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## **Using Virtualization Environments to Support Migration to SAS® 9.2**

Scenario: AIX 5.3 environment with WebSphere 6.1

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## Table of Contents

<b>Abstract.....</b>	<b>1</b>
<b>Introduction .....</b>	<b>1</b>
<b>Overview of migration environment .....</b>	<b>3</b>
<b>Assumptions .....</b>	<b>3</b>
<b>Overview of migration process .....</b>	<b>4</b>
<b>Overview of converting SAS® 9.2 instance to production .....</b>	<b>5</b>
<b>Migration process details.....</b>	<b>5</b>
Configure testkid .....	5
WebSphere 6.1 fixpack 17 (64-bit) .....	6
SAS® 9.2 Migration Utility .....	6
SAS® Deployment Wizard.....	7
SAS® Table Server .....	8
Validation .....	9
Backups.....	9
SAS® Metadata Server backup .....	9
SAS® Content Server repository backup.....	10
SAS® Shared Services database backup .....	10
<b>Enabling the SAS® 9.2 environment in production .....</b>	<b>10</b>
Preparing SAS® 9.2 before the outage.....	11
Starting SAS® 9.2.....	12
<b>Conclusion .....</b>	<b>13</b>
<b>Contact information .....</b>	<b>13</b>
<b>Appendix: Portal and directories information .....</b>	<b>14</b>
Organization of shared directory (/data).....	14
SAS® 9.2 Portal optional customization for WebSphere.....	14
<b>Configure WebSphere for profile creation by non-root user IDs .....</b>	<b>17</b>
1. Set up user ID and group .....	17
2. Delete existing SAS profiles (if present) .....	17
3. Remove any references to previous profiles .....	17
4. Ensure existence of profiles infrastructure .....	18
5. Modify group permissions and ownership.....	18
6. Turn on WebSphere Administrative Security.....	19
7. Validate security changes .....	19



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## Abstract

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Migration of the SAS® 9.1.3 platform environment to SAS® 9.2 requires careful and deliberate planning. The planning includes a migration process to introduce SAS 9.2 into the computing environment. Ideally, you should configure SAS 9.2 on physical servers that differ from your SAS 9.1.3 environment to ensure that your existing production environment remains stable and available. However, if additional hardware is not available, you can configure SAS 9.2 on the same machine(s) that are running SAS 9.1.3. But, it is also possible to utilize virtualization technologies to simulate the use of different hardware. This paper provides an example of how virtualization can be used to support migration to SAS 9.2 on the same hardware that is running SAS 9.1.3.

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## Introduction

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The SAS®9 platform environment provides a robust and integrated infrastructure to deliver business analytics across your organization. SAS®9 can meet every business process challenge, including data integration, analytics, reporting and targeted business solutions. The SAS environment could be comprised of a SAS server tier (metadata and SAS compute servers), a SAS midtier environment (Web applications) and/or a collection of customer SAS data libraries, support libraries and reports.

SAS 9.2 provides utilities to assist customers with migration processes – the SAS Migration Utility and the SAS Deployment Wizard. The SAS Migration Utility and SAS Deployment Wizard utilities cooperate and collaborate to analyze the existing SAS 9.1.3 enterprise business intelligence (BI) deployment; collect, validate and aggregate the customer SAS data and configuration; and redeploy SAS 9.1.3 content into the SAS 9.2 deployment.

An additional phase of a migration scenario is to deploy the current SAS 9.1.3 configuration, data and libraries into a SAS 9.2 testing environment that can be independently validated before deployment into a production system. Advantages of staging a testing environment include:

- Maximize availability of the SAS 9.1.3 production environment(s) throughout the migration process.
- Functional verification and operational qualification testing of the SAS 9.2 deployment(s) independent of the SAS 9.1.3 deployment.
- Predictable migration of the new SAS 9.2 testing deployment into SAS 9.2 production.

Ideally, we recommend that you migrate to SAS 9.2 on a different set of physical or logical servers rather than on the same servers running SAS 9.1.3. This allows complete separation of the SAS 9.1.3 production environment from the SAS 9.2 environment. However, additional hardware is not always available to support this recommendation. It is possible to migrate to SAS 9.2 on the same machine with an existing SAS 9.1.3 environment. It is also possible to utilize virtualization technologies to simulate the use of different hardware.

This paper walks you through an example of how to migrate a SAS 9.1.3 enterprise BI deployment to SAS 9.2. The SAS 9.2 virtual environment can then be fully tested in a nonproduction state, while fully protecting the availability and integrity of the SAS 9.1.3 production framework. Upon successful validation of the SAS 9.2 virtual environment, a series of steps can then be implemented to move the virtual environment into production. These steps and phases allow a high degree of availability of the current SAS 9.1.3 environment. Care should be taken that the same data sources will be accessible to both environments. Strict processes should be in place to govern concurrent data updates and data access.

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## Overview of migration environment

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In this situation, the migration environment consists of a standalone AIX server, hostname **testdad**, with the following components:

- IBM 9133-55A, PowerPC\_POWER5, 64-bit, 8 GB Memory, AIX 5.3.
- IBM WebSphere 6.1 fixpack 17 (32-bit).
- SAS 9.1.3 Service Pack 4 with SAS Enterprise BI Server, and SAS Enterprise Data Integration Server solutions.
- Local directory defined as `/data` with 100 gigabytes of available disk space.

