



Mission: Control!



When you are the people responsible for Storage Management at a major European Data Centre, the one thing you don't want to lose is control!

Ian Porter is the Technical Support Senior Controller at Nissan's European Data Centre in Sunderland. The centre runs the operations for the Nissan UK Manufacturing Plant and Nissan GB Distributors. It also plays host to the majority of Nissan's other European operations.

"We run the systems for Nissan in Germany and Spain, as well as the company's main European Headquarters in Holland. To accommodate these systems, we operate eight separate LPARs, each one with its own specific Storage Management requirements..."

Ian Porter, Senior Controller

One of the primary responsibilities of Ian Porter's team is to ensure that the Dasd space allocated to these separate LPAR's is used as effectively as possible. Unnecessary wastage of Dasd space has to be eliminated and the occurrences of Sx37 abends have to be reduced to a minimum.

The data belonging to the various systems also has to be regularly backed up. These backups must be taken in such a way that individual datasets can be restored whenever required, and entire Dasd volumes can be recovered in the event of a disaster.

"With over 1.65 TB Hitachi 9960 and 700 GB of EMC² Dasd currently on the floor, spread across eight LPARs, it is absolutely essential that our Dasd Management System is both powerful and flexible enough to accommodate our specific requirements. We have to be confident that it is doing exactly what we want, when we want."

"We simply cannot afford to lose control...!"

The Problem

Ian Porter felt that the Dasd Management System that Nissan had been using since the late 1980's was no longer providing him with the control he so desperately needed. Together with his fellow colleagues in the Technical Support Team, he had an overwhelming sense of dealing with a 'black hole'.

With Nissan's multi-LPAR setup, the existing Dasd Management System was proving to be increasingly inflexible. There was also a lack of feedback from the system, making it difficult to check if the company's critical Dasd Management policies were being implemented.

In particular, there were four key areas that were causing the greatest concern—Data Migration, Disaster Recovery, Home-Site Restores and Controllability.

Ian and his team decided to embark on an evaluation of the FDR Dasd Management System to see if it could help to address some or all of these issues...



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Here, in more detail, are the issues that Ian Porter and his team were keen to address with the FDR Dasd Management System, specifically utilising the ABR component, which provides Data Migration and Volume Incremental Backup services.

Problem 1: Data Migration

Although Nissan were doing Data Migration with the existing Dasd Management System, it was clear that the legacy policies which had been implemented were not fully understood. Datasets that were eligible for migration were being left on disk. Others, which were not required at all and which should have been deleted, were taking up large amounts of Dasd space. Even datasets that *were* being migrated were retained indefinitely, with no clear mechanism in place to expire them.

The initiation of the daily Data Migration tasks was also causing concern and proving difficult to monitor. It was not always clear when migration was taking place, or what had been migrated. Failures in the migration tasks were also difficult to track.

As a direct result of these problems, Sx37 space abends were all too frequent, prompting 'reactive' action, which would only stave off the problem for a short period of time.

The ABR Solution:

With ABR's *batch-driven* mechanism for Data Migration, Ian and his team immediately regained control of the process, utilising their Job Scheduling system for initialisation. The DFSMS Management Class information was used to control which datasets were migrated or expired, and any non-zero return code gave a highly visible indication of failures.

"Sx37 space abends are now almost a thing of the past and we are now working pro-actively instead of re-actively..."

Problem 2: Disaster Recovery

Nissan were taking a mixture of weekend Full-volume Backups and daily Incremental Backups. They were experiencing similar 'control' problems with these backups as previously highlighted for Data Migration—i.e. they were not sure what was being backed up and what was being missed. Again, due to the lack of feedback, they were also unaware when failures were occurring in the process.

Their company Disaster Recovery plan was based around doing 75% of the restore work from the weekend Full-volume Backups.

They then used a home-written program to automate the restores from the daily incrementals. It worked well and speed wasn't an issue, but it required constant attention to keep up-to-date.

Ian and his team sought advice from their Disaster Recovery provider, who concluded that the tools currently being utilised were unsuitable for Nissan's increasingly demanding recovery needs.

The ABR Solution:

ABR's Volume Incremental Backup System was introduced as a replacement.

