



Maintaining Native Mac[®] File Sharing in an Enterprise Storage Environment

A Technical Best Practices Whitepaper

About This Document

This whitepaper explores two important trends in Enterprise Storage: the growing presence of Apple[®] Mac[®] computers that need compatible access to file sharing resources, and the business imperative driving the adoption of consolidated, unified storage infrastructures such as those from EMC and NetApp.

The paper describes different scenarios for integrating Acronis' ExtremeZ-IP[®] file server with unified storage solutions to provide the most compatible file-sharing environment for Macs in the Enterprise.

The Need for Native Mac File Sharing in the Enterprise

Apple's Mac OS X computer platform has seen its market share grow rapidly in Enterprise environments. This has been driven by the popularity of innovative products like the iPhone[®] and the MacBook Air[®], as well as Mac OS X's security and its ability to run virtualized instances of Windows applications. As a result, Macs are entering the Enterprise through senior level executives or formal pilot projects.

ITIC's Laura DiDio released a survey in late 2008 that showed 68% of some 700 companies polled planned to allow their end users to deploy Macs as their work systems in the next 12 months (citation 1). Separately, a recent survey by the Enterprise Desktop Alliance showed that 91% of IT administrators indicated that integration and management parity between Macs and PCs were major issues of importance to their organization (citation 2).

Compatibility Without Compromise

When it comes to connecting these Macs to file sharing resources, many users and IT professionals discover that while the Mac has basic support for Windows® file sharing protocols, something more is needed. This is what we call Compatibility without Compromise: maintain the innovative Mac user experience and functionality for the end user; conform to the organization's IT policies and best practices; and improve end-user and network performance and scalability.

Acronis' ExtremeZ-IP file server meets this need. ExtremeZ-IP is a Windows-based software package that implements the Mac's native AFP file sharing protocol, but provides IT professionals the ability to integrate the Macs properly into the IT infrastructure.

For end users, ExtremeZ-IP provides support for the features of Mac OS X such as long file names, large files, full content searching, automatic backups, as well as rock solid stability, performance and lack of data corruption required to get the job done. For the administrators, ExtremeZ-IP provides support for IT policies such as single file storage of Mac information, Active Directory, Microsoft® DFS, Single sign-on, caching to keep Mac-intensive file operations off the server, and flexible file naming policies. This translates to measurable business value in the form of increased productivity and IT infrastructure efficiencies, ease of integration and significantly reduced volume of help desk calls.

ExtremeZ-IP comes with the backing of a vendor who understands the issues surrounding Mac / Windows integration and provides timely support and fixes that keep pace with the innovations from both Apple and Microsoft. That is why over 3,000 companies worldwide have trusted ExtremeZ-IP for the past 10 years to provide the best integration between Macs and Windows file sharing infrastructures.

Beyond SANs

ExtremeZ-IP has always been fully compatible with Windows environments that connect to storage directly (Direct Attached Storage, or DAS), as well as in higher performance Storage Area Network (SAN) configurations such as those from EMC®, Dell® or HP®. ExtremeZ-IP also supports running on Network Attached Storage (NAS) devices that are running the Windows Storage Server platform.