In addition, **testdad** will be configured with a logical partition virtual machine, commonly referred to as an LPAR, and will be populated by cloning the operating system from **testdad** to this virtual server that will be referenced as **testkid**. Cloning the operating system ensures that the SAS 9.2 and SAS 9.1.3 environments will use the same version of the operating system.

Utilizing a virtual environment allows migration and upgrade without requiring additional hardware resources. Once the SAS 9.2 testing is complete, the virtual machine can be disabled. Additionally, virtualization allows the SAS 9.1.3 and SAS 9.2 environments to share the same TCP/IP port numbers, simplifying SAS client application integration testing.

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## Assumptions

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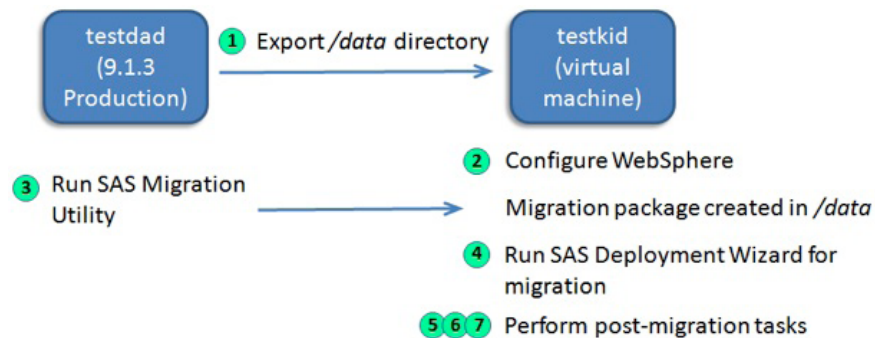
For the purposes of this paper, we assume that you have already created a SAS software depot for SAS 9.2 on **testdad** in the `/data` directory, with the necessary plan files. We also recommend running the SAS Migration Utility in “analyze” mode against your 9.1.3 environment to verify that the environment is ready to migrate to SAS 9.2. For details on how to do this, please refer to the SAS® *Intelligence Platform: 9.1.3 to 9.2 Migration Guide*.

To simplify and streamline the migration process for this scenario, an NFS-mounted directory is hosted on **testdad**. The directory will be referenced as `/data`. This directory will need sufficient space to contain the following entities during the installation and migration steps:

- SAS 9.2 software depot.
- SAS 9.2 Installation directory (`SASHOME`).
- SAS 9.2 Configuration directory.
- SAS 9.1.3 migration output created by the SAS Migration Utility.
- WebSphere 6.1 fixpack 17 (64-bit) installation.

## Overview of migration process

The following section provides a high-level overview of the migration process used in this scenario.



1. Export the `/data` directory from **testdad** server to the virtual machine **testkid**. With the usage of a shared file system, all the installation and configuration of software on the virtual machine will be available on both servers.
2. On **testkid**, install and configure the 64-bit Web application server required by SAS 9.2. For this instance, the migration will move to the 64-bit version of WebSphere 6.1 with fixpack 17. Also, the environment will be modified to allow non-root creation of profiles for WebSphere (refer to *Appendix*). This is necessary to auto-deploy SAS 9.2 Web applications with a non-root user ID.
3. Run the SAS Migration Utility on **testdad** to package the SAS 9.1.3 content for migration. The SAS Migration Utility output will be created on `/data` for import processes on **testkid**.
4. From **testkid**, access the SAS software depot on `/data` to execute the SAS Deployment Wizard to initiate the installation, configuration and migration process. Following the Custom path within the SAS Deployment Wizard is required to override the default location for the SAS Table Server content directory.
5. At completion of the configuration and migration steps, modify the default location in SAS metadata for the SAS Table Server sample database (MYTRAN).
6. Validate the SAS 9.2 migrated environment on **testkid** using the steps outlined in the Web page (instructions.html) produced by the SAS Deployment Wizard.
7. On **testkid**, perform a backup of the SAS 9.2 Metadata Server, back up the SAS Content Server repository and back up the SAS Shared Services database located in the custom location of the SAS Table Server content directory.



## Overview of converting SAS® 9.2 instance to production

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When you are ready to make the SAS 9.2 environment the production environment, you must replace the SAS 9.1.3 environment with the virtual SAS 9.2 environment. For this scenario, we took the following steps:

1. Shut down the **testkid** server.
2. Remove the IP address for the **testkid** virtual server.
3. Set up a hostname alias for **testkid** to point to **testdad**. This is a canonical name (CNAME) record. Once this is functioning, a ping command for **testkid** and **testdad** should reference the same IP address.
4. From **testdad**, modify the ObjectSpawner.sh script to reference the hostname alias and restore the SAS Shared Services database into the SAS 9.2 Configuration directory.
5. Shut down the SAS 9.1.3 BI servers and the 32-bit version of WebSphere 6.1.
6. Start the SAS 9.2 Metadata Server and modify two table server database locations in the SAS metadata.
7. Start the remainder of the SAS BI servers, SAS Remote Services and the 64-bit version of WebSphere 6.1 fixpack 17.
8. SAS 9.2 is in production.

