BEST PRACTICES FOR BACKUP

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There are two kinds of people in the world – those who have had a hard drive failure, and those who will

Are you ready?

HOW DO I APPROACH BACKUP?

- **Think … buying insurance**
  - Complex, nuanced, unfamiliar terms, hidden implications, huge impact if get it wrong, easy to pay for wrong coverage, costs increase without understanding, policy coverage doesn't keep align to the changes in your lifestyle - over time

- **So, do you …**
  - Buy the first policy you find
    - You will be surprised when you find out the policy doesn't cover you
    - Backup everything frequently (weekly) to a secured location
  - Ask friends
    - Your policy is the same as everyone else's – most things covered, but not your grandfather's ring
    - Buy and configure cloud backup
  - Ask a broker - Do the research to make sure YOUR needs are covered
    - Figure out what you truly need … and get it done.
    - Your policy covers just what you need at the best price

WE ARE TAKING THE ‘DO THE RESEARCH’ APPROACH

- By the end … you will be knowledgeable enough to determine how much of your work is required to choose the right approach and solution.

THEY THOUGHT THEY WERE COVERED

One of the more famous examples was when long time Life magazine photographer Peter Stackpole lost his home, along with 20 years' worth of negatives, in the 1991 Oakland Hills fire.

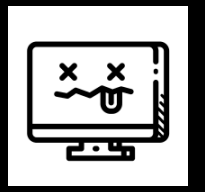
Another example, the work of the late photographer Jacques Lowe, which included more than forty thousand negatives of President John F. Kennedy and his family, was lost in the attacks of September 11, 2001. He had wisely stored his precious archive in the fireproof vault at the J.P. Morgan/Chase Bank in New York's World Trade Center, only to have it all destroyed on that horrible day.

Source: David Helfer Well

WHAT RISKS DO I NEED TO MANAGE?

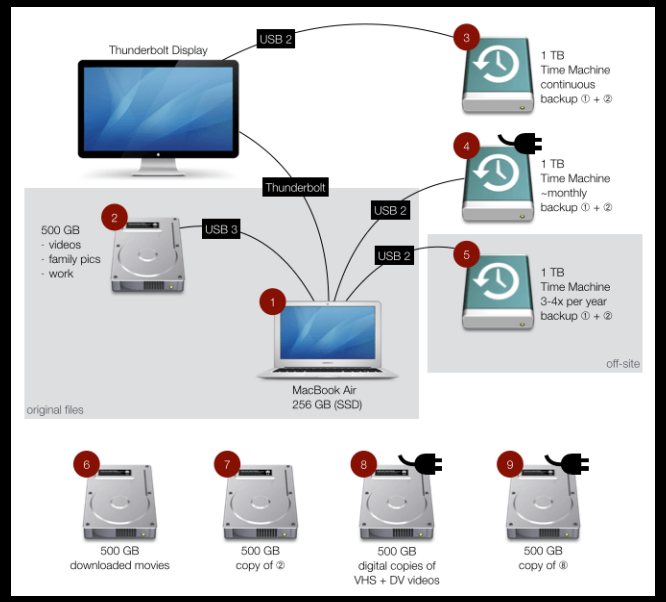
Understanding the requirements is critical for knowing how to protect your data

- **Prevent destruction or corruption of data**
  - Human error, electronic deletion, electronic failure (crash), and physical destruction
- **Reduce device recovery time/ protect metadata**
  - Restore my device settings and programs - operating system configuration, application configuration,
  - Restore metadata - photo catalogues and picture meta data
- **Protection from nefarious criminal challenges**
  - Manages risks associated with ransom ware, viruses, malware
- **Physical/environmental risk management**
  - Protection from device damage (lighting strike) or loss (fire, flood), theft
- **Archival of data – 'future proofing'**
  - Long term protections from technology changes (medium and **file format**)
- **Archival of data - Legal, audit, etc.**
  - Long term protection of data aligned to the business/legal requirement

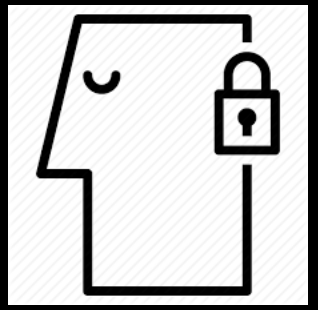


WHAT IS A BACKUP STRATEGY?

