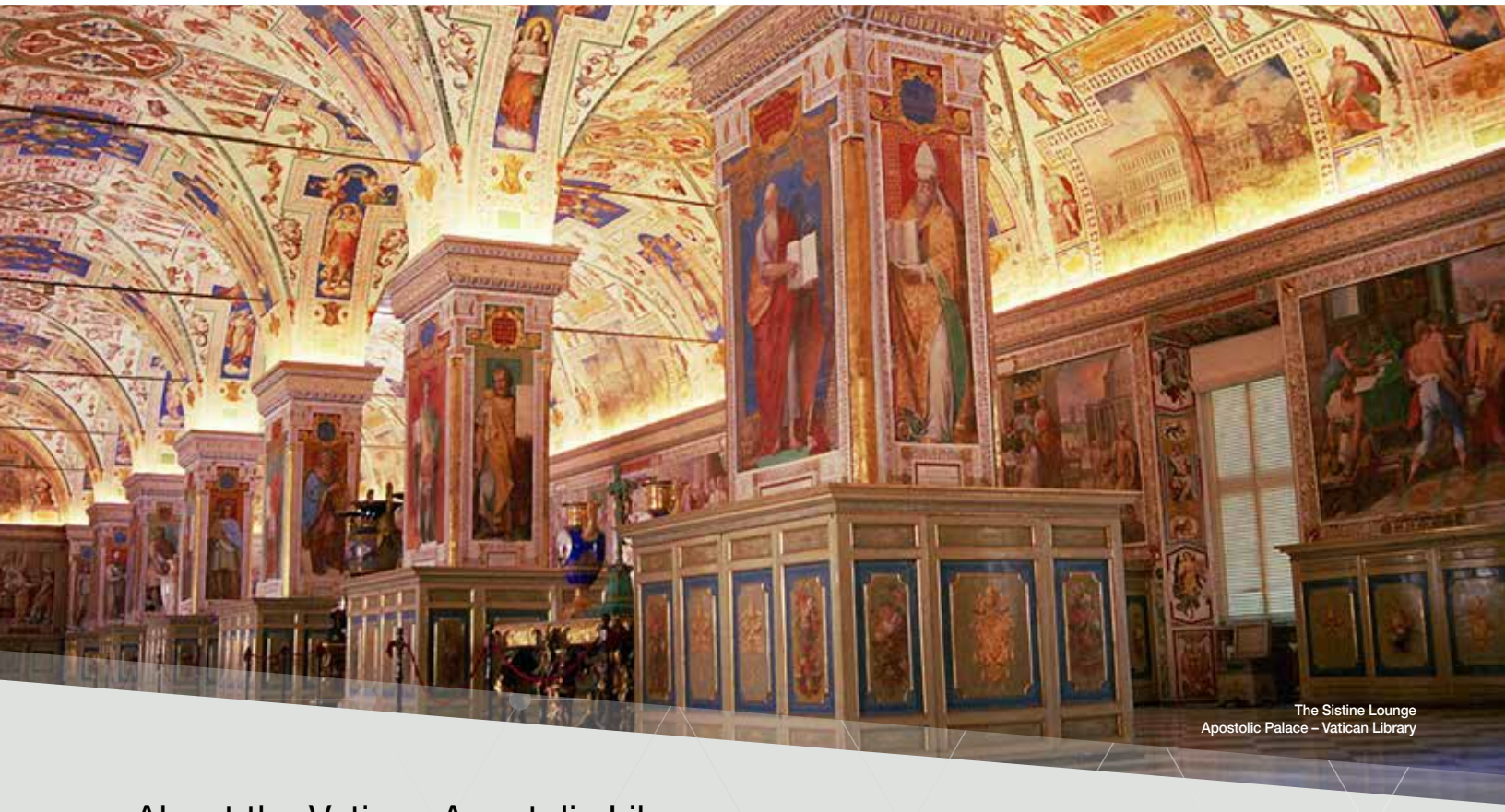
Vatican Apostolic Library Case Study



The Sistine Lounge
Apostolic Palace – Vatican Library

About the Vatican Apostolic Library

Founded in 1451 by Nicholas V, the Vatican Apostolic Library preserves and displays rare manuscripts from as far back as the third century. The Vatican Apostolic Library holds pivotal cultural documents that include letters from important historical figures; drawings and notes by artists and scientists such as Michelangelo and Galileo; and treaties from all eras, in all fields of learning, from all parts of the world.

Currently, the Vatican Apostolic Library maintains over 180,000 manuscripts (including 100,000 archival units), 1.6 million printed books, over 8,600 incunabula, more than 300,000 coins and medals, 150,000 prints, drawings and engravings, and over 150,000 photographs.

Today the Vatican Apostolic Library is a research institution for history, art, literature, law, philosophy, science, and theology. One of the main functions of this distinctive institution is to offer consultation services on the stored books through selected researchers and qualified members of the academic community. These services provide a valuable resource on the collected information, contributing to world history consolidation and the sharing of human knowledge.

Biblioteca
Apostolica
Vaticana

PANDUIT®
infrastructure for a connected world

COMPANY
Vatican Apostolic Library

COUNTRY
Vatican State

INDUSTRY
Education and Historical Research

BUSINESS CHALLENGES
To provide a highly reliable and secure network infrastructure that empowers the use of technology, supports sustainability objectives, and provides the highest network capacity today and into the future.

PANDUIT SOLUTION
Panduit Integrated Data Center Solution comprised of SmartZone™ Software and Hardware for comprehensive energy and physical infrastructure efficiency in the data center. The Net Access™ S-Type Cabinet System for thermal sealing and cable management, and the copper and fiber cabling system for consistent network reliability, performance, and scalability.

