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Getting from SAS® 9.1.3 to SAS® 9.2: Migration Tools or Promotion Tools

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ABSTRACT

If you are running a metadata server in your SAS® 9.1.3 environment, you must upgrade your metadata when you move to SAS® 9.2. There are two possible approaches to take. The first approach is a migration, which will essentially copy your SAS 9.1.3 environment over to SAS 9.2 as part of your SAS 9.2 installation process. The second approach is to make a fresh start by installing SAS 9.2 first, then promoting specific content from SAS 9.1.3 afterwards. This paper will describe the tools, processes, and considerations for each approach. The goal is to help you make an educated assessment to determine which approach will work best for you.

INTRODUCTION

"Upgrade" and "migration" are both understood to refer to the process of creating a more current software deployment based on an existing deployment. This is no different for SAS and the process to move from SAS 9.1.3 to SAS 9.2. Upgrading (or migration) to SAS 9.2 is:

> *The process of populating a new deployment of SAS software with content, data, or metadata (or a combination of these) from an existing deployment. Migration might include steps to upgrade to a new software release, convert data or metadata, or make changes to ensure compatibility.*

There are two main methods for upgrading to SAS 9.2. The first is to create a "complete" SAS 9.2 deployment, which contains the content from your 9.1.3 deployment, by using SAS migration tools. The second approach involves creating a new SAS deployment with SAS 9.2 software "out of the box" (OOTB), and then recreating user content by using SAS promotion tools and rebuilding content from scratch. These approaches can also be used in tandem, if you use migration tools first, followed by promotion.

Both of these approaches require that you are currently running the most current release of SAS®9: SAS 9.1.3 Service Pack 4. If you are using an earlier version of SAS®9, you must upgrade to the current release before using the tools to upgrade existing content. You should also have the most current hot fixes applied.

How do you determine which would be the best approach? There are multiple factors to consider before you choose. By spending some time upfront to assess and plan for your upgrade, you can determine the best approach for your environment. The four main factors, which we'll call *SNAP*, are:

- **S**tructure of SAS 9.1.3 environment
- **N**ature of SAS 9.1.3 content
- **A**ims for SAS 9.2
- **P**eriod of time for upgrading

Although SAS provides tools to help with the upgrade, using the tools are not the only actions required. You will need to perform some manual steps to prepare for and to complete your upgrade. With appropriate planning upfront, those activities can be identified and included in the overall upgrade process. However, we will not be discussing the complete upgrade process in detail in this paper. Further information is planned to be available from the SAS Customer Support site in the *SAS® 9.2 Intelligence Platform: SAS 9.1.3 to SAS 9.2 Migration Guide*, when SAS 9.2 Phase 2 is released.
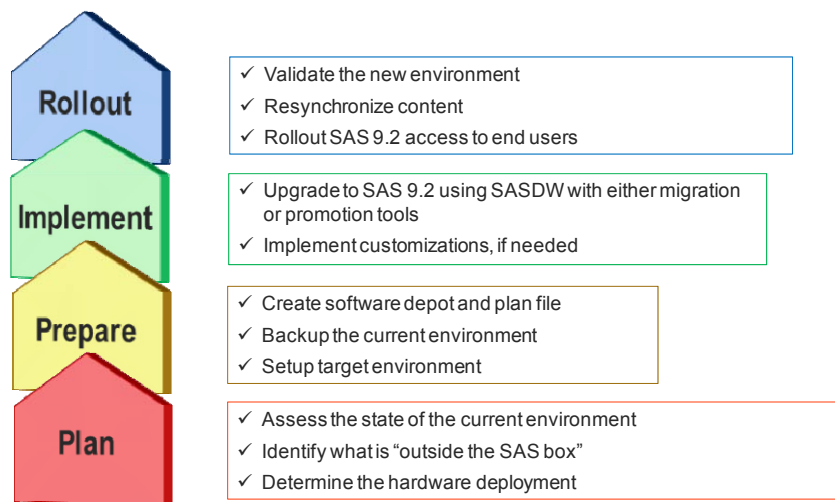
THE UPGRADE PROCESS

Upgrading software requires careful planning, with consideration of options and timing. Upgrading from SAS 9.1.3 to SAS 9.2 is no different. The goal is to complete the upgrade as quickly and easily as possible and to retain (or improve) the performance that was experienced in SAS 9.1.3.