- A backup strategy defines the **process, equipment and tools** that are required to **manage the appropriate risks.**
- The more comprehensive the risk management is … the more complex the backup strategy becomes



WHAT IS BEST PRACTICE?



- **3-2-1 backup strategy***
  - 3 total copies of your data
  - 2 copies - local, but on different media/device
  - 1 copy – offsite

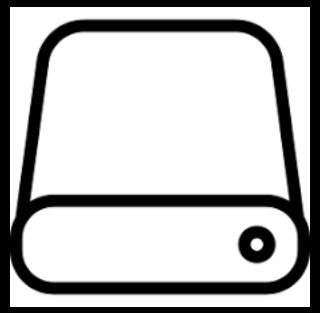
- Why 2 local copies?
  - Manages: device loss or corruption, physical device damage, ransom ware …
  - fast, easy, cheap

- Why offsite?
  - Manages local storage risks (loss by fire, theft, …)
  - Can be accessible anytime from anywhere

* Recommended by US-CERT – United States computer emergency readiness team

LOCAL STORAGE – DIFFERENT MEDIA?

- Removeable Storage – can be disconnected
  - Pros
    - Portable – can take on trip
    - Cheap (fault tolerant adds cost)
    - Connectivity not required
  - Cons
    - Loss – theft, damage, loss, … (may not be fault tolerant)
    - platform specific (depending …)
    - Storage capacity
    - Security relies on physical protection unless encrypted
  - Types
    - External hard drives – traditional drives (moving parts)
    - External docking bay for hard drives – bay for traditional drives
    - Solid state drives – SD drives, USB flash drives, SD and microSD cards – no moving parts
    - Optical storage – DVDs, Blu-ray, M-disk…



OFFSITE STORAGE?

- **External Device**
  - moved to offsite location
- **Cloud**
  - **Pros**
    - Protection against 'worst-case scenarios' and comprehensive critical failures
    - Anytime, **anywhere** access to data
    - No need for equipment … requires bandwidth
    - Fault tolerant storage
    - Storage space needs easier to manage
    - Can met regulatory requirements
  - **Cons**
    - Bandwidth … cost and speed
    - Proprietary solutions
    - Security – remote access risks

WHAT DO I NEED TO CONSIDER?

- **What are your needs for accessing the data?**
  - What connectivity is required? - home network, internet bandwidth
  - Special software required? Is it a proprietary data structure?
- **What level of protection is required for the data?**
  - Password, encryption, fault/failure tolerant
- **How much are you willing to spend?**
  - Equipment, software, bandwidth, cloud storage costs
- **What platforms or multiple devices do you need to manage**
  - Windows, iOS, both, other

- **How much data do you need to store?**
- **What level of automation do you require?**
- **How do you need to protect data during digital photo workflow?**
- **Do you need to consider archival/future proofing? (How often do you plan on moving your data?)**

HOW MUCH STORAGE SPACE DO I REQUIRE?

