Sun City Summerlin Computer Club Seminar

Backup Tools 2019

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Seminar Agenda

- **Basic Backup Concepts**
- **Cloning vs Imaging**
- **Backup Tools**
- **Where to Back up?**
- **Where to Buy Backup Hard and Flash Drives**
- **Demo – Imaging with Free Macrium Reflect**
- ***-- Bio Break (~10 min)***
- **Demo – Other Macrium Features and Tools**
- **Demo – Setting Up Windows File History**
- **Cloud Backup for Data Files**
- **Tom's Backup Guidelines**
- **Web Site Links – Where to Buy**
- **Open Q and A**

Basic Backup Concepts

- **"Backing up" means *making a copy* of all or part of your PC hard or solid state drive to another hard or flash drive.**
- **Why do it?**
  - **Hard drives are electro-mechanical devices – they BREAK DOWN. (but hard drive MTBFs are now 100,000+ operating hours)**
  - **Even solid state drives can fail or become corrupt.**
  - **Drives, their folders and files can become CORRUPT.**
  - **Humans are fallible!! Sooner or later you will DELETE or overwrite a file when you didn't mean to.**
  - **Malware of all kinds may attack your PC and DESTROY data.**
  - **Lightning may strike, fires happen, floods happen.**
- **Without backups, you may lose irreplaceable data**
  - **Family photos, music, videos, financial records, e-mail, …**
- **Replacing lost software may be difficult and expensive.**

Cloning vs Imaging

- **Cloning**
  - Backs up one *entire* drive to another entire drive.
  - The resultant drive is bootable – same OS & drivers.
  - The resultant drive has all the files and folders of the original.
  - The "clone" is a logical copy – not a bit-for-bit physical copy.
- **Imaging**
  - A disc image is a single large file on NTFS, or a group of files on FAT32.
  - An image is a copy of one or more *partitions* of a hard drive.
  - Images are compressed – about 2 to 1.
  - Images only contain "used" areas of the original partition(s).
  - A backup drive can hold *multiple* images.
  - Images are not directly bootable, but contain all boot information.
  - With software help, an image can be "mounted" as a logical drive. (This allows individual files to be retrieved from the image).

A Sampling of Backup Tools (1)

- **Macrium Reflect 7 – *FREE Edition***
  - **https://www.macrium.com/reflectfree**
  - **Can back up entire hard drive or partitions.**
  - **Supports both cloning and imaging.**
  - **Can "mount" a backup image as a logical drive.**
  - **Includes a bootable "Rescue disk" or "Rescue flash drive".**
  - **Paid editions have extra features; you may not need them.**
- **Acronis True Image Home**
  - **https://www.acronis.com/en-us/ or http://ugr7.com/**
  - **Single PC about $25, family pack of 3 about $50 (UGR7.com)**
  - **Excellent for backing up entire hard drives or partitions.**
  - **Also can back up individual files.**
  - **Makes both "clones" or "images"**
  - **Can "mount" a backup image as a logical drive.**
  - **Can make a bootable "Rescue disk" or "Rescue flash drive".**

A Sampling of Backup Tools (2)

- **CASPER by Future Systems Software**
  - **https://www.fssdev.com/products/casper/**
  - **Supports both cloning and disk imaging.**
  - **Features SmartClone technology (differential clones).**
  - **Single system price about $50; family pack of 3 for $70**
- **Windows File History (built-in to Windows 8 & 10)**
  - **Automatic scheduled backups of a designated set of folders to an external hard or flash drive.**
  - **Excellent for backing up files / folders that change frequently.**
- **Windows File Explorer (built-in to Windows 7, 8 & 10)**
  - **Built-in Windows File Manager.**
  - **Easy to use for ad-hoc copying small groups of files and folders.**

A Sampling of Backup Tools (3)

- **Google Cloud (Google Drive) - *FREE***
  - **https://drive.google.com/drive/u/0/my-drive**
  - **Requires a Google / Gmail account**
  - **15-17 GB of free cloud storage**
  - **Install Google Backup and Sync app (Windows)**
  - **Specify a set of folders to be monitored and backed up to the Google Cloud whenever a change is detected.**
- **Microsoft OneDrive - FREE**
  - **https://onedrive.live.com/about/en-us/**
  - **Requires a Microsoft Account**
  - **5 GB free (1 TB free if subscribed to Office 365)**
  - **Syncs from a OneDrive folder on your PC or device to your OneDrive cloud storage.**

Where to Back Up?