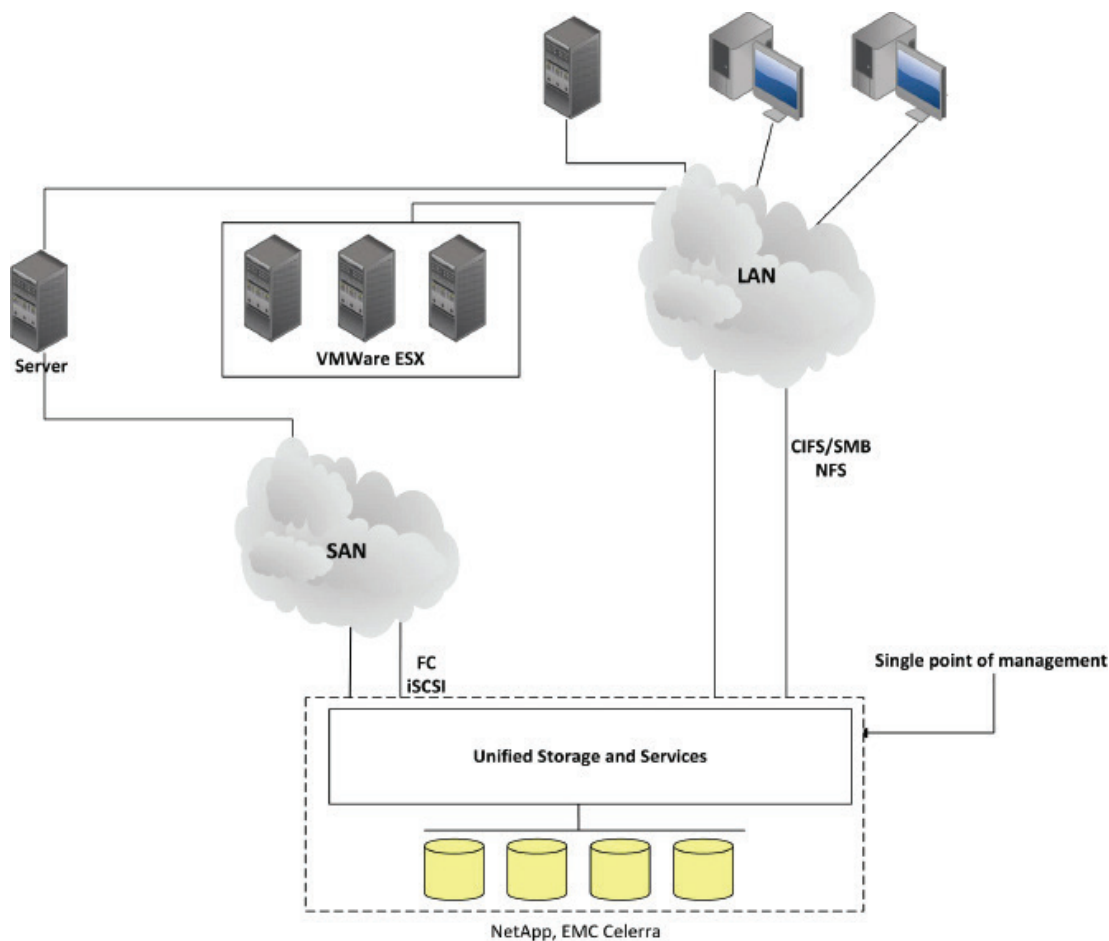
Recently, organizations have begun looking beyond DAS and SAN storage architectures toward a consolidated, unified storage model. And they want to understand how to continue to provide the most compatible Mac experience while consolidating storage.

Unified Storage Architectures

Unified storage is one of the fastest growing segments of the storage market today, with offerings from major vendors such as NetApp and EMC with its Celerra NX4, NS-120 and NS-480 line of Network Attached Storage (NAS) devices.

These solutions are not just NAS file servers – they combine NAS file sharing with block access like a SAN over standard protocols like Fibre Channel or iSCSI, all supported on the backend by a unified storage fabric.

The business case for unified storage can be compelling. Unified storage enables the consolidation of islands of SAN, NAS and DAS storage into a single pool of storage. Not only does the unified fabric simplify and reduce the costs of IT management, additional capabilities can be applied to the entire storage system in a consistent, all-in one manner. This includes backup, snapshots, mirroring for disaster recovery, de-duplication, thin provisioning, etc.



Virtualization Strategies Are Driving Unified Storage

Organizations’ virtualization initiatives are a key driver of the adoption of unified storage solutions. As corporations consolidate their back office servers on VMWare or Hyper-V infrastructure, they want to leverage their unified storage fabric through the user of Fibre Channel or iSCSI block access for the virtualization layer. Thus unified storage isn’t just for file sharing – it’s the platform for storage services in the Enterprise.

