


Innovating Existing Data Centers and Greenfield Sites

Cisco Nexus solution allows Fiat Powertrain Technologies to optimize business agility and speed to market

EXECUTIVE SUMMARY

Customer Name: Fiat Powertrain Technologies S.p.A. 

Industry: Automotive

Location: Turin, Italy

Company size: 20,000 employees

Challenge

- Deliver new efficiencies through consolidation and extending virtualization capabilities, while also protecting legacy IT investment

Solution

- Cisco Data Center 3.0 vision, architecture, and technologies
- Unified Fabric with Cisco Nexus 5000 platform

Results

- Estimated savings of 40 percent from server and storage consolidation
- 60 percent improvement in application performance

Challenge

Formed in 2005 as part of the Fiat Group, Fiat Powertrain Technologies (FPT) is the driving force behind the group's successful ranges of vehicles, industrial machinery, marine engines, and power generators. FPT is one of the largest companies in the powertrain sector with operations in nine countries, including 16 plants. Over the course of a year it will produce around 2.9 million engines and 2.4 million transmissions and axels.

Information Technology (IT) plays a vital role in supporting these global operations. A converged Cisco IP network provides the foundation that unites engineering and design (E&D), procurement, sales and marketing, manufacturing and distribution. Five data centers help to empower 20,000 employees by ensuring instant access to critical systems and applications.

Paolo Vallotti, chief technology officer for FPT, describes the direct link that exists between data center performance and business objectives: "We have three facilities in Italy and another two in China and Brazil. Greater efficiency of data center operations can have a direct bearing on improving E&D productivity, project delivery timeframes, and lean and agile manufacturing processes. For the business, this means increased speed to market and reduced time to revenue."

Recognizing its impact on overall business performance, FPT decided to transform its data center infrastructure, starting with its facility in Turin. Key requirements included consolidating its distributed server farms into a more structured and controlled environment, and optimizing application performance.

“We have 100 physical servers handling around 36 terabytes of data,” says Vallotti. “These operations were complex and resource hungry. For example, each time we moved virtual machines (VMs) between servers we had to re-establish network policies and configurations. We wanted to move to a more unified fabric and acquire new virtualization capabilities without having to replace our EMC-based storage area network.”

“Before we were unable to complete virtualization, mainly because of the physical limitations imposed by separate LAN and SAN architectures. The Cisco Nexus platform has bridged this gap by creating one virtual environment.”

—Paolo Vallotti, Chief Technology Officer, Fiat Powertrain Technology

Solution

In search of a complete solution FPT decided to talk with its trusted advisor, Cisco. The two companies had worked together to build the original network infrastructure that served the Turin center. A trip to Cisco Executive Briefing Center (EBC) in San Jose helped to crystallize thinking further.

Vallotti explains: “Cisco presented its vision for the next-generation data center. This really helped inform our strategy. In particular, they helped us to understand the benefit of deploying new technologies, such as Fiber Channel over Ethernet (FCoE), and how this would allow us to create an architecture that we could easily scale without the need to buy extra hardware. The benefits shown to us during the EBC have since been confirmed by the execution.”

That vision was based on [Cisco® Data Center 3.0](#), an architectural approach for data center evolution that uses a three-phase methodology: *consolidate*, *virtualize*, and *automate*. The end result is tighter integration of servers, networks, and storage systems, which in turn helps to deliver new improvements in performance and cost efficiency. For FPT, it has provided a practical roadmap to accelerate a journey that began several years ago when the company first started to reduce network devices and cabling, and to virtualize IT services. However, the big challenge was to extend these benefits beyond the data center and across all network infrastructures.

“Before we were unable to complete virtualization, mainly because of the physical limitations imposed by separate LAN and SAN architectures. The Cisco Nexus platform has bridged this gap by creating one virtual environment,” says Vallotti.

The implementation of 10 [Cisco Nexus 5000 Series Switches](#), a key component of Cisco Data Center 3.0, has enabled network and storage data traffic to be consolidated onto one single network switch.

The Cisco Nexus 5000 helps to extend FCoE technology beyond the SAN and make it more widely available in the data center. This delivers new levels of support for server virtualization applications, which often require many physical I/O connections per server.

In addition, the Cisco solution helps to reduce the number of network interface cards required to connect to disparate storage and IP networks. The use of unified fabric has also significantly reduced the number of cables, while virtualization has increased server utilization resulting in fewer switches with a corresponding reduction in power and cooling costs.

The new solution has been designed to ensure integration with existing Cisco Catalyst 6500 Series Switches (in the IP backbone), Cisco MDS 9500 Series Multilayer Switches (in the SAN), and server farms running VMware virtual machines. At the rack level, the Cisco solution has also enabled I/O consolidation (the ability to support SAN and LAN traffic simultaneously on a single cable), reducing the number of adapters, cables, switches, and transceivers that each server must support.

“The beauty of Cisco Data Center 3.0 is that it allowed us to innovate and also protect IT investment ”

–Paolo Vallotti, Chief Technology Officer, Fiat Powertrain Technology

Results

The Cisco Nexus 5000 Series Switches have helped FPT to simplify management and lower total cost of ownership, while also realizing a host of new benefits. “The beauty of Cisco Data Center 3.0 is that it allowed us to innovate and also protect IT investment,” says Vallotti.

Reducing devices and rationalizing rack space and cabling is expected to deliver a saving of around 85 percent. At a time when IT departments are under growing pressure to do more for less, FPT has increased server utilization rates by 25 percent. “Having greater levels of agility and flexibility means that we can cope better with peaks in demand for IT resources, such as the launch of a new product,” says Vallotti.

The new Cisco switches have boosted connection speeds from 1 to 10 Gbps. This is expected to deliver a great improvement in the performance of business applications, file servers and IT management tools, such as Microsoft Active Directory.

The productivity of the data center team has also been improved. For example, by taking advantage of FCoE connectivity, administrators can complete daily tasks, such as assigning policies, deploying software, and applying critical updates, easier and much faster than before.

And it's not just FPT's internal customers that stand to benefit. Innovation in the data center will also ripple through the supply chain. For example, the Fiat Group places high importance on lean manufacturing¹ and measuring every aspect of work and eradicating inefficiencies within the Fiat Production System, a supply chain that comprises FPT and three other companies. Reducing the time to deploy new IT services and applications will also help FPT to shorten engineering and design cycles and respond better to these customer requests.

Next Steps

Cisco Data Center 3.0 has provided FPT with a proven model for the adoption of FCoE technology for both legacy data centers and also greenfield sites. The company is currently in the process of building a new facility in Turin. The next stage of the collaboration is to upgrade the IP backbone technology by implementing the Cisco Nexus 7000 platform and, in the process, enabling virtualization to be extended across other data centers.

FPT is also considering plans to introduce the [Cisco Nexus 1000V Series Switch](#). The software switch delivers [Cisco VN-Link](#) services to virtual machines hosted on a particular server, allowing for tighter integration between server and network environments and helping ensure consistent, policy-based network capabilities to all servers in the data center. The Nexus 1000V can typically help to virtualize 30 percent more servers, while reducing workload by 30 percent, and improving both server and networking team efficiency.

For More Information

To find out more about Cisco Data Center 3.0 visit: www.cisco.com/go/datacenter

PRODUCT LIST

Switching

- Cisco Nexus 5000 platform
- Cisco Catalyst 6500 Series Switches
- Cisco MDS 9500 Series Multilayer Switches

¹. Lean manufacturing refers to a production practice that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful, and thus a target for elimination.



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