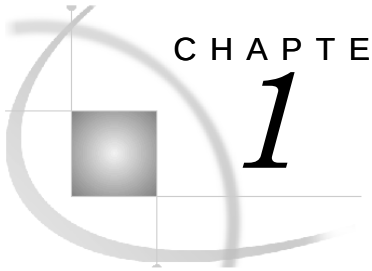

CHAPTER 1

General Concepts

The BRM Tool

The BRM tool is a utility for backing up, restoring, and moving content for SAS Solutions Services, SAS Financial Management, SAS Strategy Management, and SAS Human Capital Management.

Note: For historical reasons, some BRM filenames contain the word "migrate." However, the BRM tool cannot be used to migrate from one version of SAS to another.

What Is Backed Up, Restored, or Moved

The BRM tool backs up, restores, or moves the following types of content:

- all metadata content
- all the DAV content that is managed by the SAS Content Server
- the following MySQL databases (if applicable for the site's installed products):
  - HCM
  - SASOP
  - SASSDM
  - SHAREDSERVICES
  - SPM
  - secondary ODCS databases, if any
  - SAS Table Server databases, if any

  Note: We recommend that you configure the solutions to store the Shared Services database in MySQL, not in SAS Table Server.
- the contents of the ***SAS-config-dir*\Lev1\SASApp\Data** and ***SAS-config-dir*\Lev1\AppData,** and ***SAS-config-dir*\Lev1\Data** directories

  Note: ***SAS-config-dir*\Lev1** is the directory specified by the `BRM.config.dir` property, and **SASApp** (or **SASMain**) is specified by the `BRM.sasapp.dir` property.

Site customizers can extend the BRM tool to include additional directories and types of storage in BRM's backup targets. For more information about customizing BRM to add additional backup targets, search the brm.properties.template and customAnt.xml

files in the ***BRM-install-dir*\config** directory for the word "custom1". Read the comments and examples that are near that keyword.

Features

The BRM tool has the following features:

- coordinated backup on all server machines in a multi-tier installation
- pausing of the Web application server while content is being backed up and restored, to preserve data integrity by preventing normal user access
- support for automated nightly backups with minimal disruption to servers
- ability to move content between operating system types (with limitations; see below)
- ability to combine multiple tiers into one
- ability to split one tier into multiple tiers

Limitations

General Limitations

BRM 5.2 version 2 is supported on version 5.2 of SAS Solutions Services, SAS Financial Management, SAS Human Capital Management, and SAS Strategy Management (collectively referred to in this document as Solutions 5.2). With some limitations, BRM 5.2 version 2 can also be used for Solutions 5.1.

The following limitations apply to BRM 5.2 version 2 (for both Solutions 5.2 and Solutions 5.1):

- The BRM tool does not support partial promotion. It moves all solutions content, with no provision for selecting particular objects to move.
- The source and destination systems must be at the same version level, running the same products. In this context, "products" refers not only to the solutions but also to other products such as SAS Web Report Studio.
- The source and destination systems must have the same type of Shared Services database. If the Shared Services database is on MySQL on one system and on SAS Table Server in another system, then BRM cannot move content between those systems.
- The SAS Trusted User (sastrust) must have the same account type on both the source and destination systems: either an internal account (metadata-based) or an external account (operating system-based). The same limitation applies to the SAS Solutions Administrator (slnadm).

Limitations for Solutions 5.2

For Solutions 5.2, the BRM tool can move content between installations with the following operating system and machine types:

- 32-bit Windows to 32-bit Windows
- 64-bit Windows to 64-bit Windows
- 32-Bit Windows to 64-bit Windows

- 64-bit Linux to 64-bit Linux
- AIX to AIX

Moving content between Windows and UNIX installations is not currently supported.

Limitations for Solutions 5.1

For Solutions 5.1, BRM 5.2 version 2 supports moving content only between installations with the same operating system. For example, it can move content between two installations, both running 32-bit Windows Server 2003 or both running 64-bit Windows Server 2008.

Migration Testing Note

Migrating SAS solutions from one version to another after running BRM 5.2 version 2 has not yet been tested.

Conventions

This book uses the following documentation conventions to identify paths in the solutions configuration:

Path	Refers to
SAS-config-dir	Path to the SAS configuration directory. For example: (Windows) **C:\SAS\Config** (UNIX) **/usr/local/SAS/Config**
SASHOME	Path to the SAS installation directory. For example: (Windows) **C\Program Files\SAS** (UNIX) **/usr/local/SAS**
BRM-install-dir	Path to the BRM installation directory. For example: (Windows) **C:\SAS\BRM-install** (UNIX) **/usr/local/SAS/BRM-install**

The name of the configuration directory and the level number might be different at your site.

Check for Updates to These Instructions

For additions and updates to these instructions, see the README-FIRST.txt file, in the same directory as this document.

CHAPTER 2

Installation

Unzip the Distribution File into Each BRM Installation Directory

The distribution file is named `BRM-5.2*.zip`.

