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Technical Paper

Migrating a SAS[®] Deployment to Microsoft
Windows x64

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Abstract

Many customers want to take advantage of 64-bit hardware for metadata-based SAS 9 deployments. These deployments contain Business Intelligence, Data Integration, or Solution products with metadata that is stored by a SAS Metadata Server in a SAS Metadata Repository. This paper discusses the migration of such deployments from 32-bit SAS (on either 32-bit Windows or Windows x64) to 64-bit SAS (on Windows x64).

Introduction

In SAS 9.1.3, metadata-based deployments — which can contain Business Intelligence, Data Integration, or Solution products with metadata that is stored by a SAS Metadata Server — were not available for 64-bit SAS on Windows x64. Some customers ran 32-bit SAS on a 32-bit Windows subsystem on Windows x64 with the Windows-on-Windows 64 bit (WOW64) technology. Other customers ran 32-bit SAS on 32-bit Windows.

Beginning with SAS 9.2, customers can choose to run 64-bit SAS on Windows x64. (See the SAS System Requirements document for specific details.) The SAS Migration Utility can migrate an existing 32-bit SAS deployment to 64-bit SAS 9.2 or SAS 9.3. This feature has been integrated into the SAS Deployment Wizard. An additional choice is promotion, instead of or in addition to migration. This paper covers two migration tracks from 32-bit SAS:

- You are currently running 32-bit SAS on a 32-bit Windows subsystem on Windows x64. You want to deploy 64-bit SAS 9.2 or SAS 9.3 on that same environment.
- You are currently running 32-bit SAS on 32-bit Windows. You want to upgrade to a new Windows x64 environment and deploy 64-bit SAS 9.2 or SAS 9.3.

Why Upgrade to 64-Bit SAS?

When you purchase new x86-based hardware, it will contain a 64-bit x86 CPU (x64). By moving to 64-bit SAS, you will be using software that is designed for this environment. The 64-bit environment removes the 2GB of memory limit that exists on 32-bit machines. With SAS 9.2 and later, 64-bit Java application servers and JREs are established as the baseline for all 64-bit hardware to leverage benefits of the larger address space and improved performance. There can be costs associated with changing to a 64-bit system, because data sizes can increase. For example, SAS has changed recommendations related to Java "garbage collection" settings because of the larger address space.

Evaluate your move to 64-bit SAS based on the value of using commodity 64-bit hardware and the potential for improved performance. On vendor-supplied UNIX systems, all SAS releases are 64-bit.

For more information about new features in SAS, see the what's new topics in *SAS Intelligence Platform: System Administration Guide*, which is available at <http://support.sas.com/documentation/onlinedoc/intellplatform/>. See also the what's new topics for all SAS products, available at <http://support.sas.com/documentation/whatsnew/>.

Standard Upgrade and Migration Tasks

Almost everything you need to know about upgrading, migrating, and promoting is available in the book *SAS Intelligence Platform: Migration Guide*. The book contains instructions for pre- and post-migration tasks, and refers you to additional documentation where appropriate. Use the information to plan your upgrade.

Following the instructions in the *SAS Intelligence Platform: Migration Guide*, run the SAS Migration Utility in analyze mode and later in package mode. The Migration Utility generates an Analysis Report that:

- Lists the software that is installed on each machine
- Highlights products that are not supported by the automated migration tools
- Identifies products that are not at the minimum baseline
- Notes configuration settings that might require manual intervention before or after using migration tools.

After your preparation and planning are complete, you can run the SAS Deployment Wizard to migrate, deploy, and configure your new SAS deployment.

Special Considerations for SAS Libraries

Beginning with the second maintenance release of SAS 9.2, libraries that are stored under the SAS configuration directory (for example, /SAS/Config/Lev1) are migrated automatically by the migration tools and are converted to 64-bit.

Libraries outside the SAS configuration directory, or libraries migrated by an earlier release of SAS 9.2, are not converted to 64-bit. You can manually migrate these 32-bit libraries to 64-bit libraries, or you can access them with limited CEDA (cross-environment data access) processing.

