



IMAGE BACK-UP: *Systems And Strategies For Best Practices*

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OBJECTIVES

- REVIEW PROBLEMS WITH ELECTRONIC SYSTEMS THAT REQUIRE REDUNDANCY
- DESCRIBE HOW ADOBE LIGHTROOM STORES IMAGES AND METADATA
- DIFFERENTIATE BETWEEN CATALOG AND IMAGE BACK-UP
- REVIEW METHODS AND TECHNOLOGY FOR LOCAL BACK-UP
- CLARIFY THE NEED FOR REMOTE BACK-UP
- DISCUSS “BEST PRACTICES” FOR IMAGE BACK-UP

Goal: Assure you will never lose an image or critical file

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DATA STORAGE DEVICES



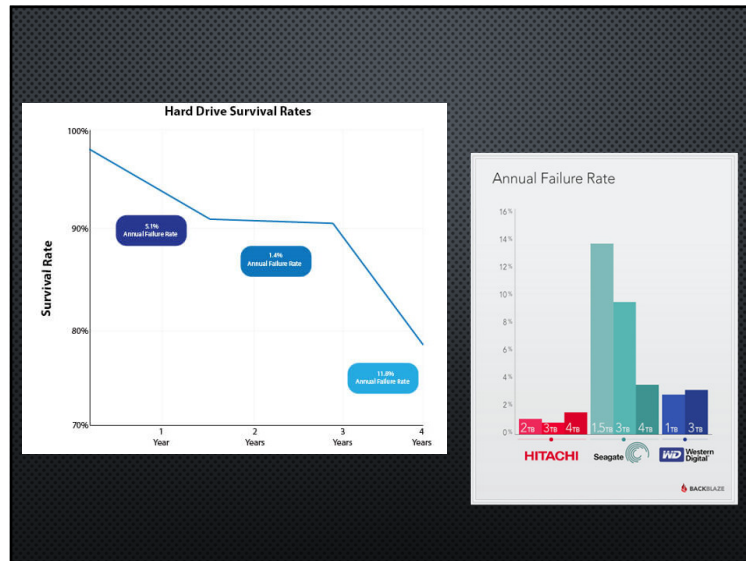
- RANDOM ACCESS MEMORY (RAM)
 - ULTRA FAST
 - VOLATILE
- INTERNAL HARD DRIVE
 - ROTARY — HIGH CAPACITY, INEXPENSIVE, (RELATIVELY) SLOW
 - SOLID STATE (SSD) — FAST, (RELATIVELY) EXPENSIVE
- EXTERNAL HARD DRIVE (USB, FIREWIRE, ETHERNET, OTHER)
 - SINGLE VS MULTIPLE
 - FLEXIBLE CONFIGURATION (PRIMARY OR BACK-UP)
 - PORTABLE (VARIOUS FOOTPRINTS)
 - ACCESSIBLE BY MULTIPLE DEVICES

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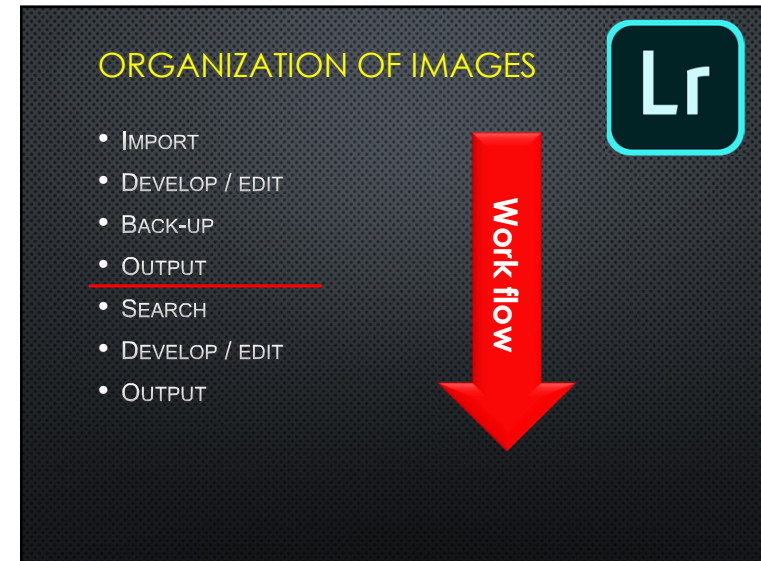
ISSUES

