

# Greener and More Efficient Cloud Services



Cineca's UCS platform optimizes server management and pays for itself within 12 months.

## EXECUTIVE SUMMARY

**Customer Name:** Cineca

**Industry:** Public Sector

**Location:** Bologna, Italy

**Number of Employees:** 500

### Challenge

- Reduce infrastructure, operating costs, and time-to-market

### Solution

- Cisco Data Center Business Advantage vision, architecture, and technologies
- Cisco Unified Computing System

### Results

- 96 percent success rate in first phase of consolidation and virtualization
- 20 percent consolidation of servers (90 physical servers decommissioned and virtualized within 90 days)
- 75 percent reduction in provisioning time

## Challenge

Cineca is one of the largest supercomputing centers in Italy. With more than 500 employees, it provides high-performance computing, as well as the management and development of networks, cloud services, and complex information management systems. Cineca's customers include universities and science and research organizations, such as the National Institute of Oceanography and Experimental Geophysics, the National Research Council, and the Ministry of University and Research.

Even though Cineca operates as a nonprofit consortium, it is still subject to the same commercial pressures experienced by any business. These demands include the usual balance sheet challenges, as well as delivering continuous improvements in performance and customer service. The data center is at the heart of this testing boardroom agenda: both as an overhead that must work smarter and more efficiently, and also as a key enabler for improving agility and customer experience.

When Cineca was tasked in 2010 with reducing operating expenditure by 25 percent, it was well positioned. "By executing the first phase of our cloud strategy a year earlier, we had already started to lower total cost of ownership (TCO) and realize early advantages from consolidation and virtualization," says Paolo Malfetti, IT infrastructure manager for Cineca.

Aligned with the [Cisco® Data Center Business Advantage](#), the Cisco vision and practical roadmap for data center transformation, Cineca introduced the Cisco Nexus® 7000 platform. The super-fast switching platform delivered all the benefits of 10 Gigabit networking and high performance. As well as improving end user

experience, the project paved the way to a new network node for high-performance computing, with excellent port density and scalability, saving on LAN switching and cabling. Typically, a 10 Gigabit port costs three times more than a Gigabit Ethernet port, but offers 10 times more bandwidth. On this basis, the Nexus 7000 should deliver a 3:1 cost reduction. Moreover, it formed part of a wider, holistic approach for simplifying operations, speeding time-to-market, and reducing costs further still.



**“We can do much more with much less. In basic terms, we have more RAM per blade and the ability to match lower-cost DIMM slots to specific applications. That’s a major advantage and gives us a brand new approach for lowering total cost of ownership.”**

Paolo Malfetti  
IT Infrastructure Manager  
Cineca

## Solution

With data volumes doubling from 80 to 160 terabytes year-on-year, the second phase of Cineca’s cloud strategy moved inside the data center to focus on server virtualization and process automation.

“We had 450 physical servers, many of which were approaching end-of-life,” says Mauro Morsiani, IT infrastructure design and development manager for Cineca. “We were spending a lot of money on maintenance and power. Also, server management and provisioning were very time consuming. Initially we set our sights on achieving a €100,000 saving on server maintenance and support.”

Cineca compared several cloud solutions before finally choosing the Cisco Unified Computing System™ (UCS). “It was clear to everyone in the room that Cisco offered a better approach,” says Morsiani. “UCS came pre-tested and pre-configured, so we knew it would work seamlessly with VMware Hypervisor from day one. It also delivered the highest RAM performance and offered the best solution for managing a large number of Linux virtual machines within a production environment.”

Cisco UCS unites server, network, storage, and virtualization capabilities into one energy-efficient system for managing the most demanding large dataset applications. These capabilities have been extended by two models of Cisco UCS B-Series Blade Servers powered by the Intel® Xeon® processor 5000 and 6500 series, delivering maximum performance on a minimum of power—automatically.



The inclusion of Cisco Nexus 1000V Series Switches has improved visibility of virtual machines (VMs) and provided Cineca with one common management console for both physical and virtual network infrastructures. Using Cisco VN-Link technology, the Nexus 1000v helps ensure that network and security policies defined in the port profile follow the VM throughout its lifecycle, whether it is being migrated from one server to another, suspended, hibernated, or restarted.

## Results

Cineca has virtualized and decommissioned 20 percent of physical servers, from 450 to 360 and at the end of the consolidation process will retire 10 racks. “UCS was really easy to implement,” says Morsiani. “And the results were equally impressive. We were able to quickly and easily migrate 96 percent of our physical servers to virtual machines.”

Other benefits realized include greater scaling of server virtualization with lower operating expenses. As UCS blades deliver ever-increasing core and memory density, as well as Intel Xeon processor innovations, Cineca can increase the number of virtual machines per physical UCS server without added complexity or the cost of buying more physical servers. For example, Cisco extended memory can provide 384 GB of RAM operating at 1333 MHz for the same cost as a normal server offering 192 GB of RAM.

“We get the best of both worlds: Cisco’s extended memory capacity technology combined with industry leading, energy efficient Intel® Xeon® processors,” says Malfetti. “That means that with UCS we can run more virtual machines on fewer physical servers. In basic terms, we have more RAM per blade and the ability to match lower-cost DIMM slots to specific applications. That’s a major advantage and gives us a brand new approach for lowering total cost of ownership.”

In addition to making it easier and faster for Cineca to scale, UCS has also achieved a six-fold increase in server utilization and lowered power consumption of its entire server estate by a third.

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Management is much simpler, more automated, and less expensive. With UCS, one single IP address can be used to manage up to 320 servers, including all of the network and storage elements of those servers. It also provides a single management “pane of glass” and graphic user interface. The introduction of service profile templates has reduced the number of manual steps required to configure and provision new services. This automation has reduced the chance for human error, improved consistency, and accelerated server and network deployment times. Training costs are also expected to reduce through process streamlining and the standardization of operating systems.

The end result is a more agile cloud model for deploying software-as-a-service and infrastructure-as-a-service. “It used to take around 16 work-hours to provision a physical machine. On average, we can now do it in four hours. And of course, there is no lead-time for purchasing and testing new hardware,” says Morsiani.

In fact, Cineca has been so pleased with the success of its Cisco cloud-computing platform that it has since purchased additional UCS blades. Malfetti sums up: “Without considering reductions in cabling and future hardware spend, and just looking at savings on maintenance contracts and power alone, we expect UCS will pay for itself within 12 months. But, perhaps the most telling impact of UCS is that the move has been completely invisible to our customers.”

### For More Information

To discover how Cisco can help you to transform your data center, go to:

[www.cisco.com/go/datacenter](http://www.cisco.com/go/datacenter)

For further information on Intel Xeon processors go to:

[www.intel.com/en\\_uk/business/itcenter/products/xeon/index.htm](http://www.intel.com/en_uk/business/itcenter/products/xeon/index.htm)

### PRODUCT LIST

#### Data Center

- Cisco Unified Computing System;
  - B200 M2 servers with Intel Xeon E5620 processors
  - B230 M1 servers with Intel Xeon E6510 processors

#### Routing and Switching

- Cisco Nexus 1000v Series Switches
- Cisco Nexus 7000 Series Switches



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