On each server machine in the Solutions installation, unzip the distribution ZIP file into a new directory. This directory is the BRM installation directory.

Keep the following points in mind:

- You must install a copy of BRM locally on each computer on which it will run.

  A BRM installation directory cannot be shared between machines.

  There are configuration files in each installation directory that might have settings that are unique to a particular machine.

  In addition, the BRM agent that runs on each machine creates its own log file (named BRM-agent.log) in the installation directory.
- On Windows, BRM does not support being run from a UNC network path.

  For example, you cannot run BRM with a command such as the following:
  `\\machinename\share\BRM-install\brm backup`

  It must be run from a regular disk path, like this:
  `C:\SAS\BRM-install\brm backup`

Run the BRM Setup Script

Perform these steps on every computer on which BRM is installed:

1. Open a command window in the BRM installation directory.
2. Run one of the following commands:
   - On Windows:
     `setup SASHOME`
   - (UNIX)
     `. setup.sh SASHOME`

For **`SASHOME`**, substitute the full path to your main SAS installation directory. On Windows this is typically something like **`C:\Program Files\SAS`**. If there are spaces in ***`SASHOME`***, enclose the path in quotation marks. For example:

```
setup "C:\Program Files\SAS"
```

On UNIX, you cannot run this command as **./setup.sh**, because the file has just been unzipped from the BRM distribution zip file and still is not marked executable. When setup.sh runs, it marks all of the .sh files in the BRM installation directory as executable so that in the future, they can be run normally, like this: **./brm.sh**.

The setup script creates the brm.ini file from the brm.ini.template file. The setup script makes substitutions and modifications as necessary, based on the operating system platform and the *SASHOME* value that you provide.

In the ***BRM-install-dir*\config** directory, the setup script also copies the brmagent.properties.template file to a file called brmagent.properties. It copies the brm-log4j.properties file to a file called brm-log4j.properties.

Edit the brm.properties File

Perform these steps on the machine where the metadata server is installed. (This machine is referred to as the metadata tier in this document. At many sites, the metadata tier and the data tier are on the same machine.) You will run the BRM controller on this machine. The BRM controller reads the brm.properties file, and its properties are made available to the BRM agent on each machine.

1. In the ***BRM-install-dir*\config** directory, make a copy of the brm.properties.template file. Name the new file brm.properties.
2. Edit the brm.properties file with a text editor.
3. Following the instructions in the file comments, set the BRM property values.

   This file is a Java properties file. Every line beginning with **#** is a comment. Comment lines and blank lines are ignored. The other lines define properties used by BRM.
4. Save the file.

Because the backslash character (\) has special meaning in Java properties files, the backslash characters in directory paths in this file must be doubled. For example, if your configuration directory is **C:\SAS\Config\Lev1**, then the corresponding setting in the properties file is: `BRM.config.dir=C:\\SAS\\Config\\Lev1`.

Share the BRM Output Directory

For a multi-tier installation, the BRM output directory (property `BRM.output.dir`) must be a shared directory that is accessible across the network from all machines in the solutions installation. The name of the BRM output directory must be in the form of a network directory, with a name relative to network share (such as **\\mymachine\Public\backup**) instead of relative to a local disk (such as **C:\Public\backup**).

For example, imagine a solutions installation with two servers, machine1.default.com and machine2.default.com. Machine1 has the largest amount of free disk space available. If a directory **C:\data\BRM-backup** is chosen as the BRM output directory, and the **C:\data** directory is shared as **\\machine1\data**, then your brm.properties file should have this setting:

```
BRM.output.dir=\\\\machine1\\data\\BRM-backup
```

Note: Each backslash in this line in the file is doubled, as required by the Java properties file format.

Set the permissions on the shared directory so that the user who runs BRM has permission to write to **\\machine1\data** from both machine1 and machine2.

Edit the brmagent.properties File

The **config\brmagent.properties** file contains properties that are specific to the instance of the BRM agent on a particular machine. Property values that are set in this file override properties of the same name that are configured in the brm.properties file on the machine on which the BRM controller was run.

If both of the following conditions are true, you do not need to modify the brmagent.properties files:

- Your configuration directory path is exactly the same on every machine on which BRM is installed.
- You plan to use the default BRM TCP port number of 2206.

Otherwise, perform these steps on every computer on which BRM is installed.

1. Edit the brmagent.properties file with a text editor.
2. Following the instructions in the file comments, set the BRM property values. Like the brm.properties file, the brmagent.properties file is a Java properties file. The same general syntax rules apply.
3. Save the file.

Notes:

- If the SAS configuration directory is different on this machine than on the machine on which the brm.properties file resides, you must set the `BRM.config.dir` property in the brmagent.properties file. Otherwise, that line can remain as a comment.
- If you want BRM to use a different TCP port number than the default (2206), change the BRM.agent.port property in the brmagent.properties file. However, if you change this property in one of the brmagent.properties file, you must also change it in the brmagent.properties file on every other machine. The port number must be the same in every file.

