

Most powerful R&D computing center in France advances toward next generation data center



EXECUTIVE SUMMARY
CUSTOMER NAME · The National Institute for Nuclear and Particle Physics (IN2P3)
LOCATION · Lyon, France
INDUSTRY · Research
COMPANY SIZE · 2,500 employees
BUSINESS CHALLENGE · Demand for computing resources expected to double every year · Increase data center capacity without exponential increase in resources · Increase computing center operational efficiency
NETWORK SOLUTION · Cisco Data Center Networking solution based on Cisco Data Center 3.0
BUSINESS VALUE · Reduces the cost of setting up and managing a next generation data center · Enables data center resources to be used more efficiently and effectively · Ensures high performance computing operations · Supports control and management of huge data volumes – 17PB

The National Institute for nuclear and particle physics (IN2P3), which runs one of the most powerful R&D computer centers in France, has deployed a Cisco next generation Data Center solution to manage huge data processing demand from high profile experiments like the Large Hadron Collider (LHC) at CERN

Business Challenge

The National Institute for Nuclear and Particle Physics (IN2P3) comes under the jurisdiction of the French Ministry of Research. IN2P3's mission is to develop and coordinate research into nuclear and particle physics. One of its most high profile activities is collaboration with the European Organization for Nuclear Research, commonly known as CERN. IN2P3 is one of 10 worldwide computing centers charged with storing, processing and analyzing the 15 Petabytes of data generated every year from experiments carried out on the Large Hadron Collider (LHC) at CERN. IN2P3 has around 20 research laboratories around France with its headquarters and computing center located in Lyon.

Because of projects like those related to the CERN LHC, IN2P3 is required to manage huge volumes of data. For example, IN2P3 was being asked to handle data throughput of 20 Gigabits per second. Between 2006 and 2010, IN2P3 expects demand for its computing and data storage capacity to double each year. The Institute needed to create a data center infrastructure capable of meeting this demand.

Jerome Bernier, IT manager for network and storage at IN2P3, says, "IN2P3 has a long history with Cisco and our networking infrastructure is entirely based upon Cisco. The data center is critical to what we do, so it was essential that we had the best solution now and for the future. We looked at a number of solutions, but we've also ways found Cisco to be very reliable and, for the high-performance, data center computing demand we face, Cisco offered a robust and scalable solution."



Network Solution

IN2P3 is developing a next generation data center based upon the Cisco Data Center 3.0 vision. The Institute has deployed a Cisco data center networking solution based upon a modular, 10 Gigabit Ethernet switching fabric to increase performance and capacity.

IN2P3's strategy is to deploy additional Cisco data center networking technologies such as Cisco Nexus to simplify its data center architecture further and maximize resources.

Within the data center at IN2P3's computing center in Lyon there are currently 10PB on tapes, 7PB on disc and 1200 computing servers. In addition to a 10 Gigabit link with CERN in Switzerland, IN2P3 has two other 10 Gigabit links, one with another research center in Germany and the other link to the French National Research and Education Network. The center in Germany has a 10 Gigabit connection back to CERN providing IN2P3 with a resilient, high bandwidth Wide Area Network (WAN) link to CERN.

IN2P3 has built its entire networking infrastructure on Cisco. As well as its the Cisco data center networking solution, the Cisco WAN and Cisco Local Area Networks (LANs), IN2P3 uses Cisco to support a Metropolitan Area Network (MAN) in Lyon and for hosting the Amplivia regional broadband network in the Rhone-Alps area.

The Cisco data center network solution at IN2P3 has been implemented by Telindus, a Cisco Gold Certified Partner.

Business Results

"The volumes of data and throughput rates that IN2P3 deals with are some of the highest and most demanding in France if not in Europe and having a data center solution built around the highly reliable and robust technology that Cisco offers is essential to managing this capacity," says Bernier. "Cisco helps IN2P3 reduce total cost of ownership by reducing the need to buy more equipment, by reducing cabling and by making the data center simpler and easier to manage."

The Cisco data center networking solution has helped IN2P3 develop a more unified and integrated, high performance architecture so that resources such storage devices can be used more efficiently.

The modular design of the Cisco equipment means that the data center infrastructure can be adapted and scaled up to meet increased demand quickly, easily and at less cost than before. This helps organizations increase resilience, simplify operations and maximum investment protection with backward and forward compatibility. The Cisco technology, especially the data center switching equipment, has enabled IN2P3 to manage the increase in data volume and throughput without having to invest in a lot more equipment.

Also, because of the increased capacity and scalability of the Cisco technology cabling within the data center can be reduced and because it is less complex, it is simpler to manage, change and add additional hardware.



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Data Center	
<ul style="list-style-type: none"> • Cisco Catalyst 4900M Switches (10 Gigabit Ethernet) • Cisco Catalyst 6500 Series 	

Bernier says, "The kind of data center technology that Cisco provides is very important to IN2P3. We have built our data center networking architecture around Cisco and have been using Cisco for more than 15 years. As well as being very robust and reliable, implementing the Cisco data center networking solution delivers very good value for money because of the data center management and control improvements it delivers and the ability to maximize existing equipment and reduce future costs."

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Jerome Bernier, IT Manager for Network and Storage, IN2P3



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