

# Whitepaper: Business Continuity strategies for File & Print services

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## Business Continuity defined

Business continuity management can best be defined as:

'A holistic management process that identifies potential impacts that threaten an organisation and provides a framework for building resilience with the capability for an effective response that

safeguards the interests of its key stakeholders, reputation, brand and value-creating activities.'

(Business Continuity Institute, 2001.)

Building-in business continuity, making it part of the way that you run your business, rather than

having to 'firefight' any emergency, helps prepare you to offer 'business as usual' in the quickest

possible time. Planned business continuity management, so that your staff, customers and suppliers are reassured that you have an effective policy and practice for managing the unexpected, helps build confidence in your business.

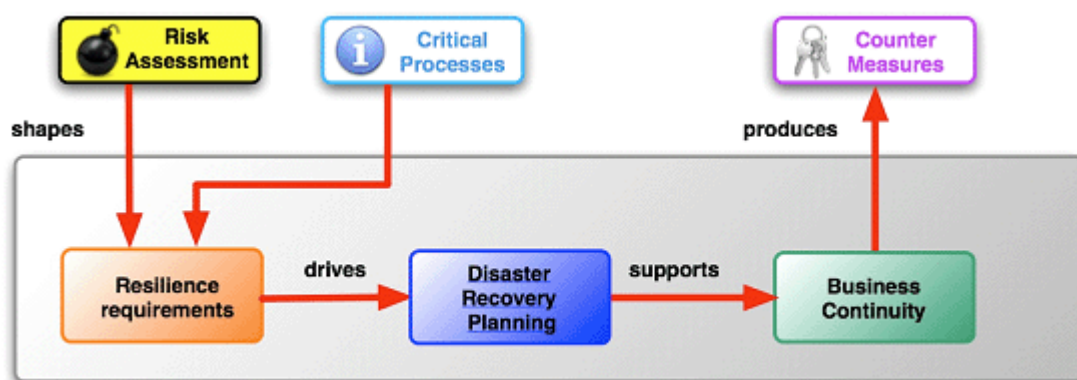
(LondonPrepared.gov.uk)

'Business Continuity is defined as those actions designed to prevent or reduce interruptions in business processes. For this reason the process is also known as 'continuity of operations'.

The focus is on business-critical resources, and the process takes a holistic view of business activities and centres on planning before the event.'

(CabinetOffice.gov.uk)

Business Continuity (BC) and Disaster Recovery (DR) are often confused as being the same thing, while in truth DR is a component of BC as illustrated below:



(CabinetOffice.gov.uk)

## File Services

### ***Appliance based solutions***

Specialist NAS appliances are rapidly becoming popular within the enterprise, and can offer several benefits over traditional file servers.

#### **Key Features:**

- Specialised storage devices
- Performance, scalability and reliability benefits over Windows based file servers
- Built-in data replication and clustering
- File System snap-shots
- Active Directory Integration
- RAID disks
- Massive capacity.
- Self monitoring and maintaining, including “Dial Home” functionality when a problem is detected.
- Fully redundant
- Support both Windows and Unix/Linux hosts

#### **Cost:**

Check with the individual vendor.

#### **Ease of Implementation & Notes:**

These are often installed and initially configured by the vendor, however it is strongly recommended that specialist training is undertaken.

Usually implementing this type of device is as part of a “Bigger Picture” storage strategy, which will take into account the storage needs of the business as a whole, including Fibre Channel and iSCSI connectivity (of which these devices also do), hierarchical storage and archiving.

## ***Software based solutions***

Software solutions can offer some cost savings due to the fact that they can utilise existing assets, as well as reducing the different types of hardware that needs to be supported.

### **DFS Namespaces**

DFS Namespaces is the new name for what used to be known as Distributed File System. The DFS system now comprises of two parts:

**DFS Replication:** This is the new mechanism (Replacing FRS) by which data is replicated between servers & sites.

- State Based, Multi-Master Replication
- Replicates only changes within files, rather than the whole file, reducing bandwidth requirements

**DFS Namespaces:** Formerly known as Distributed File System, allows administrators to group shared folders located on different servers and present them to users as a virtual tree of folders known as a namespace. A namespace provides numerous benefits, including increased availability of data.

#### **Pre-Requisites & Restrictions:**

- All Domain Controllers must be a minimum of Windows 2003 SP1
- Client Failback only supported on WinXP SP2 with the Client Failback patch installed
- A schema update is required
- Replicated Servers must be Windows 2003 R2
- Antivirus software must be compatible with DFS Replication
- Not cluster aware
- Maximum of 1TB of replicated files per server supported

#### **Key Features:**

- State based Multi-Master replication
- Replicates only changed portions of files
- Target priority (For fail-over)
- Flexible scheduling & bandwidth throttling
- Self Healing
- Ease of recovery
- Delegated Administration
- Built-in health & diagnostics
- Client fail-back

#### **Cost:**

No software cost if your company has implemented Windows 2003 R2 based infrastructure.

#### **Ease of implementation & notes:**

This solution provides thorough planning and testing to implement, especially if an upgrade to your environment is required.

DFS Namespaces should be seen as a long-term option rather than as a quick-fix to an immediate problem.