Four general phases are typically defined for enterprise software upgrades:

1. plan/design
2. prepare
3. implement
4. rollout

Planning, or design in most projects, is a critical first step. Before you start the upgrade, you must decide on the goals for your SAS 9.2 deployment, profile your SAS 9.1.3 deployment, and choose the best approach for the upgrade. Preparation for the upgrade includes ordering and receiving the SAS 9.2 software and setting up the target hardware. It could also involve some administrative work on the SAS 9.1.3 deployment to facilitate easier migration of the content. Implementation includes execution of the upgrade itself. The last stage, rollout, is likely to take a significant amount of time, as this includes validation of the SAS 9.2 environment.

The upgrade process requires a good level of understanding of the SAS®9 deployment in addition to the administration and operational details. The upgrade cannot be handled by a novice user. If your organization does not have the expertise, or if you have involved SAS Services to help with the installation or to maintain the environment, engage SAS Services to perform the upgrade. SAS Services offers both an assessment service and an implementation service to help you through the upgrade process.

Figure 1. SAS Software Upgrade Process

This paper concentrates on the planning phase and determining your approach to upgrade to SAS 9.2.

MIGRATION TOOLS

Migration tools support automated upgrade of a SAS 9.1.3 system to SAS 9.2, providing a way for our customers to preserve their current investment in SAS while upgrading to the latest version. There are two classes of migration. The first class is environment migration, which includes upgrading server-based content, including metadata. The second class is migration of client software, and addresses how custom preferences and other application settings are made available to the newer versions of the client software. For the environment migration, there are three key characteristics:

- "All at once" – The migration tools migrate software configurations and metadata content and deploy software at one time. Therefore, customers should not attempt to migrate until all installed SAS 9.1.3 products are available to be deployed with SAS 9.2.

- "Like for like" – The migration tools deploy the SAS 9.2 environment in the same manner as the SAS 9.1.3 environment. This means that the software is deployed in the same configuration and assumes that the hardware and operating system configurations are essentially the same. There is some leeway with Windows environments, because the migration tools do support some changes in the Windows operating system version. In addition, Web application server settings are not migrated, so you are able to configure a different Web application server for SAS 9.2.

- "Do no harm" – The migration process does not modify the SAS 9.1.3 environment. The SAS 9.1.3 configuration files and metadata remain intact, and the new SAS 9.2 files are written to a different file system directory.

The migration tools consist of the SAS® Migration Utility and the SAS® Deployment Wizard. The SAS Migration Utility is a command line executable that runs on each physical server in your SAS 9.1.3 environment. It creates a migration package that includes two key outputs:

1. Migration Analysis Report – This report identifies software and content installed on each physical server and indicates how migration will be supported (or not). For each software product the SAS Migration Utility finds, it produces feedback about whether the product is supported by the migration tools, and if there are additional considerations for completing the migration of content or configuration related to the product. The SAS Migration utility can be run in analyze mode to just generate this analysis report for planning.

2. Migration content – The configuration information, metadata, and content that will be used to configure the SAS 9.2 system and populate content. Information for each deployment tier (for example, metadata, Web, server) must be stored in the same file system directory, so storing these on a shared drive would be ideal.

The SAS Deployment Wizard is the same utility that is used to install and deploy SAS 9.2 OOTB. It has support for conducting an upgrade using a migration package built into the interface. If you indicate that you want to deploy SAS using a migration package, the SAS Deployment Wizard reads the migration package created by the SAS Migration Utility and configure products based on settings from the SAS 9.1.3 environment and converts the content as part of the software configuration process. Only content contained in the migration package will be upgraded in this fashion.

The SAS Migration Utility focuses primarily on content in the SAS 9 configuration directory and webDAV. In Windows, this is the **`..\SAS\<SASConfig>\Lev1`** directory (or any other `Lev` directory). The type of content includes:

- metadata repositories and their content (except for service deployment files)
- SASMain\SASEnvironment folder, including Data, SASCode, SASFormats, and SASMacro content
- Web application configuration files (in the .war files under **`..\Lev1\web\webapps`**)
- WebDAV content, using either Apache DAV or Xythos, is included as an option in the migration package.

