

Disks Shine Bright for Backup Applications

Thomas M. Coughlin* and Farid Neema+

*Coughlin Associates

+Peripheral Concepts, Inc.

Introduction

This article and the next are based on a survey of North American IT managers that was conducted from May through July of 2004. An earlier survey covering much of the same material was conducted in 2003. Parts of this article will appear in InfoStor Magazine. Out of 5,000 managers contacted, 1387 qualified managers answered 30 screening questions. Of this population, 665 respondents were identified as having given reliable information to analyze the data in great detail. From this population of 665 we selected over two hundred individuals representing sites relatively evenly distributed among the disk capacity ranges, with an attempt to include a sufficient number of representatives from each of the ten selected industries. We submitted this population to the full survey of over 200 questions. Completed surveys were received from 110 of these people. These participants met the criteria of having backup and/or archiving responsibilities for IT operations that store a minimum of 500 GB of raw disk storage.

Ten industries were primarily targeted: Finance/banking, Health, Manufacturing, Retail Distribution, Government, Education, Consulting, Transportation, Media/Entertainment, and Telecommunications. Sixty operations report over 2 petabytes of SCSI/FC disk capacity, mostly in the Transportation, Entertainment, and Telecommunication industries. The majority of the respondents in Education and Consulting use less than 5 TB in each of SCSI and ATA disk storage.

The full Backup and Archive report contains report contains 171 figures summarizing site, industry, and revenue characteristics of the surveyed population as well as information on disk and tape backup and archive installed base, trends and perceptions. The report can be ordered from www.tomcoughlin.com (see Technical Papers section). A companion report based on the survey is also available covering Business Continuance and Disaster Recovery.

Growth in Disk Drive Demand and Capacity

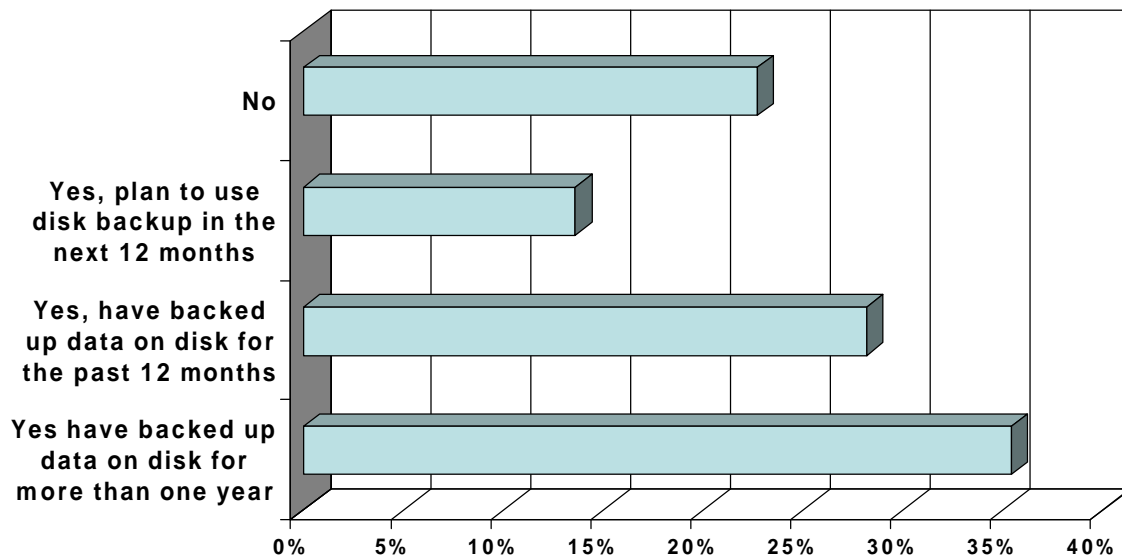
We found that the weighted average growth of total storage capacity over the last year in the survey population was:

- § SCSI drives will grow 26% growth
- § ATA will grow 23% growth

While tape shows the greatest installed base for backup applications, disk-based storage for backup shows the strongest growth potential. Secondary disk is playing an increasingly important role in backing up corporate data. The population using disk in backup has grown to 62%, and is forecast to reach 76% penetration by 2005. With the increased utilization of disk for backup, there is a growing interest in backing up in file format.

In the 2004 survey, the percentage that have used disk backup in the last 12 months has increased as shown in **Figure 1**.

Figure 1. Do you have now or plan to have in the next year disk drives used for backup?



It is interesting to note that the majority of disk backup applications currently existing in the surveyed population used SCSI or Fibre Channel disk drives rather than ATA or SATA disk drives. Backing up on disk is not new and was not initiated with the new generation of ATA drives. Though it might seem surprising to see SCSI more widely used than ATA, one has to remember that higher reliability ATA drives were introduced recently, and a large number of managers are still skeptical about using ATA drives for these applications (**Figure 2**). Their reasons often denote a lack of knowledge of newer ATA system implementations. We believe that, with time, most of their concerns will fade away, thus opening a greater opportunity for ATA/SATA.