- **To an external disc drive (USB 2.0/3.0/3.1 or to a rack / tray mounted drive)**
  - **Fastest I/O, especially for cloning or imaging.**
  - **Backup drive can be removed after backup is complete.**
  - **If imaging, can use an "images" folder on the external drive. (No need to dedicate the entire drive to backups).**
- **To a USB flash drive or plug-in memory card**
  - **Fast I/O to a solid state device.**
  - **No external power needed.**
  - **Capacities now up to 1 TB**
- **To another computer on your home network**
  - **Similar to imaging to a USB backup drive.**
  - **Dedicate an area on that PC to storing backup images.**
  - **Best over a 1 Gigabit LAN.**

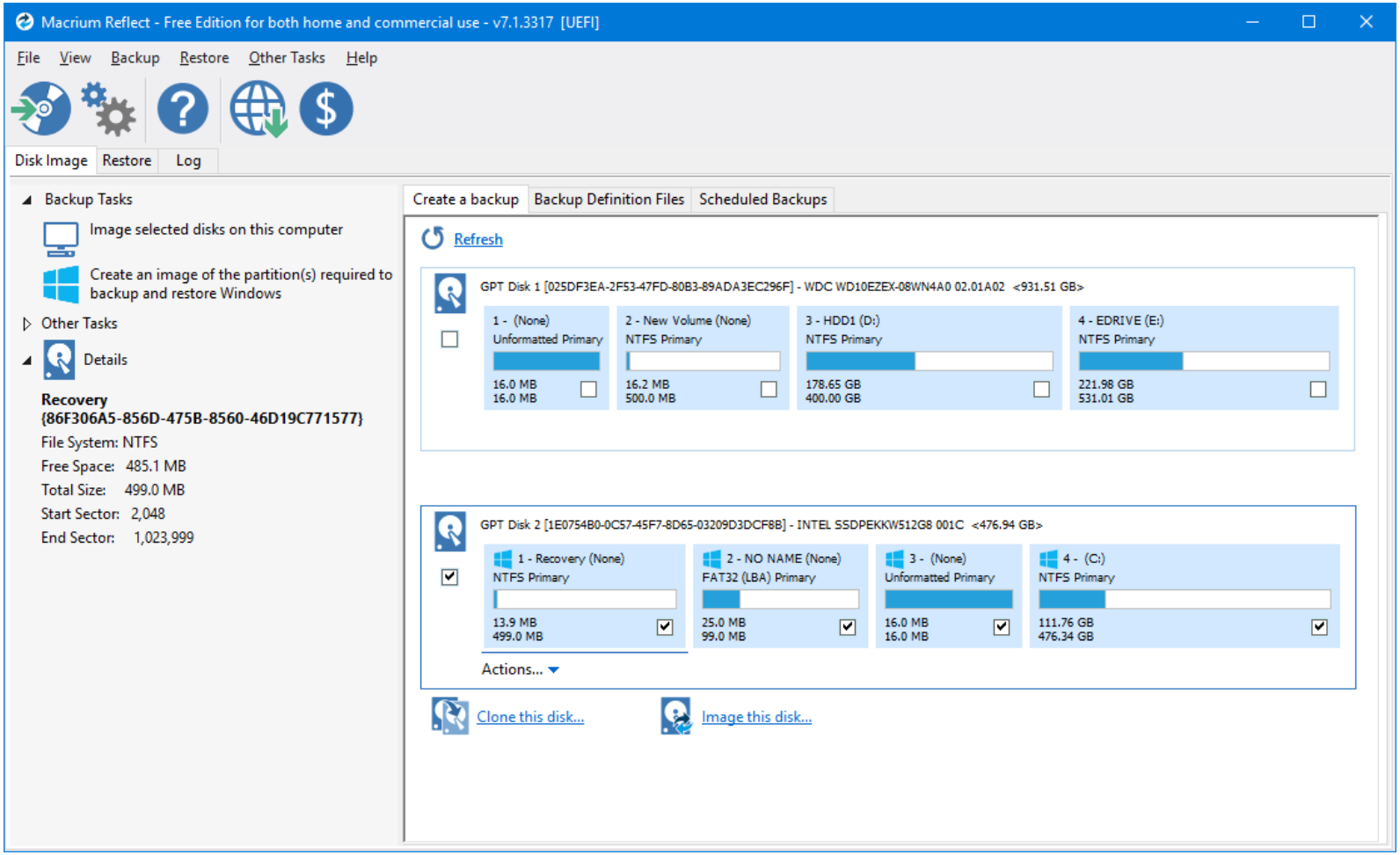
Ransomware / Malware Considerations

- **Ransomware is a virus infection that encrypts (scrambles) your PC's files and then demands a ransom in exchange for the decryption key / tool.**
- **Ransomware scrambles files on *any attached disk drives*, including mapped network drives.**
  - **Files on File History backup drive are at risk.**
  - **Files in cloud folders on your PC are at risk.**
- **Best to frequently make a separate manual backup of essential / important data files.**
- **Also – important to do a virus scan before making a clone or image backup.**
  - **Don't want to back up an infected hard drive.**

Where to Buy a Back Up Drive

- **Shop the usual on-line tech stores:**
  - **www.amazon.com**
  - **www.newegg.com**
  - **www.tigerdirect.com**
  - **www.bestbuy.com**
  - **www.officedepot.com**
- **Search Google, Bing or DuckDuckGo for a specific brand / size:**
  - **external "hard drive" "usb 3" 2-tb**
  - **Lots of hits – typical price about $60 for a 2 TB disc drive.**
  - **Ultra-slim drives may be slower.**
- **For just backing up data files, consider a flash drive**
  - **USB 3 32GB, 64GB and 128GB drives/cards quite affordable.**
  - **128GB USB 3 flash drive costs about $20.**

Main Screen – Macrium Reflect 7 Free



Demo – Backing Up With Macrium

"Within Windows" Method (much more convenient)