(Optional) Edit the brm-log4j.properties File

BRM uses the Java Log4j logging component. The **config\brm-log4j.properties** file is the configuration file used by Log4j to control which log messages are recorded and to which file they are sent. There is a brm-log4j.properties file on every computer on which BRM is installed.

The default settings in brm-log4j.properties are sufficient for most sites. Usually the only reason to edit the brm-log4j.properties file is to enable logging of debug level messages. See Enabling BRM Debug Logging on page 33 for more information.

Notes:

- The main BRM log file is named BRM.log. This file is placed in the current working directory in which the BRM controller is running.
- Log messages from the backup and restore operations executed by the BRM agents on each machine are automatically collected in the central BRM.log file that is created by the BRM controller.
- Each BRM agent instance also creates a BRM-agent.log file. This file normally contains only a few messages, for events such as the BRM agent starting and stopping.
- The brm-log4j.properties file is in the Java properties file format.

CHAPTER 3

Running the BRM Tool

BRM Controller and Agents

The BRM tool can perform coordinated backup and restore operations on multiple machines. This coordination is achieved by running the BRM tool in controller mode on one machine and in agent mode on the other machines.

If the solutions installation is on a single machine, then a separate BRM agent is not necessary.

Starting the BRM Agent

Note: You no longer need to run a separate BRM agent on the same machine as the controller.

To run the BRM agent, open a command window in the BRM installation directory and run this command:

- On Windows:
  `brm agent [--allow-shutdown]`
- On UNIX:
  `./brmrunas.sh sassrv agent [--allow-shutdown]`

On UNIX systems, use the brmrunas command. You are prompted for the sassrv password. During a **`brm restore`**, BRM must overwrite some files that are owned by the SAS Spawned Servers account (typically, sassrv). When necessary, BRM executes subcommands as sassrv in order to overwrite these files.

When the BRM agent has started and is ready to accept requests, it prints a single line of output like this:

```
12:16:15  INFO BRMAgent is listening for requests on port 2206
```

Without the **`--allow-shutdown`** option, the BRM agent remains running on this computer until you shut it down by typing **`CTRL+C`** in the command window in which you started the agent. Do not shut down the BRM agent until all BRM operations are complete and no more BRM commands are to be issued.

When the BRM agent is run with the **`--allow-shutdown`** option, each BRM agent exits after a BRM command completes. This option is helpful for running automated nightly backups. For example, assume that you scheduled **`brm backup`** to run at 3:00 A.M. on the metadata server machine. Then you would schedule **`brm agent --allow-shutdown`** to run at 2:55 A.M. (for example) on every other server machine in the

installation. After the BRM backup is complete, all the agents will shut down automatically. Without the **`--allow-shutdown`** option, the agents would still be waiting for further commands after the backup is complete.

Running the BRM Controller

The BRM controller is run automatically whenever a BRM command is initiated, such as **`brm backup`** or **`brm restore`**. For descriptions of these commands, see Backup and Restoration on the Same Machines on page 11.

CHAPTER 4

Backup and Restoration on the Same Machines

Overview

Use these instructions to back up solutions content and later restore that content on the same machine or set of machines.

For instructions on moving solutions content to a different machine or set of machines, see Moving Solutions Content Between Machines on page 15.

Creating a Backup

To create a backup of solutions content, follow these steps:

1. Leave all services and servers running.

   While BRM backs up the content, the metadata server and the Web applications servers are paused briefly. They resume again automatically before BRM finishes.
2. Start the BRM agent on every machine except the metadata-tier machine (where you started the BRM controller). See Starting the BRM Agent on page 9.
3. Set the `BRM.output.dir` property in the brm.properties file to determine where the solutions content is backed up.

   The `BRM.output.dir` directory must be a shared directory that is accessible from all the machines that are backed up.
4. Open a command window in the BRM installation directory on the metadata-tier machine.
5. Run the following command:
   - On Windows:
     `brm backup`
   - On UNIX:
     `./brm.sh backup`

Restoring from a Backup

Follow these instructions to restore solutions content from a **brm backup** that was performed on the same machine or set of machines.

Note: You must perform a **brm restore** using a backup that was made with the same version of BRM. You cannot use BRM 5.2 version 2 to restore from a backup that was made using BRM version 1.4.

Follow these steps:

1. Before running **brm restore**, make sure that all servers and services are running.

   BRM shuts down and restarts the metadata server. On the middle tier, it also shuts down the managed server for the portal (by default, SASServer1) and the managed server for the solutions (by default, SASServer3). All servers other than the metadata server need to be manually restarted after **brm restore** is completed.
2. Start the BRM agent on every machine except the metadata-tier machine. See Starting the BRM Agent on page 9.
3. Open a command window in the BRM installation directory on the metadata-tier machine.
4. Run the following command:
   - On Windows:
     brm restore *BRM-backup-directory*
   - On UNIX:
     ./brmrunas.sh sassrv restore *BRM-backup-directory*

   BRM-backup-directory is the name of the BRM output directory that was specified when the BRM backup was created.

