

# EMC VNX and VNXe with Microsoft SMB 3.0

The best of NAS and SAN without compromise

## ESSENTIALS

- Supports critical application deployments with resilient file shares
- Simplifies storage management and lowers cost
- Improves performance and availability

## HIGHLIGHTS

- **High Performance:** Application level performance on IP networks
- **Continuous Availability:** Seamless failover and protection for critical applications like SQL Server, Hyper V.
- **Multipath MPIO:** Provides load balancing, transparent network interface failover, and increased bandwidth.
- **Simplicity:** Manage simple Windows shares rather than complex storage.
- **Encryption Security:** Encrypt sensitive data in transit. Secure critical data or applications locally or in remote offices
- **Offload Copy:** Copy data on the storage system relieving the load on the server.
- **Zero Downtime Backups:** Backup applications with zero downtime using VSS shadow copies.

## The Benefits of SMB 3.0

For many years, IT has divided storage technology between Network Attached Storage (NAS) and Storage Attached Network (SAN). NAS provides a networked attached file share that shares data files, while a SAN is a local network made up of multiple devices that operates on disk blocks. People have always liked the management and ease-of-use of NAS and the high speed, reliable performance obtained by using a SAN.

Now, with new protocols such as Microsoft's Server Message Block (SMB) version 3.0, the lines are starting to blur. With the rapid improvements in disk storage technology, today's NAS devices now offer capacities and performance that once were only possible with SAN. File-sharing becomes more advanced. Ethernet speeds are increasing.

## SMB 3.0 on EMC® VNX® and VNXe® Storage

The VNX family was the first to offer SMB 3.0 support, demonstrating a continued commitment to consistently offer customers the best solution for their needs. The EMC VNX family delivers industry-leading innovation and enterprise capabilities for file, block, and object storage in a scalable, easy-to-use solution.

## SMB 3.0 on EMC VNX Makes Storage Simpler

With SMB 3.0 and the EMC VNX family you can use an IP storage network structure to install a centralized storage system that performs as well as a SAN without the cost of buying new fibre channel (FC) equipment. You get the benefits of file share management without any performance penalties typically associated with legacy SMB (CIFS) deployments.

## SMB 3.0 is the Future of Storage

SMB 3.0 in Windows 8 clients and Windows 2012 servers is the future of storage protocols. It gives excellent performance with low CPU overhead – plus fault tolerance. Its load balancing/scaling will adjust throughput to available NICs and it also supports simultaneous access by multiple cluster hosts, with built-in arbitration for data consistency. There's also file-share VSS (RVSS) backup support that facilitates the capture of application-consistent backups on SMB shares. This resiliency, combined with increasing Ethernet speeds, opens up the potential for demanding, mission critical workloads such as Hyper-V and Microsoft SQL Server, to be placed on NAS.