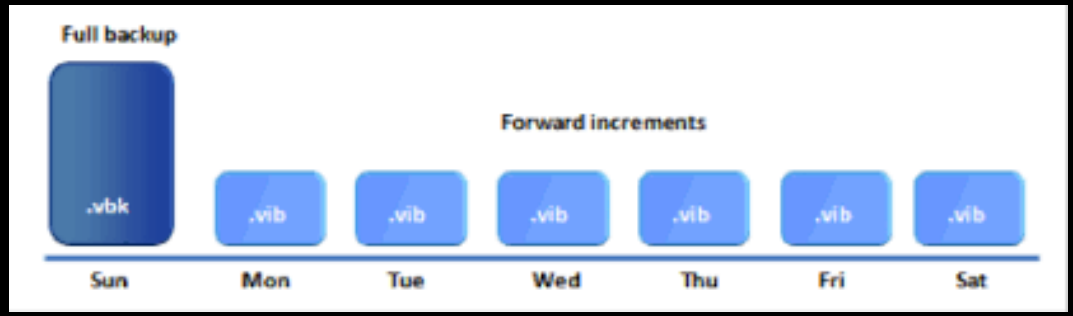
Do you need to have access a **previous state** of data?

- ***Scenario:*** *I replaced (overwrote) a file by accident … I need to access the original file.*
  - *I realized this Immediately … can you access a backup and get it back*
  - *I just realized this happened Last month … do you have a 'historical copy' from last month that is still accessible?*

HOW DO I CAPTURE A PREVIOUS STATE?

Multiple, time stamped copies of the dataset are required.

- **How many? How are they managed?**



- **Full Backup**
  - *Captures a copy of entire dataset.*
  - *Most reliable, time-consuming, large*
  - *Multiple copies drives **huge** storage requirements*

- ***Incremental Backup***
  - *Updated files are backed-up, previous backups untouched*
  - *Needs to be used with full backup and previous incremental copies to build current data set*
  - *Less reliable (all copies must be viable), time consuming to restore, individual file restore complex*

- ***Synchronization (Real time – no historical capture)***
  - *Copying files so that two locations have same version of data*

HOW MUCH AUTOMATION?

Can you automate the required backup strategy?

- The gap in time between updates and backup leaves the data exposed.
  - Limited time gap - Rolling backups or Mirroring
    - ‘real time’ or near real time backups
    - However, can propagate unwanted changes (human error, malware)

- Automated scheduling – ensures it happens, and can target unused times

- Managing the backed up data set – managing size, implementing backup rules/strategy, managing files

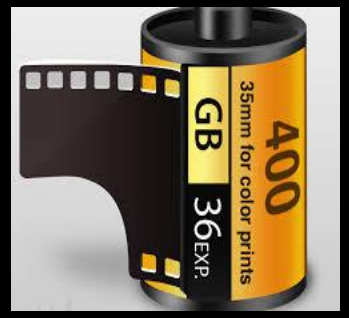
- Managing Data files – compression, encryption, proprietary access

HOW DOES MY WORKFLOW IMPACT BACKUP?

- What steps in my workflow require backup considerations?
  - Do I need to protect my initial RAW files as unchangeable source data?
  - Do I need to protect my files while I undertake my workflow?
  - Do I need to protect my photo catalogue?
    - Does image processing software have specific backup capabilities?
    - How do I protect my metadata?

  - Do I plan to ***archive*** my publishable pictures?

CAN WE FUTURE PROOF OUR DIGITAL PHOTOS?



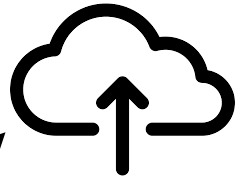
- Challenge – **not permanent** … only long term storage until migration is required …
- Scenario … you want to watch your old wedding video …
  - Format Migration - Film->Beta->VHS->DVD->Blu-Ray
- Bottom Line … you need to manage an archival data set with migration in mind*
  - Use appropriate format (non-proprietary, commonly used, best quality)
  - Limit the size of the archival data
  - Keep metadata about the files
  - Name files so that they have historical meaning
  - Keep the archive safe
  - Validate integrity of data , yearly
  - Update archive media every 5 years (depends on media type)

  - Library of Congress Best Practices (digitalpreservation.gov)
  - http://digitool.library.mcgill.ca/webclient/StreamGate?folder_id=0&dvs=1542229448307~602

WHAT DOES A SIMPLE STRATEGY LOOK LIKE?

