



IT'S TIME TO MOVE **UP** FROM VSAM....

What are my options?

Why is it time to unlock your Legacy Data....

That's easy. In today's rapidly moving business environment, IT is a key factor in business success. A key part of IT strategy is rapid access to business data. Yet there are still companies all over the world using VSAM files in legacy applications. It's time to unlock your legacy data because

- Legacy structured businesses need to move closer to 24x7 decision making based on real-time feedback with customers, suppliers and competitors.
- The opportunities for your company are endless but maintaining a competitive edge is crucial.
- Business survival for globalisation depends heavily on IT as the key enabler of the flexibility and responsiveness of any business.

Most well established IT sectors have a massive investment in legacy systems, but it's the scale of this investment that inhibits modernization.

- It is unrealistic to redevelop many of these systems and too risky to change them.
- Skills required are not always available and re-engineering cost is not easily bearable.

Business Data is the single most valuable element in Legacy environments, yet there is still an enormous amount of data locked into VSAM applications and therefore not easily available for **Querying, Analyses** or other e-based purposes

There are several ways to unlock this Legacy Data to allow for exploitation of new e-business opportunities, using relational database technologies, the strategic data environment of choice for most companies. You should know - you have probably looked at them already.

Today's Information Economy
=
(technical capabilities + business imperatives)

Data Exploitation With VS/2

"I've looked at this before and it is both too risky and expensive...."

This statement was true in the past when there were only 3 realistic options to consider.

OPTION 1 - Migrate VSAM applications and data to a DB2 environment

The biggest problem with this is that the costs were always unrealistic. In addition, you had to manage the high risks associated with changing your core systems and the goals were unreachable. Not to mention the problems of maintaining your applications during the migration process.

OPTION 2 - Perform extracts and queries directly on VSAM datasets

This option is quite popular, despite the additional DASD and processing costs, and coupled with the fact that there are few tools to help you. You also have to consider the inherent inflexibility in this method, and the reliance on an over-burdened application development department to provide new extract programs.

OPTION 3 - Duplicate VSAM datasets to DB2

You had to be really keen (or should that be committed) to adopt this solution. OK, so it gets your users off your back but at what cost? I'll tell you; ongoing data cleansing and restructuring, synchronisation, no real time or 24x7 benefits, day old data syndrome, disaster recovery implications. I'll spare further pain by stopping here.

OPTION 4 - VS/2

"You just said that there were only 3 options." Well now there's a fourth option. In fact when you examine VS/2, you will say that there is only one option. Why? Try these for starters;

- ❑ You have only one copy of the data, and it is in DB2
- ❑ You don't have to make any changes to your existing legacy programs
- ❑ You don't have to make any changes to your existing legacy programs. This is worth saying twice because you probably didn't believe it the first time.
- ❑ VS/2 provides extensive data re-engineering capabilities. For example, you can convert DATE fields to DB2 DATE columns and let VS/2 convert these fields back your current VSAM file format for your legacy programs
- ❑ You can convert on a file by file basis, at your own pace
- ❑ You are using proven technology, and a proven methodology

It's time that you took another look at unlocking your legacy data. Just think of the business benefits that await. And if you migrate to DB2 with VS/2, you can enhance your legacy applications using the full power of SQL.

"OK I might be interested. Why haven't I heard of VS/2 before"

For a start, it's new, which explains why you haven't heard of it before. But the idea is not new. In fact its sister product DL/2 does the same as VS/2 for IMS databases (and let me tell you that it was much tougher doing IMS). That's why the technology is proven, and the methodology is tried and tested. This is how it works;

- First, you have a runtime component to intercept the VSAM calls in your legacy programs.
- If the file has not been migrated to DB2, the call is passed to VSAM and handled as it is today
- If the file has been migrated, VS/2 loads a couple of driver modules, one of which includes all the SQL you need to process the data in DB2. By the way, it's static SQL

Another couple of pieces are of interest. VS/2 is a suite of tools that handle the entire migration process. There is a mapping component that you use to define the relationship between your existing file and the DB2 table that VS/2 uses. There is also a data migration component that converts your VSAM file into a sequential dataset for loading into DB2. These 2 pieces are only used for the initial file migration.

