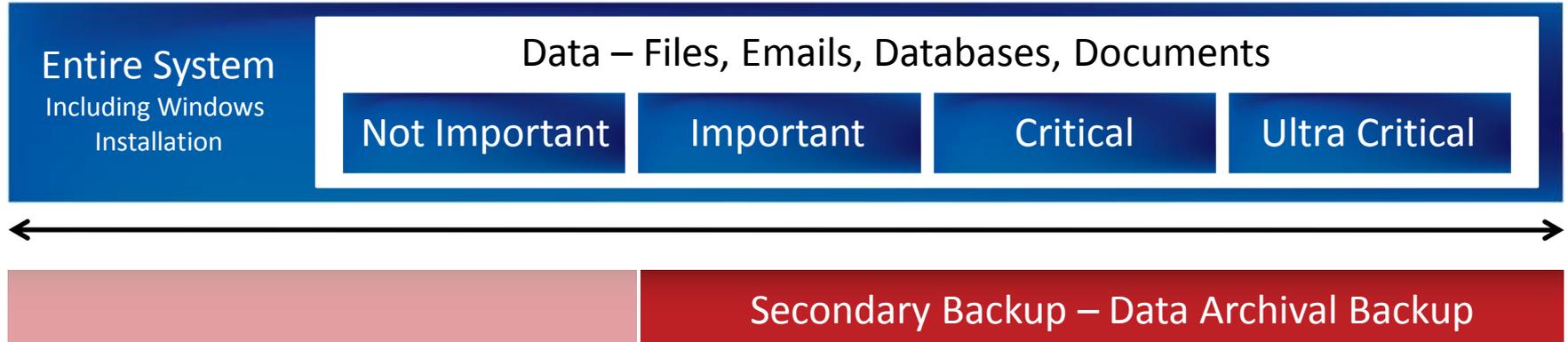


# Secondary Backup



Secondary Backup  
objective is data backup & history

# Why file replication?

- Before we begin, why are we providing another method of backing up?
  - ▣ Consider the case of the “rogue employee” – three months ago they started deleting files; they quit last week, and the data loss was only discovered today. What will save your bacon?
    - Drive Imaging backup – no\*
    - Tape backup with GFS scheme – no\*
    - File replication backup – yes!



\* Historical backups are done only at particular intervals (eg. Monthly, weekly) leaving large gaps between successive backups and providing only partial protection. File Replication backups provide daily snapshots of the filesystem for comprehensive data protection.

# Why file replication?



- Having another backup in a different format also gives you more restore options:
  - ▣ If image backup gets corrupted, or fails for any reason, this gives you another alternative for restoring data
  - ▣ Our File Replication Engine far more powerful at file versioning and historical backups than any other backup method.
  - ▣ This extra protection is simple, adds very little overhead, but has numerous benefits. Cost benefit ratio is immense!

# Objective: data archival backup



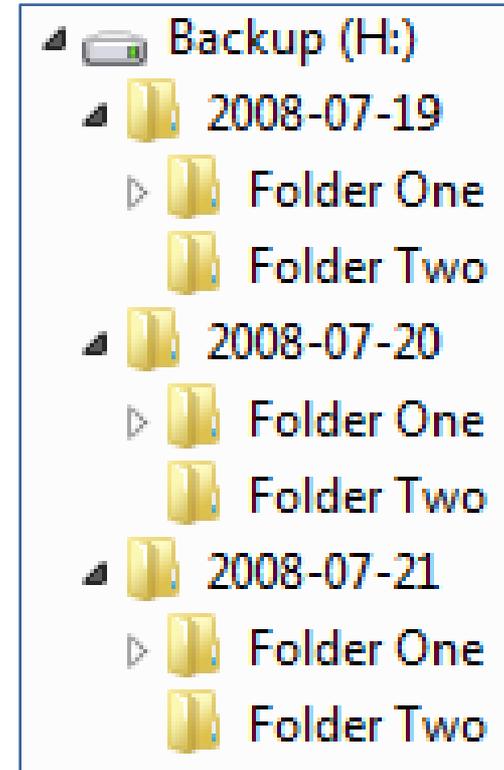
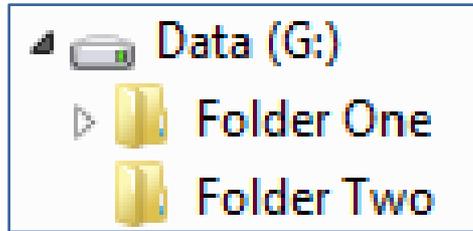
- File Replication Engine
  - ▣ Based on the simplest form of backup: copying files from “A” to “B”.
  - ▣ File-based backup technology that is substantially better than previous “standards” in terms of speed & reliability
  - ▣ Fantastic for backing up data files & maintaining version history that goes back hundreds of days!
  - ▣ Totally transparent Single Instance Store saves space and improves performance
  - ▣ Runs on XP, 2003, Vista & 2008
  - ▣ Exact copy including NTFS security & data streams
  - ▣ The backup is completely non proprietary – simply a file system that can be restored easily without additional software!
  