- “STUFF” HAPPENS
- SYSTEMS FAIL
- AVERAGE TTF TIME TO FAILURE
- SIGNS OF IMPENDING HARD DRIVE FAILURE
 - IT QUITS!
 - RARELY, THERE MAY BE NOTICEABLE SLOWING OF SYSTEM, BLACK-OUTS, RE-BOOTS, OR NOISE FROM DRIVE
- LITTLE DATA ON SSDs BUT THEY LAST “LONGER”
 - PERHAPS >1M HOURS (~114 Y)
 - COST/TB IS ~10X MECHANICAL DRIVE

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ADOBE LIGHTROOM ORGANIZATION

- **COPY** FROM MEMORY CARD OR **ADD** IN CURRENT LOCATION
 - COPY FUNCTION CREATES A NEW COPY AT YOUR LOCATION OF CHOICE
 - ADD FUNCTION DOES NOT CREATE NEW COPY; MERELY ADDS IMAGE TO CATALOG IN ITS CURRENT LOCATION
- "ALMOST" ALWAYS THE DESTINATION SHOULD BE AN EXTERNAL HARD DRIVE
- SAVE IMAGES ON MEMORY CARD UNTIL YOUR MAIN "PICTURES" FOLDER IS BACKED UP

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DELETING IMAGES – BEST PRACTICES

- WHEN VIEWING / EDITING IMAGES USE THE "REJECT" FLAG TO MARK IMAGES FOR FUTURE DELETION
- WHEN BOTH CATALOG AND IMAGES ARE COPIED TO YOUR BACK-UP DRIVE, YOU CAN **DELETE** REJECTED IMAGES IN LIGHTROOM
- BEFORE DELETING IMAGES FROM MEMORY CARDS BE SURE TO IMPORT TO LIGHTROOM AND **BACK-UP** BOTH CATALOG AND IMAGE FOLDER
- WHEN BACK-UP IS COMPLETE, **FORMAT** YOUR MEMORY CARD IN THE CAMERA WHERE IT WILL BE USED

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CATALOGS, FOLDERS, COLLECTIONS

- CATALOG – (ONE AND ONLY ONE CATALOG)
 - VIRTUAL POINTERS, METADATA, SETTINGS
- FOLDERS
 - "PICTURES" FOLDER (MASTER)
 - SUB-FOLDERS (LOGICALLY NAMED)
 - RAW IMAGE FILES (LOGICALLY NAMED)
- COLLECTIONS (STATIC AND SMART)
 - VIRTUAL POINTERS TO CATALOG IMAGES
 - POWERFUL ORGANIZATIONAL / SEARCH TOOL
 - **No** ACTUAL IMAGE FILES

Images live here!

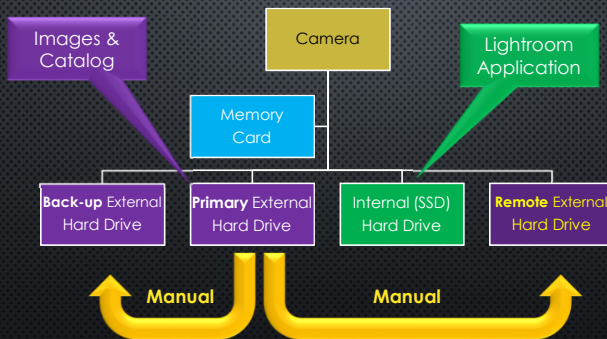
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LIGHTROOM BACK-UP PRACTICES

