

EMC Solutions for File Systems File System Archiving for Windows/Centera

Reference Architecture Guide (Rev. 2.0)

EMC Global Solutions Operations

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About this document

PURPOSE	<p>This document provides an overview of the architecture of an EMC[®] Solution developed by EMC Global Solutions Operations.</p> <p>Information in this document can be used as the basis for a solution build, white paper, best practices document, or training.</p> <p>Information in this document can also be used by other EMC organizations (for example, the technical services or sales organization) as the basis for producing documentation for a technical services or sales kit.</p>
AUDIENCE	<p>This document is intended for internal EMC personnel, partners, and customers. It is not intended to be released, in its current form, as part of a technical services or sales kit.</p>
SCOPE	<p>This document describes the architecture of an EMC Solution built and tested at the EMC Global Solutions lab in Hopkinton.</p> <p>Implementation instructions and best practices are beyond the scope of this document.</p>
RELATED DOCUMENTS	<p>The following documents provide additional, relevant information:</p> <ul style="list-style-type: none">• <i>File System Archiving for Windows/Centera Best Practices Guide</i>• <i>DiskXtender 2000 with EMC Centera Best Practices Guide</i>

The Business Challenge

Management of information throughout its life cycle can overburden IT resources. Enormous annual growth in data leads to persistent difficulty meeting backup windows and recovery-time objectives, increases storage requirements, and greatly expands the time that IT administrators must spend managing systems. At the same time, many organizations — private or public — have fewer resources at their disposal and must solve their problems while lowering total cost of ownership (TCO).

The Technology Solution

Moving from a reactive to a proactive data archiving strategy makes it possible to manage key data assets throughout their life cycle. A flexible, scalable archiving environment helps automate retention and disposal policies while maintaining quick access to archived business content.

File System Archiving for Windows/Centera pairs EMC DiskXtender file system archiving software with EMC Centera content-addressed storage (CAS). EMC DiskXtender for Windows software automates the movement of static or fixed-content files from Windows-based primary storage to the more cost-effective Centera storage system. Centera CAS is a disk-based technology that provides fast, online access for fixed content assets.

EMC DISKXTENDER FILE SYSTEM ARCHIVING SOFTWARE

EMC DiskXtender for Windows software is a powerful, highly scalable solution that delivers policy-based, file-system archiving for terabyte- to petabyte-size environments. DiskXtender software provides virtually unlimited storage capacity by automatically moving reference or compliance data that may be infrequently accessed to secondary storage devices. DiskXtender software acts on defined management policies that align the value of data with the appropriate storage tier. With DiskXtender software, a business gains immediate return on investment, driven by savings on storage acquisition costs, reduced management overhead, and faster backup and recovery performance.

CENTERA CONTENT-ADDRESSED STORAGE

EMC Centera is specifically designed and optimized for archiving, providing fast, online access with petabyte scalability for all fixed-content assets.

Centera CAS greatly simplifies managing, sharing, and accessing archived data, enabling businesses to maintain online information cost-effectively and eliminating the need to put data on offline media or keep multiple backup copies. Centera CAS self-configures, self-manages, self-heals, and does not need frequent backups — features that dramatically reduce management costs.

Physical Architecture

SOLUTION VALUE

File System Archiving for Windows/Centera makes it possible to save on storage and its management costs while freeing up resources to focus on generating new revenue and increasing service levels to customers. More precisely, the solution provides the ability to:

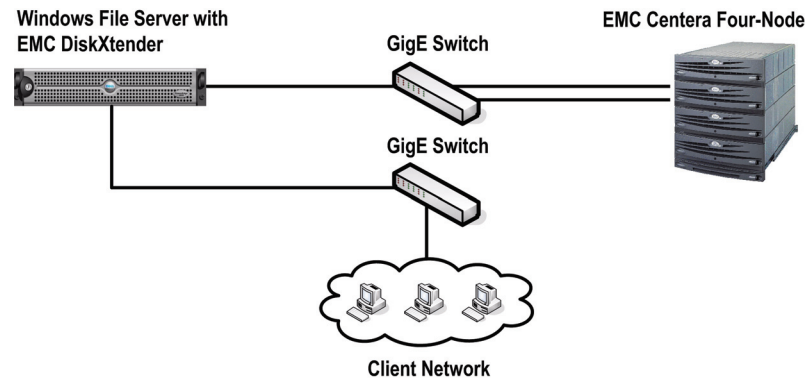
- Stay within backup windows and meet recovery-time objectives
- Free valuable primary storage capacity
- Deploy tiered storage to lower costs
- Automate policies for retention and deletion of inactive files

Physical Architecture

OVERALL ARCHITECTURE

Figure 1 shows the overall physical architecture of File System Archiving for Windows/Centera.

