

## IBM CICS VSAM Transparency for z/OS, Version 2.1

### Recent enhancements

- Auto-generate customized data migration JCL
- Enhanced IDCAMS REPRO support
- New migration tracking report
- Improved diagnostic facilities
- Support for CICS® Transaction Server V4.2 and DB2® 10
- Many other functional enhancements

### Features

- Move critical CICS and batch VSAM data to DB2 with no program changes
- Integrate your data with new and existing DB2 applications
- Access DB2 data 24x7
- Support business intelligence and data analytics
- Provide a fast route to DB2
- Automate VSAM-to-DB2 mapping
- Staged migration of individual VSAM files
- Dual-mode testing facility

### Benefits

- Support world-wide markets with no batch windows
- Simplify integration with new applications and channels
- Get more value from your CICS and batch data
- Run ad hoc queries and perform data analysis
- Avoid data-synchronization issues
- Create visual information and dashboards
- Extensive tooling portfolio for DB2
- Simplify integration with new applications and channels
- Avoid high cost of application rewrite

### Expand the reach of your data

Introduced in the early 1970s, virtual storage access method (VSAM) continues to be one of the main file-management systems for CICS and batch applications running on z/OS®. With continued enhancements to meet new technical challenges, such as statutory compliance requirements, many VSAM applications have become increasingly complex. Knowledge of these applications can be scarce. As a result, retrieving business-critical data from your VSAM files or providing Web or mobile access to your existing applications can be difficult. At the same time, the costs of application rewriting and testing to make critical data more accessible through a database management system (DBMS), such as IBM® DB2, can be costly and time-consuming.

IBM CICS VSAM Transparency for z/OS (CICS VT), Version 2.1 can help you migrate your valuable data from VSAM files to DB2 tables as your business requirements dictate, with no modification to your CICS and batch VSAM application programs and with only minimal changes to your system environment and JCL (see Figure 1). By migrating to DB2, you can make your data available 24x7 to customers and suppliers to support real-time global operations—with the security-rich reliability and maintainability that DB2 offers.

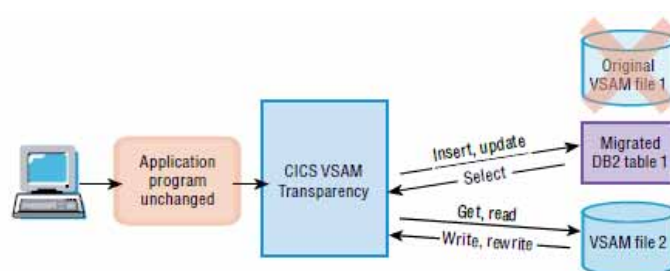


Figure 1 CICS VT helps you move critical data to DB2

### Fast access to business-critical data

The perceived cost and risk of moving your critical data from VSAM to DB2 might seem daunting. It can involve rewriting and testing applications, mapping and migrating data, and disturbing existing applications that might have successfully run unchanged for years.

However, moving your data to DB2 can help you add value to your information assets by enabling you to take advantage of robust capabilities like 24x7 availability, integration with DB2 applications, and the use of powerful business intelligence and data analytics tools for the line of business, and function-rich database management, performance, and governance tools for the IT specialists.

With CICS VSAM Transparency, you can quickly and smoothly migrate your business-critical data from VSAM to DB2.

Other benefits gained when using CICS VT include:

- Enable new applications to be fully DB2 technology-based—allowing database standardization
- Web and mobile access
- Phased migration for VSAM files for a low-risk approach
- Preserve investments in core applications—avoiding complex application rewrites.

### **Data management and performance**

CICS VT offers options for extensive data reengineering. For example, you can automatically convert date fields in your VSAM files to DB2 DATE columns. Fields defined in a COBOL copybook and stored in VSAM as zoned decimal can be mapped to a DB2 decimal column—CICS VT will automatically transform the data. Once files have been migrated to DB2, you can combine traditional VSAM access and native SQL access in the same application.