Scenarios for Integrating ExtremeZ-IP with Unified Storage

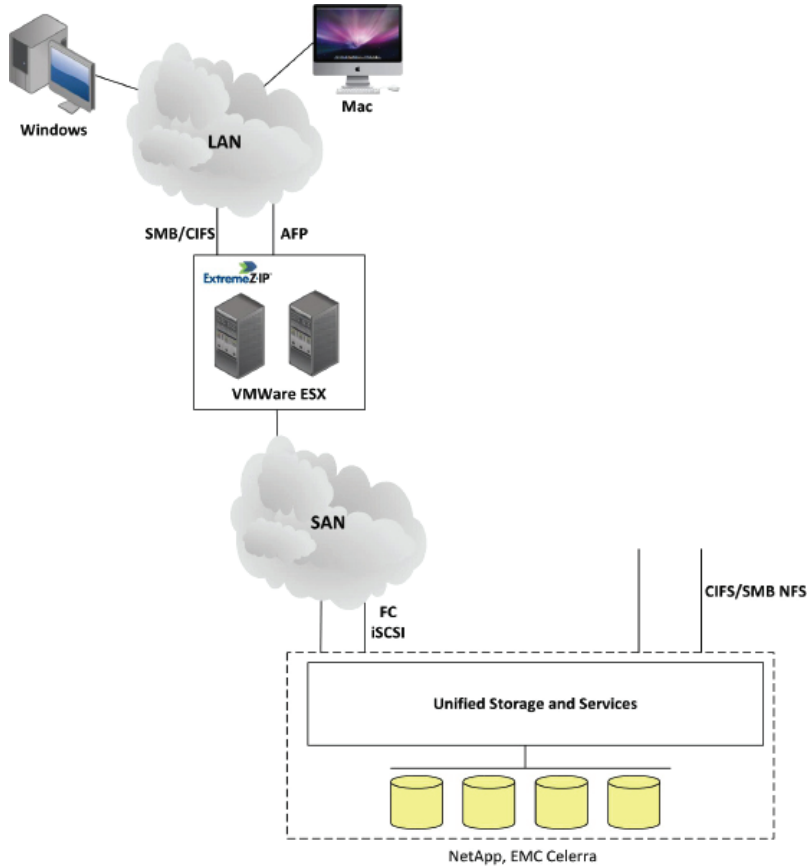
This section explores how ExtremeZ-IP can leverage unified storage architectures to provide Compatibility without Compromise – the innovative user experience for Mac users while conforming to an organization’s IT policies.

Scenario 1: Storage Consolidation and Windows Virtualization Strategies

In this scenario, unified storage is being introduced as part of a storage consolidation and virtualization initiative. Typically islands of storage from isolated Direct Attached Storage (DAS) or Storage Area Networks (SAN) are consolidated into a single storage platform. As well, the disparate servers using that storage are virtualized onto the VMWare or Hyper-V platform.

In this case, individual Windows Server instances that previously provided file sharing on particular volumes are now consolidated on a virtualization layer that leverages storage from a single pool of managed storage.

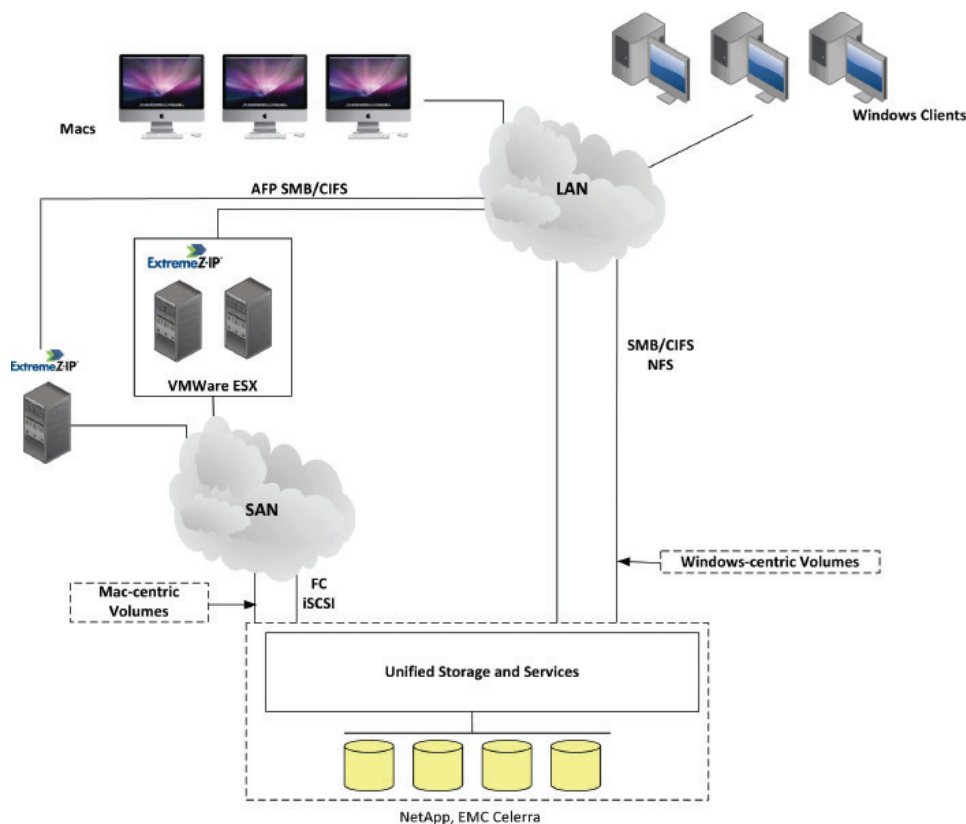
ExtremeZ-IP is then installed and hosted on those Windows Server instances to provide full Mac support using the native AFP file sharing protocol.



