

Military-Standard Data Center Management



NATO enhances data center systems resilience and scalability while freeing space and reducing energy needs

EXECUTIVE SUMMARY

Customer Name: NATO Communications and Information Agency (NCIA)

Industry: Defense

Location: Italy

Challenge

- Make IT operations faster, better, and cheaper
- Move to greenfield data center without disrupting military operations

Solution

- Cisco Unified Data Center solution based on Vblock to seamlessly integrate Cisco compute and network (both physical and virtual), VMware server virtualization, and EMC storage technologies

Results

- 70 percent space saving
- 30 percent reduction in power consumption
- 85 percent improvement in provisioning times
- 400 percent increase in storage capacity

Challenge

Secure collaboration and information exchange are crucial for any organization. In the case of the North Atlantic Treaty Organization (NATO) lives depend on it. In the 21st century, the prime focus of this 28-country alliance is to safeguard the freedom and security of its members.

That role involves a delicate combination of crisis management and peacekeeping, supported by fail-safe communications and secure data management, of which the NATO Communications and Information Agency (NCIA) is a key enabler. Present in 30 locations worldwide, NCIA connects NATO forces and nations, providing IT services and state-of-the-art capabilities including cyber and missile defense.

Faster, better, and cheaper service delivery is a top priority. Yet, heterogeneous data centers that were complex and difficult to operate meant these goals were rapidly moving out of reach. Built using different technologies, including 110 physical and 30 virtual servers, this multi-vendor environment served 1300 users. "It was becoming harder to ensure optimum performance and deliver step improvements in efficiency," says NCIA Sector Naples (NCNP) Commander, Colonel Dario Nicolella. "This was due to a lack of integration, not only from a hardware and software perspective, but also in terms of system management."

With a virtualization and cloud technology vision in mind, NCIA decided to refresh and standardize its data center platform by relocating to a greenfield site in Italy. "We saw the opportunity to make a one-off investment that would quickly pay back in recurring savings," says Colonel Nicolella. "So it was a case of researching the market and finding a cutting-edge next-generation networking and cloud computing platform."

Solution

Several vendors were invited to provide a high-level design and, after careful consideration, NCIA decided to partner with Cisco. "What impressed us most about the Cisco proposal was its integrated data processing, storage, and networking management," says Raffaele de Luca, head of operations, plans, and service management at NCNP. "Once we had awarded the contract Cisco contributed to the low-level design, helping us move forward safely and quickly."



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Colonel Dario Nicolella
Sector Naples Commander
NCIA



Colonel Dario Nicolella

Built on pre-validated Vblock design principles, the solution smoothly unifies compute, network, and storage technologies. Server virtualization is provided by Cisco Unified Computing System™ (UCS®) B200 M1 and M2 Blade Servers, which together with the VMware vSphere Hypervisor and Cisco Nexus® 1000V distributed switching platform, help to simplify and automate data center operations. The UCS servers are currently partitioned into 120 virtual machines running a comprehensive range of applications and services including Microsoft Exchange, SQL, and SharePoint, Cisco® Unified Communications, file and print servers, anti-virus software, and custom software such as EPO.

Switching has been standardized on Cisco Nexus 7010 and Cisco Nexus 1000V Series Switches, combined with Cisco Catalyst 3750, 4500, and 6500 Series Switches, to support a unified fabric for delivering Fibre Channel over Ethernet (FCoE) with 10Gbps networking. The addition of Cisco UCS 6140 Fabric Interconnects gives a single point of management, and policy enforcement across the access and the computing layer of the data center network, for example.

“With Nexus-enabled features such as Virtual PortChannel and Virtual Device Context, we’re now able to create virtual switches with different functionality,” says Rosario Romeo, head of project management, plans, and requirements at NCNP. “The operating system is very well integrated with VMware and Vblock.”

The storage elements include Cisco MDS 9509 Series Multilayer Director and EMC CLARiiON CX4-480 Series Storage Arrays. Using EMC Ionix Unified Infrastructure Management (IUIM) the project team created configuration policies to help ensure the implementation adhered to Cisco, EMC, and VMware virtualization best practices. A Cisco ACE 4710 Application Control Engine provides load balancing and helps increase availability and security of NATO applications.

Results

Taking a holistic approach to data center transformation has helped NCIA achieve impressive results. “Our data centers are much more resilient thanks to greater inbuilt redundancy embedded within the overall Vblock design,” says Fabio Viscardi, head of AIS core section at NCNP. “UCS servers also occupy 70 percent less floor space and consume 30 percent less power than before.”

NCIA is in better shape to manage challenges posed by big data. “By implementing FCoE and virtualizing SAN and LAN domains we’ve delivered a 400 percent increase in storage capacity,” says NCNP systems engineer Tommaso Marfella. “Our storage technicians are pleased because they don’t have to continually search for spare capacity.”

Simplifying operations has also helped to lower capital expense, while moving to FCoE has cut down on cabling and switches. In addition, it’s no longer necessary to purchase separate LAN and SAN network interface cards.

Systems are far more agile and responsive. Servers, for example, can be typically provisioned 85 percent faster than before. “UCS Manager, along with Unified Infrastructure Manager have simplified the management of IT resources. With service profile templates we’re able to fine-tune and automate the configuration process for different services,” says Viscardi. “Key applications like Microsoft Exchange are running better on the Vblock mainly due to the improved applications management and system flexibility.”

Provisioning multiple service offerings with VMware ESXi Hypervisor clusters and Cisco Nexus 1000V distributed virtual switching platform takes steps out of the management process and helped NCIA accelerate a recent Microsoft Exchange migration.

“Cisco assisted us in saving time during the design and implementation phases,” says Colonel Nicolella. “They shared effective integration techniques, enabling us to get the most from our data center architecture.”

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Rosario Romeo
Head of Project Management Plans and Requirements
NCIA

Next Steps

NCIA expects Cisco Intelligent Automation for Cloud to be instrumental in the orchestration and delivery of eagerly anticipated cloud-based services. “Our study confirms advanced requirements in many crucial aspects of the IT infrastructure,” says Colonel Nicolella. “Availability and reliability are essential for any modern business, but especially for services that support military operations. With our new data center platform in place, many Cisco technological innovations are likely to feature in its ongoing evolution.”

For More Information

To learn more about the Cisco architectures and solutions featured in this case study, please go to:

www.cisco.com/go/vblock

www.cisco.com/go/ucs

www.cisco.com/go/1000v

Product List

Data Center

- Cisco Unified Computing System (UCS)
 - Cisco B200 M1 and M2 Blade Servers with Intel 5600 Processors

Routing and switching

- Cisco Nexus 7000 Series Switches
- Nexus 1000V Series Switches for VMware
- Cisco Catalyst 3750, 4507, 4928, 6506, and 6509 Series Switches

Fabric Interconnects

- Cisco UCS 6140 Fabric Extender

Hypervisors

- VMware vSphere 4.0 Update 1

Load Balancing

- Cisco ACE 4710 Application Control Engine

Storage

- EMC CLARiON CX4-480
- Cisco MDS 9500 Multilayer Director

Applications

- Microsoft Exchange
- Microsoft SharePoint
- SQL
- EPO
- Anti-virus software
- File and Print



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