

## 1.19: Network Files

### Learning Objectives

- Discuss proper file management techniques for network files

There is a saying about file management storage that goes “lots of copies keeps stuff safe.” The idea behind the principle is that even if your main storage system fails, you still have access to your data.

If you have very important data, you may want to keep many copies, but most people should follow the 3-2-1 Rule and keep three copies of their files. This rule states that you should have 3 copies of your data in 2 locations on more than 1 type of storage media.

The offsite copy is particularly critical. Many people keep their data and a backup copy on-site, but this doesn’t factor in scenarios where the building floods or burns down (as can happen in a chemistry building) or a natural disaster occurs. Storing a copy of your data off-site can make the recovery process easier if everything local is lost.

While the 3-2-1 Rule mainly concerns redundancy, it’s also a recommendation for variety in that data should not all be stored on one type of hardware. Computer hard drives fail, cloud storage can be disrupted, and CDs will go bad over time; each storage type has its own strengths and weakness so using several types of storage spreads your risk around. So if the first copy your data is on your computer, look for other options for your backups like external hard drives, cloud storage, local server, CDs/DVDs, tape backup, etc. Finally, always keep a local copy of your data if its main storage is in the cloud. Accidents happen, even with well-run cloud storage, so it’s always best to have a copy of your data in your direct control, just in case.

Here’s an example of following the 3-2-1 Rule using resources a research has locally available:

- a copy on my computer (onsite)
- a copy backed up weekly to the office shared drive (onsite)
- a copy backed up automatically to the cloud

The 3-2-1 Rule is simply an interpretation of the old expression, ‘don’t put all of your eggs in one basket.’ This applies not only to the number of copies of your data but also the technology upon which they are stored. With a little bit of planning, it is very easy to ensure that your data are backed up in way that dramatically reduces the risk of total loss.

### Backups

Part of following the 3-2-1 Rule means having backups in place. When looking for good backup options, consider the following:

- Any backup is better than none
- Automatic backup is better than manual
- Your work is only as safe as your backup plan
- Check your backups periodically

You should check your backups for two reasons. First, you need to know that they are working properly. A backup that is not working is not a backup at all. You should test your backups once or twice a year and any time you make changes to your backup system. If your data are particularly complex to back up or particularly valuable, considering testing your backups more frequently.

The second reason to test your backups is to know how to restore from backup. You don’t want to be learning how to restore from backup when you’re already in a panic over losing the main copy of your data. Knowing how to restore from backup ahead of time will make the data recovery process go much more smoothly.

It’s a small thing to periodically test restore from backup, but it will give you peace of mind that your data are being properly backed up and that you will be able to recover everything if something happens to your main copy.

### Practice Question

<https://assessments.lumenlearning.co...essments/18554>

### Contributors and Attributions

CC licensed content, Original

- Network Files. **Authored by:** Robert Danielson. **Provided by:** Lumen Learning. **License:** [CC BY: Attribution](#)

- Practice Question. **Authored by:** Sherri Pendleton. **Provided by:** Lumen Learning. **License:** [CC BY: Attribution](#)

CC licensed content, Shared previously

- Rule of 3. **Authored by:** Kristin Briney. **Provided by:** Data Ab Initio. **Located at:** <http://dataabinitio.com/?p=320>. **License:** [CC BY: Attribution](#)
- 3 Data Management Best Practices. **Authored by:** Robert Belford, Kristin Briney, Ye Li, Leah McEwen. **Provided by:** LibreTexts. **Located at:** [https://chem.libretexts.org/Courses/University\\_of\\_Arkansas\\_Little\\_Rock/ChemInformatics\\_\(2015\)%3A\\_Chem\\_4399%2F%2F5399/Text/3\\_Data\\_Management\\_Best\\_Practices](https://chem.libretexts.org/Courses/University_of_Arkansas_Little_Rock/ChemInformatics_(2015)%3A_Chem_4399%2F%2F5399/Text/3_Data_Management_Best_Practices). **License:** [CC BY-NC-SA: Attribution-NonCommercial-ShareAlike](#)

---

1.19: Network Files is shared under a [CC BY](#) license and was authored, remixed, and/or curated by LibreTexts.