- IMPORT IMAGES FROM CARD READER
- COPY TO EXTERNAL HARD DRIVE; "PICTURES" FOLDER
- EDIT IMAGES IN CATALOG (DEVELOP MODULE)
- BACK-UP CATALOG ON (**EVERY**) EXIT FROM LIGHTROOM
 - I KEEP THE CATALOG IN A LIGHTROOM FOLDER UNDER PICTURES
- BACK-UP EXTERNAL HARD DRIVE (**IMAGES!**)
- FORMAT MEMORY CARD (IN CAMERA)

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IMAGE DATA STORAGE



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WHY BACK-UP LIGHTROOM CATALOG?

- BACK-UPS ARE COMPRESSED TO TAKE LESS DISK SPACE
- BEFORE BACK-UPS ARE STARTED LIGHTROOM:
 - CHECKS FOR ERRORS IN DATABASE
 - OPTIMIZES THE DATABASE
 - COMPRESSES THE FILE
 - LABELS IT IN A DATED, BACK-UP FOLDER
- HOWEVER, YOU SHOULD PERIODICALLY COPY THE LR CATALOG AND A BACK-UP FOLDER TO ANOTHER "OFF SITE" LOCATION (POCKET USB DEVICE, FOR EXAMPLE)

Catalog – 2.2 GB
Back-up – 894 MB

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IMAGE & FOLDER BACK-UP

- ALWAYS START WITH A "MASTER" **PICTURES** FOLDER
 - ALLOWS ONE, SINGLE FOLDER TO BE COPIED WITH ALL SUB-FOLDERS AND IMAGES
- CREATE A SUB-FOLDER ORGANIZATION SYSTEM
 - BY YEAR
 - BY LOCATION
 - BY SUBJECT
 - BY EVENT
 - OR FAMILY, PERSON, JOB, PROJECT, ETC.
 - HOWEVER YOU THINK ABOUT YOUR IMAGES

Organization to Avoid
• By month or day/date

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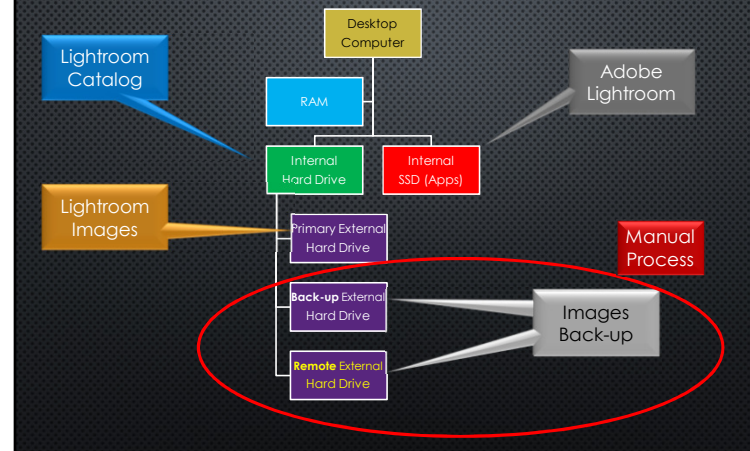
OFFICE OPTIONS

BEST PRACTICES

- KEEP PROGRAMS / APPLICATIONS ON INTERNAL C: DRIVE – PREFERABLY A FAST SSD
- KEEP LIGHTROOM CATALOG AND SUPPORT FOLDERS WITH YOUR IMAGES
- BACK-UP LIGHTROOM CATALOG WITH EACH CLOSURE
- DO PERIODIC CATALOG BACK-UPS TO ANOTHER DEVICE
- DELETE UNNECESSARY OLD BACK-UP FOLDERS
- BACK-UP YOUR "PICTURES" FOLDER WHENEVER YOU ADD SIGNIFICANTLY TO YOUR IMAGE CATALOG

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DIGITAL DATA SYSTEMS & STORAGE