Manual migration with PROC MIGRATE is recommended rather than CEDA because PROC MIGRATE:

- is a one-time process.
- provides validation tools.
- converts library members to native 64-bit format, so processing will be faster than it would be with run-time CEDA processing.
- prevents mixed 32-bit and 64-bit libraries. Default SAS processing outputs new data files in 64-bit mode, and a mixed library is not optimal, because you can accidentally write over an existing 32-bit file if the name is duplicated. Note that if you convert a data set to 64-bit, the data set is read-only in 32-bit SAS 9.1.3 or 9.2.
- avoids CEDA constraints. For example, CEDA does not read SAS catalogs (which can contain user-defined formats, and which can affect the rebuilding of OLAP cubes), indexes, integrity constraints, or audit trails.

For a list of CEDA constraints, see "SAS File Processing with CEDA" in the *SAS Language Reference: Concepts*, <http://support.sas.com/documentation/cdl/en/lrcon/62753/HTML/default/viewer.htm#n0oj2nagtyy32yn17pj01t6vytaw.htm>.

When you use PROC MIGRATE, having some previous experience with SAS programming language (PROCs, DATA steps, LIBNAME statements) is helpful. The formal documentation is provided in the *Base SAS Procedures Guide*, <http://support.sas.com/documentation/cdl/en/proc/63079/HTML/default/viewer.htm#p1kv04orx2cy03n1urntor37gzkz.htm>. For example code that is specific to your environment, use the PROC MIGRATE Calculator, which is available at <http://support.sas.com/rnd/migration/planning/files/migratecalc>.

When catalogs are present in a library, PROC MIGRATE requires that you have access to a SAS/CONNECT or SAS/SHARE server that is running on the same kind of operating environment (32-bit Windows) as the source SAS environment. You specify this server in the IN= option (or in the SLIBREF= option if the catalogs were created prior to SAS 9.1.3). If you do not have access to a SAS/CONNECT or SAS/SHARE server, use PROC CPORT and PROC CIMPORT, as shown in an example, "Additional Steps for Unsupported Catalogs," in the PROC MIGRATE documentation. PROC CPORT and CIMPORT are documented in *Moving and Accessing SAS Files* and in the *SAS Procedures Guide*.

If SPD tables from the SPD engine are present in your libraries, they require conversion to 64-bit before they can be updated in 64-bit SAS on Windows x64. SPD tables are not supported by PROC MIGRATE. You can use PROC CPORT and CIMPORT, or PROC UPLOAD or DOWNLOAD.

Differences After Migration to Windows x64

- 64-bit SAS datasets might get larger. See a SAS Note: <http://support.sas.com/kb/24/456.html>.
- The data representation as shown in log messages and PROC CONTENTS will be different when you output a 64-bit file:

WINDOWS_32 indicates a file created under 32-bit SAS. This includes both 32-bit Windows and 32-bit Windows subsystem on Windows x64 (WOW64).

WINDOWS_64 indicates a file created under 64-bit SAS. This includes both Windows for 64-bit Itanium-based systems and Windows x64.

- For changes that are necessary for SAS programs and applications to run correctly in the target SAS environment, see the following:

Special Considerations for Customers Upgrading to SAS 9.2, <http://support.sas.com/92administration>

SAS 9.3 Guide to Software Updates, <http://support.sas.com/93administration>.

- To learn which DBMS versions are supported by SAS/ACCESS under your target operating environment, see Technical Support's SAS/ACCESS Validation application, available at <http://support.sas.com/matrix>. Note that if you are deploying a 64-bit SAS version, you will need 64-bit DBMS client software. This includes 64-bit ODBC drivers and manager if you are using ODBC.

Conclusion

If you are running 32-bit SAS on Windows, and you want to migrate to 64-bit SAS on Windows x64, you can follow the general migration tasks in the *SAS Intelligence Platform: Migration Guide*. You might have one additional task, which is the migration of any libraries that were located outside the configuration directory.

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