The Three R's in the Anatomy of Backup

Redundancy, Retention, Recovery

"How often do you back up all the data on your computer?"

- **The 2022 Backup Survey: 54% Report Data Loss with Only 10% Backing Up Daily. Every June, for Backup Awareness Month, the Harris Poll gauges the state of backups in the U.S. This is the 14th year of that survey.**

- **Four in five Americans who own a computer (80 percent) have ever backed up all the data on their computer, which is up from roughly three-quarters (76 percent) in 2018.**

- **9 percent who own a computer back up their computer once a day or more often.**

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- **Among those who have ever backed up all data on their computer, nearly three in five (58 percent) use the cloud as the primary method to back up all of the data on their computer, 38 percent use an external [hard drive](), and just 5 percent use network-attached storage (NAS).**

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- **It's important to realize that not all data backups do what you need. There are three things you need in a data backup solution. They are the three Rs: Redundancy, Retention, and Recovery.**

Types of Need for Backup Recovery

- **Lost of Physical System**
- **System Running at Snail Pace**
- **System Does Not Power Up**
- **System with Corrupted Operation**
- **System Not Operable with Latest Update(s)**
- **System Subjected to Ransom**

Redundancy

- What is redundancy? It simply means having one or more copy of the primary data backed up.

- Verification of media to ensure ability to recover.

- It's more than what are you backing up but what you should be backing up!

What Should You Be Backing Up?

- **Law Office of Probate Filing**
- **Bank Accounts, Brokerage Accounts, Credit card numbers and other Financial Information**
- **Contact Information of Family Members and Friends (birthdates, addresses, email addresses and phone numbers)**
- **Contact List of Doctors**
- **Military Discharge Papers**
- **Social Security Account**
- **Contact List of Executor(s)**
- **Health Proxy, Power of Attorney, Last Will and Testament**
- **Birth, Marriage, and Divorce Documents**
- **Estate Trust Instrument**
- **Passports**

- **Graduation Diplomas**
- **House Deed(s)**
- **Certificate of Citizenship**
- **Voting ID**
- **Death Certificates**
- **Insurance Policies (car, life, health, house)**
- **Cemetery Plot Deeds**
- **System Configuration (Apps, Devices, Hardware)**
- **Downloaded Software Applications in Use**
- **Copies of Software Applications on Media**
- **Copy of ISO Windows OS in Use**
- **Bootup Toolkit**
- **Password of OS (remote)**

Less Critical Data

- **Photographs**
- **Video, and**
- **Audio Files**

Retention

- **Every record has a lifecycle which could be a few days, or it could be permanent. The records lifecycle is determined by how long it must be retained to meet legal, regulatory, administrative, fiscal, historical, and best practice requirements. Throughout this process, a record must be appropriately managed and regulated for the duration of its existence.**

- **What data is static and what is dynamic?**

Types of Backup Requirements

- **Institutional**
- **Mom & Pop or Small Business Owners**
- **Personal Computer Users**
- **Military**

		Recovery Requirements		
	Institutional	Small Business	Personal	Military
		Mom & Pop	Computing	
Data	Defined	Defined	Varies	Classified
Redundancy	Legal	Legal	Varies	Classified
Retention]	Legal	Legal	Varies	Classified
Recovery	ASAP	ASAP	Varies	Immediate

Types of Backup

- **An incremental backup is a backup of the data that has been modified since the last backup. It is one of the three types of backup. During an incremental backup, only files changed since the most recent backup are included. The last backup can be a full backup, a differential backup, or an incremental backup. When a full recovery is needed, the restoration process would need the last full backup plus all the incremental backups until the point of restoration.**

- **A differential backup only preserves data change from the last full backup. This type of backup uses more memory as it saves all the data changes since last full backup. It contains less redundant data and recovery is easy but the time needed for creating backup is high.**

- **Incremental – a journal of changes**
- **Differential – the updated record**

- **A full backup, also known as a complete backup (e.g. Copy of Disk or Clone Copy), creates an exact copy of an entire dataset. Since a full data backup refers to a defined dataset, it is a relative term.**

- **A clone copy contains every bit of information on a disk, including whatever's in the unused areas, and preserves the physical layout.**

- **Clone copy can be the entire disk or just a partition.**

Image Copy

- **An image copy contains only what we care about: the overhead information used by the operating system and all of our data. When it comes to routine backups, an image is generally what you want.**

- **The image backup is saved as a single file. Modern backup tools compress and possibly encrypt this file.**

Types of Backup

	Institutional	Mom & Pop Small Business	Personal Computing	Military
	In House Support	Outsource Support		
Data Encryption	YES	YES/NO	NO	
Incremental Backup	YES	NO	NO	
Differential Backup	YES	NO	NO	
Image Backup	YES	YES/NO	NO	
Clone Backup	YES	YES/NO	YES	
File Copy Backup	YES	YES/NO	YES	
Hot Backup	YES	NO	NO	YES

- **Recovery**

  The whole point of backing up your data is for you to be able to get it back if there's some kind of catastrophe. The crucial test is whether disaster recovery is possible. You need your backup system to be matched to your needs.

