



The Limitation of Tape Backup

Introduction

Businesses of all sizes, not for profits and government understand that the only way to ensure data protection and business continuity in the face of the worst sorts of disasters - floods, cyclones, earthquakes, fires, terrorist attacks, and power outages – is to establish a remote recovery site a significant distance from their main and branch offices. But business continuity needs to be maintained against smaller but much more common threats, such as theft, hard disk failure, loss of PCs and operator error where vital files are accidentally overwritten or deleted.

And many organisations choose tape as their backup medium of choice- it was the first method readily available and it is still the most common backup method, though rapidly being overhauled by other physical mediums.

As a result, every night many companies are already backing up their main and branch office systems to tape, and transporting them to a site anywhere from 50 to over 1,000 kilometres away. What they don't understand is just how vulnerable their data and their business remain to these threats, even after such a huge outlay of administrative effort and cost.

This paper explores the high cost, complexity and potentially dangerous shortcomings of a recovery strategy based only on traditional tape backup.

What's Wrong With Tape Backup?

The problems with tape backup are well known; organisations have been dealing with them for decades.

Firstly, tape backup requires a significant investment. Tape hardware and backup software are expensive, as is the labor required to set up and maintain them. Tape cartridges are a continuing cost and completing daily tape backups requires heavy administrative intervention.

Secondly, if you have branch offices, especially in the more remote locations of Australia, then you need to either set up tape equipment (and allocate administrative responsibility for each) or ensure that each office is connected to the Head Office network so that it can be backed up. Large organisations opt for the latter, but for smaller organisations centralizing IT operations is more of an issue.

The only other option in these situations is to forego protecting data in branch office locations which becomes a problem all of its own.

Thirdly, making backups is inconvenient for small organisations but hard for larger organisations where the volume of data to be backed up causes delays. Tape backup can involve downtime, known as backup windows, since the system being backed up cannot be used during the process. Given the ever-increasing demand for around the clock data access, it gets harder and harder for organisations to complete nightly backups within the backup window allowed. Sometimes, the nightly backup slips to every other night for some applications.

In branch offices, the problem is ensuring that backups have actually taken place, a common problem where backups are left to non-IT staff. This is also a major issue for smaller organisations that do not have an IT department, or even an IT administrator.



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Most organisations do not understand just how vulnerable their data and business remain to disaster – even after they've made an up-front and ongoing investment in tape-based disaster recovery.

An article in the US by Search Security reports that in a survey of 500 IT departments, as many as 20% of routine nightly backups fail to capture all data. This is not surprising because of the volumes of data held on mobile computing assets. Among participants of another survey, 40% of IT managers were unable to recover data from a tape when they needed it. Many organisations never test their tapes to ensure data can be recovered and blissfully assume that the backup has worked- tapes deteriorate over time and often are not working when called upon to carry out a restore.

This is a significant concern for organisations regulated by industry guidelines or government requirements as they can face the risk of being non compliant if they cannot produce data when they need it most.

Tape backup also places limits on your recovery point, the point in time to which you can recover your systems. Periodic tape backup guarantees hours of lost data in the event of a disaster. Often, a backup every night is too long a period- backups need to run more frequently but the backup facility is not equipped to allow this to occur.

Suppose, for example, that a critical system fails some time today; the best you can do is recover yesterday's data, which will be at least twelve hours old. The later in the day disaster strikes, the older your recovery data and the greater the value of the data lost. This particularly applies if disaster occurs on the first or last day of your working week- that is most likely when you are recording more information as clients tend to peak then.

In addition, recovering from a disaster, any data not backed up is lost for good – unless you re-create it. The cost of permanently lost data is high and includes the cost of the revenue that the data represents, the business value you can extract from it, and the cost to re-create it.