## Migration process details

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### Configure testkid

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There needs to be sufficient disk space in the `/tmp` directory on **testkid** to accommodate temporary files created by the SAS Migration Utility migration, SAS Deployment Wizard installation and WebSphere installation and maintenance processes. For this scenario, approximately 3 GB of disk space was available. Finally, the custom installation location for the SAS Shared Services database must be a local directory on **testkid**.

## WebSphere 6.1 fixpack 17 (64-bit)

In this case study, the SAS 9.1.3 deployment for WebSphere utilizes 6.1 with fixpack 17 (32-bit) and will be migrated to WebSphere 6.1 with fixpack 17 (64-bit). Refer to *Third Party Software for SAS® 9.2 Foundation* for the latest information on support requirements. This version of WebSphere will be installed on the network directory (/data) using the virtual machine **testkid**; to allow the usage of automatic deployment in the SAS Deployment Wizard, the following requirements will be completed:

- Set up one WebSphere cell to host the deployment manager and application server, which will be created by the SAS Deployment Wizard during its configuration process.
- After WebSphere is installed, additional configuration steps need to be completed to allow non-root creation of profiles (refer to Appendix). Additional user group IDs and user IDs, along with permission and ownership changes throughout the WebSphere directory, should be performed on **testdad** and **testkid**.

## SAS® 9.2 Migration Utility

The SAS 9.2 software depot includes the SAS Migration Utility (smu.sh). For this scenario, a script is created from the **testdad** server that will execute the utility, pass additional command line parameters and utilize a properties file. For example, a mig.sh script was created in a new directory /data/92/SMU with the following contents:

```
#!/bin/ksh

# example of a smu script called mig.sh

# this is created under /data/92/SMU

/data/92/SASDepot/utilities/smu/smu.sh -- -sasconfigdir
"/data/913/configdir/Lev1" -replace

-metadataahost "testdad.<domain_name>" -port "8561" -user
"<admin_id>" -password "<admin_password>" -outputdir "/
data/92/SMU_OUTPUT" -sasproductdir "/data/913/SAS"

-sasexedir "/data/913/SAS/SAS_9.1" -davtier -properties
/data/92/SMU/smu.properties
```

Execution of the smu.sh script will create the migration package and will create an analysis report document to highlight any potential migration issues. This output should be created on the network drive (/data). Having the output on /data provides access to it from **testkid**.

## SAS® Deployment Wizard

This migration package, created with the `smu.sh` script, will be imported during the installation phase using the SAS Deployment Wizard. In this scenario, we selected the options to follow the Custom path for configuration and selected the option to automatically configure and deploy the Web applications to WebSphere.

With SAS 9.2 and the addition of the SAS Table Server and the SAS Content Server, databases that are controlled by the SAS Table Server cannot exist in an NFS directory. By default, the SAS Table Server Content directory is configured in the SAS Configuration directory. This location **must** be installed on a local directory; therefore, using the Custom path in the SAS Deployment Wizard is needed to override this location. For this scenario, we override the default SAS Configuration directory location with a local directory called `/saslocal`.

After the creation of the `/saslocal` directory for usage with the SAS Shared Services database, the `setup.sh` script can be invoked to start the installation and configuration.

Refer to the dialog in Figure 1 for the SAS Table Server content relocation prompt.

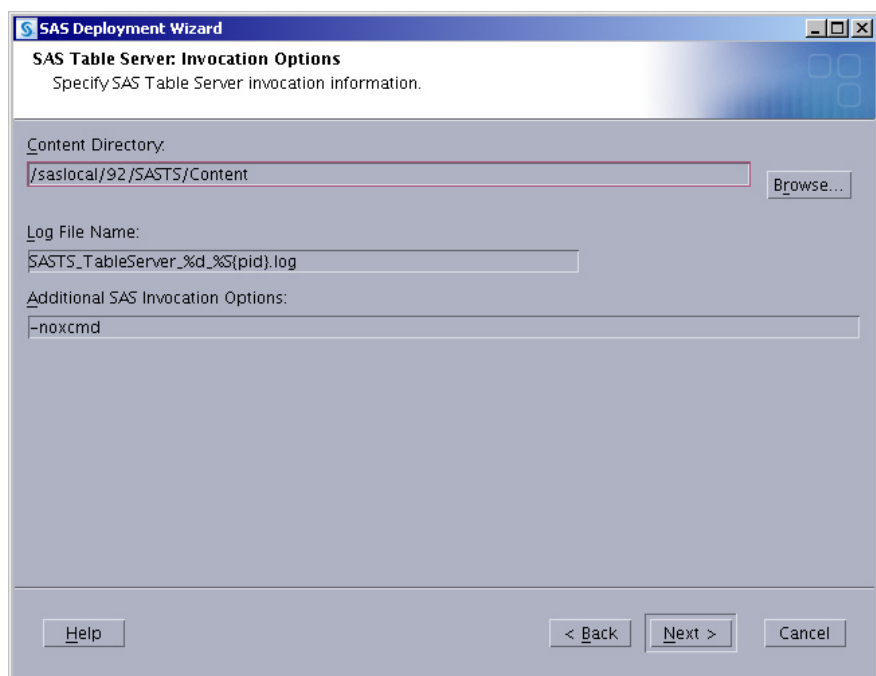


Figure 1: Custom location for the SAS Table Server content directory

## SAS® Table Server

After the configuration completes, additional manual steps are required for SAS Table Server. SAS Table Server uses a sample database (samples.tdb) that is located in the `<install-dir>/SAS/SASFoundation/9.2/vulcan` directory. Copy the database to the directory specified in the dialog in Figure 1.

