Data Migrations

Focus on Hitachi

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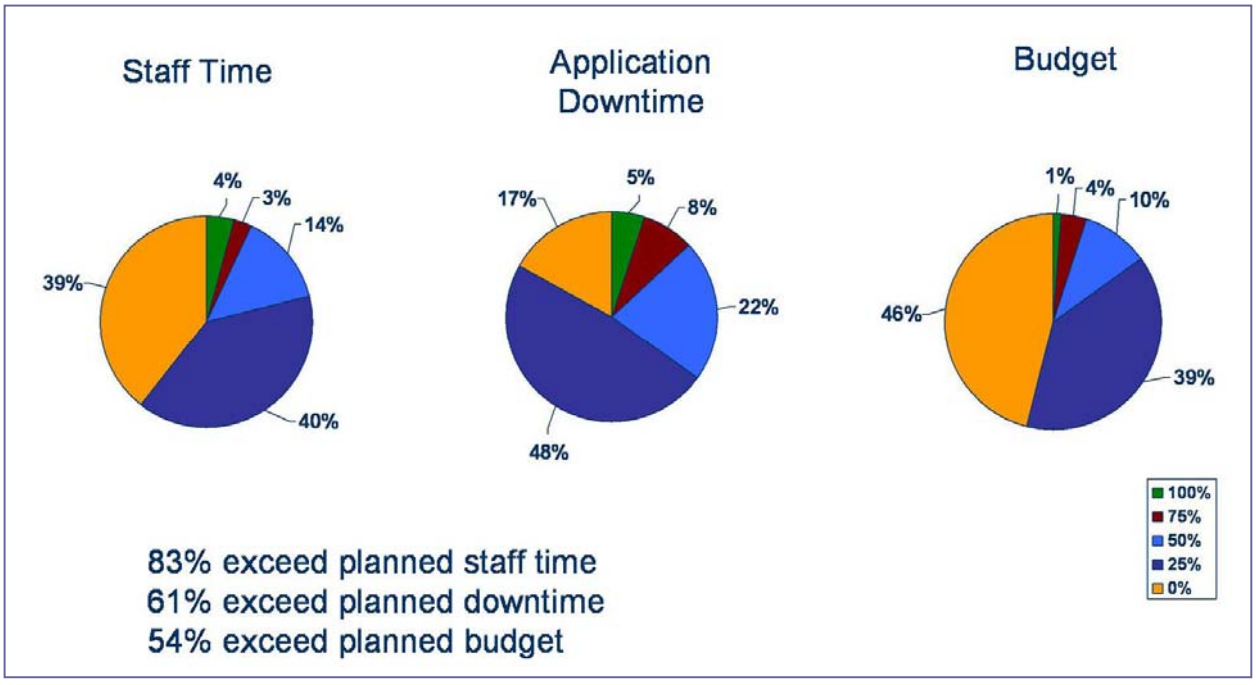
Data Migrations

ESG has found that data migrations are extremely common, with server and storage equipment replacements, relocation, consolidation, lease renewals, and load balancing, all of which drive the need to migrate data on a regular basis. One of the reasons for migrating data is to implement an intelligent tiered storage environment, allowing companies to move infrequently accessed data to lower cost storage systems, and promote data to higher performance tiers as business dynamics dictate.

The problem is that traditional methods of data migration are inherently disruptive as the process involves moving data from one storage system to another and then redirecting applications. However, there are better methods and tools for implementing data migrations. Hitachi provides the Universal Storage Platform (USP) and Network Storage Controller (NSC) as platforms to migrate data among different heterogeneous storage tiers.

Companies migrate data for a number of reasons, including upgrading storage systems and providing capacity load balancing. One of the most important initiatives within data centers is migrating data among different tiers of storage. Hitachi provides its HiCommand Tiered Storage Manager that allows companies to set up application-oriented groups of volumes, apply policies by way of highly customizable storage tier definitions, and move data without interrupting running applications. Additionally, storage requirements typically change over time and therefore data must be mobile. While it may appear easier to store everything the same way -- on the same class of storage system with the same protection levels -- it creates costs that will be substantial. The task of classifying data is somewhat daunting and requires time that most companies do not have. However, Hitachi Tiered Storage Manager will move data based on volume groups and their corresponding application requirements, which relieves companies from the arduous task of micro-managing the classification of all data.