Types of Retention

- **Generational**

  Grandfather/ Father/   Son

- **Alternative**

  External Media Storage for Each Different Day of Week

Retention Storage

- **Remote Storage**

- **Cloud Storage**

- **A fireproof box is a secure storage solution designed to protect your valuable documents and items from fire damage. These boxes are constructed with fire-resistant materials and often have additional features like waterproofing.**

Audit/Review

- **Review what data is no longer needed – at least once a year**
- **Whenever there is an equipment change**
- **Installation of a New App**
- **Whenever there is a Windows Update**
- **Review latest versions of installed apps**

What is Escheatment?

- **https://ouf.osc.state.ny.us/ouf/?wicket-crypt=R8ru9e1sS44**

- **When money lies dormant in a deposit account or appears to be abandoned, the bank or other organizations with which the money was deposited aren't necessarily allowed to just keep that money for their own use. After a period of time, they're required to turn it over to the state. This is called "escheatment."**

Tweaking Simple Backup

- **Save all or parts of USER data onto external media for each day of the week**

- **Store media in fireproof box**

- **A full save (CLONE) of the system at a designated period (e.g. end of month)**

What to Backup?

- **Directory of C:**
- **12/15/2020 04:23 PM   <DIR>   boot**
- **07/25/2021 06:34 PM   <DIR>   Brother**
- **07/08/2021 08:50 AM   <DIR>   Drivers**
- **08/23/2023 11:03 PM   <DIR>   ESD**
- **12/07/2019 04:14 AM   <DIR>   PerfLogs**
- **12/22/2023 12:02 AM   <DIR>   Program Files**
- **12/22/2023 12:01 AM   <DIR>   Program Files (x86)**
- **02/08/2023 10:56 AM   <DIR>   TEMP**
- **12/19/2023 11:07 PM   <DIR>   Users**
- **02/07/2024 10:23 AM   <DIR>   Windows**
-
- **C:\>cd users**
- **C:\Users>dir**
- **Directory of C:\Users**
- **12/19/2023 11:07 PM   <DIR>   .**
- **12/19/2023 11:07 PM   <DIR>   ..**
- **01/26/2024 10:59 PM   <DIR>   hankk**
- **03/18/2022 02:04 AM   <DIR>   Public**

- **Directory of C:**
- **C:\Users>dir Directory of C:\Users\hankk**
-
- 01/26/2024 10:59 PM   <DIR>   .
- 01/26/2024 10:59 PM   <DIR>   ..
- 03/28/2023 01:51 PM   <DIR>   .android
- 05/22/2022 10:27 PM   <DIR>   .cache
- 11/17/2023 09:40 AM   <DIR>   .ms-ad
- 08/14/2022 09:30 AM   <DIR>   .ssh
- 10/26/2023 09:14 AM   <DIR>   3D Objects
- 03/18/2022 02:04 AM   <DIR>   Contacts
- 02/07/2024 03:23 PM   <DIR>   Desktop
- 02/07/2024 01:04 PM   <DIR>   Documents
- 02/07/2024 01:01 PM   <DIR>   Downloads
- 04/20/2022 09:13 AM   <DIR>   Links
- 01/20/2024 11:02 AM   <DIR>   Music
- 06/01/2023 08:44 PM   <DIR>   NCH Software Suite
- 01/30/2024 05:15 PM   <DIR>   OneDrive
- 11/13/2023 09:00 AM   <DIR>   Pictures
- 03/18/2022 02:04 AM   <DIR>   Saved Games
- 11/09/2023 04:17 PM   <DIR>   Searches
- 07/15/2022 08:04 PM   <DIR>   Tracing
- 10/28/2023 07:58 AM   <DIR>   Videos

Recommend

- **Only File Copy or Clone Copy**

- **Use Quality USB Flash Drive (e.g. Sandisk)**

- **NO Data Encryption (BitLocker)**

- **Do NOT store System Password on system**

- **Use of Scanner of Multi Function Unit**

- **Turn Off Auto Update**

- **Microsoft PC Manager**

- **Repurpose Legacy Equipment**