Local Backup
RAW, Images, Catalog

Working files
RAW, Images, Catalog



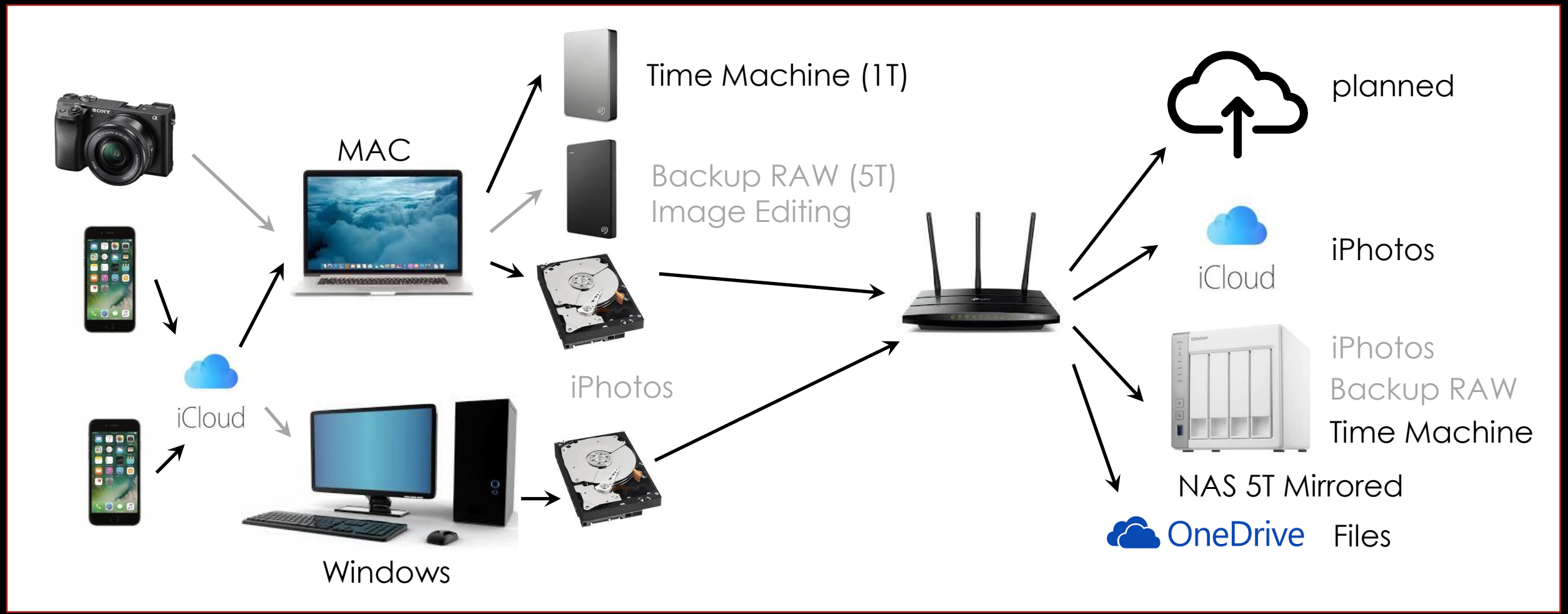
Offsite Backup
RAW, Images,
Catalog

Local Backup
RAW, Images,
Catalog

NAS

Software: Native OS Backup Software, weekly backup

PUTTING IT INTO PRACTICE



WHAT ARE THE TYPICAL COSTS?