   On UNIX, you are prompted for the password for the sassrv user.
5. After running the restore command, a confirmation dialog will come up. Enter Y or Yes to proceed with the BRM restore.
   - If you do not see a dialog window come up, check to make sure it is not hidden behind some other window on your computer desktop.
   - On UNIX, if the DISPLAY environment variable is not set, then instead of displaying a graphical confirmation dialog, BRM will print a message to the console. In this case, enter Y or Yes in the command window in which you typed the restore command.
   - If it is necessary to disable the confirmation dialog, see Suppressing the BRM Restore Confirmation Dialog on p. 33.

After the **brm restore** command is completed, follow these steps:

1. Restart all the SAS servers and Web application servers, except the metadata server. The metadata server was automatically restarted by **brm restore**.
2. (SAS Human Capital Management only) Rebuild the OLAP cubes, as described below.

Instructions for Rebuilding the OLAP Cubes

To rebuild the OLAP cubes for SAS Human Capital Management:

1. On the data tier, ensure that SAS Server Users have full control over the **SAS-config-dir\Lev1\Appdata\SASHumanCapitalManagement5.2\Cubes** directory and its contents. (These are file system permissions, not metadata permissions.)

   For more information, see "Secure Your Installation" in the *SAS Solutions Services: System Administration Guide*.
2. Log on to SAS Human Capital Management as the SAS Demo User. This user must have the HCM Administrator role.
3. Click **Administration**.
4. On the **Data** tab, select **Cubes**.
5. Click **Refresh cubes**.
6. Select the check box at the top of the page to select all the cubes.
7. Select both **Rebuild selected cubes** and **Create Information Maps for selected cubes.**
8. **Click OK**.

CHAPTER 5

Moving Solutions Content between Machines

Introduction

These instructions are for using BRM to move solutions content from one machine or set of machines to another.

Moving content via BRM includes these features:

- Move solutions content from one solutions installation to another. This content includes all metadata, MySQL data, DAV content, and data sets in the configuration directory.
- Combine content from a two-tier source installation into a one-tier destination installation.
- Split one tier into multiple tiers.
- Move content between a 32-bit Windows installation and a 64-bit Windows installation.

Moving content via BRM has the following limitations:

- **No version upgrade is permitted**. The solutions must be at the same version level on the source and destination systems.
- The same products must be installed on the source and destination systems.
- All content-related metadata and data are moved. There is no partial promotion ability.
- The same set of users must exist in the destination system as in the source system. There is an exception: limited automatic remapping of the Windows domain prefix is performed. For details, see (If Necessary) Create an Operating System Account for sasadm on page 17.

Overview of Moving Content

Moving content between one Solutions installation and another requires these general steps. (Each step is described below in more detail.)

1. Perform the required preparation.
2. Run **`brm backup`** on the source installation.
3. Run **`brm backup`** on the destination installation.
4. Run **`brm saveconfig`** on the destination installation.
5. Edit brm.properties and run **`brm restore`** on the destination installation, using the output directory from the BRM backup performed on the source installation.
6. Update the logon names and passwords in the SAS Management Console.
7. Run **`brm loadconfig.`**
8. Run **`brm fixpaths`** to update the file and directory paths in metadata.
9. Run **`brm fixhosts`** to update the machine names in metadata**.**
10. Restart all servers.

Preparation for Moving Content

(If Necessary) Create an Operating System Account for sasadm

If the SAS Administrator (sasadm) has an operating system account in the source installation, a matching account must exist in the operating system of the destination installation. This is true even if sasadm is an internal account on the destination system.

If an account is local to the metadata server machine, its domain prefix is automatically converted to the new metadata server machine name. Here is an example:

- On the source installation:
  - the metadata server is named "machine1"
  - SAS Administrator has account **machine1\sasadm**
- On the destination installation:
  - the metadata server is named "machine2"

In this hypothetical example, when BRM moves the metadata from machine1 to machine2, the name of the account that is associated in metadata with user "SAS Demo User" is automatically converted from **machine1\sasadm** to **machine2\sasadm**. For authentication to succeed, you must create the **machine2\sasadm** account if it does not already exist.

Run brm backup on the Source Installation

On the source installation, follow the steps for Creating a Backup on page11, with the following additional step:

If the source and destination installations have different operating systems (for example, 32-bit Windows versus 64-bit Windows), uncomment the following line in your brm.properties file:

```
BRM.cross.platform=true
```

Run brm backup on the Destination Installation

On the destination installation, follow the steps above for Creating a Backup.

Be sure to use different BRM output directories to back up content from the source and destination installations.

The purpose of creating a BRM backup of the destination installation is to be able to roll back to the original content if there are issues with the content or the configuration that has been moved.

Run brm saveconfig on the Destination Installation

The **brm saveconfig** command saves configuration-related data and metadata in the **temp** directory under the BRM installation directory. This saved information is used later by the **brm loadconfig** command.