- Two modes of operation – mirror and backup

## ■ Mode 1 – Simple mirror



- The result on the backup device is an identical copy of the original

## ■ Mode 2 – Backup with history



- The result is a series of mirrors, one each time the backup is run. Each mirror is self-contained & the single instance store works totally transparently!

- This is NEW technology, so a few points to note:
  - ▣ Archive bit is not relevant anymore
    - We don't touch it so it won't interfere with any other backup methods
  - ▣ No such thing as a full, incremental or differential – instead the mode is “Automatic”, where:
    - if a previous backup exists, merge in the changes
    - if no previous backup – do a full backup
  
- Highly efficient transfer
  - ▣ The speed of a differential backup
  - ▣ Each backup looks like a full

- Ticks all the boxes:
  - ▣ Fast differential-speed backups
  - ▣ Each backup looks like a full backup
  - ▣ Simple one-step restore
  - ▣ Non-proprietary format
  - ▣ Backup history – potentially store hundreds of versions
- Also an easy, scheduled, monitored & VSS aware replacement for Robocopy scripts

## ■ Usage scenarios:

### ■ Using portable media

- Direct replacement for NTBackup-to-tape – swap external disks instead



### ■ Using fixed media

- Backup to a NAS or mass storage device every day for automatic protection
- The user doesn't even know it's happening!



- Completely different league of performance  
When compared to traditional file backup methods:

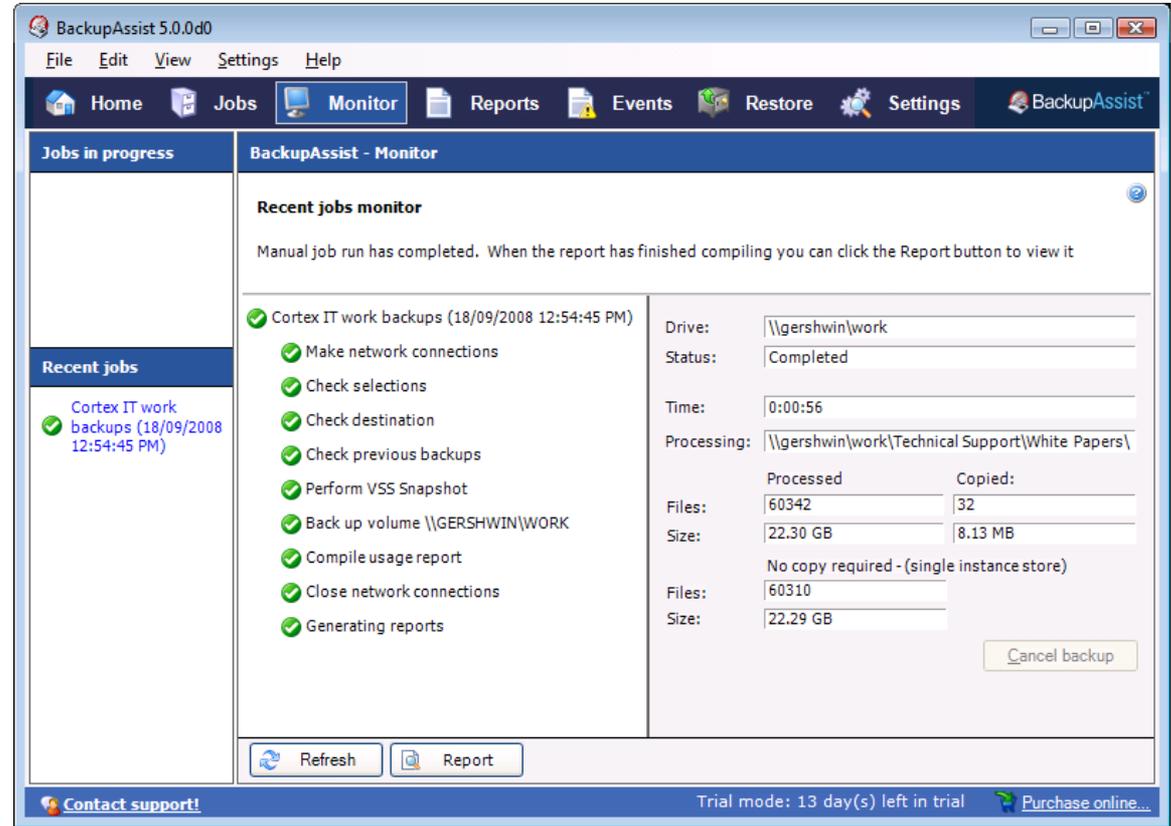
Traditional File Backup (NTBackup, Backup Exec) Full backups every time	BackupAssist File Replication Engine Full backups every time
Every file is transferred every time	Only changed files are transferred <b>Faster</b>
No single instance store	Single instance store <b>Smaller</b>
Small number of backups per backup drive – limited version history	Many backups on each backup drive – extensive version history <b>Better</b>
Restore requires additional software	Restore does not require additional software

