Backing Up to Tape

Another benefit of using a tape backup is that you can run it unattended. In fact, you can schedule a tape backup to run automatically during off hours when no one is using the network. For unattended backups to work, though, you must ensure that you have enough tape capacity to back up your entire network server's hard drive without having to manually switch tapes. If your network server has only 100GB of data, you can easily back it up onto a single tape. If you have 1,000GB of data, however, invest in a tape drive that features a magazine changer that can hold several tapes and automatically cycle them in and out of the drive. That way, you can run your backups unattended.

The most popular type of tape drive in use today is linear tape open (LTO). LTO tape technology is sometimes called Ultrium, though the word *Ultrium* refers to the size and shape of the cartridges that house the LTO tape rather than the tape itself.

LTO tape has gone through eight generations since its introduction in the year 2000, with each generation storing more data on a single tape. LTO tape uses built-in data compression, so the capacity of a single tape is listed both as a raw (uncompressed) capacity and an estimated compressed capacity. (The compressed capacity is an estimate because the degree of compression achieved depends on the nature of your data.)

The generations, along with their capacities and write times, are as follows:

Generation	Raw Capacity	Compressed Capacity	Time to Write Full Tape (h:mm)
LTO-1	100GB	200GB	1:25
LTO-2	200GB	400GB	1:25
LTO-3	400GB	800GB	1:25
LTO-4	800GB	1.6TB	1:50
LTO-5	1.5TB	3.0TB	3:10
LTO-6	2.5TB	6.25TB	4:35
LTO-7	6TB	15TB	5:55
LTO-8	12TB	30TB	9:15

As you can see, each generation roughly doubles the capacity of the each tape.

The total amount of time required to fill a single tape provides a useful guide for how long a tape backup job will require to complete. It may seem as if the newer