Consider:

- How much money would your company lose if you lost all your transaction data for the last twelve hours, or even the last ten minutes?
- What is the value of the knowledge contained in your company's last twelve hours worth of e-mails and e-mail attachments? What would it cost to have your engineers recreate the last twelve hours worth of original or edited CAD/CAM drawings?
- What's your exposure if you can't produce this data in compliance with external requirements and regulations- from ASIC, ATO or if you are listed, the ASX? What is your exposure to legal requirements or industry guidelines?
- What's your exposure if you lost all the data of your client- you are an accountant, financial planner, solicitor etc. Your clients would be very unhappy.

In The Cost of Lost Data, a Pepperdine University (US) report updated in 2003 – before the advent of Sarbanes-Oxley – Dr. David Smith estimates the average cost of irrecoverably lost data at more than USD10, 000 per megabyte lost. But if the data lost is business transaction data or data that's especially expensive to reproduce and key to your company's regulatory compliance, your costs could be much, much higher.

Cost of downtime

When a large-scale disaster strikes, with tape backup you're out of business until you can restore your systems and your data from your tapes. This kind of restoration takes a minimum of several hours, and can easily take days or even weeks. In the US, Gartner Group estimates that the average cost of network downtime for larger corporations is USD 42,000 per hour; Contingency Planning Research pegs the



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average hourly downtime costs for small businesses at roughly USD 18,000, and there is no reason to think that Australian costs would be any different.

But the cost of downtime can be significantly higher depending on the business, depending on the criticality of your system to doing business. For a business engaged in the provision of building services or contracting, for example, downtime can be downright inconvenient but for a business engaged in finance, telecommunications or manufacturing downtime can spell disaster.

The key to a successful disaster recovery plan is to focus not just on the data but also on the applications that end users run to gain access to that data. Recovery Time is generally defined as the amount of time it takes to regain access to business-critical data. Solutions like tape backup, which can have a recovery time of hours or days depending on the size of the organisation, don't provide the level of recoverability that most organisations require.

The complexity of traditional recovery solutions compounds an already difficult situation, and heightens the opportunity for human error. Speed and quality of recovery are extremely important when customers and employees are relying on access to critical data, but the average restoration takes hours at best.

And with solutions like tape backup, even a successful recovery can result in the loss of any data that is new or has changed since the backup was made. A common backup solution in a branch-office scenario is to replicate the branch servers to a central location and perform a nightly tape or disk backup. If a Branch server fails, the administrator would have to provision the new server, install applications, then go through the cumbersome recovery process. On average, this would take more than one IT person and several hours. Still, when the recovery server is restored, the Branch is missing all of the data that is new or had changed since the night before.

Historically, organizations have dutifully performed their backups to tape and shipped a copy of these tapes off-site. However, as installed disk capacity has grown faster than tape performance, traditional tape-based backup solutions have fallen behind and are no longer meeting backup/restore requirements. Add the demands of 24x7 Web operations and ecommerce-based applications, and the need to supplement traditional backup and recovery methods becomes obvious.

Summary

There was a time when tape-based backup was widely believed to be the only feasible backup solution. Whilst tapes are being replaced by disks and memory sticks they are still physical mediums that suffer from the same problems as tapes- they still need to be stored securely off-site, they are point of time only, they can still be lost, corrupted, stolen or damaged, and they still miss vital data held on non-connected PC.

Tape backup alone is no longer the only realistic solution and centralized backup solutions are coming to the forefront. As a result of this shift, enterprises have re-evaluated tape-only backup solutions and don't like what they have found. According to one report, nearly one-quarter (24%) of companies say that twenty percent (20%) or more of their tape-based backups fail. As such, depending on tape backup alone creates an unacceptable level of risk.

Fortunately, advances in technology have made the tape based backup obsolete. Innovative technology like ABC Backup means that all the problems associated with tapes (and largely shared with other physical backup methods) are a thing of the past. Quick backups performed as frequently as you like with one click recovery gives organisations industrial strength backup and recovery facilities at a cost comparable with other methods.