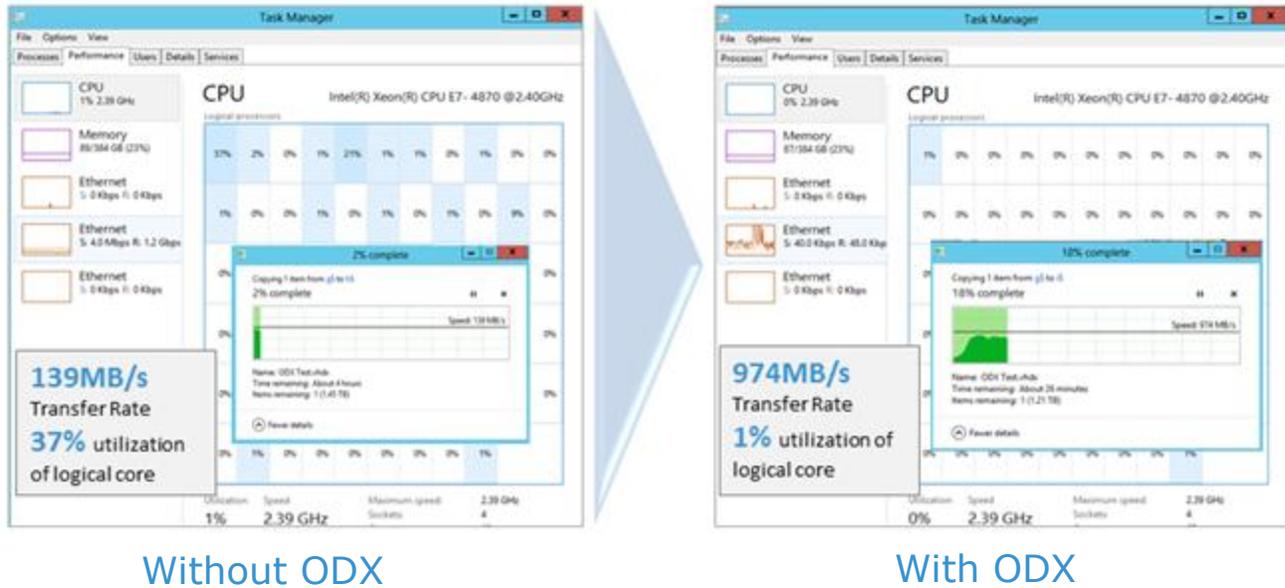


Figure 1: EMC VNX ODX support increases transfer rate and decreases CPU utilization during move of 1.5TB VHDX Virtual Hard Disk between servers

### New Feature Summary:

- Offload Data Copy (ODX):** Prior to SMB 3.0, a Windows client request to copy data from one location in the storage array to another location in the storage array required interaction between the Windows client, CIFS server, and back-end storage consuming network bandwidth and host CPU cycles. With SMB 3.0, copying data from a Windows client to the storage device is offloaded – meaning it’s performed within the back-end storage itself. Further, if two SMB3.0 servers share the same back-end storage, then the client can do the copy across different servers.
- Server Continuous Availability:** SMB 3.0 has introduced persistence for durable handles. Persistent handles will allow a CIFS server to save on-disk most of the metadata associated with an open file. If a Data Mover failover occurs, all open files that were present prior to the failover can be re-established by the client.

- **Client Continuous Availability:** When an application that has open files on a CIFS server is failed over to another node in the cluster, it attempts to re-open those files. The CIFS server sees this as a different client trying to access the locked files and rejects the request. SMB 3.0 includes a unique identifier called an Application ID, which is used to indicate to the server that it is the same application.
- **Multi-Path IO (MPIO):** With previous SMB versions, only one TCP connection could be associated to a given user session. With SMB3.0, multiple TCP connections can be associated to a given SMB3.0 session. This feature optimizes bandwidth (multiple TCP sessions can be associated with a single SMB session) and enables failover and load balancing transparency with multiple NICs.
- **CIFS Encryption:** SMB encryption provides secure access to data on SMB file shares. It protects data on untrusted networks by providing end-to-end encryption of SMB data “in flight.” This can be enabled on a per-share basis or on all shares through the registry of the CIFS server. There are no settings required on the SMB client.
- **BranchCache V2:** BranchCache allows clients in branch offices to cache and then retrieve data from locally held copies, instead of transmitting files over the WAN from the Main Office. BranchCache V2 introduces efficiency in the file hashing process, using fixed 128 MB segments, increasing the likelihood of finding shared segments at the local office. For more information on BranchCache, refer to Configuring and Managing CIFS on VNX and VNX Command Line Interface Reference for File.
- **Remote Volume Shadow copy Service (RVSS):** The previously available shadow copy service, known as VSS, was a local concept only and handled creating and managing snapshots of the local disk resources. Windows 8 now supports RVSS, which allows you to take checkpoints across file shares from multiple file servers. From a networking standpoint, this service is implemented as a new MSRPC. RVSS is also known as FSSC (File share Shadow Copy).
- **VNX OE for File Version 7.1.65.8:** With this release, the VNX File Server supports Windows Server 2012 as a member server, using Server Message Block (SMB) 3.0 as the default CIFS protocol, with some other new improvements

## CONTACT US

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