Chart One: Data Migration Planning



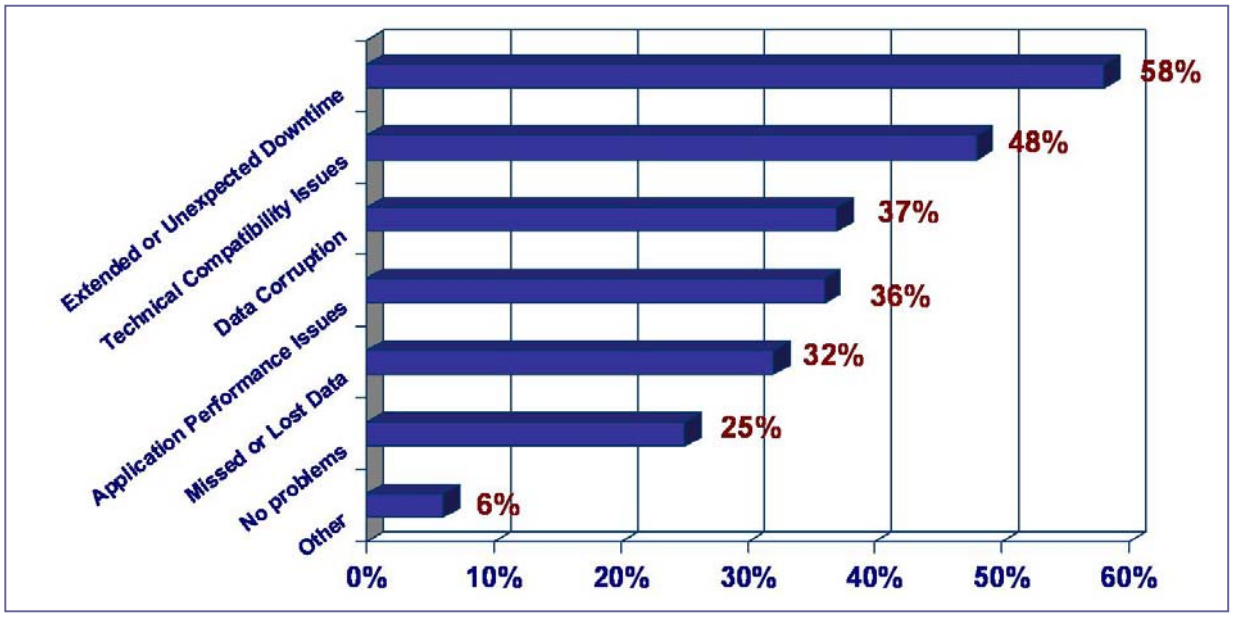
ESG Research: Data Migrations

ESG conducted a survey of over 550 end-users from across North America and Europe on data migrations in 2005. The results of the survey confirmed that the majority of migrations are conducted on weekends and

application downtime is the biggest overall issue. The results indicated that there is a need for a change in how migrations are performed. The majority of users (75 percent) experienced problems with data migrations, with 58 percent reporting extended or unexpected downtime, and 36 percent experiencing application performance issues (Chart Two). Many users consider migrating data to be a complex process; over 72 percent of respondents take more than two weeks to plan an implementation and over 40 percent of the migrations require more than 5 people to complete.

As our research shows, data migrations can be very risky and costly, particularly for those organizations that need to perform migrations on a regular basis. While the general perception is that data migrations are a rare occurrence, a surprising 20 percent performed migrations on a weekly basis, and another 21 percent performed monthly migrations. ESG found that 76 percent of UNIX migrations and 74 percent of Windows migrations are performed on weekends. The respondents who perform migrations on weekends overwhelmingly state they are trying to avoid application downtime and overall risk. Depending on how staff is paid, those weekend migrations can mean costly overtime, or, at the least, a very unhappy group of employees.