On the metadata server machine, open a command window. Change to the BRM installation directory. Run the following command:

- On Windows:

brm saveconfig

- On UNIX:
  ./brm.sh saveconfig

Run brm restore on the Destination Installation

On the destination installation, follow the steps in Restoring from a Backup on page 12, with the following modifications:

- When you edit the brm.properties file, modify accounts and passwords as necessary:

Item	Description of Change
BRM.trusted.user and BRM.admin.user	Modify these logon names to match the logon names for SAS Trusted User and SAS Administrator, respectively, on the source system. There is one exception: the domain name, if included, must match the destination system. For example, assume that "machine1" is the source metadata server and "machine2" is the destination metadata server. If the source system logon name is machine1\sasadm and the destination system logon name is sasadm@saspw, you would change the entry in the brm.properties file as follows: `BRM.admin.user=machine2\\sasadm`
Internal accounts such as sasadm@saspw	Enter the password from the source system. The metadata that is moved from the source system includes the passwords for these accounts.
Operating system accounts	Enter the password that matches the domain or machine on which they are validated in the destination installation.
MySQL administrator account and WebLogic administrator account	Leave these account passwords as they are on the destination system. These passwords do not come from metadata and are not changed by the BRM restoration process.

  Note: Do not modify the BRM.output.dir property.

- When you run the **brm restore** command, specify the directory with the output from the **brm backup** command that you ran on the source installation. For example:
  - On Windows:
    brm restore \\machinename\sharename\BRM-backup-dir
  - On UNIX: (all on one command line)
    ./brmrunas.sh sassrv restore
    /export/*machinename*/*sharename*/BRM-backup-dir

Note: After the **brm restore** command completes, do not restart the servers. Complete the remaining steps below first.

Steps to Take after Moving Content

Introduction

Running **brm restore** modifies user login and password metadata on the destination system so that it matches the values on the source system. After moving content to the destination system, you must synchronize the user logon and password information in the metadata server for key administrative accounts with the metadata logon credentials that are stored in various configuration files on the system.

In the following sections, you use SAS Management Console and the SAS Deployment Manager to restore the user credentials to their original values on the destination system (that is, the values that they had before the move).

All the tasks in this section occur on the destination system. Failure to make these changes results in services being unable to restart and SAS Data Integration Studio jobs being unable to run.

Update User Credentials

At this point, the user credentials on the destination system match the credentials on the source system. Restore those credentials to their original values, as follows:

1. Log on to SAS Management Console as the SAS Administrator.

   The first time you log on to SAS Management Console, you must use the SAS Administrator logon name from the source system. If the source system has an internal account for SAS Administrator, you must use the password from the source system for this first logon session.
2. On the **Plug-ins** tab, select **User Manager**.
3. Right-click the SAS Administrator user and select **Properties**.
4. Select the **Accounts** tab.
5. Make the following changes, based on the current account type for this user and the original account type on the destination system:

Current Account Type	Original Account Type	Action
Internal account ("Internal account" appears at the foot of the dialog box)	Internal account	Update the user ID and password to match the original values on the destination system.
	External account	Delete the user ID and password. Click **New** to create an operating system-based account with user ID and password to match the original values on the destination system.
External account ("Internal account" does not appear at the foot of the dialog box)	Internal account	Click **Create Internal Account.** Use the same user ID and password as the original values on the destination system.
	External account	Edit the logon information so that the user ID and password match the original values on the destination system.

6 Repeat steps 3-5 for the following users and group:

- SAS Trusted User
- SAS Demo User
- SAS Solutions Administrator
- Solutions Host User
- SAS Anonymous Web User
- SAS General Servers (group account)

Update MySQL Credentials in Metadata

Certain metadata groups contain logon information for accessing MySQL databases. The passwords for these logon accounts need to be restored to their original values on the destination system.

Follow these steps:

1 Log on to SAS Management Console as the SAS Administrator.

2 On the **Plug-ins** tab, select **User Manager**.

3 Right-click the SASSDM MySQL Users group and select **Properties**.

4 Select the **Accounts** tab.

5 Select the login row (for example, sassddbadm) and click **Edit**.

6 Change the password to match the password for that MySQL account on the destination system.

Repeat steps 3-6 for the following groups:

- ❑ HCM MySQL Users (if SAS Human Capital Management is installed)
- ❑ SPM MySQL Users (if SAS Strategy Management is installed)

Update the User Service Configuration

The user service definitions in metadata for the SAS Administrator and SAS Trusted user accounts must be updated so that the SAS Remote Services start correctly.

Follow these steps:

1. Log on to SAS Management Console as the SAS Administrator.
2. On the **Plug-ins** tab, navigate to **Environment Management > Foundation Services Manager > Remote Services > Core > User Service**.
3. Right-click **User Service** and select **Properties**.
4. On the **Service Configuration** tab, click **Configuration**.
5. In the User Service Configuration dialog box, select the **Users** tab.
6. For each item in the **User IDs** box, select the user ID and click **Edit**.