Once the copy is complete, you have to reflect this change in the metadata. Log in to the SAS Management Console with the administrator user ID, and navigate to the Table Server Manager and down to the transactional database location for MYTRAN (see Figure 2). Change the path for the database file to be under the `/saslocal/92/SASTS/Content` directory.

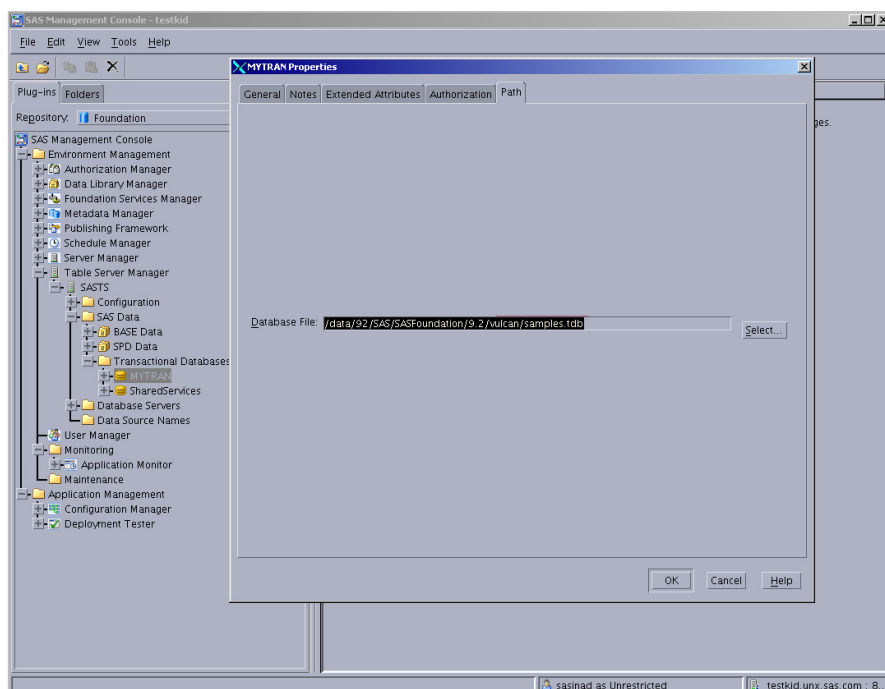


Figure 2: Relocating the Default directory for the MYTRAN sample database

Once the database is copied and the metadata location is modified to reflect the new location, the SAS Table Server must be stopped and restarted to reload the reference to the modified location. Now, the Validate server action should complete successfully (see Figure 3).

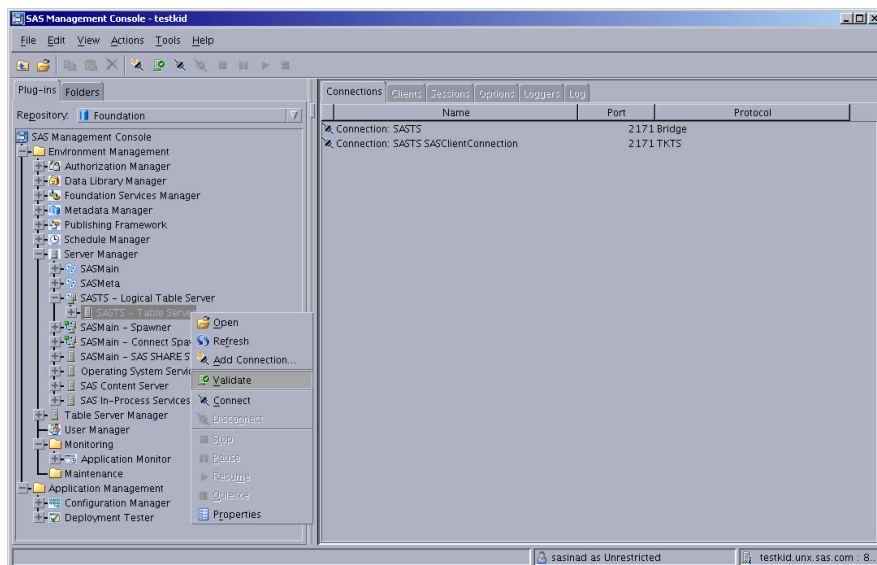


Figure 3: Validation of SAS Table Server and sample database

## Validation

Follow the directions in the instructions.html file to validate that the SAS 9.2 software is installed and configured correctly.

## Backups

As good practice, create backups of the SAS 9.2 environment once you complete the validation steps above. This includes backing up the metadata repository, the SAS Content Server and the SAS Shared Services database.

## SAS® Metadata Server backup

A utility provided in the SAS 9.2 installation process can be used to create this backup by running the command:

```
/data/92/configdir/Lev1/SASMeta/MetadataServer/
MetadataServer.sh
-backup
```

The utility pauses a running metadata server, creates a full backup of the metadata in the /data/92/configdir/Lev1/SASMeta/MetadataServer/SASBackup directory and restarts the server.