Chart Two: User Problems during Data Migrations



Surprisingly, 50 percent of all of the respondents have never used an online migration utility. Users were more inclined to perform offline migrations in Windows environments, with 68 percent of Windows migrations being performed offline, compared to 49 percent of UNIX migrations. North American respondents indicated they experienced the most problems with Windows migrations (76 percent), with the top problem being unexpected or extended downtime. This level of unexpected downtime is actually much higher than the average of 58 percent for all respondents across all operating systems.

ESG conducted another study in which users indicated that the majority of all applications could tolerate no more than four hours of downtime. However, a high percentage of respondents utilizing manual processes take the applications offline in advance of the migration: 54 percent of Windows applications were taken down less than an hour ahead of data migrations and 29 percent were taken down between 1-6 hours ahead of the migration.

Of course, users experience problems and incur costs with all migrations, across all OS's. The intent is not to say that Windows migrations are problematic, only that there seems to be a direct correlation between the number of problems incurred and the number of offline, or manual, migrations implemented.

Overall, respondents to the data migration survey indicated that 54 percent of all migrations took between 1-6 hours, and 13 percent of all migrations took over six hours.

When asked how often the data migration processes exceeded originally planned estimates, including planning, staging, actual migration, and validation, the results weren't good. Staff time is often underestimated with 69 percent of respondents exceeding estimates during a migration. Additionally, 21 percent stated that they always exceeded planned staff time.

ESG found that 61 percent of respondents sometimes exceeded their budgets and 11 percent always did. Startlingly, 70 percent of users sometimes exceeded planned downtime estimates, and 11 percent always did. ESG found that 18 percent of Windows migrations always exceeded planned downtime.

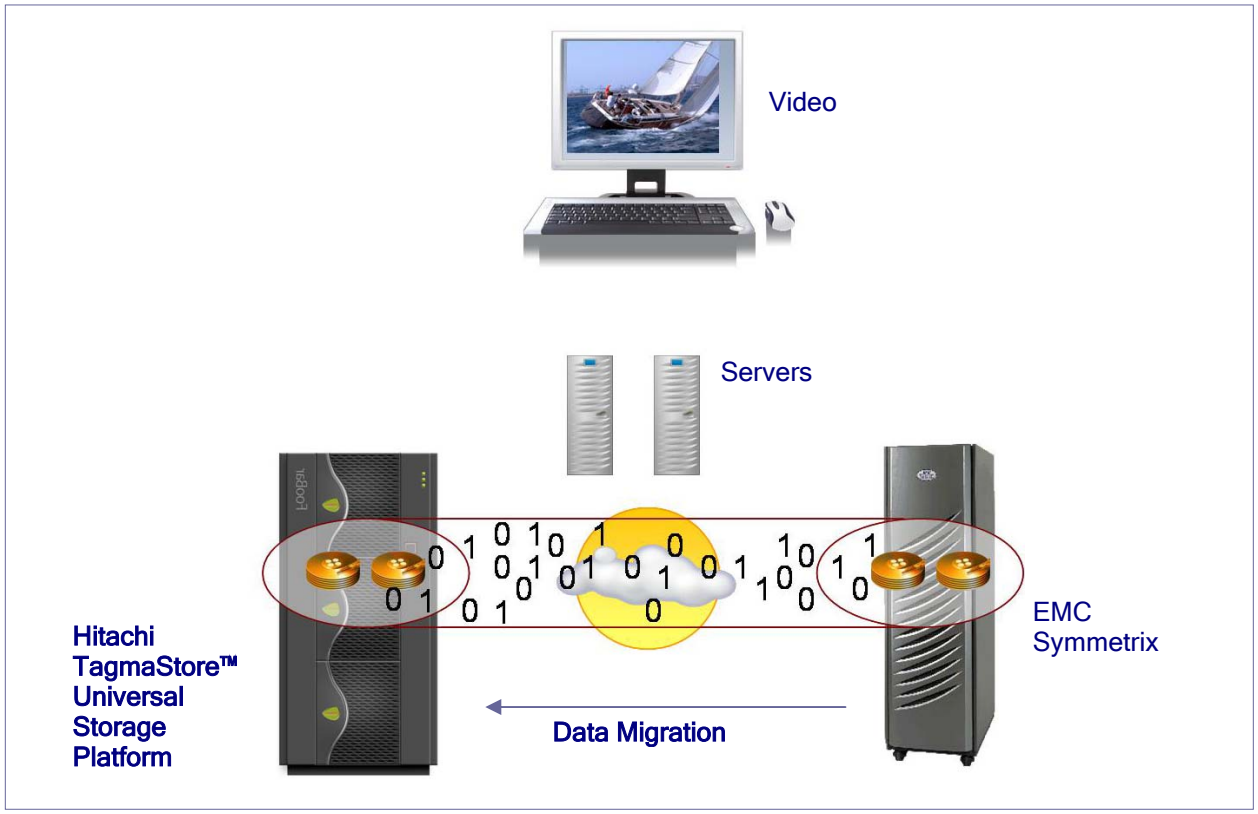
Considering the cost of downtime and impact on business, migrating data can have a significant impact on both the top and bottom line. Granted, in this case, this is "planned" downtime, but one has to think that if this downtime could be avoided by utilizing online migration solutions, organizations would run much more efficiently and save a significant amount of money.