   Modify the ID and password to match the original ID and password on the destination system. Click OK.
7. Navigate to **Environment Management > Foundation Services Manager > SASBIDashboard4.3 Local Services > Core > User Service** and repeat steps 3 through 6. (Substitute the appropriate version number if necessary.)
8. If SAS Strategy Management is installed: Navigate to **Environment Management > Foundation Services Manager > SASStrategyManagement5.2 Local Services > Core > User Service** and repeat steps 3 through 6. (Substitute the appropriate version number if necessary.)

Edit the brm.properties File

Make the following changes in the brm.properties file:

- Set `BRM.admin.user` to the current logon name of the SAS Administrator on the destination system.
- Set `BRM.admin.password` to the password of the SAS Administrator on the destination system.

Save the file.

Run brm loadconfig

The **brm loadconfig** command loads certain configuration items into the metadata repository—items that were extracted by the **brm saveconfig** command and saved in the **temp** directory under the BRM installation directory. It makes other important updates, such as updating the status.xml file so that upgrade in place is possible and loading some HCM configuration data back into the HCM database.

To run **brm loadconfig**, follow these steps:

1. Make sure that the BRM agent is running on all of the servers.
2. On the metadata server machine, open a command window.
3. Change to the BRM installation directory.

4 Run the following command:

- On Windows:
  brm loadconfig
- On UNIX:
  ./brm.sh loadconfig

The first time you run the **brm loadconfig** command you may see warning messages like the following:

```
WARN Could not match 2 object(s) by name.
WARN To ignore these warnings (not recommended), re-run with the force option: brm
loadconfig force
WARN Created new template file at: C:\BRM\config\loadconfig.ini
WARN Edit this file and then re-run brm loadconfig to enable BRM to find the needed
objects by name.
INFO Aborted loading configuration objects.
```

If you see this message:

- Edit the **loadconfig.ini** file.
- Follow the instructions in the **loadconfig.ini** file.
- Save the file, then re-run **brm loadconfig**.

Update File and Directory Paths in Metadata

After you move metadata from one installation to another, you must usually change the file and directory paths in metadata to match the new environment. This task is necessary unless **all** the file and directory paths in the destination installation are the same as in the source installation. The match must include the configuration directories and the SAS installation directories on each tier.

After **brm loadconfig** successfully completes, perform the following steps on the metadata server in the destination installation.

Edit the migrate.ini File

Perform these steps in the destination installation, on the machine where the metadata server resides:

1 In the **BRM-install-dir\config** directory, choose one of the migrate.ini.template-* files and copy it to migrate.ini in that same directory. Use this chart as a reference:

Template File	Examples of Intended Use
migrate.ini.template-simple	When the configuration directory name is the same on all machines in an installation, but different between the source systems and destination systems. When the destination system is a single-tier installation.
migrate.ini.template-zzcomplex	When the configuration directory name or SASHOME directory name is different on different machines within the destination installation; When data is spread over multiple disk drives..

If your situation does not meet the intended uses in the table above, we recommend that you begin with the migrate.ini.template-simple template and customize it to meet your needs. Use the migrate.ini.template-zzcomplex as a reference for the possible substitutions that can be made. However, that template is more complex than is necessary for most installations.

2 Edit the migrate.ini file with a text editor.

See the next two topics for information about editing the file.

Explanation of the migrate.ini file

The `[file_and_directory_paths]` section of the migrate.ini file contains a group of configuration lines with the following format:

```
<source-path>=<destination-path>
```

For example, you might have a line that looks like this:

```
C:\SAS\SASSolutionsConfig\Lev1\Web=W:\SAS\Config\Lev1\Web
```

The configuration line above instructs BRM to convert file and directory paths beginning with `C:\SAS\SASSolutionsConfig\Lev1\Web` to instead begin with `W:\SAS\Config\Lev1\Web`. If the directory path **C:\SAS\SASSolutionsConfig\Lev1\Web\Logs** is found in metadata, it is converted to **W:\SAS\Config\Lev1\Web\Logs**, according to the example migrate.ini line above.

If two or more lines from migrate.ini match a path found in metadata, the line from migrate.ini with the longest left-hand path is used. For example, suppose these two lines exist in the `[file_and_directory_paths]` section of the migrate.ini file:

```
C:\SAS\SASSolutionsConfig\Lev1\AppData=
  D:\SAS\Configuration\Lev1\AppData
C:\SAS\SASSolutionsConfig\Lev1\AppData\SASBIDashboard4.3=
   W:\SAS\Config\Lev1\AppData\SASBIDashboard4.3
```

If the path **C:\SAS\SASSolutionsConfig\Lev1\AppData\SASBIDashboardEventGen4.3** is found in metadata, it matches the second line instead of the first line in the migrate.ini file, because the more specific match is used.

