Sharing VSAM Data Across OS/390 and VM and/or VSE in the Year 2000

BY LAYNE BENNETT

IBM has stated that the OS/390 platform will no longer support VSAM catalogs or processing beyond 1999 and suggests the use of ICF catalogs. However, since VM and VSE require VSAM catalogs to share data and do not support ICF catalogs, in order to share VSAM data between OS/390 and VM and/or VSE, you will need to select an alternative method.

OVER the past few years there has been an overwhelming increase in Year 2000-related issues. Is your company ready? Are your vendors ready? Will the power work? The list goes on.

With so many elements to check and re-check to ensure your company is ready for 2000, it's common to overlook critical areas in your system that may not be as ready as previously believed. One prime example is IBM's announcement more than a decade ago that VSAM catalogs in MVS would not be supported as of January 1, 2000. When this was originally announced, many organizations didn't realize or were unconcerned how they would be impacted, so no preparations were made. Now that the Year 2000 is just around the corner, the damage to day-to-day operations could be catastrophic.

Before going any further, it's important to understand how or if discontinued VSAM catalog support affects you. Simply ask yourself the following questions:

◆ Do I have applications that use VSAM?
◆ Am I sharing VSAM data between OS/390 and VM and/or VSE?
◆ Am I using third-party products between OS/390 and VM and/or VSE?

If you answered no to all of these questions, then you probably will not be affected. However, if you answered yes to any of the above

Figure 1: Before Year 2000

Figure 2: After Year 2000
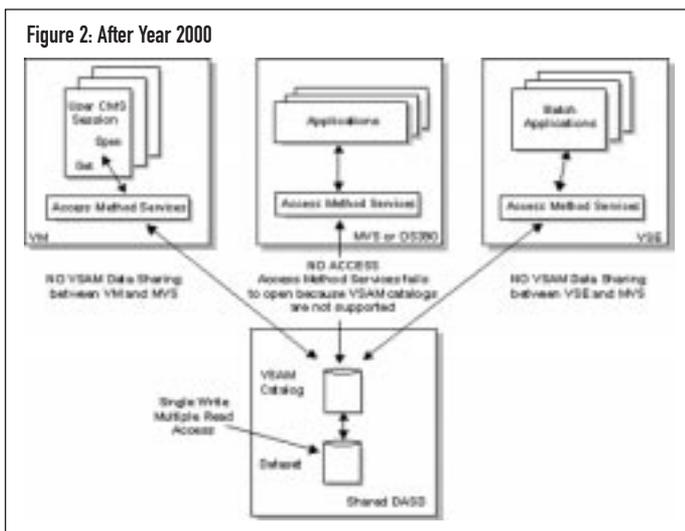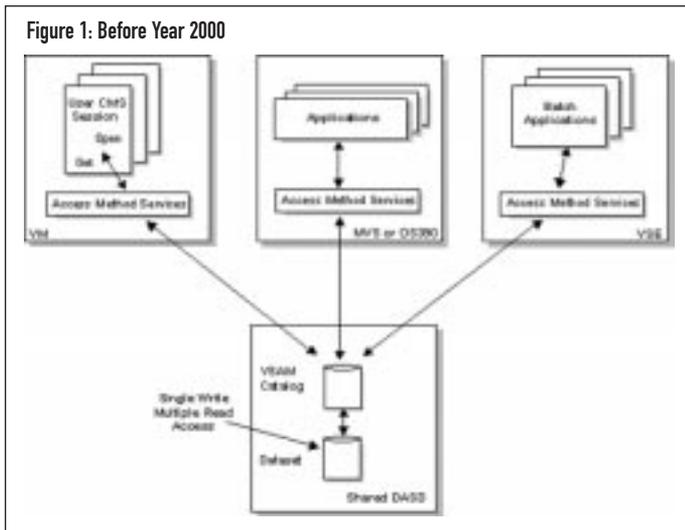
questions, read on; it may be the most important information impacting the success of your Year 2000 efforts.

WHAT'S THE PROBLEM?

The problem is simple: On January 1, 2000, OS/390 will not support VSAM catalogs (non-ICF). The result: Using VSAM catalogs to share VSAM data between OS/390 and VM and/or VSE will not be possible.

Today, OS/390 VSAM supports single write and multiple reads to VSAM catalogs on VSE and VM. Since these three operating systems support VSAM catalogs, you have the capability of sharing VSAM data. See Figure 1.

IBM has stated that the OS/390 platform will no longer support VSAM catalogs for processing when the system date is beyond 1999. To support datasets that need to have explicit expiration dates beyond the end of 1999, or to create cataloged datasets after 1999 on MVS systems, you must now use Integrated Catalog Facility (ICF) catalogs. Since VM and VSE require VSAM catalogs to share data and they do not support ICF catalogs, sharing VSAM data between OS/390 and VM and/or VSE will no longer be possible. Any configuration currently sharing VSAM data between OS/390 and VM and/or VSE will fail as of January 1, 2000. See Figure 2.

