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*Technical Paper*

Migrating a SAS Deployment to Microsoft  
Windows for x64

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## Abstract

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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 9.1.3 (on either 32-bit Windows or Windows for x64) to 64-bit SAS 9.2 (on Windows for x64).

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## Introduction

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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 in 64-bit mode. Some customers ran 32-bit SAS 9.1.3 in 32-bit mode on 64-bit Windows for x64. Other customers ran 32-bit SAS on 32-bit Windows.

In SAS 9.2, these customers can now choose to run 64-bit SAS on Windows for x64. The new SAS Migration Utility can migrate an existing SAS 9.1.3 deployment to SAS 9.2. 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 9.1.3:

- You are currently running in 32-bit mode on a Windows for x64 environment, and want to deploy SAS 9.2 in 64-bit mode on that same environment.
- You are currently running on a 32-bit Windows environment, and you want to upgrade to a new Windows for x64 environment, and deploy SAS 9.2 in 64-bit mode.

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## Why Upgrade to 64-Bit SAS?

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When you buy new hardware, it will probably be 64-bit. 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, 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 9.2, see "What's New in System Administration for the SAS 9.2 Intelligence Platform" in *SAS Intelligence Platform: System Administration Guide*, which is available at <http://support.sas.com/92administration>. See also the topics in "What's New in SAS 9.2," which is available at <http://support.sas.com/documentation/whatsnew/index.html>.

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## Standard Upgrade and Migration Tasks

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Almost everything you need to know about upgrading, migrating, and promoting is available in the book *SAS Intelligence Platform: 9.1.3 to 9.2 Migration Guide*. The book contains instructions for pre- and post-migration tasks, and refers you to additional documentation where appropriate. Use the information in the *9.1.3 to 9.2 Migration Guide* to plan your upgrade.

Following the instructions in the *9.1.3 to 9.2 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 9.2 deployment.

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## Special Considerations for SAS Libraries

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In a migration from 32-bit to 64-bit SAS for Windows, the automated migration tools convert the metadata repository files to 64-bit. However, the automated tools do not convert the content of SAS libraries in the *Levn* configuration location to 64-bit, even though the libraries are migrated. If you have content in a SAS library, you must decide whether you will access it in SAS 9.2 with CEDA (cross-environment data access), or instead migrate the library members to 64-bit format with PROC MIGRATE.

To migrate the content of SAS libraries, 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 will output 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.)
- avoids CEDA constraints. For example, CEDA does not read SAS catalogs (which can contain user-defined formats), indexes, integrity constraints, or audit trails. For a list of CEDA constraints, see <http://support.sas.com/documentation/cdl/en/lrcon/617222/HTML/default/a002143983.htm#a002118680>.

When you use PROC MIGRATE, some experience with SAS programming language (PROCs, DATA steps, LIBNAME statements) is helpful. The formal documentation is provided in the *Base SAS Procedures Guide*, which is available at <http://support.sas.com/documentation/cdl/en/proc/61895/HTML/default/a002592163.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>.

As noted above, CEDA does not read catalogs, which can contain user-defined formats. If your environment contains user-defined formats in the SASEnvironment/Formats folder, you might receive errors when you try to rebuild cubes or validate the BI Dashboard. These format catalogs and other catalogs must be migrated to 64-bit SAS with PROC MIGRATE or another conversion method. 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 9.1.3 environment, which you specify with the SLIBREF= option. 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 will require conversion to 64-bit before they can be updated in 64-bit SAS on Windows for x64. SPD tables are not supported by PROC MIGRATE. You can use PROC CPORT and CIMPORT, or PROC UPLOAD or DOWNLOAD.

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## Differences After Migration to Windows for x64

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- 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 is a file created under 32-bit SAS. This includes both 32-bit Windows and 32-bit mode on Windows for x64.

WINDOWS\_64 is a file created under 64-bit SAS. This includes both Windows for 64-bit Itanium-based systems and 64-bit mode on Windows for x64.

- For changes that are necessary for SAS 9.1.3 programs and applications to run correctly in SAS 9.2, see *Special Considerations for Customers Upgrading to SAS 9.2*, which is available at <http://support.sas.com/92administration>.

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## Conclusion

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If you are running 32-bit SAS 9.1.3 on Windows, and you want to migrate to 64-bit SAS 9.2 on Windows for x64, you can follow the general migration tasks that in the *SAS Intelligence Platform: 9.1.3 to 9.2 Migration Guide*. You have one additional post-migration task, which is the migration of libraries with PROC MIGRATE or other SAS utility procedures.

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