- Practical example – our own file system

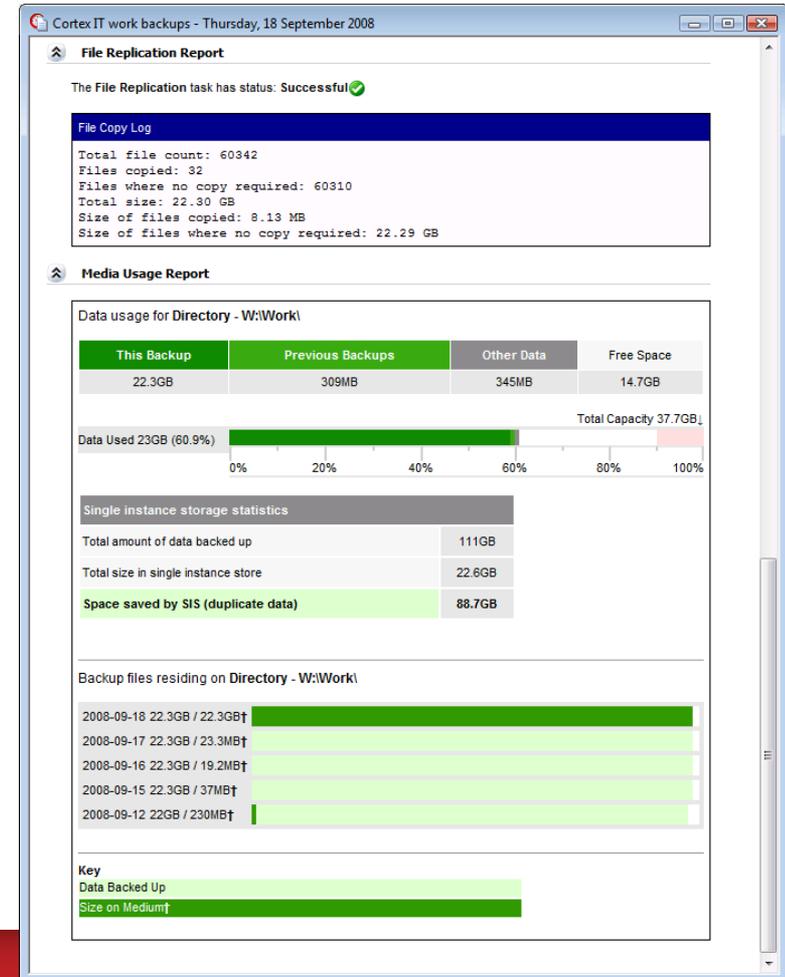
# File Replication Engine



- 22 GB data protected
- 60,000+ files
- Average 5-20 MB changes
- Nightly backup time: Under 2 minutes over Gigabit LAN



- Backup Report:
  - ▣ 22.3GB in last backup
  - ▣ Previous backups average 20-40 MB
  - ▣ Single instance store has saved 88 GB in just 5 backups
  - ▣ Projected 190 days of backup history



CortexIT work backups - Thursday, 18 September 2008

### File Replication Report

The File Replication task has status: **Successful** ✓

#### File Copy Log

Total file count:	60342
Files copied:	32
Files where no copy required:	60310
Total size:	22.30 GB
Size of files copied:	8.13 MB
Size of files where no copy required:	22.29 GB

#### Media Usage Report

Data usage for Directory - W:Work1

This Backup	Previous Backups	Other Data	Free Space
22.3GB	309MB	345MB	14.7GB

Data Used 23GB (60.9%)

Total Capacity 37.7GB

#### Single instance storage statistics

Total amount of data backed up	111GB
Total size in single instance store	22.6GB
Space saved by SIS (duplicate data)	88.7GB

#### Backup files residing on Directory - W:Work1

2008-09-18	22.3GB / 22.3GB↑
2008-09-17	22.3GB / 23.3MB↑
2008-09-16	22.3GB / 19.2MB↑
2008-09-15	22.3GB / 37MB↑
2008-09-12	22GB / 230MB↑

#### Key

- Data Backed Up
- Size on Medium↑

- Other uses
  - ▣ Backing up Hyper-V guests
  - ▣ Backing up VMware guests
  - ▣ Adding media rotation to other types of backups
  - ▣ Overcoming limited backup windows for slow tape drives – D2D2T
  - ▣ General scheduled copying with reporting
  - ▣ Backing up huge data sets quickly
  
- BackupAssist Scenarios White Paper describes these scenarios in more detail

- What are we working next?
  - ▣ Encryption on backup disk
  - ▣ Maintaining a separate copy of NTFS security and alternate data streams, to cater for non-NTFS backup devices like Linux NAS

Archival backup (versioning)  
Backup files & folders

Backup large data sets / limited windows

Virtual machine backup

Media rotation for “static” backups

Bare metal system recovery

Internet based backup

Application aware backup