VERIFYING VSAM CATALOG IMPLEMENTATION

There are a number of techniques you can use to determine if your organization will be affected by the Year 2000 VSAM catalog and data sharing issue. Among these are the following:

◆ Use the IDCAMS command to verify the catalog type. Use the command *LISTCAT CAT(catalog-name)*. This uses IDCAMS to list the Catalog type (either ICF or VSAM).

◆ Verify APARS OW25632 (DFSMS/MVS)and OW25988 (MVS/DFP). These APARS and their associated PTFs introduced changes that issue a console message when a VSAM catalog (non-ICF) is accessed. When testing on a system with the date set before January 1, 2000, access to the data under OS/390 will be permitted, but a warning message will be displayed when the VSAM catalog is accessed: "Beginning January 1, 2000, any attempt to use a VSAM catalog by OS/390 will be denied and you will not be able to access the data until the catalog is converted to ICF."

In most cases these methods should identify VSAM catalog usage on OS/390. Some of the catalogs you may find may not be from custom applications, but from third-party vendors. If this is the case, contact the vendor for assistance. If your vendor does not have a solution coming, you need to read further.

WHAT TO DO IF YOU ARE USING VSAM CATALOGS

If your site is using VSAM catalogs on OS/390, these catalogs must be converted to ICF catalogs. (See *IBM DFSMS/MVS Managing Catalogs* documentation for conversion information.)

Although ICF catalogs offer better performance, integrity and functional characteristics than VSAM catalogs, you will not have the ability to share VSAM data across OS/390 to VM and/or VSE, where ICF is not supported. Therefore, to continue to access shared data between OS/390 and VM and/or VSE, you will need to select an alternative method.

There are a number of alternatives to resolve VSAM sharing issues associated with VSAM catalogs. Each approach has its advantages and disadvantages. The primary issues to take into consideration when implementing a new method for data sharing are performance, transparent access, error recovery and time.

Performance can become a major issue when your data can only be accessed in a synchronous manner. This creates an environment where updates must be queued, and depending on the number of users, a single transaction can take minutes to complete. "The system is too slow" becomes a common user complaint – one sure to keep the system administrator's job "exciting." Performance should not be compromised unless no other alternative is available.

Transparent access is an important aspect of implementing data sharing. Additional steps should not be introduced into the current process. Modifications to current processes require extensive time investments in retraining, development and testing. Therefore, your solution should be implemented without additional steps to complete a transaction. In addition, error recovery is very important and becomes a critical issue when sharing sensitive data, particularly when the method has no contingency in place.

Finally, the most important issue at hand – time. Do you have the time to implement a new method for VSAM data sharing? Year 2000 is just around the corner and you've got enough to worry about. You need to keep time in perspective when determining the magnitude of the task for resolving the problem.

Figure 3: Sharing Data After Year 2000 with DATASHARE Y2K
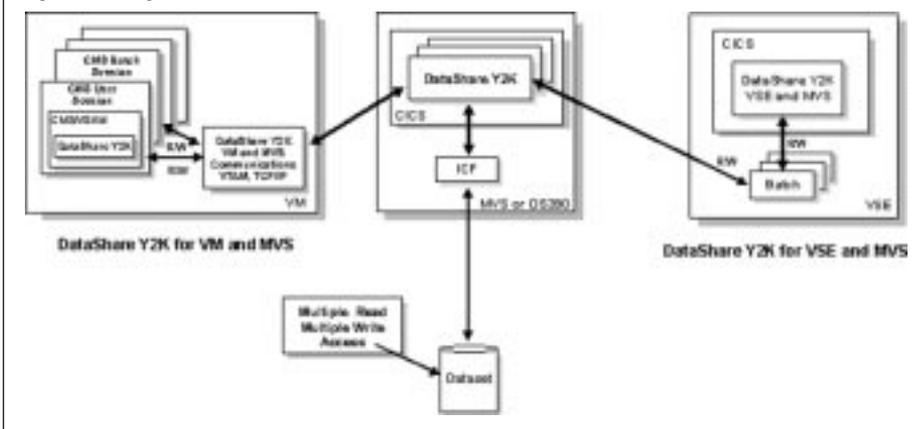
ALTERNATIVE METHODS TO VSAM SHARING WITHOUT VSAM CATALOGS

The following is a list of alternatives that may be taken into consideration to continue providing VSAM data sharing functionality beyond 1999:

◆ Create separate copies of VSAM datasets – This is probably the most obvious solution and requires the creation of two separate datasets. With this solution, actual data sharing does not take place. Any required synchronization of the copies will be the system administrator's responsibility. Although this is the simplest solution, the main issue with implementing two copies of the data is synchronization and error recovery. The risks for such an alternative should be considered.

◆ Consolidate access under one platform – You may find that your most optimal solution for an application is to move all datasets to a single platform (OS/390, VM or VSE), making whatever application changes are necessary. Note that VM and VSE can continue to share VSAM datasets without any application changes. However, this can be one of the most costly of the solutions, requiring application rewrites that may take as much time as it took initially to develop the application.