Scenario 2: Mac-Centric Shares

A related scenario is when storage is consolidated into a single unified storage-capable Network Attached Storage (NAS) device. In this case general file sharing is provided directly by the NAS over the SMB or NFS file sharing protocols. However, there are file shares that are used heavily by Mac clients and need to have full Mac compatibility. A common example is an organization with a creative department that heavily uses some shares for Mac-oriented workflows.

In this scenario, “Mac-centric” shares are shared out from a Windows Server running ExtremeZ-IP that utilizes the unified storage pool using iSCSI or Fibre Channel connections. Windows clients that need to access the same storage do so by connecting to the Windows Server over the SMB protocol, but Macs can use the native AFP file sharing protocol for optimal compatibility.



Scenario 3: Tie Together with Microsoft Distributed File System (DFS)

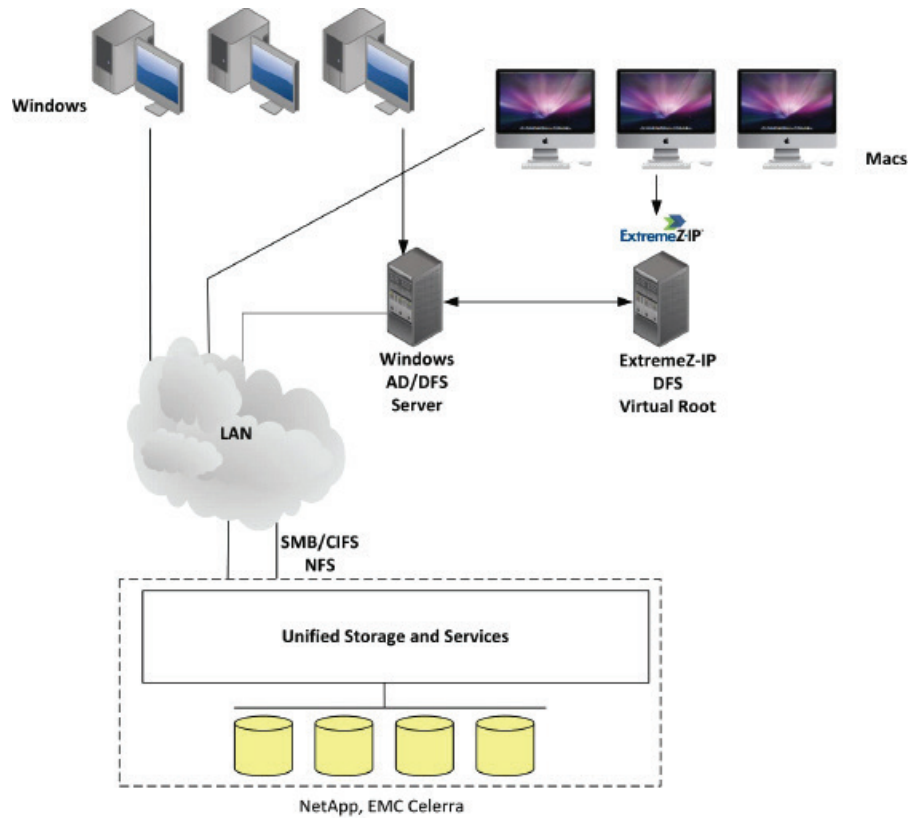
Many organizations are adopting Microsoft’s DFS technology as part of their storage consolidation and virtualization efforts. By using DFS, administrators can change the configuration of storage, file shares and the backing servers without having to retrain users or change workflows.