BUSINESS BENEFITS
Improved data center infrastructure management offering better visibility of critical IT infrastructure to enable streamlined processes and agile business decisions.

Improving Reliability and Enhancing Operational Efficiency

The Vatican Apostolic Library implemented the Panduit Integrated Data Center Solution to create a robust and highly available network infrastructure to support the conservation of its literary treasures.

BUSINESS CHALLENGES

The manuscripts in the Vatican Apostolic Library are extremely delicate and sensitive to light, humidity, and temperature. Therefore, handling the material presents significant risk for destruction or damage. To guarantee the preservation of its documents, the Vatican Apostolic Library has begun an extensive manuscript digitization project.

The purpose of the project was to provide the technology and functionality needed to support the future storage of the valued manuscripts. To accomplish this goal, the existing data center needed to be completely dismantled and equipped with a more efficient data center infrastructure.

The new data center required a highly available, secure network infrastructure to support the massive data transfer effort and provide the capability to monitor and capture real-time data.

The complex project has two aspects. The first is the transition of over 80,000 historical manuscripts held in the Vatican Apostolic Library to a digital format. This aspect has been in process since 2012. The second aspect involves implementing the upgraded network infrastructure that would enable effective optimization of data center cooling, power continuity, and storage, and was successfully completed.

According to Luciano Ammenti, IT Director, Vatican Apostolic Library, “We needed a solution with a tangible contribution to technology and a solution provider with specialized knowledge to allow the Vatican Apostolic Library to easily extend its services to patrons well into the future.”

The Apostolic Palace from the inner Belvedere courtyard

STRATEGIC OBJECTIVES

The Vatican Apostolic Library needed the capability to monitor and manage its new data center, and support the demand for increased power and capacity. The existing tools were inadequate and the new data center needed to address inefficiencies surrounding power monitoring, energy management, capacity, and environmental conditions in the data center, while offering the latest technology to the Library's patrons. This would allow the Vatican Apostolic Library to address current needs and prepare for future growth as the digitization project progressed.

In addition, the data center enhancements would support the Vatican Apostolic Library's commitment to create a setting which allows readers to easily access the manuscripts while avoiding further degradation of the original materials.

PANDUIT SOLUTION

After validating the robust performance of the connectivity previously installed at the main data center, located in a nearby site, the Vatican Apostolic Library again selected Panduit to fulfill its network infrastructure requirements. This included implementing the integrated physical infrastructure, hardware and software, and the hot aisle containment system for the new site within the historical home of the Vatican Apostolic Library. According to Mr. Ammenti, "The consultative approach of the Panduit team along with partners such as EMC^2, Stulz, and Borri UPS, allowed us to resolve our physical infrastructure challenges with credibility and reliability." The implementation of the SmartZone™ Solutions allows the Vatican Apostolic Library to monitor and process real-time data, and access current and historical views of power and temperature, providing enhanced functionality and visibility across its entire physical infrastructure. The solution addresses the Library's power and energy usage challenges, capacity constraints, environmental issues, patch field connectivity, and security and access control requirements to provide the tools and information needed to make intelligent decisions for its data operations.

SmartZone™ Gateways simplify the Vatican Apostolic Library's network architecture by processing and consolidating the monitoring, management, and control of gateway-enabled rack power distribution units (PDUs) and environmental sensors through a single IP address, reducing the need for separate IP ports. This information can then be displayed via internal firmware or utilized by SmartZone™ Software platforms for real-time monitoring and display, management, and automated documentation of operational metrics. To enhance data center security, SmartZone™ Gateways support access control card readers on cabinets and manage encrypted access data for smart card technologies and other readers.

The upgraded network infrastructure includes eight Panduit Energy Efficient Net-Access™ S-Type Server Cabinets, thermally compartmentalized using a complete Panduit® Net-Contain™ Hot Aisle Containment (HAC) System for energy efficiency, optimized airflow distribution, and improved thermal performance across the data center. The cabinets consist of components that maintain hot/cold air separation to improve cooling efficiency from the previous cooling system by 40%, which significantly lowers cooling expenses for the Vatican Apostolic Library.

To improve cable management while ensuring system performance, durability, and reliability within the Vatican Apostolic Library's data center solution, NetManager™ High Capacity Horizontal Cable Managers and Patchlink™ Horizontal Cable Managers were deployed.

The solution was completed with Panduit copper and fiber systems for connectivity within the cabinets. Together, the Panduit OM3 fiber optic transport system (MPO interconnects, angled patch panels, and pre-terminated fiber cassettes) and Category 6A 10 Gig copper system provide reliable network performance and enable application availability while exceeding the latest industry standards. The consistent performance and reliability accommodate the Vatican Apostolic Library's network performance needs.

BUSINESS BENEFITS

“The use of Panduit technology has provided us with an essential contribution to our data center in terms of efficiency, infrastructure management, and data availability, creating balance between cost and performance,” said Mr. Ammenti.

The robust and innovative architecture of the Panduit Integrated Data Center Solution provided the Vatican Apostolic Library with the capability to support the vast amount of data generated by the digitization project, ensuring high reliability and elevated transmission speed.

The deployment time for the installation was 30% less than deployment time offered by alternate solutions, which was a great added value for the overall project. Since the completion of the project, visiting customers to the Vatican Apostolic Library have shown sincere interest in duplicating the same layout, implementing similar Panduit solutions suitable to their needs.

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