

Distributed and Integrated IaaS and PaaS Cloud for Research - The INFN Corporate Cloud solution.

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INFN Corporate Cloud (INFN-CC) is a geographically distributed private cloud infrastructure, based on OpenStack, that has recently been deployed in three of the major INFN data-centres in Italy. INFN-CC has a twofold purpose: on one hand its fully redundant architecture and its resiliency characteristics make of it the perfect environment for providing critical network services for the INFN community, on the other the fact that it is hosted in modern and large data-centres makes of INFN-CC the platform of choice for a number of scientific computing use cases.

INFN-CC also deploys a higher PaaS layer, developed within the EU funded project INDIGO-DataCloud (www.indigo-datacloud.eu), in order to provide to the INFN scientific communities not only an easier access solution to computing and storage resources, but also both automatic instantiation and configuration of services or applications used for their everyday work, like batch-system on demand or big data analytics facilities. The PaaS layer, together with the underlying IaaS, is able to provide automatic scalability of the clusters instantiated and fault tolerance in case of a single node or complete site failures.

We present the hardware and software architecture, the challenges and advantages of this solution, together with the results of the first supported use cases.

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