Changing the migrate.ini File to Meet Your Needs

Starting with the migrate.ini file that you copied from the appropriate template (as explained in Edit the migrate.ini File on page 22), edit the paths to match your installation. Do not just accept the default values in the file. Check the drive letters and directory names on each line. The default assumes that you are changing drive letters, which may not be the case for your installation.

If you copied your migrate.ini file from migrate.ini.template-single, make the following changes:

1. Fix the line for the configuration directory:

   ```
   <source-path>=<destination-path>
   ```

   - Change the path to the left of the equal sign to the name of your source configuration directory.
   - Change the path to the right of the equal sign to the name of your destination configuration directory.

2. Make similar changes to the line for the **SASHOME** directory and to any other applicable lines in the file.

   If you copied your migrate.ini file from migrate.ini.template-zzcomplex, make changes as for the single-tier example in the paragraph above. However, there are many more lines in the multi-tier migrate.ini template file, with directory name matching that is more specific. This permits better distinction between paths on the data-tier machine and paths on the middle-tier machine. A search and replace of directory name prefixes might be appropriate, but check the results carefully.

3. Save the file when the changes are complete.

Run brm dumppaths

Run the **brm dumppaths** command to get a listing of all the known file and directory paths current in metadata. The last parameter on the command line directs the output to a text file named dump1.txt:

- On Windows:
  brm dumppaths dump1.txt
- On UNIX:
  ./brm.sh dumppaths dump1.txt

Run brm fixpaths

Run the **brm fixpaths** command to change the file and directory paths in metadata according to the configuration in the migrate.ini file.

We recommend that you run the **brm fixpaths** command twice:

- Run it the first time to log all the potential changes that would be made to metadata in the BRM.log file, without actually making any changes:
  - On Windows:
    brm fixpaths nochange
  - On UNIX:
    ./brm.sh fixpaths nochange

- After reviewing the BRM.log file, run the command again to make the actual changes to metadata:
  - On Windows:
    brm fixpaths commit
  - On UNIX:
    ./brm.sh fixpaths commit

Run brm dumppaths after Changing Metadata

Run the **brm dumppaths** command again to see the complete effects of the **brm fixpaths** command. The last parameter on the command line directs the output to a text file named dump2.txt:

- On Windows:
  brm dumppaths dump2.txt
- On UNIX:
  ./brm.sh dumppaths dump2.txt

Compare and Rerun as Needed

Compare the result of the first run of **brm dumppaths** with the result of running **brm dumppaths** after **brm fixpaths** was completed.

For example, if the output of the first and second runs of **brm dumppaths** was placed in files dump1.txt and dump2.txt, respectively, then you would compare dump1.txt and dump2.txt and verify the changes that were made to the file and directory paths in metadata.

For this purpose, it is helpful to use a file comparison program. There are several free and commercial text-file comparison programs available. On UNIX, the `diff` program can be used.

If important file or directory paths were not detected and changed, make additions to the migrate.ini file to match these paths. Then rerun the BRM fixpaths command.

Update Machine Names in Metadata

Edit the migrate.ini File for Host Name Change

If you have not done so already, pick one of the migrate.ini.template files in the BRM config directory. Make a copy and name the new file migrate.ini.

Edit the `[domain_names]` section of the migrate.ini file. This section is for changing Windows logon domains when you are moving content to another server. For example, to convert all logon IDs from `DOMAIN1\`*`username`* to `DOMAIN2\`*`username`*, and convert `DOMAIN3\`*`username`* to `DOMAIN4\`*`username`*, edit the `[domain_names]` section of the migrate.ini file to resemble the following:

```
[domain_names]
DOMAIN1=DOMAIN2
DOMAIN3=DOMAIN4
```

Check the Host Names in the brm.properties File

If you have not already done so, edit the brm.properties file and verify that the host names in the file are correct.

Search the file for all occurrences of properties whose names begin with `BRM.host` and verify that the property value is correct. For a single-tier installation, all of these property values are set to the same machine name.

These property values are used by the **`brm fixhosts`** command to update host names in metadata.

Run the brm fixhosts Command

The **`brm fixhosts`** command searches for host names in metadata and updates them according to the settings in your brm.properties file. BRM also consults the components.ini file, but the components.ini file normally is not altered by users.

1. To preview the changes that **`brm fixhosts`** will make, without actually altering metadata, run the following two commands first:
   - On Windows:
     `brm dumphosts hosts-before.txt`
     `brm fixhosts nochange`
   - On UNIX:
     `./brm.sh dumphosts hosts-before.txt`
     `./brm.sh fixhosts nochange`

The **brm dumphosts** command writes a list of all host names that it found in metadata into a text file. These are the objects in metadata that potentially could be modified. Running **brm fixhosts** with the **nochange** option causes BRM to do everything that the **fixhosts** command normally does, short of changing metadata. Examine the messages in the BRM.log file to see the effects of the command.