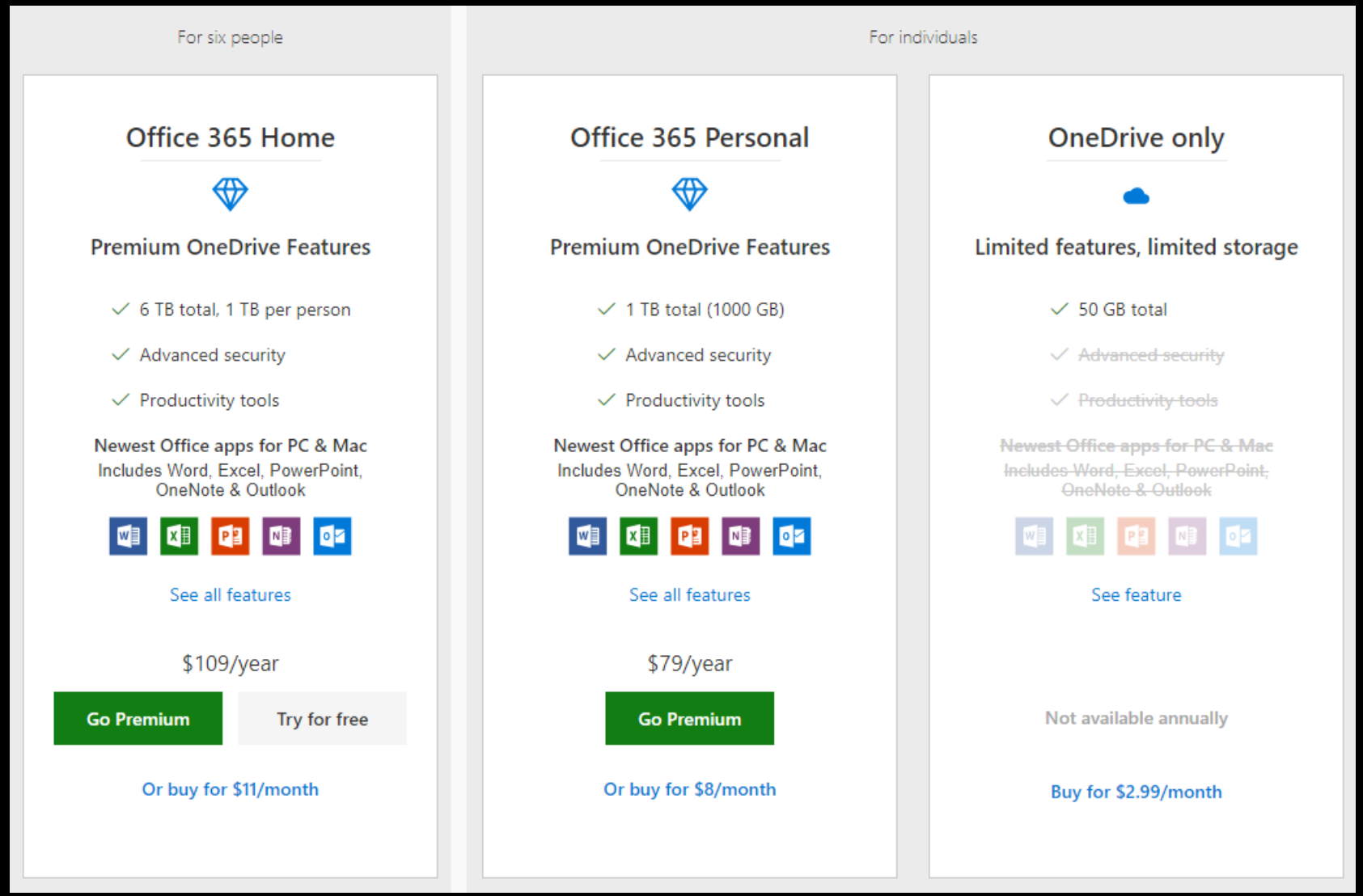
Local Backup

- External HD
  - 8 T USB 3.0 Seagate – Windows $189.99 Amazon
  - 80TB RAID – MAC $11,147.39 Amazon
- Drive Bay (2-Bay USB 3.0 $44.79 Amazon – no drives)
- Mirrored NAS (Network Attached Storage)
  - Buffalo 2 TB $179.79
  - WD MyCloud 8 TB – Windows/MAC $2,344.07, 4TB $454.00
  - QNUP 4-Bay, Quad core, Video Streaming capable, 4GB mem $892.99 (no drives)