There are several exceptions that you should be aware of:

- Service deployment files (found under the SAS® Foundation Services Manager in SAS® Management Console) are not included in the migration process. New service deployment files will be loaded when the Web applications are configured.

- Server configuration files and autoexec files are not migrated. New files will be created OOTB in SAS 9.2, and any customizations you had coded in SAS 9.1.3 must be manually added to your SAS 9.2 environment.

Any content that is stored outside the configuration directory (with the exception of webDAV content) will NOT be copied by the migration tools . These files must be handled separately, if they need to be moved. For example, these could include:

- stored process code files
- SAS® Data Integration Studio external code files
- physical data sources
- Web application server configuration files
- physical OLAP structures (must be rebuilt after upgrading)

To use the migration tools, your SAS 9.1.3 software must be updated to the most current release. This means that you should be running SAS 9.1.3 Service Pack 4 with current hot fixes applied. If your SAS 9.1.3 software is not at the supported level for the migration tools, you must update your 9.1.3 software before using the migration tools. The analysis report will highlight those products whose software is not at the minimum baseline level.

PROMOTION TOOLS

Promotion tools support the copying of selected content from a source system to an already configured target system. Promotion tools are also used for change management and to copy content between development, test, and production environments. In SAS 9.1.3 Service Pack 4, the BI Manager plug-in for SAS Management Console provides promotion capabilities. If your version of SAS does not support the BI Manager plug-in, you must update your software to a more current version to use the promotion tools. This same interface can be used to select content to copy between your SAS 9.1.3 deployment and a similar SAS 9.2 deployment. The BI Manager interface in SAS Management Console creates SAS package files, and these package files can be imported using SAS Management Console in SAS 9.2.

While the general process is the same – create a package of content and copy it from 9.1.3 to 9.2 – there are some major differences in the behavior of the SAS Migration Utility and BI Manager.

1. The SAS Migration Utility will include associated physical files only if they are stored in the SAS configuration directory or webDAV. The BI Manager plug-in gives you the option to include associated physical files into the package from any file directory it can access.

2. The SAS Migration Utility, in conjunction with the SAS Deployment Wizard, supports only the movement of content from and to the same hardware and operating system configurations (with leeway across Windows OS). The promotion tools framework is operating system agnostic – the source and target environments do not have to be same operating system or operating system family (for example, movement between Windows and UNIX is supported).

3. The SAS Migration Utility packages up all metadata in your SAS 9.1.3 environment. BI Manager supports only a subset of metadata content.

BI-related content	DI-related content	Other content
Reports	DI jobs	Mining results
Stored processes	Libraries	Metadata tree folders
Information maps	Deployed jobs	
Data explorations	Job flows	
	Tables	
	Generated transformations	
	Notes	
	Documents	
	External files	

Physical files associated with these metadata objects (such as .srx files, source and so on.) are included in the promotion packages.

PLANNING/DESIGN PHASE

The planning phase is an important foundation for success in any upgrade project. By understanding the situation, goals, and process, you can be prepared to deal with challenges and determine the best approach.   To help you understand and assess your upgrade options when moving to SAS 9.2, think of the acronym SNAP: understanding and documenting the **S**tructure of your SAS 9.1.3 environment, the **N**ature of your 9.1.3 environment, the **A**ims of your 9.2 environment, and the **P**eriod of time you have to perform the upgrade.

SNAP – STRUCTURE OF SAS 9.1.3 ENVIRONMENT

To assess the structure of the SAS 9.1.3 environment from a deployment perspective, the administrator needs to understand how many physical machines are used, what software is installed on which machines (including third-party software, such as the Web application server), the version of the software, what operating systems are used, and the machine names. If your installation was handled via SAS Services, then it's likely that there is already existing documentation of the current environment.

This information will be used to help determine the impact of deployment customizations on the upgrade process. The SAS migration and promotion tools can handle most deployments, but if you have significantly customized your deployment it might be better to use one set of tools versus the other.

In addition, **your SAS 9.1.3 environment must be current, that is, must be running SAS 9.1.3 Service Pack 4 updated with all current hot fixes**. If your SAS 9.1.3 environment is not at the baseline (such as running SAS 9.1.3 SP3 or an earlier release), you must update your environment before proceeding with the upgrade. If this is your situation, we highly recommend contacting your account team for advice on how to proceed.

