

EMC and UNISYS: Project REAL

Best practices for Microsoft SQL Server deployment

Comprehensive, secure, available

The goal of business intelligence (BI) is to provide the right information at the right time to the right people. This means deploying a BI solution that is comprehensive, secure, and available all day, every day. EMC and Unisys are working with Microsoft® and others on a project to make that solution a reality. Called Project REAL, this Microsoft-led initiative is a joint effort to develop an end-to-end BI reference architecture combining expertise from leading IT partners with the strengths of Microsoft SQL Server 2005.

SQL Server 2005, Microsoft's next-generation data management and analysis software, is an end-to-end business intelligence platform. It builds on the strengths of SQL Server 2000 with increased scalability, availability, and security for enterprise data and analytical applications.

Project REAL is not simply a demo. It is BI in practice using Microsoft SQL Server 2005 and over 2 TB of real customer data from Barnes and Noble. The project team built an end-to-end BI system architecture, tested it at scale, and is now managing ongoing operations including daily 170 GB incremental updates, large multi-user workloads, system monitoring, and data lifecycle management.

EMC: storage resources and architecture

EMC provided substantial storage resources for Project REAL and architected and implemented the data integrity and backup solutions for the tiered storage. The EMC® platform contribution included one Symmetrix® DMX1000, one CLARiiON® CX700, and one CLARiiON CDL300 Disk Library to support backups. EMC also provided two 32-port 2-GB Fibre Channel switches to create the fault-tolerant storage area network (SAN) and enable storage volumes to be attached or moved easily to any machine. EMC software products supporting the Project REAL environment include:

- **EMC Replication Manager:** used to manage array-based disk backups (split mirror) and image snapshots
- **EMC NetWorker™:** for "tape-based" backups to the CLARiiON Disk Library
- **EMC Solutions Enabler:** includes TimeFinder® and the TimeFinder-SQL Integration Module which provided scripting tools to enable automated management of the split-mirror backups.
- **EMC CLARiiON Navisphere®:** includes Navisphere Manager and Navisphere Analyzer
- **EMC CLARiiON SnapView™:** used to create snapshots and clones for backup and rapid recovery purposes

EMC used CLARiiON LUN migration to support the data-aging process by moving SQL 2005 table partitions from expensive LUNs to inexpensive LUNs transparently and non-disruptively.

The experience gained has enabled EMC to develop best practices for designing systems to meet storage performance and availability requirements based on a number of factors including:

- Total initial storage size and growth projections
- Peak (including when the peaks occur), sustained, and average throughput requirements for both read and write, with future projections
- Peak (including when the peaks occur), sustained, and average bandwidth requirements for both read and write, with future projections
- Fault tolerance and high-availability needs
- Backup and recovery including rapid recovery needs

Unisys: server technology and performance optimization

Unisys has been involved with Project REAL from the very beginning and is a key player in the performance optimization of this groundbreaking BI implementation. ES7000 server technology was the foundation for architectural design considerations to explore consolidated versus distributed environments and the performance differences of 64-bit versus 32-bit technology.

The 32-bit performance leadership of the ES7000 Orion 540 enables customers to get the most out of their mission-critical applications such as business intelligence. The ability to divide it into four partitions makes it an ideal platform for consolidating applications and large-scale databases as demonstrated in Project REAL.

The ES7000 Orion 430 server is a powerful 64-bit Intel[®] Itanium[®] 2-based system for large-scale, mission-critical databases. Its enterprise-class reliability, availability, and serviceability characteristics make it an ideal platform for consolidation, mission-critical applications such as business intelligence, and growing, large-scale databases.

Along with 32- and 64-bit ES7000 servers, Unisys contributed technology experts from throughout Unisys and the Business Intelligence Center of Excellence (BICOE). With Project REAL, Unisys continues its commitment to share expertise and provide enterprise-class tools and operating systems to help clients quickly and efficiently achieve competitive advantage.

A robust storage and server environment

Project REAL has been able to address the full range of real-world challenges that companies face when analyzing large data sets including:

- Design of schemas—both relational and for Analysis Services
- Implementation of data extraction, transformation, and loading (ETL) processes
- Design and deployment of client front-end systems for reporting and interactive analysis
- Sizing of systems for production
- Management and maintenance of systems on an ongoing basis, including incremental updates to the data

The combined technologies of EMC and Unisys provided a robust storage and server environment to meet the requirements for enterprise-scale BI implementations.

The value of experience

With Project REAL experience at hand, IT organizations now have the tools to evaluate and discover best practices and trade-offs in performance, scalability, ease of deployment, manageability, and costs. All of this contributes to:

- Optimized infrastructures to support performance, scalability, and availability SLAs.
- Improved ROI of IT investments through consolidation and alignment of server and storage assets with the changing value of information over time.
- Reduced complexity to implement high-availability SQL Server enterprise infrastructures.

The best decision a company can make as it approaches the implementation of SQL Server 2005 is to leverage best practices, services, software, and platforms from EMC, Unisys, and their Project REAL partners: Apollo Data Technologies, Emulex, Intellinet, Panorama, Proclarity, Scalability Experts, and Microsoft.



Learn more

To learn more about the solutions that EMC has for Microsoft SQL Server 2005, contact your sales representative or visit www.EMC.com/solutions/microsoft/sql_server/.

Project REAL

Learn more about Project REAL at www.microsoft.com/sql/bi/ProjectREAL/default.aspx.