This makes VS/2 a single, comprehensive tool set that will take you from VSAM to DB2 with minimum risk.

We know, because we do this already with DL/2. Our DL/2 clients have already realised the following benefits;

- Investment in existing legacy applications is preserved
- Enhancements to existing programs can be done in SQL
- The DB2 database can either be simple character columns relating to existing copybook fields, or can use the full power of VS/2 to reengineer data. (the reality is that you will deploy different methods for different files, based on what you want to do with the data in DB2)
- No changes to existing application programs (this one keeps popping up)

One VSAM file typically becomes one DB2 table. Some of our DL/2 clients have redefined parts of their IMS databases and use multiple copybooks for the same records. DL/2 and VS/2 allow you to do this. So one VSAM can become multiple DB2 tables if you want.

"Just suppose I was interested. How do I justify VS/2?"

For a start, your organisation can refocus on growing its business and technical capabilities under a single data infrastructure paradigm. That's worth at least one promotion for you. There are some other things you can think about, such as

- Potential for faster deployment of new applications or application upgrades
- Single source of production data, available at all times to all customers alike
- Consistent quality-of-data and quality-of-service across the board to all customers
- Simplified data maintainability and future database restructuring
- Effective assistance toward the Continuous Availability and Real Time needs for 24x7 purposes

It doesn't stop there. Here are some others worth mulling over;

- Significant economy-of-scale savings are possible in certain elements:
 - ◆ CPU and DASD usage,
 - ◆ Disaster Recovery complexity (ouch)
 - ◆ Application and Data maintainability
 - ◆ Reduced set of production and development OEM tools
- Facilitates the running of Sysplex environments
 - ◆ Provides simplification to the Real Time Operability challenges
 - ◆ Allows for better management of standards and measurements
 - ◆ Simpler set-up and operation of test streams
- Harmonizing potential
 - ◆ Planning, Development and Service Delivery resources/Skills
 - ◆ Change Management and Control processes

If that's not enough, VS/2 means that you can realise the following immediately

- You are no longer bound by long-existing VSAM dataset limitations, and forced to use VSAM scaffolding features.
- DB2 already includes a sound and established Partition Tablespace feature, so there is no practical limit on the size of your DB2 table
- It's one less data management discipline to worry about.

You've got the general idea by now.

"How do I ensure that it will work for me?"

Try it. Legacy systems invariably have characteristics that were de riguer when systems programmers had long beards, smoked menthol cigarettes and wore sandals. (those heady days - I remember them well) Before you commit yourself (having already committed your ex-systems programmers), you can prove the VS/2 concept by running a Pilot Test. This will typically fall into 3 phases;

PHASE 1 - Identify the Pilot Test Scope

The first phase figures out what is involved in the test.

1. Identify a candidate VSAM file that you want to migrate and test.
2. Examine the characteristics of the file to determine the set-up required for the Pilot Test
3. Identify candidate programs to be tested.

1. and 3. Are performed by you. Circle usually performs 2. Any data such as file descriptions, copybooks and so on are subject to a Confidentiality Agreement.

PHASE 2 - Create the Pilot Test Environment

Once the scope of the test is decided, the next step is to set up the test environment on your system. This involves the following;

1. Map the file to DB2. Mapping is a VS/2 process that establishes the relationship between the VSAM file and the DB2 table that the file is migrated to. It is performed once per VSAM file. The DB2 table design will normally be based on the Copybook for the file, with one field becoming a DB2 column
2. Generate the VS/2 driver programs
3. Migrate the VSAM file to DB2, and register it is a VS/2 file
4. Make the required JCL changes to enable VS/2 to run the batch and online programs you will be testing.

Items 1-3 are normally performed by Circle. In most cases, they can be done remotely which reduces the cost of the test.

Data Exploitation With VS/2

PHASE 3 - Execute the Pilot Test and Evaluate the Results

A Circle consultant working onsite will provide you with VS/2 training so that you can objectively evaluate VS/2. The training includes things such as

1. How you migrate the data from VSAM to DB2 with VS/2. (you may have to do this during your testing)
2. How you control data access so that you can flip your programs between accessing the data in VSAM and in DB2.
3. What tracing you can perform in VS/2 to show that your calls are actually processed using DB2 data
4. VS/2 Migration Project Management
5. How you can enhance the value of your data in DB2 using VS/2 data re-engineering and User Exits.