Below is a sample diagram that can be used to document your SAS environment.
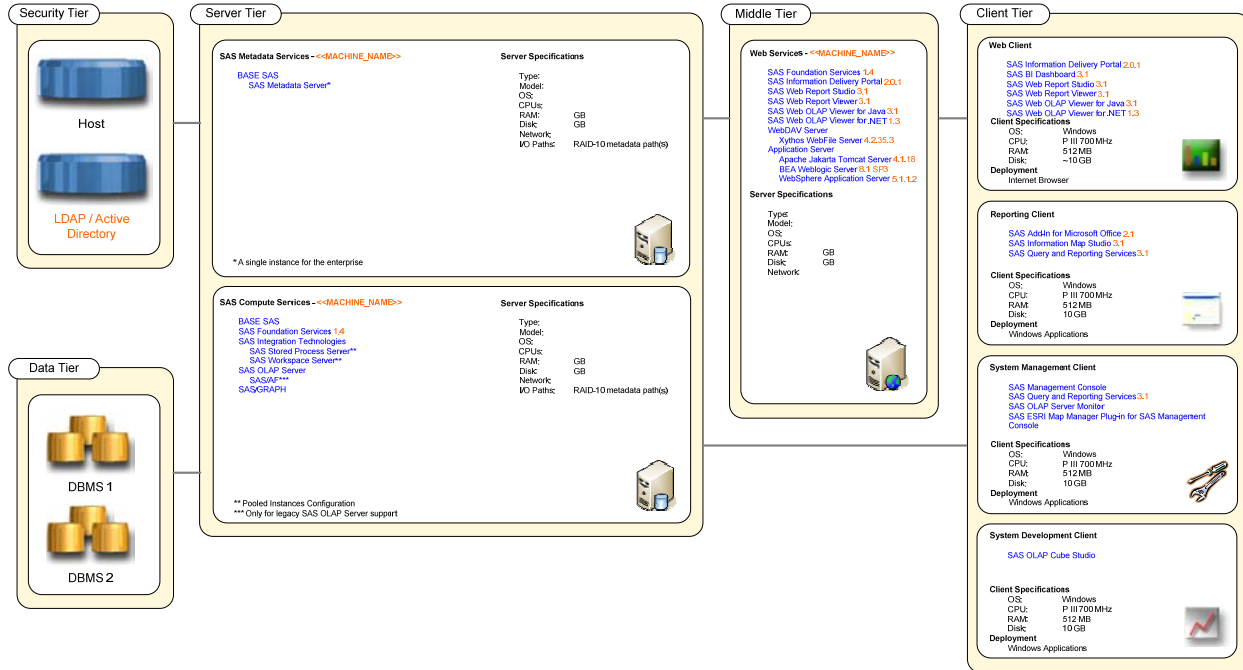
Figure 2. Sample SAS Enterprise BI Deployment Diagram

The more details you can capture the better! Below are sample tables that represent the type of content you can capture. Entries (*in italics*) are primarily for example only and might not be the same as your environment.

PHYSICAL SERVER MACHINES

Machine Name:	**<Host_Machine>**
Model:	
Platform:	*Windows 2003 Server*
# CPUs:	*4*
RAM:	*16 Gb*
Disk Storage:	*1 Tb*
IP Address:	*100.100.0.100*
SAS Site Number, O/S:	*00000000*
SAS Release Information:	*9.1.3 SP4*
Auth Provider:	*Active Directory*
Web Auth Provider:	

MACHINE PORTS

Service or Process	Port Numbers	Machine Name
Name of service	*Port number for service*	*Name of physical server*

KEY CONFIGURATION FILES

The following is a list of key configuration files on the logical machine and their role in the overall SAS environment.

File	Purpose
Complete filename including path	*Purpose of the configuration file and what it's associated with.*

HOST USER ACCOUNTS

The following host-based user accounts were created to support the SAS 9.1.3 environment.

User Account	User Name	Password	User Description
User ID for host account	*Name of User*	*optional*	*Description of the user account*

HOST GROUPS CREATED

The following host-based groups were created to support the SAS 9.1.3 environment. This group was granted "Log on as a batch job" right (on Windows).

Group Name	Purpose
Group name defined for host	*Purpose of the group*

FILE SYSTEM

Here is a list of key file system locations housing the SAS environment on this logical machine.

