**Lab 03: Backup and Recovery Concepts**

In this lab, we setup and configured a backup of our data using FreeNAS. An rsync service was used, as well as a snapshot.

**Rsync**

Rsync is used to transfer and sync files across a network, which use the SSH protocol by default. In order for it to work, rsync must be installed on both the source and destination machine. When first used, it will create a backup of everything that it was configured to do. On subsequent uses, it will look at files that have been modified, and copy only those. It is an efficient method of data backup, as it does not have multiple copies of the same file, only the most recent versions. It can also compress and decompress data.

An rsync push from NAS01 to NAS02 was created and configured, with NAS02 setup to accept the rsync push from the rsync server on NAS01. This allows a backup of data from NAS01 to be copied to NAS02. To ensure that the backup was successfully initiated, the “ls -l” command was issued on NAS02, which showed the items that were copied over.

**Snapshot**

A snapshot is a read-only copy of the entire system at the point of which the snapshot was taken. It is similar to that of taking a picture of a moment to remember all of the details.

Snapshots track changes you have made to any file, and so they do not need to store the data in its entirety. If you replicate the data, it only affects the changes. This allows for faster speeds, and also reduces bandwidth usage. When you replicate it only replicates the changes. This speeds things up and reduces bandwidth usage.

Snapshots are ideal for an easy way to roll-back a system. A snapshot can be taken of the system before a significant change is implemented. If the change causes problems, the system can be restored to how it was pre-update.

A snapshot of NAS01 was created. It was configured to take a snapshot every 5 minutes for 2 hours. To ensure that the backup was successfully initiated, the ZFS snapshot was mounted. Again, the “ls” command was issued, outputting the contents of the snapshot.