FIGURE 1. Physical architecture of File System Archiving for Windows/Centera



NETWORK ARCHITECTURE

The network shown in Figure 1 includes two subnetworks. One subnetwork is the public LAN. This LAN supports connectivity between the file server and the client workstations and connectivity to the outside world. The other subnetwork provides connectivity between the file server and the access nodes of the four-node Centera. This configuration depicts two network connections to the Centera, one to each available access node.

The file server requires two Network Interface Cards (NICs), one to connect to the public LAN and one to support connectivity to the Centera access nodes.

Physical Architecture

FILE SERVER ARCHITECTURE	<p>The file server contains two internal disks. (The server disks in the validated configuration were 68 GB each.) The first disk supports the Windows operating system and stores application executables. The second disk serves as a network share that clients can write files to and read files from. The share is accessible to clients via the public LAN.</p>
ARCHIVE ARCHITECTURE	<p>EMC DiskXtender is a storage management system that provides support for EMC Centera, flexible data organization, and rules-based file migration. The File System Manager component of DiskXtender accomplishes this through an easy-to-navigate interface and transparent communication with storage locations and device management software. Users on the network may typically save data to a drive on a Microsoft Windows file server. As long as the drive is an NTFS volume, file storage capabilities can be significantly expanded without changing anything from the user's point of view by extending the drive with File System Manager. File data on a drive extended by File System Manager can be moved to EMC Centera without affecting the file listing seen by the user.</p> <p>The solution uses File System Manager to extend a network file share located on a local disk attached to the file server. Only the disk containing the network share is extended. File System Manager monitors activity on the extended NTFS volume and then communicates with Centera for files to be retrieved, as needed. Once a media service for DiskXtender provides access to Centera, File System Manager communicates directly with Centera to read and write data.</p> <p>Frequently used files can be kept on the volume, while less active files can be moved to Centera, allowing the less active files to be purged from the drive. Purging allows the file to appear as if it still resides on the extended drive. Files are migrated and purged using a rules-based model. These rules may apply to file size, file attributes, or file age. A file retention period for the Centera can also be specified.</p> <p>To validate the solution, files that were older than sixty days were archived. This time period allowed for approximately 50% of the file data to be extended on to the Centera for longer term storage. Once the files were archived, they were purged from the file share. The purging process left behind a file stub indicating the location of the migrated file. The space that the file data had been taking could then be reclaimed to store new files.</p>

Hardware resources

Hardware resources

File System Archiving for Windows/Centera uses the hardware listed in Table 1.

TABLE 1. File System Archiving for Windows/Centera: Hardware resources

Hardware	Quantity	Configuration
Cisco Catalyst 3560G switch	One or two	Copper Gig-E ports; if one switch is used, the switch must be configured with two VLANs
Dell PowerEdge 2850 server	One (see Figure 1 on page 4 for configuration)	Two 3.0 GHz Intel Pentium4 processors 4096 MB memory Two on-board 10/100/1000 MB Ethernet NICs
EMC Centera	One	Four-node cluster

Software resources

File System Archiving for Windows/Centera uses the software listed in Table 2.

TABLE 2. File System Archiving for Windows/Centera: Software resources

Software	Quantity	Configuration
Windows 2003 Server Enterprise Edition	One	One license for the file server
Windows 2003 Server SP1	One	Installed on the file server
CentraStar 3.0.0	One	Installed on the Centera cluster
Java	One	Installed on the file server
Centera Tools 3.0	One	Installed on the file server
EMC DiskXtender 6.0	One	Installed on the file server

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