## SAS® Content Server repository backup

SAS provides a WebDAVDump utility that dumps the content in the SAS Content Server, saving directories, content and properties. It creates one XML file that describes the content and one file for each content resource found in the server.

For instructions on how to use the utility, see *SAS Note 34163*.

## SAS® Shared Services database backup

With the custom installation of the SAS Shared Services database being relocated in a directory that is not part of the SAS Configuration directory, a backup of the database is recommended so that the database can be relocated into the Configuration directory on the target machine. SAS provides a backup and restore utility called SASTBACK that is located in the directory

```
<install-dir>/SAS/SASFoundation/9.2/vulcan/bin/sastback.
```

The syntax for the backup file creation is:

```
sastback -b /saslocal/92/SASTS/Content/SharedServices.fdb
-mo read_only
-verbose
/data/92/configdir/Lev1/SASTS/Content/SharedServices.fbk
```

**Note:** the SharedServices.fdb file on the local directory on **testkid** is being created in a backup file (SharedServices.fbk) on the NFS-mounted /data location so that it can be restored from the **testdad** machine. Therefore, when **testkid** is disabled, the backup file is available for the restoration process on **testdad**.

## Enabling the SAS® 9.2 environment in production

When you are ready to make SAS 9.2 the production environment, the virtual environment that was created for the migration and testing of the SAS 9.2 environment can be disabled. First, disable the **testkid** server, so that it will not be found in the network. The installation and configuration of SAS 9.2 and WebSphere 6.1 64-bit software exists on the /data directory that exists on **testdad**, so no additional steps are necessary to allow access to these files from the **testkid** virtual server.

Next, remove any changes to domain name settings that were performed to set up an IP address for **testkid** from the network. And finally, create a hostname alias for **testkid** that will redirect any reference of the **testkid** hostname to the server **testdad**. For example, if a reference to *http://testkid.unx.sas.com:9080/SASPortal* is made for login for the SAS Portal application, it will follow the alias and actually look for the running SAS Portal application on the server **testdad**. Once **testdad** and **testkid** servers can be reached with a ping command, and both commands come back with the same IP address, the alias is in place and the shutdown of the SAS 9.1.3 environment can begin.

## Preparing SAS® 9.2 before the outage

To minimize the SAS 9.1.3 outage time, there are a few minor updates that can be performed before the shutdown of the SAS 9.1.3 environment. To ensure the usage of the new hostname alias with the SAS Object Spawner, one minor update to the ObjectSpawner.sh script is required. Under the SAS 9.2 Configuration directory, edit the file `/data/92/configdir/Lev1/ObjectSpawner/ObjectSpawner.sh` (in this scenario) and modify the `CMD_OPTIONS` line to look like this:

```
CMD_OPTIONS=" -dnsMatch testkid.unx.sas.com -dnsName
testkid.unx.sas.com"
```

Before starting any of the SAS 9.2 servers, a restoration of the backup copy of the SAS Shared Services.fdb file is necessary. The same utility that created the backup on **testkid** will be used to restore the file:

```
sastback -r /data/92/configdir/Lev1/SASTS/Content/
SharedServices.fbk
-verbose
/data/92/configdir/Lev1/SASTS/Content/SharedServices.
fdb
```

This creates the SAS Shared Services database in the SAS Configuration directory, which now is a local disk when referenced from the **testdad** server. And before the SAS 9.2 servers are started, this directory location must be updated in the SAS metadata.

## Starting SAS® 9.2

Because SAS 9.1.3 and SAS 9.2 are using the same port numbers, the SAS 9.1.3 and the WebSphere 6.1 32-bit servers must be shut down before there is an attempt to start the SAS 9.2 environment.

Once the SAS 9.1.3 servers are down, the SAS 9.2 Metadata Server needs to be started to make the minor modification to the location for the SAS Table Server content directory and the sample database. From SAS Management Console, connect to the running SAS 9.2 Metadata Server and define the PATH for the SharedServices and MYTRAN databases back to the Configuration directory and SAS installation locations (see Figure 2 and Figure 4).

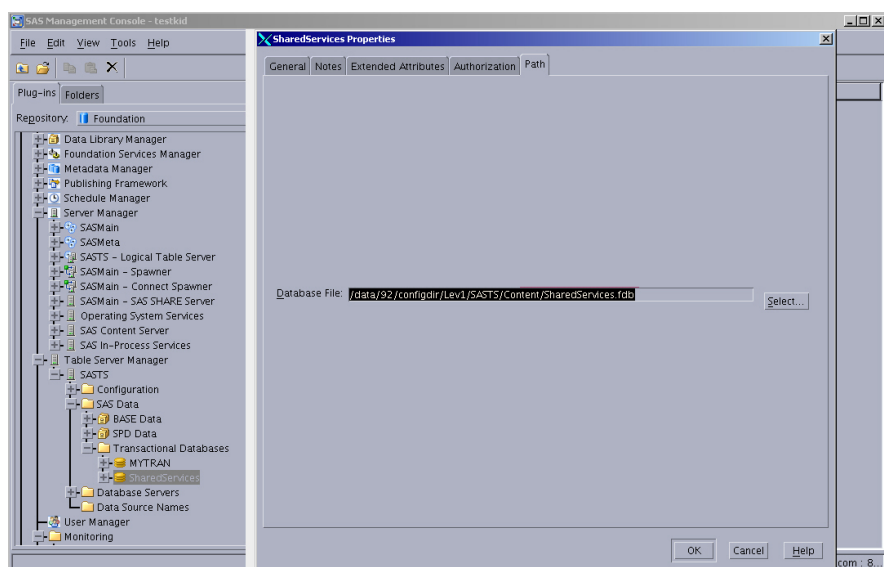


Figure 4: Setting path of SAS Shared Services database to SAS Configuration directory