Hitachi Data Migration

Hitachi provides tools and technology, independently validated by ESG Lab, that provide relief from the data migration issues discussed above. Using Hitachi's HiCommand Tiered Storage Manager, companies can perform data migrations online and transparently without any user disruption. This eliminates, or at least minimizes, application downtime, data loss, overtime costs, and overall risk.

ESG Lab migrated an active volume from the EMC Symmetrix to the Tier One internal storage on the Hitachi Universal Storage Platform. We played a video on a Fibre Channel-attached drive from a Microsoft Windows server. The migration was configured and executed using HiCommand Tiered Storage Manager. The video was started and viewed from a handheld HP IPAQ, which accessed the video on the Windows mapped drive over a wireless network. The video played continuously without a hitch during the migration[1].

Figure One: Migrating from EMC Symmetrix to a Hitachi TagmaStore Universal Storage Platform



The Hitachi HiCommand software automatically discovered the connected tiers of storage and directed the migration of data between the tiers. The process was fast, easy, and transparent to the users and applications.

[1] See *ESG Lab Validation Report: HiCommand Tiered Storage Manager*, November 2005.

ESG's View

ESG Research shows that a large number of customers are exceeding planned downtime, as more time is required from their staff, and spending more than they budgeted for. Additionally, many are experiencing data corruption and loss of data – two cardinal sins of data management.

The majority of users (75 percent) have experienced problems with data migrations, with 58 percent reporting extended or unexpected downtime, and 36 percent experiencing application performance issues. Many users also find migrating data to be a complex process: More than 72 percent of respondents take more than two weeks to plan an implementation, and more than 40 percent of the migrations require more than five people to complete. This is not limited to the smaller environments. Our research shows that even the largest enterprises struggle with migrations. At these larger enterprises, the error rate of a data migration may be a bit less, but at a significant cost in preplanning and execution. As more companies buy into multiple storage tiers to drive down costs, data mobility across tiers of storage becomes a pivotal issue. Traditional data migrations are simply too costly, too disruptive, and much too risky.

Hitachi provides high-performance data migration technology, combining its best-in-class storage systems, including its Universal Storage Platform and Network Storage Controller with the Hitachi HiCommand Tiered Storage Manager. The combination of these products provides a solution that solves the major challenges of data migrations for upgrades, capacity load balancing, and the day-to-day management of data mobility in an intelligent tiered storage environment.

Related ESG Reports:

ESG Lab HiCommand Tiered Storage Manager, November 2005