For more information visit: <http://technet2.microsoft.com/WindowsServer/en/Library/d3afe6ee-3083-4950-a093-8ab748651b761033.aspx>

## Robocopy

Robocopy is a resource kit tool supplied by Microsoft, and is described by Microsoft:  
*“Robocopy is a 32-bit command-line tool used for file replication. This tool helps maintain identical copies of a directory structure on a single computer or in separate network locations”*

### Pre-Requisites & Restrictions:

- Requires Windows NT 4 or greater.
- Failover is a manual process involving login script changes
- Doesn't run natively as a service, however can be made to run automatically using Windows' built in scheduler or to run as a service using another Resource Kit tool (SrvAny)
- Not cluster aware, however can run on clustered systems with appropriately written scripts.
- No automated replication from the secondary data store to the primary data store when it comes back online.

### Key Features:

- Provides “Mirror” functionality from source to destination.
- Only sends changed files.
- Can be run as a continuous service or on a schedule.
- Retries failed copy operations.
- Can exclude directories by name or path.
- Bandwidth usage control.
- Monitors directory trees for changes.
- Logs all operations and/or errors.

### Cost:

Included with Windows Resource Kit

### Ease of implementation & notes:

This solution is quite easy to implement and requires little planning, however procedures need to be defined and tested to cater for failure conditions.

Where a failure occurs, certain changes must be made to affected users login scripts, or some conditional processing needs to be incorporated into the login script to detect the loss of availability of the primary data store.

When the primary data store comes back online, both stores need to be taken offline (for user access) temporarily in order to re-sync the primary store.

In the absence of a permanent data replication solution, this solution should be considered as a stop gap measure.

If this solution is implemented and login scripts are used to map drives, it would make good sense to have some 'DR' versions of login scripts written.

If AD GPOs are used to re-direct folders to network shares, it would make good sense to have standby DR GPOs to swap in for when the need arises.

## **Symantec / Veritas Storage Foundation for Windows Disaster Recovery**

In Veritas' own words: *"Available for Windows Server 2000 and Windows Server 2003, Storage Foundation for Windows Disaster Recovery (DR) is a bundled solution that combines clustering technologies with storage management technologies to provide an integrated and comprehensive disaster recovery solution to protect your environment. The single bundle is comprised of VERITAS Storage Foundation with the Dynamic MultiPathing and FlashSnap options, VERITAS Volume Replicator and VERITAS Cluster Server with the Global Cluster Option (GCO) "*

### **Pre-Requisites & Restrictions:**

- Minimum requirement of Windows 2000 Server

### **Key Features:**

- Data Replication with zero loss
- Local and remote clustering
- File system snapshots
- Automatic reverse replication of data once primary site is back online
- Automatic failover

### **Cost:**

This is a chargeable item. For pricing information please check with your Symantec reseller or visit

[http://eval.veritas.com/mktginfo/products/Sales\\_Docs/High\\_Availability/sfwdr\\_information.pdf](http://eval.veritas.com/mktginfo/products/Sales_Docs/High_Availability/sfwdr_information.pdf)

### **Ease of implementation & notes:**

This is high-end software based solution that requires adequate planning and testing. In the event of the primary site failing, the remote site will automatically come online with all the characteristics of the primary site, so no manual changes will be required, while still providing HA services at the local site.

Through the use of File System snapshots (and their associated rapid restoration), additional protection is gained from accidental or malicious damage to data without the need to restore data from tape.

Although this solution isn't the cheapest of the three solutions being compared in this document, it should be considered as part of the "Big Picture" – Business Continuance of other critical applications and services, namely applications such as SQL server and Exchange server.

### **For more information visit:**

[http://eval.veritas.com/mktginfo/products/Datasheets/High\\_Availability/sfw\\_dr\\_datasheet.pdf](http://eval.veritas.com/mktginfo/products/Datasheets/High_Availability/sfw_dr_datasheet.pdf)

## Print Services

Unfortunately there aren't very many practical BC solutions for Print Services due to the often 'dynamic' nature of the configuration of these servers.

### ***Microsoft Windows Print Migrator v3.1***

#### **Key Features:**

- Exports/Imports print queues, drivers, ports, AD Print objects and shares
- Can be scheduled to run automatically
- Supports clustered print servers
- Supports Windows NT4, 2000 & 2003 servers

#### **Cost:**

Free download from Microsoft.com

#### **Ease of implementation & notes:**

This is best implemented on a cold-standby server, which has been pre-built with the appropriate O/S & patches and pre-populated with the print queues for the DR site (Personnel). The standby server should be on the domain and should be left running so that it can receive the regularly exported files from the primary print-server.

When the need arises for the BC plan to be implemented, Windows Print Migrator can be run on the standby server to import the production printers. At this point it will be necessary to update user login scripts to point to the appropriate print queues relative to the user location (even if the users haven't been moved to their DR site, they will need to have their print settings pointing toward the correct print server.

If this solution is implemented and login scripts are used to map printers, it might be a good idea to have some 'DR' versions of login scripts written.

For more information visit:

<http://www.microsoft.com/windowsserver2003/technologies/print/default.mspx>