Again, due to its batch-driven nature, this provided Ian and his team with the control and visibility they desired. ABR's world-renowned performance now ensures that all changed datasets are secured each day, while the unique Automatic Volume Reconstruct process is used to recover whole Dasd volumes in the event of a disaster, removing the need for Nissan's home-written application.

"We can now recover our data well within the timeframe allowed, and we can easily bring it back to any point up to the most recent backup..."



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Problem 3: Home-Site Dataset Restores

Because of the mishmash of backups that were being taken each day, Nissan were experiencing several difficulties when trying to restore individual datasets.

For example, Development users often needed to restore old copies of datasets. Due to the complexities of the backup system in use, this involved the user having to call a member of Nissan's Operations Staff to request the restore. A search would then be made through the listings of the weekly Full-Volume Backup and the daily Incremental Backup jobs to work out where the most recent (or perhaps older) copy of the dataset resided. A restore task would then be initiated.

This process was particularly time-consuming and the Development users regularly had to wait up to 4-5 hours for their dataset to be restored.

Ian and his team desperately wanted to improve this service to their users. They wanted to speed up the restore process and they were also keen to try and reduce, as much as possible, the involvement of the already stretched Operations personnel.

The ABR Solution:

With ABR's Volume Incremental Backup system now in as a replacement, all backups can be tracked in ABR's simple and efficient recording mechanism. Coupled to the ISPF panels that are supplied with ABR, Nissan's Development users can now go online and display a list of all backups currently being tracked for their datasets. They can then request the restores for themselves.

"It's brilliant! The restores now take less than 10 minutes...and our Operations Staff doesn't even have to get involved...!"

Problem 4: Controllability!

Nissan utilise a Memorex Robot with a capacity of 10,000 cartridges. The robot is shared between each of the LPARs, so it is essential that effective communication can take place between any processes running under these LPARs which require the use of a tape drive. This is particularly important for long-running processes, such as Data Migration and Volume Incremental Backup.

Nissan's OPC Job Scheduling System is the key to the effective sharing of the tape drives in the robot. It can control which processes are initiated across each of the LPAR's, ensuring minimal tape drive contention.

Unfortunately, Nissan's existing Dasd Management System operated around a central Started Task, from where all job initiation took place. Each LPAR had one of these started tasks. There was no co-ordination between them because they were entirely outside of the control of OPC.

The ABR Solution:

Once again, the batch-driven nature of the ABR Migration System and the Volume Incremental Backups allowed Nissan to regain control. Now, all Migration and Backup tasks that require a tape drive can be centrally scheduled, ensuring that these processes are not delayed due to tape drive availability. Across the multi-LPAR setup, the Memorex Robot is being effectively utilised.

"What can I say? The ABR Migration and Backup tasks now run when we want them to! And we're no longer concerned with unsolicited tape drive contention."

"We're in control again...!"



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And There's More!

Software Costs

Ian Porter is always under pressure to reduce costs as much as possible. Nissan were already users of Innovation's FDR/Upstream, which allows LAN Servers and Workstations to be backed up to the OS/390 host, so they were familiar with Innovation's competitive pricing policy. The introduction of the FDR Dasd Management System, coupled with the decommissioning of the old software will yield a saving of 80% from the fourth year onwards.

“This was certainly a bonus! We were happy to resolve the four key issues, but a saving of such a scale in the cost of our Dasd Management software was more than welcome...!”

Resource Utilisation

Although the Dasd Management System is an important component within OS/390 operations, it is still only a housekeeping tool. The running of daily backups and the migration of data are not revenue-generating functions.

For this reason, the Storage Management System should be as efficient as possible when it comes to resource utilisation, such as CPU usage, EXCP's and Elapsed times. Nissan's old Storage Management System frequently featured in the "Top Ten" of CPU users in the category set aside for housekeeping tasks. The equivalent ABR jobs are conspicuous by their absence!

“We had one regular job which used to defragment certain Dasd volumes. Under the old system, it used to take 10-15 minutes per volume. When we converted to Innovation's FASTCPK, the volumes were being completed so quickly that we started getting calls from our European colleagues who were concerned that the jobs weren't doing anything...!”

“Now that's the kind of problem I like to have!”



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