Cloud Backup

- iCloud (Apple) Monthly Family Plan
  - 5 GB : Free
  - 50 GB : $1.29
  - 200 GB : $3.99
  - 2 TB : $12.99
- Google Drive (Google)
  - 15 GB : Free
  - 100 GB : $ 2.79
  - 1 TB : $13.99
  - 10 TB : $139.99
  - 20 TB : $279.99
  - 30 TB : $419.99
- Amazon Prime
- OneDrive
- …

* Office 365 Home One Drive (Microsoft)



CARBONITE

About Carbonite

Carbonite offers all the tools necessary for protecting data from the most common forms of data loss, including ransomware, accidental deletions, hardware failures and natural disasters. From automated computer backup to comprehensive protection for physical and virtual server environments, Carbonite ensures the accessibility and resiliency of data for any system.

Select all that apply:

I have a single computer	I have multiple computers	I have one or more servers	I need to comply with regulations (such as HIPAA)

Compare our plans

Features	ONE COMPUTER FROM $6 / MONTH billed annually	MULTIPLE COMPUTERS FROM $24 / MONTH billed annually	COMPUTERS + SERVERS FROM $50 / MONTH billed annually
	Buy now	Buy now	Buy now
Automatic cloud backup	✓	✓	✓
Award-winning support, 7 days/week	✓	✓	✓
External Hard Drive backup	Optional	✓	✓
Remote file access to computer files	✓	✓	✓
Encryption	128-bit	128-bit	128 or 256-bit
FERPA, GLBA & HIPAA support		✓	✓
Centralized management & admin controls		✓	✓
Image Backup and Bare Metal Restore			✓
Backup for databases & applications			✓
	Try it free	Try it free	Try it free

CrashPlan Pro

- $10 / month per device, Unlimited

See how CrashPlan stacks up against traditional and alternative backup solutions, and cloud sync

	External Hard Drive	Cloud Sync (e.g. Dropbox, Google Drive, OneDrive)	Backblaze	Carbonite®	CrashPlan for Small Business
Unlimited backup storage	✗	✗	✓	✗	✓
Automatic & continuous backups	✗	✗	⚠	✗	✓
Compatible with Mac, PC, Linux	✓	✓	✓	✗	✓
Multiple Backup sets	✗	✗	✗	✗	✓
Configure version retention	✗	⚠	✗	✗	✓
Set CPU usage	✗	✗	✓	✗	✓
Customize deleted file retention	✗	⚠	✗	✗	✓
Military Grade AES-256 At-Rest File Encryption	✗	⚠	✗	✗	✓

- In addition to built in Windows Backup Software …

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Product	Acronis True Image	StorageCraft ShadowProtect 5 Desktop	NovaBackup PC	Paragon Backup & Recovery 16	Genie Timeline Home	NTI Backup Now 6
Lowest Price	$49.99 Acronis SEE IT	$99.95 MSRP	$49.95 MSRP	$39.95 Paragon Software Group SEE IT	$39.95 Genie-Soft SEE IT	$49.99 Amazon SEE IT
Editors' Rating	●●●●○ EDITORS' CHOICE	●●●●◐ EDITORS' CHOICE	●●●◐○	●●●◐○	●●●○○	●●●○○
File and Folder Backup	✓	–	✓	✓	✓	✓
Disk Backup	✓	✓	✓	✓	–	✓
Continuous Backups	✓	✓	✓	–	✓	✓
Version Saving	✓	✓	✓	✓	✓	✓
Explorer Menu	–	–	–	–	✓	–
Recreates Disk Image on New Hardware	✓	✓	✓	✓	–	–
Read Review	Acronis True Image Review	StorageCraft ShadowProtect 5 Desktop Review	NovaBackup PC Review	Paragon Backup & Recovery 16 Review	Genie Timeline Home Review	NTI Backup Now 6 Review

BUSINESS CARD

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