File system location	Purpose	Directory Security
Full path information	*Content stored in the directory*	*File system directory permissions*

SNAP – NATURE OF 9.1.3 CONTENT

Upgrading from SAS 9.1.3 also involves copying and upgrading your existing content stored in the metadata repositories. This content includes technical metadata, such as servers, users, access control templates, and business metadata, such as reports, stored processes, information maps, jobs, and tables. An inventory of the content helps to ensure that everything you need to have in the SAS 9.2 environment is there, is located in the correct place, and continues to behave in the way you expect.

TECHNICAL METADATA

Technical metadata is metadata about your SAS deployment that is managed by the SAS Administrator. In addition to the physical structure of your deployment, you should also document how SAS 9.1.3 has been configured in metadata. Any custom configurations might have to be reapplied after you upgrade to SAS 9.2, so you should document these as part of the inventory.

Specifically, the objects you should inventory include:

- application server contexts.
- logical servers.
- physical servers.

Server/Context	Members	Startup Command	Properties	Extended Attributes	Security	Additional Configuration
Name of the object	These are server definitions contained under the Server/Context	Startup command for physical servers	Any additional property settings	Any custom extended attributes	What permissions or ACTs have been applied	Any additional configuration settings

- users – this is optional if users are loaded via synchronization to Active Directory or LDAP.

User Name	Description	Properties
User name	Description	Other relevant properties

- groups/roles.

Group/Role	Members
Group/role name	List of user or group members

- access control templates.

Access Control Template	Permission Pattern
Name of ACT	Permission pattern in the template

- application data – banner images, configurations.

Filename	Location in Metadata
Name of file	Repository: Folder path

- channels.
- subscribers.

Channel/Subscriber	Properties	Subscribers/Members
Name of channel or subscriber	Any custom properties	List of subscribers to channel or members of a subscriber group

- service deployment settings.

Service Deployment	Property	Service Configuration
Name of service deployment	Specific property within the service deployment	Relevant configuration information

BUSINESS METADATA

Business metadata is metadata created through non-administrative use of SAS®9 software. Producing an inventory of business metadata provides you with the opportunity to see how SAS is being used throughout the organization. You can also identify content that should be archived or deleted. An inventory will also be invaluable during the validation of your SAS 9.2 environment.

Specifically, the objects you should inventory include:

- libraries

Library	libref	Engine	Pre-assigned?	Path	Server Context	Security	Additional Properties
Name of library	Library reference	Data engine	Yes or no	Physical path	Metadata assignment	Permissions in metadata	

- database schemas

Schema	Database	Path	Library	Security	Additional Properties
Name of schema	Associated database	Physical path	List of associated libraries	Permissions in metadata	

- jobs
- transformations

Object Name	Description	Path	Security	Additional Properties
Name of Job or transformation		Repository: metadata folder path	Permissions in metadata	

- job flows

Job Flow	Dependencies	Scheduling Server	Code location	Trigger
Name of job flow	List of job dependencies	Name of scheduling server	Location for deployed jobs in flow	How is the job flow triggered?

- OLAP cubes

OLAP Cube	Schema	Server	Security	Physical directory	Dimensions/Hierarchies
Name of cube	Name of OLAP Schema	Name of OLAP Server	Permissions in metadata	Storage location for cube structure	Structure of the cube

- reports
- information maps

Object name	Description	Path	Security
Name of report, information map or data exploration		Repository: metadata folder path	Permissions in metadata

- stored processes

Stored Process	Description	Path	Server	Source File	Parameterized?	Security
Name of stored process		*Repository: metadata folder path*	*Server assignment*	*Physical location of source code*	*List of parameters*	*Permissions in metadata*

- portal pages

Portal Page	Description	Path	Users/groups	Security
Name of page		*Repository: metadata folder path*	*List users and groups with access*	*Permissions in metadata*

CUSTOM APPLICATIONS

SAS provides a number of mechanisms for extending the functionality in the platform. These could manifest themselves as customer plug-ins for SAS Management Console or SAS Data Integration Studio, or as custom Web applications. You should document these as well, making note of the SAS technologies (such as application programming interfaces) used in each one. There are a number changes in SAS 9.2 that could require that these be modified to work in the new environment. If you have an extensive number of these custom applications, you should discuss your plans for upgrading to SAS 9.2 with your account team.