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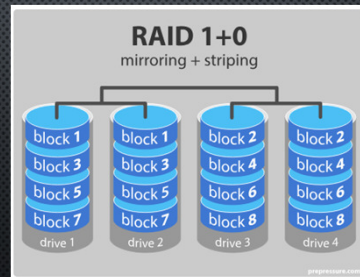
OTHER OFFICE OPTIONS

- IMPORT IMAGES TO A SECOND EXTERNAL DRIVE
 - VERY SAFE BUT TIME-CONSUMING AND THIS COPIES UN-EDITED RAW FILES SO COULD BE CONFUSING
- IMPORT DIRECTLY TO A RAID SYSTEM
- REDUNDANT ARRAY OF INDEPENDENT DISKS
 - RAID 0 – STRIPING ONLY (UNSAFE)
 - RAID 1 – MIRRORING
 - RAID 5 – STRIPING WITH PARITY ACROSS 3 OR 4 DRIVES
 - RAID 6 – STRIPING WITH DOUBLE PARITY
 - RAID 1+0 – MIRRORING AND STRIPING (EXPENSIVE)
- RAID DOES **NOT** ELIMINATE NEED FOR BACK-UP – IT ONLY PROTECTS DATA FROM ACUTE FAILURE

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RAID SYSTEM 1 + 0

16 TB (total)
\$735



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CLOUD OPTIONS

- MANY ON-LINE BACK-UP SERVICES AVAILABLE
 - SOME ALLOW MULTIPLE DEVICES +/- EXTERNAL DRIVES
 - MOST ARE PAINFULLY SLOW
 - SPEEDS QUOTED USUALLY FOR COMPRESSED JPEGS
- IDRIVE – 5T / \$52
- BACKBLAZE – UNLIMITED / \$50
- ACRONIS – 5T / \$25
- CARBONITE – UNLIMITED / \$72
- AMAZON
- PHOTO WEB SITES

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CLOUD VS HOME BACK-UP

- THE CLOUD IS A SUBSTITUTE OR ADDITION TO ROUTINE OFF-SITE BACK-UP
- YOU STILL NEED (AT LEAST) ONE LOCAL BACK-UP DONE WITH EVERY SIGNIFICANT IMAGE ADDITION
- YOU STILL NEED (AT LEAST) ONE OFF-SITE BACK-UP
- THE CLOUD IS GREAT BUT IT IS SLOW AND NOT ALWAYS IMMEDIATELY AVAILABLE



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WHAT ABOUT WHEN I TRAVEL?

1. IMPORT MEMORY CARDS IMAGES TO LAPTOP (LIGHTROOM)
 2. KEEP MEMORY CARDS IN A SAFE PLACE
 3. BACK-UP LAPTOP TO EXTERNAL DRIVE
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- KEEP EXTERNAL DRIVE SEPARATE FROM LAPTOP
 - WHEN HOME, EXPORT AS A CATALOG TO HARD DRIVE, OR
 - IMPORT CATALOG TO YOUR MASTER LR CATALOG

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HOW TO OPTIMIZE YOUR BACK-UP ROUTINE

- SET LIGHTROOM CATALOG TO BACK-UP ON EVERY EXIT
- KEEP YOUR LIGHTROOM FOLDER IN YOUR **PICTURES MASTER FOLDER** (USUALLY ON EXTERNAL HARD DRIVE)
- COPY (USING YOUR FILE MANAGER PROGRAM) YOUR PICTURES MASTER FOLDER TO YOUR BACK-UP DRIVE #1
- COPY YOUR PICTURES MASTER FOLDER TO YOUR BACK-UP DRIVE #2
- TAKE DRIVE #2 TO A SECURE OFF-SITE LOCATION
- ROTATE BACK-UP DRIVES #1 AND #2 PERIODICALLY