CICS VT helps minimize overhead by using the most-efficient DB2 access paths, offsetting some of the higher processor consumption you can experience when using a DBMS. For example, CICS VT uses DB2 indexes to optimize data access paths, and always uses static SQL—the most efficient in terms of CPU costs.

When used with CICS TS, the CICS VT Global User Exits and Task Related user exits are threadsafe, and, when combined with threadsafe file control in CICS TS 3.2 and above, this can reduce the number of TCB switches—and the associated CPU usage—when a CICS application accesses multiple resources such as VSAM, DB2, WebSphere® MQ, IMS™, etc.

After you have migrated a VSAM file, you can deploy standard DB2 system-tuning tools, from

IBM and other vendors, to help ensure optimum performance.

### **Data migration overview**

VSAM to DB2 migration with CICS VT uses a set of conversion tools and a run-time driver control component in a five-step process. The conversion tools include an Interactive System Productivity Facility (ISPF) dialog interface and support data mapping from VSAM key-sequenced data set (KSDS) structures and relative record data set (RRDS) structures to DB2 tables.

When the mapping is defined, CICS VT generates data-migration processes and drivers containing static Structured Query Language (SQL) calls. The CICS VT run-time component uses these generated drivers to access DB2 data, returning the results to the calling application in the original VSAM format.

The five steps are described in more detail below.

#### **Installation**

CICS VT is installed using System Modification Program/Extended (SMP/E) and is customized for the local environment using standard ISPF dialogs. Updates to existing system libraries are performed to define the CICS VT subsystem. Diagnostic checks and installation verification programs help to ensure that the product has been successfully installed, customized, and enabled in CICS and batch environments.

#### **Mapping**

The mapping component defines the relationship between data in a VSAM file and its proposed form in DB2. Mapping is performed using a CICS VT ISPF application. When a VSAM file is to be migrated to a single DB2 table, and a COBOL, PL/I or Assembler copybook is available, the automated mapping facility generates the DB2 SQL drivers and mapping information with minimal or no intervention.

CICS VT provides a manual mapping feature for more-complex files that map to multiple DB2 tables and potentially employ user-exit application programming interfaces (APIs). Some files might require a combination of the two mapping methods. The automated mapping facility can help significantly reduce the effort and time needed to map the majority of VSAM files to DB2, helping free your valuable database administration resources to focus on overall database design.

## Migration

Data migration is achieved through a combination of CICS VT and DB2 utility programs. CICS VT utilities unload and convert VSAM data to fixed-length sequential datasets. The data is then loaded using the DB2 LOAD utility. CICS VT then verifies that the mapping and data-migration processes were completed successfully.

New in this release is a utility to generate fully customized data migration jobs automatically, reducing set-up time and the risk of introducing errors.

Customers with large numbers of VSAM files can benefit from a new report that tracks the migration process. This report is of special value to those customers with differential charge-back systems, based on the file access method.

## Testing

The dual-mode facility (DMF) is provided to assist with the testing of the mapped and migrated data produced by the previous phase. The DMF can also assist in the testing of any user-developed exits.

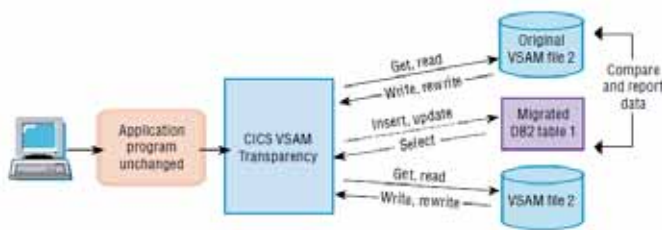


Figure 2 CICS VT assists with testing data

When you enable DMF, application program calls (either CICS or batch) are processed in DB2 as well as in VSAM (see Figure 2). CICS VT automatically compares the data areas and response code and closes the application program if a difference is encountered. This capability helps you to conduct testing faster, with less risk.

## Run-time

During application launch, CICS VT evaluates VSAM calls to determine if the requested VSAM file has been migrated to DB2. If it has, the original call is redirected to DB2 using the drivers generated during the mapping process. If the data is still in VSAM, the call is passed directly to the standard VSAM handling routines.