SNAP – AIMS OF 9.2 ENVIRONMENT

As part of the upgrade planning, you must determine what your objectives are for your target SAS 9.2 environment. Objectives include how to deploy the SAS 9.2 software and what content should be contained in the SAS 9.2 environment.

The physical deployment of your SAS 9.2 environment will have some bearing on which approach you choose to take for the upgrade. The most straightforward approach is to deploy SAS 9.2 on different hardware than SAS 9.1.3 is using, but to mimic the same topology configuration. For example, if you have a three-machine deployment (metadata server, middle-tier, and SAS application server) for SAS 9.1.3, you would have three machines for SAS 9.2 also, with the same software distribution. You might decide that you need to take a different approach, such as installing on the same hardware or changing the software distribution. These deployments are supported, but they require additional steps to complete the upgrade beyond just the migration or promotion tools.

For SAS 9.1.3 installation, you were required to have a software plan file that described the way SAS should be deployed. Plan files are also required for SAS 9.2 deployments, and you will not be able to reuse the SAS 9.1.3 plan file. However, there are several standard deployment plans included as part of your SAS Software Depot, and the need to create a custom plan file might not be necessary. If you are not familiar with the use of a deployment plan for your SAS deployment, talk to your account team for more information.
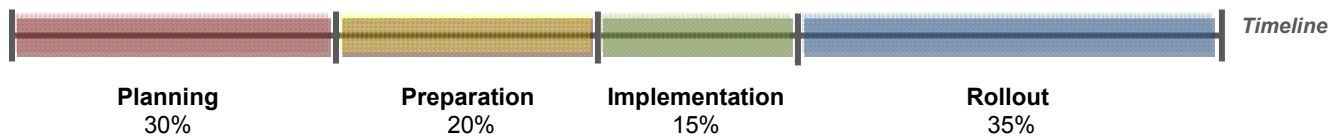
SAS 9.2 might support or require different versions of the operating system and Web application server than what you are using for SAS 9.1.3. For example, Tomcat is no longer supported as a Web application server for SAS 9.2 and has been replaced by Jboss 4.2. If you are planning to upgrade on the same hardware as your SAS 9.1.3 environment, you will need to install a second version of the Web application server or Java runtime environments. You should review the minimum system requirements for SAS 9.2 to understand the impact.

One of the key differences between the migration tools and the promotion tools is that migration tools convert all of your SAS 9.1.3 metadata during deployment, whereas the promotion tools allow you to pick and choose from supported content after the deployment. You should take some to determine how much of the SAS 9.1.3 content you would like to retain in your SAS 9.2 environment. The inventory of SAS 9.1.3 content (Nature of your SAS 9.1.3 environment) should help you make this determination.

SNAP – PERIOD OF TIME FOR UPGRADE

The upgrade process consists of multiple phases that include planning, preparation, implementation, and rollout. The amount of time to allocate to this process is dependent on the customizations and content in your SAS 9.1.3

environment. For deployments that have few customizations, you can expect the distribution of time to be something like this:

| Planning | Preparation | Implementation | Rollout |
| 30% | 20% | 15% | 35% |

Timeline

Figure 3. Distribution of Time for Upgrading to SAS 9.2

As the diagram illustrates, the execution of the upgrade takes only a small percentage of the time. The migration and promotion tools make the actual upgrade fairly straightforward. The majority of the time is spent adopting SAS 9.1.3 customizations to the SAS 9.2 deployment and copying physical content that is not migrated as part of the upgrade. For simpler deployments, it might be possible to complete the implementation phase during a weekend outage.

For more complex deployments, the preparation and execution times can take a larger percentage of time, particularly if your software is not current. If you have made extensive use of portal or OLAP technologies. there will likely be additional manual steps outside of the tools. OLAP cubes, for example, will need to be rebuilt, regardless of the approach. Complex deployments can require a week or more to validate the environment and customize the deployment to make the most of new SAS 9.2 capabilities before starting the rollout to the user community

CHOOSING BETWEEN MIGRATION TOOLS AND PROMOTION TOOLS

Once you have completed the "SNAP" planning phase, you can determine the best approach for conducting your upgrade. Both methods – using migration tools or promotion tools – have advantages and disadvantages. Choosing either approach will help you to move your SAS deployment from 9.1.3 to 9.2. The most straightforward scenario for upgrading is where you are migrating to different physical servers, distributing the software across the servers in the same manner as SAS 9.1.3, and moving all metadata content. For this scenario, using the migration tools is the most efficient method for upgrading. However, if any of these factors change, it could impact your decision on the best approach to take.

