CASE STUDY

PRODUCT EXTENSIBILITY FOR AN ENTERPRISE STORAGE ISV WITH INTEROPERABILITY

Ensured product extensibility with storage management ecosystem interoperability certifications and technical support

Client Background

Our client is a large global storage management company with development centers, laboratories and sales offices across the world. The client's customer-facing Technical Operations units help the sales effort as well as customer implementation efforts for their storage management products. There was a continuous proliferation of Storage Area Network (SAN) and Network Attached Storage (NAS), as well as of server and virtualization technologies. In addition, storage-oriented software products such as databases, email systems, enterprise class business solutions and document/content management solutions were growing in the market. Our client's Technical Operations team faced an increasing demand to conceive, plan, execute, test and tune numerous configurations of hardware and software products along with their storage management offerings. The client needed to certify their storage products for interoperability and ensure compatibility with a wide range of heterogeneous products within the product ecosystem.

The key objectives included:

- Plan and execute various activities such as testing, automation, and certification from an offsite Technical Operations lab which would be managed by the client's Technical Operations team
- Perform interoperability tests and certifications of SAN and NAS Storage Arrays for product extensibility

KEY BENEFITS

- Improved the ability of the client's Technical Operations arm to deliver certified configurations, with reduced overall cost of operation. Hiring in-house experts for certification process would have escalated the cost of operations otherwise.

Xoriant Solution | Key Contributions

As part of our interoperability testing of SAN and NAS Storage Arrays, Xoriant engineers performed intensive tests of storage sub-systems to determine the maximum throughput/IOPS which forms the baseline input for any application-level testing. Our experts performed functional and system testing of features such as disaster recovery, data replication, compression, de-duplication, load balancing, quota, ACL, ABE, join domain, and others. With our support, storage arrays of the client were certified to work flawlessly with different OS, Hypervisors, HBAs, FC Switches, etc. in the product ecosystem.

Our key contributions included:

- Conducted interoperability verification
- Managed performance and testing
- Performed test automation activities

Conducted interoperability verification: Our SAM engineers used remote VPN to connect to the client labs. In the offsite Interoperability lab, our team worked with client's Location Managers. Our experts performed testing of all SAN and NAS devices with the latest hardware and software configurations. In interoperability testing, each combination of equipment is characterized by a 5-tuple. In a given combination, the host runs one of the OS as specified in the OS block. There could be one of the Multipath software running on the host with one Host Bus Adapter (HBA) installed. The host is connected to a Fiber Channel (FC) switch which is in turn connected to the storage.

Managed performance and testing: Our team performed drive comparison test, RAID level backend comparison tests, etc. to determine the versatility of any storage array with different types of disk drives. We employed static as well as dynamic provisioning and other virtualizations techniques to test the enterprise class of storage which enables using the entire capacity of the storage array more efficiently. In addition, we performed scalability tests to verify the full capacity of any storage array.

Performed test automation activities: Our Automation team members are responsible for developing test automation scripts that can automate the manual test process followed for Interoperability lab testing. For this case,

KEY BENEFITS

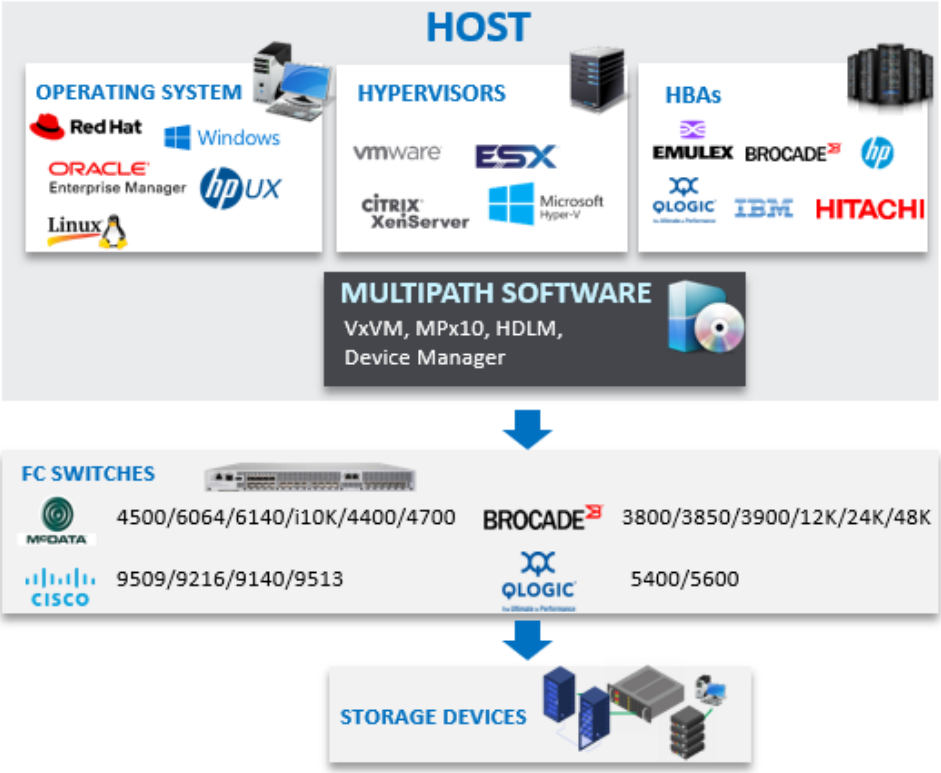
- Gained 25% improvement in time to market by certifying storage arrays across OS, Hypervisors, HBAs and FC switches. Achieved 30% improvement in productivity by assigning the same team for certifying additional storage arrays.
- Increased customer base with product extensibility achieved through the interoperability verifications and certifications performed by our experts.
- Helped sales cycles by providing the ability to measure and tune the performance of standalone client products as well as that of sales situation-specific configuration through managed performance and testing.
- Reduced the time taken for testing/certification and improved process efficiency with our test automation activities.

the work was performed with Perl and Shell Scripts, using the storage domain concepts.

Client Testimonial

With storage management business on the upswing, Technical Operations labs were becoming a limiting factor in our sales success. With timely and flexible assistance from Xoriant for product interoperability certifications, we could ensure product extensibility which significantly increased our customer base and sales.

High Level Architecture



Technology Stack

VxVM | MPx10 | HDLM | Device Manager | Red Hat Linux | Windows OS | Oracle Enterprise Manager | HP-UX | VMware ESXi | Citrix XenServer | Microsoft Hyper-V | Emulex HBA | Brocade HBA | QLogic HBA | IBM HBA | HP HBA | Hitachi HBA | FC Switches (McData, Brocade, Cisco, QLogic)

Xoriant is a product engineering, software development and technology services company, serving technology startups as well as mid-size to large corporations. We offer a flexible blend of onsite, offsite and offshore services from our eight global delivery centers with over 3600 software professionals. Xoriant has deep client relationships spanning over 30 years with various clients ranging from startups to Fortune 100 companies.