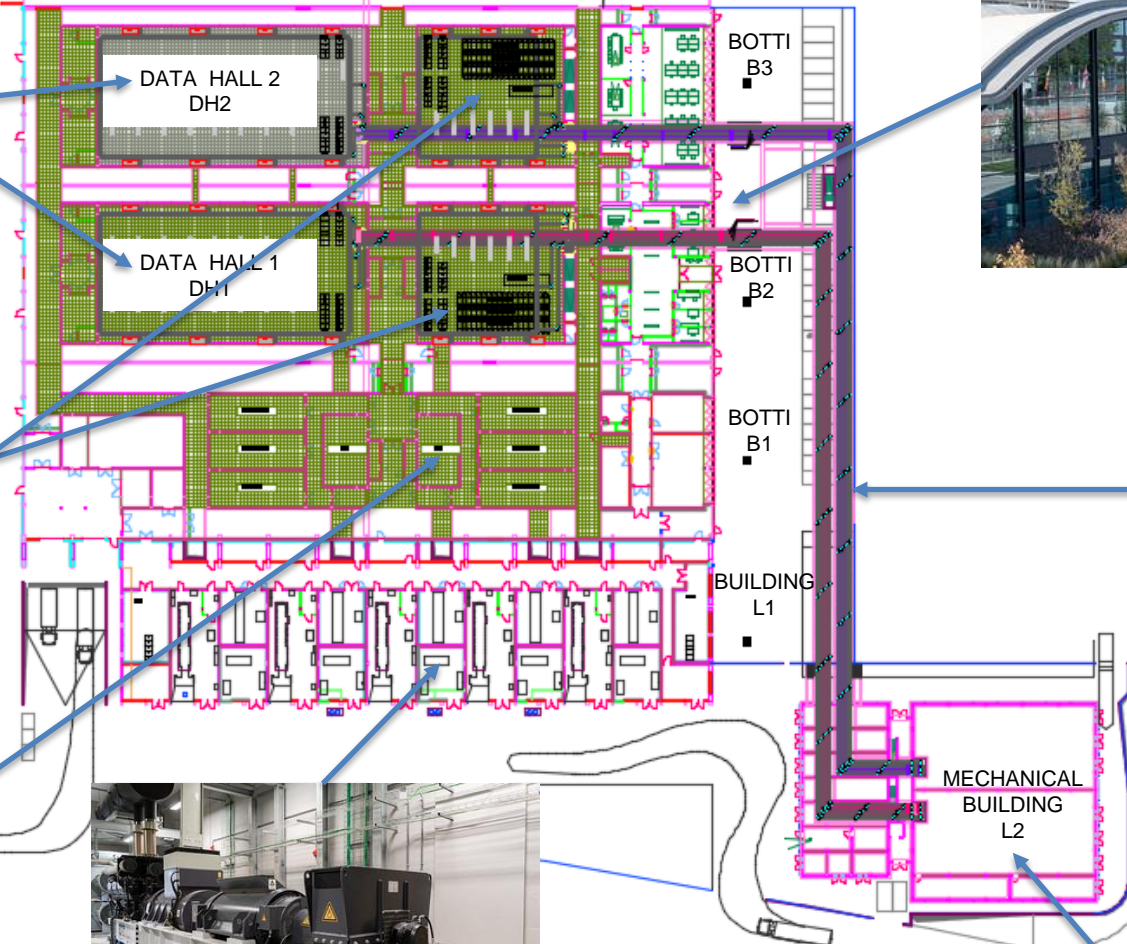
# How it looked in 2018



# How it looks in 2022

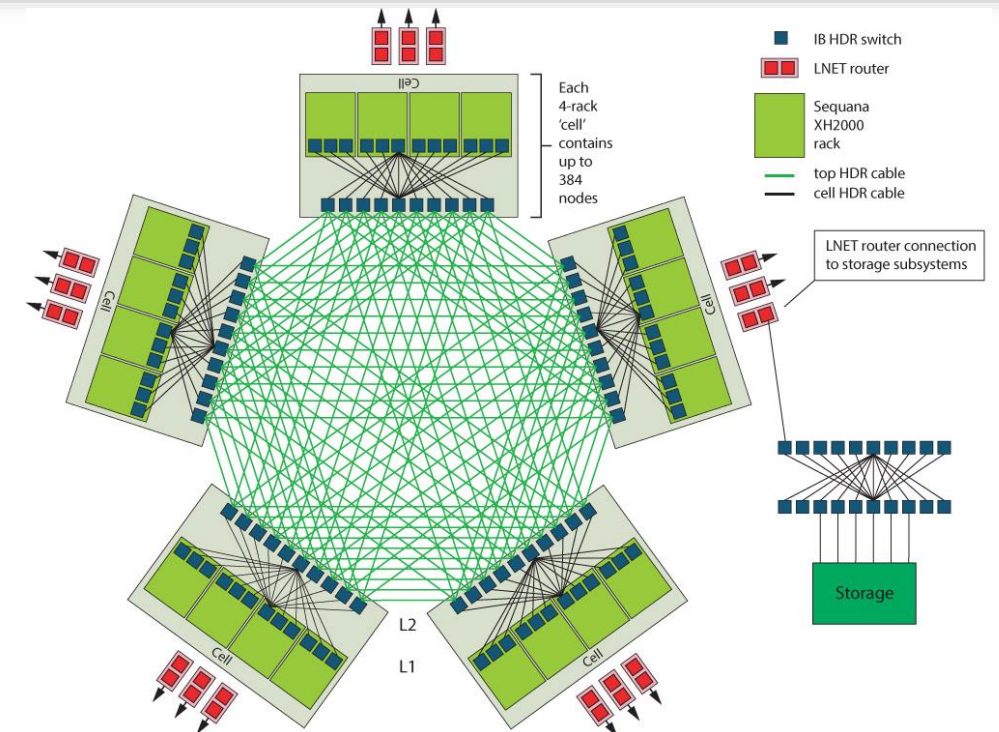
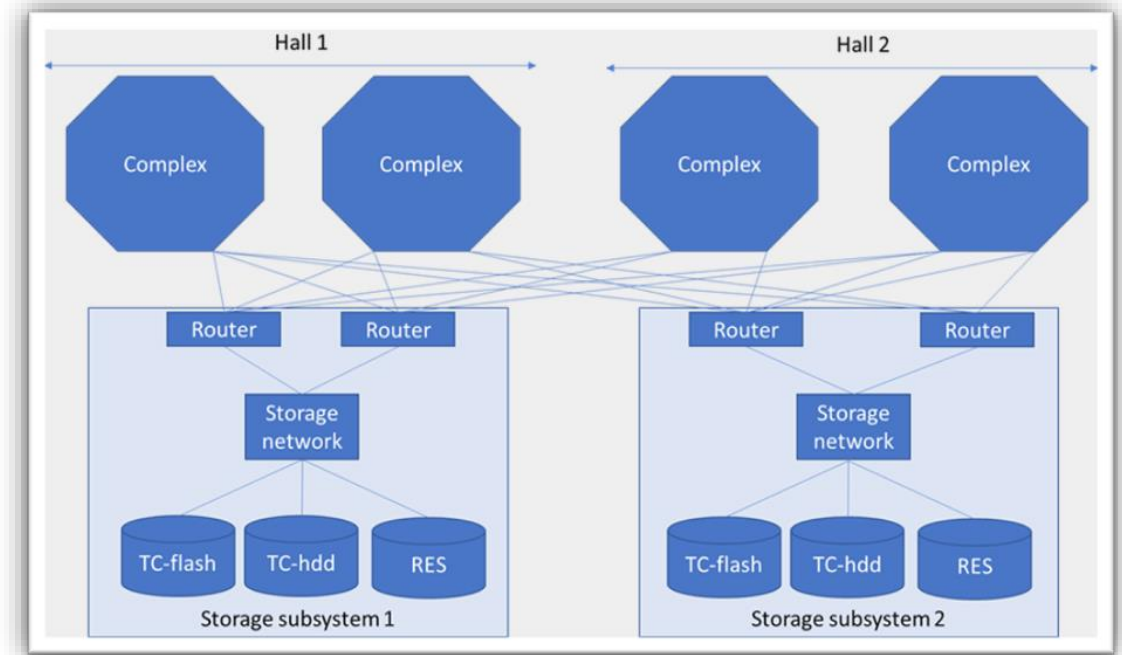


# Bologna Data Centre layout



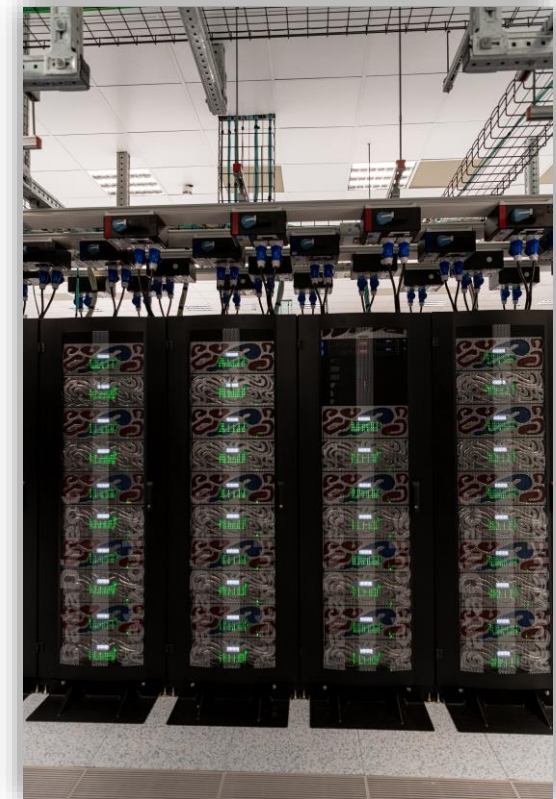
# Atos BullSequana XH2000

- 4 Complexes
  - Two in each hall
  - Each Complex consists of two partitions:
    - Parallel:
      - ATOS XH2000 Water cooled racks
      - Arranged in 5 “cells”, 4 racks per cell
      - IB HDR Fat Tree in each cell. Each cell connected to every other cell
      - 1920 nodes for parallel compute
      - AMD Rome 64 core processors
    - General Purpose (GPIL)
      - 112 nodes for general purpose use
        - More memory, local SSD
- One Slurm scheduler in each complex



# Storage Subsystem

- Global Lustre parallel filesystems
  - Disk and Solid-State storage
  - DDN
    - ES7900 & ES200NV appliances
  - Separate file systems for time critical operations and research
  - Time Critical Storage
    - 2 Lustre SSD 700TB file systems for production
    - 2 Lustre HDD 5PB file systems for short term storage
  - Research
    - 6 Lustre HDD 13PB file systems
  - Filesystems available to all clusters
- NFS storage for libraries per complex
- HOME and PERM from NetApp and TrueNAS
- Long term storage in the MARS and ECFS archives



# Atos HPC – GPU partition

- 18 GPU blades integrated into one GPIL cluster.
- Each blade is configured with
  - 2 x AMD Rome 7742
  - 512GB DDR4 3200
  - Nvidia Redstone board with 4 x A100-40
    - 72 GPUs
  - 2 x HDR200 InfiniBand connections