CONSIDERATIONS FOR USING MIGRATION TOOLS

Using the migration tools, the SAS Migration Utility in conjunction with the SAS Deployment Wizard, can provide the most efficient method for upgrading to SAS 9.2. The migration tools migrate the entire metadata environment at one time and provide reports to help streamline the upgrade and validation process. If you have made metadata-based customizations in SAS 9.1.3, these settings would also be preserved as part of the migration.

On the other hand, there are factors that might deter you from this approach. As the migration tools do migrate your entire metadata repository, you will get *everything* that is in the SAS 9.1.3 environment There might be a great deal of content in your 9.1.3 environment that you really don't want to carry over to your 9.2 environment. Over time, it is likely that you have built up content that is no longer used or just exists as part of a development exercise. You might want to start your SAS 9.2 environment with a clean slate of content that does not include the obsolete material from the 9.1.3 software.

Another consideration is that the migration tools move only physical content that is stored in your SAS configuration directory (`..\SAS\<SASConfig>\Lev1`). If you have stored much of your physical content outside of this directory, you will need to manually move the content to the SAS 9.2 environment. This might also require you to update metadata references to point to the new location. This could be a cumbersome and error-prone process to handle manually. The promotion tools can better deal with this situation for supported metadata content.

There are number of SAS 9.2 architecture enhancements that you might want to use before making the environment available to your users. In several cases, you will need to make manual updates to your SAS 9.2 configuration to take advantage of these, as using the migration tools will provide you with a similar level of SAS 9.1.3 functionality. It might be easier to install SAS 9.2 OOTB to implement these changes from the start, and then use promotion tools to copy selected content.

CONSIDERATIONS FOR USING PROMOTION TOOLS

Promotion tools are used in conjunction with installing SAS 9.2 OOTB. This provides you with the most flexibility in deploying SAS 9.2 in your environment. Once SAS 9.2 has been deployed, you can copy selected SAS 9.1.3 content by exporting promotion packages with the BI Manager plug-in from SAS Management Console. You can then import those packages using SAS Management Console in SAS 9.2. You have ultimate control over what content is copied.

Promotion tools support the copying of metadata along with related physical files, regardless of the directory where they reside. As long as the physical files are accessible, they can be moved to SAS 9.2 as part of the promotion process. This works well if there is not a lot of content to move or if you would like to upgrade in a staged manner – testing and validating content in phases.

However, using the promotion tools to move content is a manual process, so if there is a lot of content, it could be fairly time-intensive to take this approach. In addition, some care must be taken to import metadata content in the correct order. Because there are dependencies in metadata, it is required that dependent objects are available when importing. For example, reports could depend on information maps, stored processes, images, and banner images. It is easier to have the dependent metadata available at the time of importing, instead of trying to reconnect the references afterwards.

Also, remember, the use of promotion is limited to the metadata content that is supported by the BI Manager plug-in SAS 9.1.3 (see list above), even though the promotion framework in SAS 9.2 supports additional metadata content. Any required metadata that cannot be imported must be re-created manually. If you are using the SAS Portal or SAS® OLAP Server, for example, the metadata content for these products is not supported for upgrade via the promotion tools.

CONSIDERATIONS FOR CHOOSING

We recommend using the migration tools if you want to move to a different set of physical servers, deploy software across the machines in the same manner as SAS 9.1.3, and migrate all metadata content. But if any of these factors change, you might choose a different approach.

It is possible to upgrade to SAS 9.2 on the same machines that are running SAS 9.1.3. SAS 9.2 will be installed in a different set of directories than your 9.1.3 environment. Keep in mind that minimum version support for third-party software for SAS 9.2 might be different from what is supported for SAS 9.1.3. You will need to install a second version of some third-party applications in order to support SAS 9.1.3 and SAS 9.2.