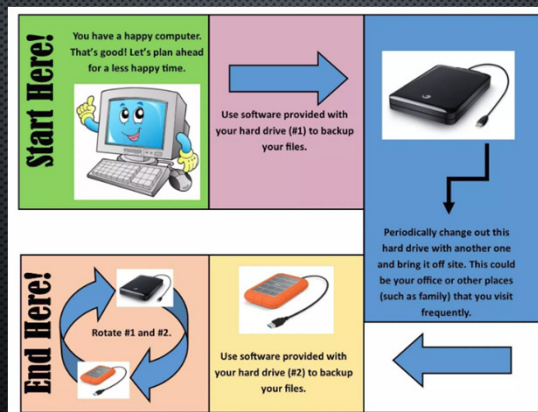
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OPTIMIZE YOUR BACK-UPS – PART 2

- AFTER EVERY "SIGNIFICANT" IMAGE ADDITION, COPY YOUR CURRENT IMAGE FOLDER TO YOUR BACK-UP DRIVE (USUALLY THIS WOULD BE CURRENT YEAR ONLY)
- AFTER EVERY "SIGNIFICANT" IMAGE ADDITION, COPY YOUR LIGHTROOM CATALOG TO YOUR BACK-UP DRIVE
- YOU MIGHT WANT TO COPY RECENT LIGHTROOM BACK-UP FOLDERS FOR ADDED PROTECTION
- WHEN YOU ROTATE YOUR OFF-SITE EXTERNAL HARD DRIVE IMMEDIATELY COPY YOUR LIGHTROOM CATALOG TO THE NEW BACK-UP DRIVE
- WHEN YOU ROTATE YOUR OFF-SITE BACK-UP DRIVE, CLEAN UP YOUR LIGHTROOM CATALOG BACK-UPS ON ALL CURRENT DRIVES

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PICTURE VERSION



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PHOTO STORAGE IDEAS - WHAT TO BUY

- PRIMARY HARD DRIVE WITH MORE THAN TWICE THE CAPACITY TO STORE ALL OF YOUR IMAGES
 - LARGE, INEXPENSIVE INTERNAL DRIVES CAN DO IT
 - LARGER, FLEXIBLE EXTERNAL DRIVES ARE BETTER
- EXTERNAL BACK-UP DRIVE #1 (SAME SIZE OR DOUBLE)
- EXTERNAL BACK-UP DRIVE #2 (SAME SIZE AS DRIVE #1)
- EXTERNAL TRAVEL DRIVE FOR LAPTOP WITH 2-4 TIMES THE CAPACITY OF YOUR MAXIMUM PROJECTED NEED

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PROTECTING YOUR HARD DRIVES

- RUN PROGRAMS/APPLICATIONS FROM AN INTERNAL SSD DRIVE — FASTER, LONGER LIFE, AND IN CONSTANT USE
- KEEP FREQUENTLY USED DATA ON INTERNAL DRIVE
- SET-UP EXTERNAL DRIVE(S) TO “SLEEP” WHEN NOT IN USE — USUALLY A 30 MINUTE DELAY
- DISCONNECT BACK-UP EXTERNAL DRIVES WHEN NOT BEING USED FOR AN ACTIVE BACK-UP
- **NEVER** MOVE A SPINNING HARD DRIVE UNTIL IT IS COMPLETELY SHUT DOWN AND STOPPED — MECHANICAL SHOCK AND GYROSCOPIC PRECESSION ARE MAJOR CAUSES OF DAMAGE.

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WHAT TO DO WHEN SOMETHING FAILS