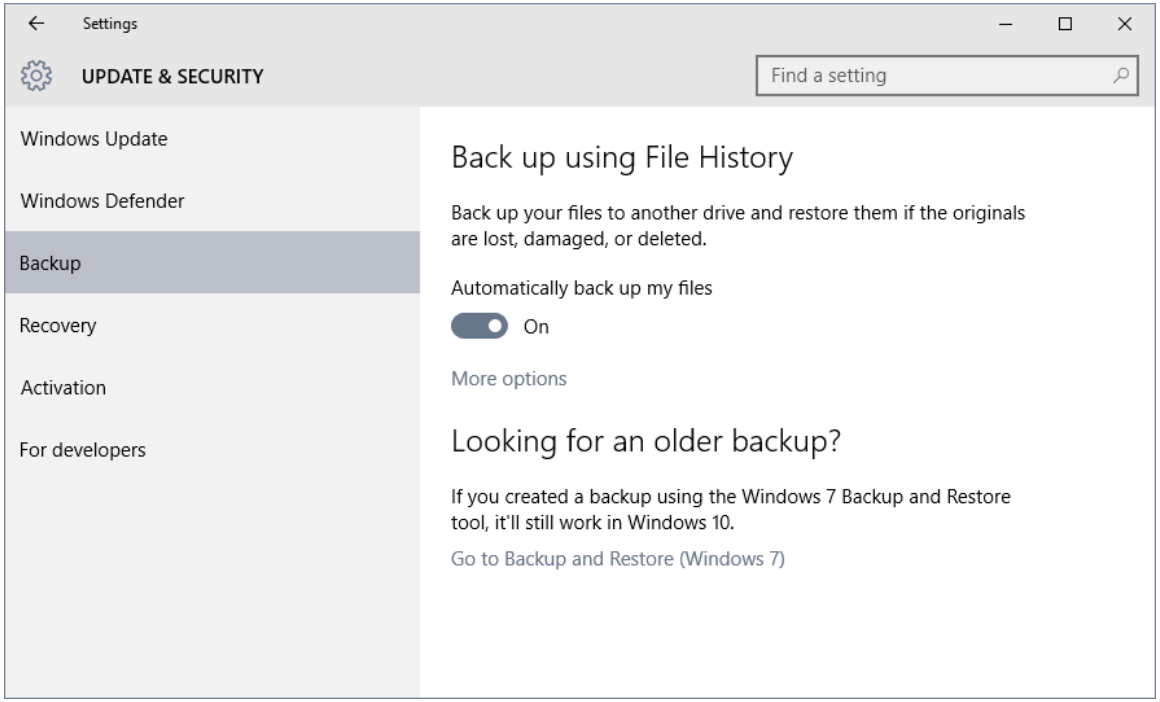
- **1. Shut down the PC (if using rack mount backup drives).**
- **2. Attach external USB drive or mount rack with drive.**
- **3. Re-boot Windows (if needed) & launch Macrium Reflect**
- **4. Choose backup Options:**
  - **Clone or Image**
  - **Source partition / drive**
  - **Target partition / drive**
  - **If imaging – full or incremental, scheduled or one-shot**
  - **Name for your backup image file (or use default)**
- **5. Review your selection and click "Finish".**
- **6. Sit back and let the backup take place.**
- **7. Shut down the PC ((if using rack mount backup drives)**
