

## 2.1 Taito-GPU hardware and operating system

The Taito cluster includes a separate partition of compute nodes with dedicated GPU accelerator cards. There are 38 of these nodes, and each of them has two NVIDIA Tesla K40 GPU accelerator cards installed. These cards are based on the NVIDIA Kepler architecture, which was designed for high efficiency, programmability and performance. In addition, each compute node hosts two Intel Xeon E5-2620-v2 CPUs, based on the Ivy Bridge microarchitecture. Memory wise, there are 32 GB of DDR3 1600 Mhz memory, and the local disks are 500 GB SATA3 HDD. Each compute node is connected to the Taito fabric with one Infiniband FDR Mellanox ConnectX-3 card. The software stack and operating system of these compute nodes is similar to the rest of the Taito compute nodes.

These compute nodes part of a supercomputer from Bull acquired in 2014, and have been integrated tightly to the Taito cluster to appear as one entity. The system is based on Bullx B700 Direct Liquid Cooled (DLC) Series, the computing blades are of model B715 and are fitted into Bullx B700 racks. There are in total three racks in the system, one for the nodes with NVIDIA GPUs, one for nodes with Intel Xeon Phi accelerators, and one for the nodes used for administering the system. The network topology is a pruned fat tree and is integrated into the Taito fabric.