- **DON'T PANIC**
 - DON'T MAKE EDITS OR ANY MODIFICATION OF LIGHTROOM SETTINGS
 - DON'T ADD OR DELETE ANYTHING
- CLOSE LIGHTROOM (AND ANY OTHER ACTIVE APPLICATIONS) AND ALLOW IT TO CREATE A NEW, OPTIMIZED, BACK-UP FOLDER
- RE-OPEN LIGHTROOM — IT WILL CHECK THE INTEGRITY OF THE CATALOG AND WARN OF ANY ERRORS
- LIGHTROOM MAY ASK TO RE-OPTIMIZE THE DATABASE — OK
- IF THERE IS A FAILURE AFTER OR DURING RE-OPTIMIZATION, CLOSE LIGHTROOM
- ATTEMPT TO OPEN PREVIOUS BACK-UP CATALOG, IF IT OPENS PROPERLY AND CATALOG WORKS NORMALLY, CLOSE THE BACK-UP AND ATTEMPT TO RE-OPEN YOUR CATALOG
- IF THIS FAILS, YOU MIGHT NEED TO DOWNLOAD A NEW VERSION OF LIGHTROOM
- USE THE NEW VERSION OF LIGHTROOM TO OPEN YOUR CATALOG, IF THIS FAILS, YOU MIGHT NEED TO GO BACK TO YOUR LAST BACK-UP AND MAY HAVE LOST EDITS AFTER THAT BACK-UP
- REMEMBER, **NONE** OF YOUR IMAGES ARE DAMAGED OR LOST AND WORST-CASE IS YOU HAVE ONLY LOST YOUR LAST EDITS

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WHAT TO DO IF SOMETHING FAILS - 2

MEMORY CARD FAILURE

- ATTEMPT TO RE-IMPORT IMAGES INTO LIGHTROOM CATALOG
- IF SOME OF PREVIOUS IMPORT IMAGES ARE CORRUPTED, BE SURE TO UNCHECK THE “DO NOT IMPORT SUSPECTED DUPLICATES” BOX
- OFTEN THE RE-IMPORT WILL FIX THE CORRUPT IMAGES
- IF YOU ACCIDENTALLY DELETE NEW IMAGES FROM YOUR HARD DRIVE, RE-IMPORT THEM FROM YOUR MEMORY CARD
- IF YOU FORMATTED YOUR MEMORY CARD, DO NOTHING — THERE IS SOFTWARE THAT CAN RECOVER THE IMAGES SO LONG AS YOU DON'T OVER-WRITE THE CARD WITH NEW IMAGES

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WHAT TO DO IF SOMETHING FAILS - 3

INTERNAL HARD DRIVE

- TAKE TO REPUTABLE HARDWARE/REPAIR STORE — CHANCES ARE THAT SOME FILES ARE RECOVERABLE
- HOPEFULLY, YOU HAVE A **MIRROR IMAGE** TO LOAD IF YOU NEED A NEW INTERNAL HARD DRIVE
- HOPEFULLY, YOU HAVE NOT **DATA** ON THE INTERNAL DRIVE SO ONLY NEED TO RELOAD SOFTWARE / APPLICATIONS
- HOPEFULLY, YOU MADE A **RECOVERY DVD** SO YOUR BASIC FUNCTIONS WILL OPERATE

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WHAT TO DO IF SOMETHING FAILS - 4

EXTERNAL HARD DRIVE

- NO PROBLEM - YOU HAVE TWO ADDITIONAL COPIES
- IF YOU HAVE SIGNIFICANT NEW DATA SINCE YOUR LAST BACK-UP, TAKE THE DRIVE TO A REPUTABLE REPAIR SHOP AND ATTEMPT TO RECOVER THE DATA TO A NEW DRIVE
- EXPECT TO PAY 3 — 5 TIMES WHAT A BACK-UP DRIVE WOULD HAVE COST!

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SUMMARY & CONCLUSIONS

- SET AUTOMATIC BACK-UPS FOR YOUR DESKTOP COMPUTER
- DO PERIODIC CLONES "MIRROR IMAGES" OF YOUR INTERNAL HARD DRIVE AND KEEP A "RECOVERY" DVD
- BACK-UP LIGHTROOM CATALOG ON EVERY EXIT
- BACK-UP OF IMAGE FILES IS **ESSENTIAL**
- PRIMARY BACK-UP PLUS A ROTATING SECONDARY BACK-UP IS THE BASIC MINIMUM
- A THIRD DRIVE SHOULD BE KEPT OFF-SITE AND FIRE / THEFT PROTECTED
- DISCIPLINE IS ESSENTIAL (SET A CALENDAR REMINDER)

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