Microsoft DFS creates a single file sharing namespace that is presented to end users, hiding the complexity of the location of shares. End users navigate this namespace as a single share, and are redirected to appropriate file share targets behind the scenes. This gives administrators the ability to re-provision file shares based on usage or load, consolidate file servers, etc. DFS also brings important benefits in creating failover shares and providing WAN optimization in multi-site environments.

Mac OS X does not support DFS natively, however with ExtremeZ-IP, Macs can connect to and navigate DFS to take advantage of the single view of the file sharing resources of an organization. Macs are then redirected to the appropriate file share, regardless of whether the target share is hosted by ExtremeZ-IP (using the AFP protocol), or a NAS or Windows-only (using SMB) server.

Using ExtremeZ-IP for DFS supports deployment of unified storage in key ways:

- When consolidating storage or virtualizing existing file servers, DFS provides the Macs with a consistent, single view of the storage hierarchy without seeing the changes occurring behind the scene. This means less user retraining or lost productivity.
- Individual shares in the DFS hierarchy that are heavily used by Macs can be pulled out and hosted as “Mac-centric” shares on a virtualized instance of Windows that uses the NetApp or EMC unified storage NAS over Fibre Channel or iSCSI. Again, this occurs without interrupting user workflows or requiring retraining, while providing optimal Mac compatibility.
- For shares hosted directly on NAS devices, ExtremeZ-IP enables the use of DFS to mask the complexity of the share structures from end users, even if Macs do not use the native AFP protocol to access the shares.



(*) Some applications, particularly graphic design applications, track related files using absolute paths. In the case where an organization has a large amount of legacy content with linked files, migrating to DFS may cause those path linkages to break. If the Zidget is used to handle DFS Browsing, the paths will be consistent with the pre-DFS migration paths.

Conclusion

This paper reviewed two key priorities in Enterprise IT:

- Increasingly, IT organizations are adopting unified storage architectures to drive down costs by consolidating islands of storage and providing a single point for storage management, provisioning, backup, disaster recovery and other services
- Additionally IT professionals are being asked to provide support for growing Mac populations. They need to support the innovative features of the Mac, while maintaining conformance with their IT policies and best practices.

Acronis' ExtremeZ-IP file server, combined with unified storage solutions from vendors such as NetApp and EMC enables organizations to meet both of these challenges.

Appendix : Other Resources

Acronis

- Sharing Files on Windows Servers Whitepaper
- Integrating Macs with Microsoft DFS Whitepaper
- The End of Services for Mac (SFM): Evaluating Your Replacement Options

These Resources may be found in the Acronis Resource Center: <http://www.acronis.com>

Others

- NetApp: White Paper: Unified Storage Architecture: Enabling today's dynamic data center (<http://media.netapp.com/documents/wp-7054.pdf>)
- EMC Unified Storage – Good Things Come in Smaller Packages (http://chucksblog.emc.com/chucks_blog/2008/08/emc-unified-sto.html)
- Citation 1: ComputerWorld: Businesses double down on Apple; 68% say they'll add Macs in '09 (<http://www.computerworld.com/action/article.do?command=viewArticleBasic&articleId=9123460>)
- Citation 2: EDA: 74% of Enterprise with Macs Plan to Add More according to Enterprise Desktop Alliance Survey (http://enterprisedesktopalliance.com/deliver/files/20090310_EDA_Survey_Result_Press_Release.pdf)

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