The remainder of the SAS 9.2 servers and the 64-bit version of WebSphere 6.1 can be started. Any references to the SAS BI Server hostname can now be **testdad** or the hostname alias of **testkid**. This is also true for the Web application URLs. The URL for the SAS Portal login window will accept either of the following:

```
http://testkid.unx.sas.com:9080/SASPortal
http://testdad.unx.sas.com:9080/SASPortal
```



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## Conclusion

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This paper details a series of implementation steps for migrating a SAS 9.1.3 enterprise BI environment to a SAS 9.2 enterprise BI virtual environment through a specific scenario. The SAS 9.2 virtual environment can then be tested in a nonproduction environment, while fully protecting the availability and integrity of the SAS 9.1.3 production framework. The techniques allow for parallel execution of SAS 9.1.3 and SAS 9.2 throughout the validation and testing process. After the SAS 9.2 virtual environment is successfully validated, you can move the virtual environment into production while preserving a high degree of availability and data integrity.

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## Contact information

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The document was prepared by SAS Research and Development, Platform Research and Development, and Enterprise Management Integration staff. If you have comments, questions or feedback about this document, please direct feedback to:

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## Appendix: Portal and directories information

### Organization of shared directory (/data)

For this migration scenario, a network directory was utilized to minimize the need for any large file transfers between the real host (**testdad**) and the virtual host (**testkid**). The following directory layout was followed for the setup of the SAS 9.1.3 environment and the SAS 9.2 environment:

/data/913/SAS	SAS 9.1.3 Installation directory
/data/913/configdir	SAS 9.1.3 Configuration directory
/data/thirdparty/WebSphere	WebSphere 6.1 fixpack 17 (32-bit)
/data/thirdparty/WebSphere-64bit	WebSphere 6.1 fixpack 17 (64-bit)
/data/92/Plan	SAS 9.2 Plan file
/data/92/SASDepot	SAS 9.2 software depot
/data/92/SAS	SAS 9.2 Installation directory
/data/92/configdir	SAS 9.2 Configuration directory
/data/92/SMU	SAS 9.2 smu migration script
/data/92/SMU_OUTPUT	SAS 9.2 migration package output

### SAS® 9.2 Portal optional customization for WebSphere

In SAS 9.2, the SAS Portal now consists of a new URL to launch the application. For example, the URL for the SAS Portal application was *http://somehost.some.domain.com:9080/Portal*. For SAS 9.2, the default URL is *http://somehost.some.domain.com:9080/SASPortal*. For sites that want to modify this default URL that is set up when deploying the Web applications, the root context value in the WebSphere console and in the SAS metadata can be modified.

First, from the WebSphere administration console, review the Enterprise Applications list and select the SAS Portal 4.2 application to expose the properties. Under the “Web Module Properties,” select the “Context Root for Web Modules” option. (See Figure 5.)

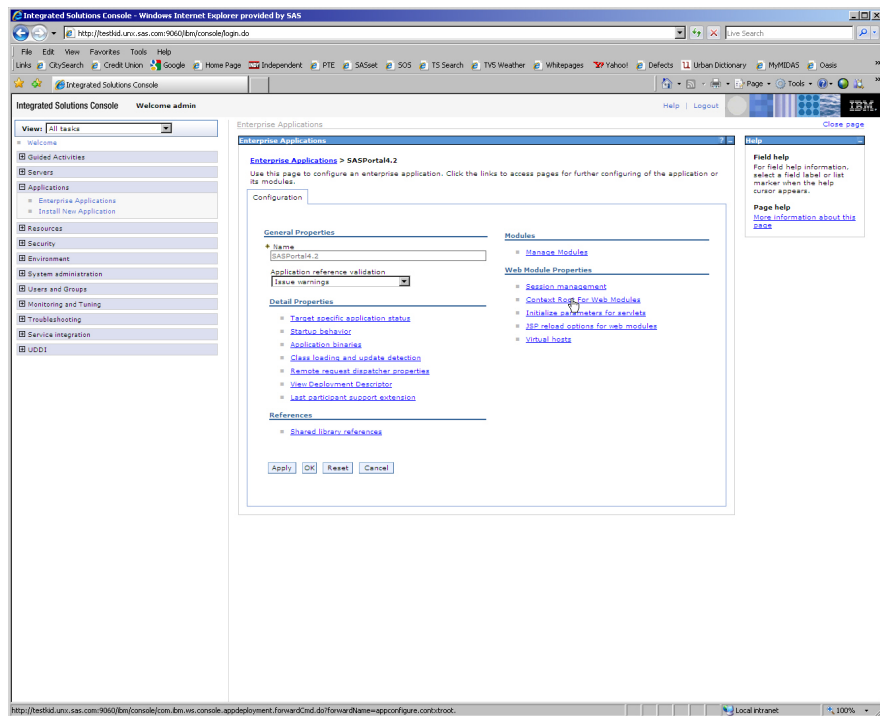


Figure 5: Select Context Root for Web modules

In the “ContextRoot” text widget, enter Portal for the new desired URL value. (See Figure 6.)