◆ Replace ESDSs that require sharing with sequential datasets – Additional options are available for entry sequenced datasets (ESDSs) if these can be replaced by sequential datasets. VM and VSE can bypass catalog requirements by specifying the dataset name and volser. This will require application modifications that may again be costly and time consuming.

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◆ Communications Protocols – Communications methods such as APPC and TCP/IP can address the sharing of data between OS/390, VM and VSE. Although they do resolve the sharing issues, the communications protocols will need to be designed into the application, so applications may need to be totally rewritten.

◆ DRDA - Use of DRDA (Distributed Relational Database Architecture) as an approach also permits one to access data from multiple platforms. You can access the data via SQL. Again, costly time and application rewrites will be required along with higher I/O overhead for this to work properly.

TIME IS SHORT – IS THERE ANOTHER ALTERNATIVE?

Now that the existing solutions have been outlined, all of which will take precious time, can be very risky and will require extensive effort to implement, you may be wondering if there is another alternative.

Our company has been working with VSAM data sharing for many years. When this issue was brought to our attention, we investigated the issues and the end result was the creation of a group of prototypes.

Eventually after each was evaluated, we chose a method that could best suit the problem seamlessly. Like in most product development processes a product line evolved that was designed to not only resolve the Year 2000 VSAM catalog issues but also to address all of the issues pertaining to sharing VSAM data across multiple mainframe operating systems. The end result provided concurrent access to VSAM data between operating systems while resolving Year 2000 issues associated with unsupported VSAM catalogs.

When sharing data between VM or VSE and OS/390, the product allowed CMS or VSE batch applications access to VSAM files that OS/390 owns without making any source code changes to the CMS or VSE batch or OS/390 programs. This meant CMS or VSE applications could access MVS VSAM files through CICS while the online users keep full access to the files and resources. In addition to data sharing across platforms, this solution extended VSAM data sharing to include multiple writers. Furthermore, physically shared DASD is no longer a requirement.

This alternative also allows VM or VSE sharing of VSAM files that are owned by MVS using the ICF catalog rather than the VSAM Catalog. In addition, this provides support well into the next millennium. Once a VSAM request is made by a VM or VSE application program, the request is intercepted and sent to the OS/390 CICS system for processing. The solution then sends the result back to the application program. This technique offers the user the convenience of running his application while the OS/390 application is also accessing the VSAM data through CICS. Capitalizing on the use of CICS in the product design, we found that we could increase the availability of data to all systems involved. See Figure 3. Although CICS is an additional requirement, we found that the overall benefit was well worth the investment.

VSAM SHARING BETWEEN VM AND OS/390

To implement the solution in a VM environment, DATASHARE parameters are added to the CMS applications' DLBL commands for the VSAM files that need to be shared with OS/390. The product uses these parameters to map the CMS VSAM file to the correct OS/390 CICS region and FCT entry. This solution then intercepts all I/O requests transparently for the specified

files and then ships them to the appropriate CICS region.

During the open processing for each DLBL statement that has DATASHARE parameters, VM and OS/390 establish a VTAM LU 6.2 or TCP/IP connection to the CICS region identified in the DLBL parameter.

An alternative to setting up the DLBL parameters could be implemented with the use of the GLOBALV command. This eliminates the need to specify the DLBL parameters on every DLBL statement. The site defined global defaults can be specified exactly as they are entered in the DLBL statement.

VSAM SHARING BETWEEN VSE AND MVS

When considering the solution for VSAM sharing between VSE and OS/390, all the parameters specified on the DLBL statements that point to the VSAM files CICS owns are validated. If any problems occur during the parameter verification, the job fails with a JCL error message.

During the open processing for each DLBL statement that has DATASHARE parameters, VSE and OS/390 establish a VTAM LU 2 connection to the CICS region

identified in the DLBL parameter. The product only maintains one connection per CICS region, regardless of how many DLBL statements specify that particular CICS region.

SHARED DASD NO LONGER REQUIRED

In addition to multiple update support, we found that this solution eliminated the requirement of having local DASD directly connected to each system. Data can now be stored on DASD and maintained by a single system via existing network connections, making OS/390 a super data server.

WHERE DO WE GO FROM HERE?

In an effort to get the message out, IBM has been actively communicating the issues regarding VSAM catalogs and the Year 2000. Currently, there are no plans to resolve the Year 2000 VSAM catalog support for OS/390. A good place to start may be to obtain additional information regarding IBM's support for VSAM and the Year 2000. Check out the IBM web sites www.vm.-ibm.com/year2000 and www.software.ibm.-com/year2000/papers/vsamy2k.html.

I hope this article has provided you with enough ammunition to identify your VSAM catalog requirements. Remember when addressing a path to resolve these issues to take the key requirements into consideration: performance, transparent access, error recovery, and most importantly, time. Most organizations will be scrambling in 1999 just to keep their businesses afloat; your best bet is to take the path that best fits your agenda. **ts**

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