- **8. Safely Remove the backup hard drive.**
- **9 Reboot the PC into Windows.**

Macrium Reflect Tools and Features

- **Demo - Make a bootable rescue disk.**
  - **Use to restore a backup image**
  - **Also can boot and make clones or images**
- **Mount a backup Image as a logical drive.**
  - **Mounted image is read-only; can't be permanently altered.**
  - **Useful if you need to recover a specific file**
  - **Useful if you want to check file dates or other information from an earlier time.**
  - **Paid versions allow a backup image to be used as a virtual disk in a virtual machine.**

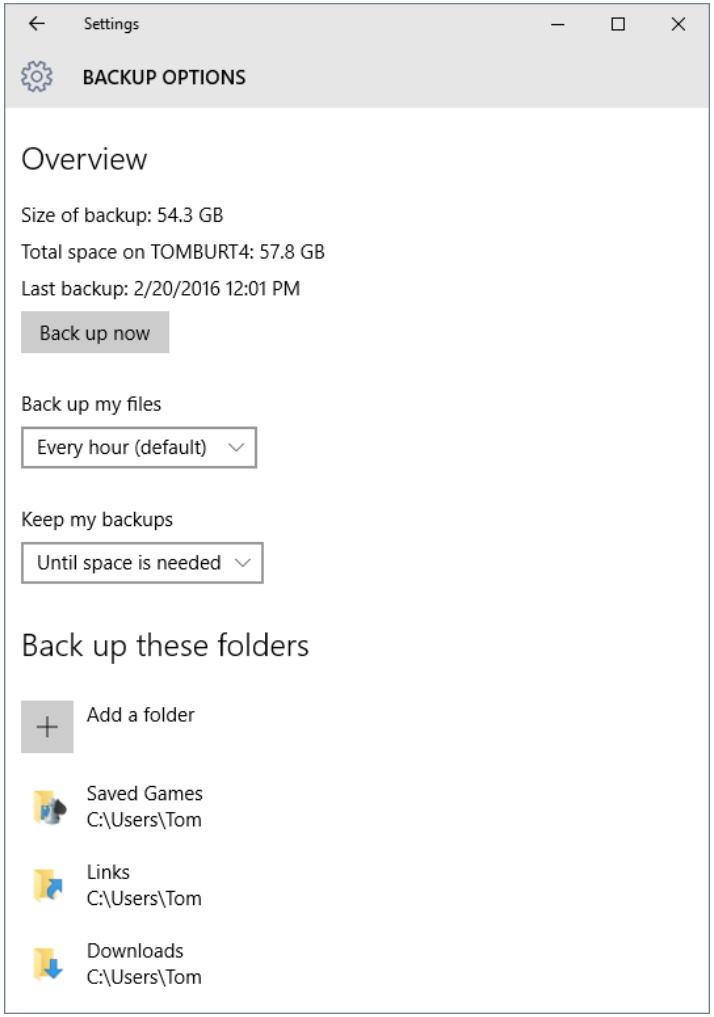
Windows File History (1)