If your SAS 9.1.3 is running as production software, it is critical to minimize the downtime and load on the SAS 9.1.3 environment. Using the migration tools to upgrade on the same hardware will require you to temporarily stop your SAS 9.1.3 servers, as the migration will use the same port numbers. Once the migration is finished, you can stop the SAS 9.2 servers and bring the 9.1.3 environment back online. When you are sharing the same hardware, you will be able to run only SAS 9.1.3 or SAS 9.2 because both servers are referencing the same port numbers. You should modify the port numbers used in your SAS 9.2 deployment before restarting it .(Further information is planned to be available from the SAS Customer Support site in the SAS® 9.2 Intelligence Platform: SAS 9.1.3 to SAS 9.2 Migration Guide, when SAS 9.2 Phase 2 is released.)

If it is not possible to bring down the SAS 9.1.3 environment for a short period, then it would be better to install SAS 9.2 OOTB and change the port numbers during the configuration process.

If the SAS 9.1.3 environment you are upgrading is not running as production and you are upgrading on the same hardware, then you might have the luxury of more time to complete the upgrade. If you are planning to run SAS 9.1.3 and 9.2 side-by-side, the best approach might be to install SAS 9.2 OOTB, because you can modify the port numbers upfront to reduce the conflicts. You might also be considering changing your software deployment topology as part of your upgrade to SAS 9.2. This means that you might want to change how SAS server software is distributed across your physical servers. For example, you might consider deploying your SAS 9.2 environment across two physical servers instead of just one server where SAS 9.1.3 is deployed. Or, you might consider configuring multiple Web servers to balance the load for your Web users, instead of using a single Web server as in SAS 9.1.3. In this case, it can be easiest to install SAS 9.2 OOTB, because it provides the most flexibility in how to deploy your software. Then, using promotion tools would be the way to copy content over from SAS 9.1.3.

Finally, you might be considering copying only a subset of your metadata content from SAS 9.1.3. If you have obsolete or unneeded content, it can be best to start with a clean metadata server. In this case, installing SAS 9.2 OOTB and using the promotion tools would be the best approach. However, if you are using SAS OLAP, and especially if you have set up member-level security, you should use the migration tools instead. The promotion tools do not support promotion of OLAP metadata. Although you could rebuild the cubes in SAS 9.2 using information from 9.1.3, you would still have to reapply any member-level security settings. Likewise, if you are using SAS Portal and have created a number of portal pages for your users, it would also be best to use the migration tools to upgrade, as the promotion tools do not support moving portal pages.

If you choose to use migration tools to copy your metadata content, you can still "clean" your metadata content after the fact. After the migration, you can delete unwanted metadata content or start over by deleting all user-created content. You can then use the promotion tools to bring selected content over from SAS 9.1.3.

CONCLUSION

There is really no right or wrong approach for upgrading to SAS 9.2. Both paths that have been discussed here can help you to succeed in your upgrade. The goal of the planning phase is to choose the most efficient path that fits your environment and timelines. In many cases, you can actually choose to take advantage of both sets of tools. Performing an upgrade first using the migration tools enables you to stage your SAS 9.2 environment with a baseline set of metadata content – including technical metadata, such as servers, users, groups, ACTs – in addition to content that might not be supported by the promotion tools, such as OLAP or Portal content. You would also be able to leverage the migration reports that are provided only with the migration tools. Then, you can use the promotion tools to manage the user content, such as libraries, reports, and stored processes.

Upgrading from SAS 9.1.3 to SAS 9.2 is not a trivial exercise, but with the proper planning and help from SAS, you can select the approach that best fits your needs . In some cases, you might determine that the upgrade process requires help from SAS Services. In others, you might conclude that you have enough information and internal SAS knowledge to perform the upgrade on your own. Choosing the appropriate SAS tools, whether migration or promotion, is part of that assessment. If you need help in making that assessment, please contact your account team.

RECOMMENDED READING

SAS Institute Inc. 2009. *SAS® 9.2 Intelligence Platform: Installation and Configuration Guide*. Available at http://support.sas.com when Phase 2 of SAS 9.2 is available.

SAS Institute Inc. 2009. *SAS® 9.2 Intelligence Platform: 9.1.3 to 9.2 Migration Guide*. Available at http://support.sas.com when Phase 2 of SAS 9.2 is available.SAS Knowledge Base/Focus Areas: Migration. http://support.sas.com/rnd/migration.

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