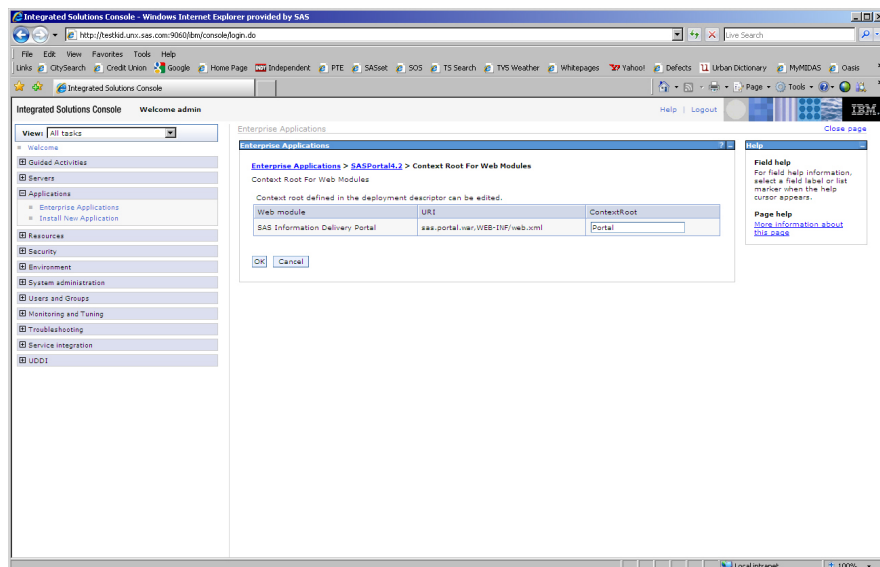


Figure 6: Override the default ContextRoot for SAS Information Delivery Portal

To complete the process, the same “Portal” value needs to be reflected in the SAS metadata. Log in to the SAS 9.2 Management Console using an administrator user ID. Under Application Management, expand the Configuration Manager and right-click Information Delivery Portal 4.2 to view the properties. Under the **Connection** tab, modify the **Service** widget to reflect the same “Portal” value that was entered in the WebSphere console. Make sure that this value has a preceding “/” (see Figure 7).

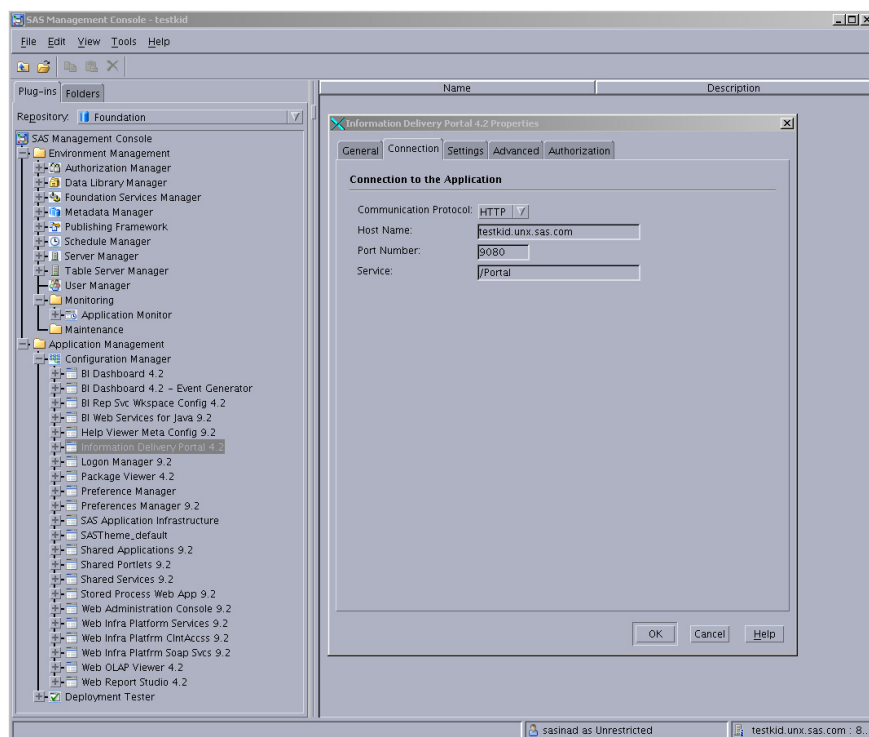


Figure 7: Updating the Portal URL in SAS metadata

In order to use this new SAS Portal URL, the WebSphere and SAS 9.2 BI servers now need to be shut down and restarted. After the restart is complete, the new URL for SAS Portal should be the 9.1.3 naming convention: *http://somehost.domain.name.com:9080/Portal*.