- **Available in Windows 8 & 10.**
  - **Backs up a user-specified set of folders to an external drive.**
  - **Keeps multiple versions of files as they evolve.**
  - **Run frequency can be scheduled – default is once an hour.**
  - **Only backs up new or changed files.**
  - **Must be turned on and then configured via "More Options".**



Windows File History (2)

- **Insert external USB flash drive or SD card**
  - **This will remain permanently mounted.**
  - **Recommend 64GB or larger capacity.**
- **Click “More Options” to configure Windows File History:**
  - **Specify the frequency of backups.**
  - **Specify how long to keep.**
  - **Add specific folders to the list.**
- **Once things are set up, you just forget about it.**
- **You can temporarily remove the backup drive if you need to use that port / slot for something else.**
  - **File history will cache any backups in a dedicated area of your hard drive until the backup drive is re-inserted.**



Cloud Backup for Data Files

- **Popular cloud storage services are another way to regularly and automatically back up your key data files.**
- **Most will automatically sync between your PC / Mac / Tablet and the cloud.**
- **Typically you can sign up for 5 to 15 GB of free storage and buy more if needed. On Google Drive, files stored in Google's *native* formats don't count against your limit.**
- **The cloud services also back up files stored there.**
- **Popular services include:**
  - **Microsoft OneDrive: https://onedrive.live.com/**
  - **Apple iCloud: www.apple.com/icloud**
  - **DropBox: www.dropbox.com**
  - **Google Drive: http://drive.google.com**
  - **SugarSync: https://www.sugarsync.com**
- **Risks of cloud storage:**
  - **Services can change or even go out of business.**
  - **Cloud data can get hacked or subpoenaed.**

Tom's Own Backup Methodolgy

- **Use Macrium for Image Backups**
  - **Monthly for OS partition (SSD C: Drive)**
  - **Monthly for separate Tom_Data partition (HD E: Drive)**
  - **Back up to a USB 3 removable hard drive dock with a 2 TB bare SATA 3 drive (can unplug and put away afterward).**
- **Use Windows File History for hourly file backups**
  - **For recurring, frequent backups of data files that change a lot. (e.g. Outlook.pst – changes hourly)**
  - **Data is backed up to a 64GB USB 3 flash drive permanently plugged in to one rear USB 3 port.**
- **Also use Google Drive to back up & share files.**
  - **Folders to be backed up listed in Google Update and Sync tool.**
  - **Can sync between desktop and laptop PCs and Android phone.**
- **Also occasionally burn & file DVD backups of some data**
  - **Tax returns & supporting files.**
  - **Medical records.**

Web Links – Where to Buy

- http://www.ugr7.com/
- http://www.acronis.com
- https://www.macrium.com/reflectfree
- http://www.fssdev.com
- http://www.newegg.com
- http://www.amazon.com
- http://www.tigerdirect.com

Questions and Answers