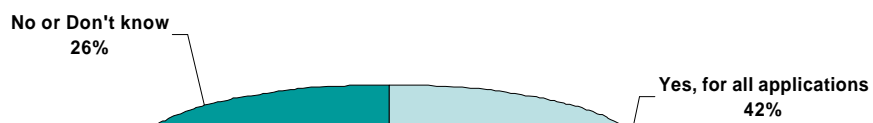
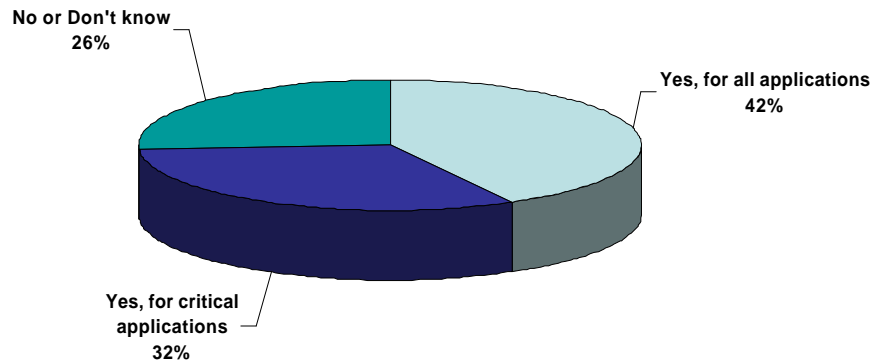


Figure 2. Would reliability or performance prevent you from selecting ATA drives versus SCSI or Fibre Channel for secondary or backup disk storage?

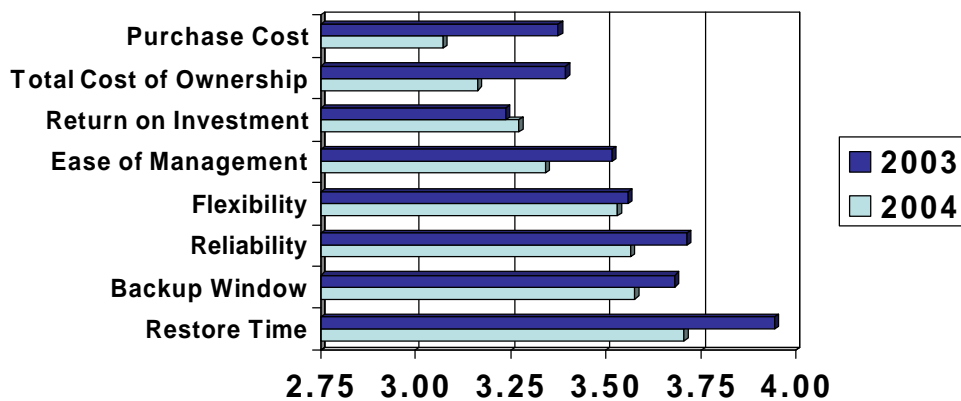


The number of IT operations reporting backing up all of their file and application servers has more than doubled since last year

Factors in the Growth of Disk Used for Backup

Reliability of the backup process is of great concern to a large majority of the respondents. Close to half of the respondents in this survey experience over 5% unsuccessful backups, to which one should add an equal number of unsuccessful restores. The respondents rank reliability and integrity at the top of their concerns with backups. Reliability problems are attributed in part to tape media and drives as well as to tape libraries, and disk drive based storage systems are expected to improve reliability as seen on **Figure 3**.

Figure 3. Advantages of Disk vs. Tape (5 = much better, 3 = equal, 1 = much worse, 0 = no opinion)



Second to reliability, performance issues related to backup speed and restore time are estimated to be major issues. The overall advantages in restore speed

and backup window will increase the use of disk drive storage systems in backup applications. We found that Purchase Cost is the least important overall consideration for using disk based backup.

A key factor to understand backup needs is the Recovery Point Objective (RPO), that is, the maximum time-window of data loss the business can afford for the most critical applications. Our survey found that the population that cannot afford to lose more than 3 hours of input has grown 30% over the population surveyed one year ago. The use of snapshot (stored on disks) contributes to more efficient and more frequent backups

Conclusions

The lowering cost of disk based storage options makes them more attractive for applications such as backup that have traditionally been the province of tape storage systems.

The surveyed population supports projections for significant growth in disk-based storage for backup although there is still a significant skepticism on the part of the surveyed users on the reliability, performance, data rate, and time to data of disk based backup systems. Already we have seen the ratio of disk to tape capacity dropping in backup and projections of higher growth in disk based storage capacity vs. tape based storage in the next year. If the negative perceptions of disk based backup can be changed there is a great deal of interest in the advantages of disk based backup that could drive future IT purchase decisions.