## Configure WebSphere for profile creation by non-root user IDs

In order to simplify Web application deployment with SAS 9.2, the SAS Deployment Wizard was enhanced to allow the automatic deployment of Web applications, such as the SAS Portal. This capability will require write access to the `WAS_HOME` location. In this example, it is the `/data/thirdparty/WebSphere-64bit` directory. By default, WebSphere is installed and configured with the root user ID. Therefore, the `WAS_HOME` directory will require additional modifications to allow a non-root user ID to create the necessary profiles. Additional information is provided by IBM's Infocenter documentation on the topic of "Creating profiles for non-root user" in the Application Server Network Deployment, Version 6.1 manual. [http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tpro\\_manage\\_nonroot.html](http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tpro_manage_nonroot.html).

The following steps summarize modifications to enable using this new feature. In the instructions, `$WAS_HOME` is a reference to `/data/thirdparty/WebSphere-64bit`.

### 1. Set up user ID and group

1. Log in as `root` and execute `smit`.
2. Create a group called **profiler** (a maximum of eight characters).
3. Add SAS installation user ID to the **profiler** group.
4. Create an additional user ID **admin** (set default group as **profiler**).
5. Ensure that the SAS server user ID is also a member of the **profiler** group.

### 2. Delete existing SAS profiles (if present)

1. `cd $WAS_HOME/bin`
2. `./manageprofiles.sh -listProfiles`  
If the profiles exist, you see a message:  
[SASDmgr01, SASAppSrv01]
3. `./manageprofiles.sh -delete -profileName SASAppSrv01`
4. `./manageprofiles.sh -delete -profileName SASDmgr01`
5. `/manageprofiles.sh -validateAndUpdateRegistry`

### 3. Remove any references to previous profiles

1. `cd $WAS_HOME/profiles`
2. `rm -rf SASAppSrv01 SASDmgr01`
3. `cd ../logs/manageprofiles`
4. `rm -rf SASAppSrv01* SASDmgr01*`
5. `cd $WAS_HOME/properties`
6. Edit `profileRegistry.xml` and remove any references to `SASAppSrv01` and `SASDmgr01`.
7. If there is a `profileRegistry.xml_LOCK` file, remove the file.

#### 4. Ensure existence of profiles infrastructure

1. `cd $WAS_HOME`
2. `ls logs/manageprofiles`
3. `ls properties/fsdb`
4. `ls properties/fsdb/_was_profile_default`

If any of these three directories are missing, create them as subdirectories.

#### 5. Modify group permissions and ownership

While logged in as root, modify the permissions and ownership to reflect the new group.

1. `chgrp profiler $WAS_HOME/logs/manageprofiles`
2. `chmod g+wr $WAS_HOME/logs/manageprofiles`
3. `chgrp profiler $WAS_HOME/properties`
4. `chmod g+wr $WAS_HOME/properties`
5. `chgrp profiler $WAS_HOME/properties/fsdb`
6. `chmod g+wr $WAS_HOME/properties/fsdb`
7. `chgrp profiler $WAS_HOME/properties/profileRegistry.xml`
8. `chmod g+wr $WAS_HOME/properties/profileRegistry.xml`
9. `chgrp -R profiler $WAS_HOME/profileTemplates`
10. `chgrp profilers $WAS_HOME/profiles`
11. `chmod g+wr $WAS_HOME/profiles`
12. `chgrp profilers $WAS_HOME/properties/fsdb/_was_profile_default`
13. `chmod g+wr $WAS_HOME/properties/fsdb/_was_profile_default`

## 6. Turn on WebSphere Administrative Security

WebSphere Administrative Security must be enabled. This results in a prompt for an administrative user ID and password when trying to access the WebSphere console. These steps will be executed using `root`.

1. Create an initial profile named **Dmgr01**.  

```
cd $WAS_HOME/bin
./manageprofiles.sh -create-templatePath $WAS_HOME/
profileTemplates/cell/dmgr -nodeProfilePath $WAS_HOME/
profiles -defaultPorts
```
2. Start the console with the new profile.  

```
$WAS_HOME/bin/startManager.sh -profileName Dmgr01
```
3. Log in to WebSphere console. A password does not currently exist for the console. Press ENTER at the prompt.
4. Expand the **Security** link on the left navigation panel.
5. Click the **Security administration, applications** and **infrastructure** link.
6. Click the **Security Configuration Wizard** button.
7. Select the **Use Java 2 security to restrict application access** check box. Click **Next**.
8. Under **Select User Repository**, choose **Local operating system**.
9. For **Configure User repository**, enter **admin** as the **Primary administrative name**. This was the user ID that was configured at the beginning of the process using SMIT.
10. Choose **Save** in the message box to save the current administration changes. Log out of the current console session.

## 7. Validate security changes

1. Log in as root and stop the current manager:  

```
$WAS_HOME/bin/stopManager.sh -profileName Dmgr01
```
2. Restart the manager with new changes:  

```
$WAS_HOME/bin/startmanager.sh -profileName Dmgr01
```
3. Log in to the WebSphere console and test the **admin** user ID and password.
4. Log out of the console and stop the manager to allow SAS Deployment Wizard to create new servers.
5. 

```
$WAS_HOME/bin/stopManager.sh -profileName Dmgr01
-username admin -password host_password
```



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