Then it's over to you to test your programs. You can either prepare a set of results before the test, or migrate the file and run the tests with and without VS/2. Your tests should include batch and online programs. If you have programs that access more than one VSAM file, you don't need to convert them all at the same time. Conversion is on a file by file basis.

You will be tempted to select the most complicated programs for the test. This won't be a problem for VS/2, so long as you can capture the necessary input files in order to run the programs with and without VS/2.

As well as providing detailed VS/2 training to those directly involved in the Pilot Test, the consultant normally gives a general VS/2 overview/training session to other IT departments, such as operations, Systems Programmers, DBAs and even Management.

Data Exploitation With VS/2

and the formalities

If you want to try VS/2 (and a Pilot Test is the best way to do this), we will send you a version of the VS/2 Software that is valid on your specific system. You only pay for the consultancy that you use. If you provide remote access to the consultant during Phase 1, the consultancy costs will reduce.

A contract will be created between you and Circle. It defines the scope of the test, which includes the file or files you want to migrate and test with VS/2, and the application programs you will use in the test.

A Circle consultant will provide telephone and e-mail support throughout the duration of the Pilot Test, as well as the onsite phase. This way you get questions answered quickly, and a significant degree of skills transfer as well.

and after the test

Using the experience you gain during the test, you should be able to estimate the cost of migrating your other VSAM files, especially the costs of testing your programs. Circle can help you to estimate the effort to perform the mapping if you provide us with details of your VSAM files (from a LISTCAT command).

You control the cost of the VS/2 software by only buying what you need, because the costs are based on the number of files you migrate and not the size of your machine. Seems fair.

"What impact will VS/2 have on my system?"

Some. Questions about system performance are always easy. Unfortunately, the answers tend to be a bit difficult and always start with "It depends...". VS/2 is no different. The first thing to understand is that it will cost more CPU. Here's why.

- VS/2 allows you to re-engineer your existing data at a field level. In order to do this VS/2 operates at a FIELD level, as opposed to a RECORD (or CI) level. The path length increase attributable to VS/2 for this is small, around 6-8 %. A small price to pay for the capability of enhancing your data. Of course this increase only applies to those calls in your program to VSAM files.
- It costs more CPU to retrieve data from DB2 than it does to retrieve the same data from VSAM. This is kept to a minimum through VS/2's use of static SQL and cursors but can still amount to 5-10%. Once again, this overhead is only for calls to VSAM files.
- Suppose you currently store date information as a PIC S9(9) COMP-3. (FIXED DEC(9,0) FOR PL/1 diehards). VS/2 can store this in a DATE column in DB2 and handle the data translation. Some column data types are stored by DB2 in encoded format and therefore there is an extra cost for processing these column types. (DATE and DECIMAL columns are examples). Once again, only calls to VSAM are affected and the overhead is based on your table design.

Overall, the CPU overhead is a factor of your DB2 database design and to some extent is under your control. You could make all your data CHAR in DB2 to keep the overhead to a minimum, but you miss out on some of the benefits of DB2. You will probably end up with a mixture - some files will use DB2 columns that allow the ability to exploit DB2 in full. Others will use CHAR data.

Despite the CPU overhead, you are unlikely to see any difference in elapsed time. In fact, you will probably find it hard to believe that VS/2 is involved, especially in your online environment.

Data Exploitation With VS/2

"What is the catch?"

There isn't really any catch. You don't have to change your existing legacy application programs, and your data is in DB2. You only migrate the VSAM files that you want to access in DB2, and you let VS/2 worry about your legacy programs.

Each DB2 table has a Primary key, and if you use alternate indexes VS/2 supports these as well. VS/2 uses only static SQL, to ensure that the DB2 overhead is kept to a minimum (and also to keep your DBAs happy)

The VS/2 tool set even includes a DDL generator which reads your copybook and generates the equivalent structures in DB2. All you have to do is estimate the size of the table (and we are working on a solution for this also).

So, your options are to either stay where you are in VSAM, or move to DB2. It's that simple.

If you would like further information:

please call +49 (0) 211 44 03 16-6 for more information

or visit

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