## Scenario: Batch window removal

As more customers expose their applications using web services and other internet technologies to gain access to a wider national and international customer base, the pressure to reduce the batch window—inherent in traditional VSAM-based applications—increases. By migrating critical on-line data from VSAM to DB2, where it can be accessed on-line and in batch simultaneously, this pressure can be relieved and the on-line applications can be available 24x7x365.

## Scenario: Application modernization

Even though existing applications using CICS or batch VSAM calls can run unchanged, you can also access the migrated data using standard SQL requests, in both existing and new applications. Whether you add native DB2 calls to existing VSAM applications or create new SQL-only applications, you can utilize your available application development skills to extract the maximum benefit from the DB2 platform.

## Scenario: Credit card security

The PCI DSS (Payment Card Industry Data Security Standard) regulations which govern how credit data is stored apply to many industries—not just banking but also retail, travel, telecoms, etc. Encrypting sensitive data in VSAM files requires application changes and complex customer-written code. However, when this data has been migrated to DB2, it can benefit from the extensive encryption and other data governance capabilities that are available when it is used with products such as IBM InfoSphere Guardium Data Encryption for DB2 and IMS Databases.

## Summary

If you're running CICS and batch systems on z/OS with VSAM and trying to migrate your data and applications to DB2, CICS VT can really help you by removing the need to modify any of your application programs and by migrating the VSAM data to DB2 tables with minimal effort.

Moving your VSAM data to DB2 will help you to comply with auditing and governance initiatives, for example, to comply with national legislation such as the U.S. Sarbanes-Oxley Act or industry-led regulations industry such as Healthcare Insurance Portability and Accountability Act (HIPAA), Basel II, and PCI DSS.

## **IBM System z tools—your pathway to success**

CICS VT is a part of an extensive portfolio of IBM System z® tools, including CICS tools, problem determination (PD) tools, application development tools, and data and systems management tools. The tools support the entire application life cycle, which helps you to build, test, deploy, and manage enterprise solutions. As a result, you can make the most of your System z platform investments and take advantage of the latest functions introduced in CICS Transaction Server, Version 4.

The comprehensive portfolio of IBM CICS tools offers you the opportunity to realize the full potential of your CICS systems, whatever your business strategy. You have the potential to maintain and manage your core CICS applications more easily and at a lower cost. CICS tools enhance IBM service management initiatives to optimize IT processes, maximize CICS system availability, reduce total cost of ownership (TCO), and transform CICS applications to achieve greater business flexibility. Moreover, in today's world of increasing governance, CICS tools can help to meet growing demands for reporting and audit compliance, and improve control over CICS runtime environments.

All IBM CICS, PD, and application development tools support the latest releases of CICS Transaction Server.

### **For more information**

To learn more about IBM CICS VSAM Transparency for z/OS and unlock the value of data used by your existing applications and extend its use to new DB2 applications, contact your IBM representative or IBM Business Partner, or visit:

[ibm.com/cics/vt](http://ibm.com/cics/vt)

To learn more about other IBM CICS Tools, visit:

[ibm.com/cics/tools](http://ibm.com/cics/tools)

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## **IBM CICS VSAM Transparency for z/OS, Version 2.1 at a glance**

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### **Hardware requirements**

CICS VSAM Transparency V2.1 can run on any IBM System z machine on which a required operating system and other required software are installed and running.

### **Software requirements**

CICS VT V2.1 will run with any supported level of operating system with which the applicable CICS TS runs.

CICS VT V2.1 is designed to be used with CICS TS V4.1 and V4.2 (5655-S97), where it supports fully the new function of the latest version of CICS TS.

CICS VT V2.1 can also be used with CICS TS V3 (5655-M15).

CICS VT V2.1 requires IBM DB2 Universal Database V8 (5625-DB2), IBM DB2 for z/OS V9 (5635-DB2), or IBM DB2 10 for z/OS (5605-DB2).

Full details of the hardware and software requirements CICS VSAM Transparency can be found at: [ibm.com/cics/vt](http://ibm.com/cics/vt)

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