2 To update the metadata, run the following command in a command window on the machine running the metadata server:

- On Windows:
  brm fixhosts commit

  On UNIX:
  ./brm.sh fixhosts commit

3 To see the new host names in metadata, run this command:

- On Windows:
  brm dumphosts hosts-after.txt
- On UNIX:
  ./brm.sh dumphosts hosts-after.txt

  Examine the hosts-after.txt file.

Update the HCMConfig.xml file (SAS Human Capital Management)

The HCMConfig.xml file has configuration settings needed by SAS Human Capital Management. The HCMConfig.xml file on the destination system must be edited and certain values in it must be updated to match what is in the HCMConfig.xml file on the source system.

The HCMConfig.xml file from the source system is located under the BRM output directory, in the following sub-directory:

- On Windows:
  config*middle-tier-machine*\SASHumanCapitalManagement5.2
- On UNIX:
  config/*middle-tier-machine*/SASHumanCapitalManagement5.2

For *middle-tier-machine*, substitute the name of the middle-tier machine in the source system.

The HCMConfig.xml file for the destination system is located on the middle-tier machine, in the following directory:

- On Windows:
  SAS-config-dir\Lev1\AppData\SASHumanCapitalManagement5.2
- On UNIX:
  ***SAS-config-dir*/Lev1/AppData/SASHumanCapitalManagement5.2**

Back up the HCMConfig.xml file on the destination system before making any changes.

We suggest that you open the HCMConfig.xml files from the source and destination systems in two text editor windows, so that you can easily copy values from the source to the destination version of these files.

Note: We do not recommend using Notepad to edit the HCMConfig.xml file. If you use WordPad, select **View > Options**. On the **Text** tab, select **No wrap** in order to better manipulate the text in this XML-format file.

1. In the destination HCMConfig.xml file, search for the text "site defined properties".
2. Change the following Property element in the destination HCMConfig.xml file to match the source HCMConfig.xml file:

   ```
   <Property Id="HCM_HOME_DASHBOARD" Name="HCM_HOME_DASHBOARD"
   Value="/Users/sasdemo/HCM_DASHBOARD.dcx" ReadOnly="false"/>
   ```

   Update only the text in the quotation marks after `Value=`. (The text above is only an example). Be careful not to modify the quotation marks or any other text.
3. Save the destination HCMConfig.xml file.

Restart All Servers after Moving Content

Follow these steps after all the steps above are completed:

1. Restart all the servers, both SAS servers and Web application servers, except the metadata server.

   The metadata server was automatically restarted by **brm restore**.
2. (SAS Human Capital Management only) Rebuild the OLAP cubes.

   For instructions, see Instructions for Rebuilding the OLAP Cubes on page 13.

Refresh SAS Strategy Management Diagrams

After you move content to a new server, SAS Strategy Management diagrams contain embedded URLs that reference the old server. To correct the URLs, give each user the following instructions for clearing the diagram cache:

1. In an open project, select **Project > Options**.
2. Expand the **Diagram Options** section.
3. Click **Clear Diagram Cache**.

   This step clears the cache of temporary diagrams for all projects that the user has viewed.

Alternatively, an administrator can refresh the diagrams in each scorecard project, as follows:

1. Log on to the portal as a user with membership in the Solutions Users group, the SPM Users group, and the Scorecard Modeler Group.
2. Open the scorecard project.
3. Open a diagram in the Diagram Editor.
4. Click the Refresh button  on the right side of the SAS Strategy Management toolbar.

Note: if the diagrams are available in a Performance Diagram portlet, you can click the Refresh Data button  at the bottom of the portlet instead of using the Diagram Editor.

Refresh SAS BI Web Services

After you move content to a new server, SAS BI Web Services contain embedded metadata IDs that are incompatible with the metadata that has been moved. Each Web service must be exported, deleted, and then re-imported in order to function properly.

To refresh the SAS BI Web Services, follow these steps:

1. Log on to SAS Management Console as the SAS Administrator.
2. On the **Folders** tab, navigate to **SAS Folders/System/Services** .
3. In the right-hand pane, right-click the **Corr** Web service object and select **Export SAS Package**.

   The Export SAS Package wizard is displayed.
4. Under **Specify a package to contain the collection of objects that you are exporting**, change the file name from Package1.spk to Corr.spk, to match the name of the Web service that will be exported. Click **Next**.
5. Accept the defaults by clicking **Next** on the next two pages of the wizard. Then click **Finish**.
6. Right-click the **Corr** Web service again and select **Delete**.
7. In the left-hand pane, right-click the **Services** folder and select **Import SAS Package**.

   The Import SAS Package wizard is displayed.
8. Under **Enter the location of the input SAS package file**, enter the path to the Corr.spk file from step 4, if it is not already there by default. Click **Next**.
9. Accept the defaults by clicking **Next** on the next four pages of the wizard. Then click **Finish**.
10. Repeat steps 1 through 9 for the remaining Web services in the **Services** folder.

Update the URLs in BI Dashboard Indicator Files

Overview

After you move content to a new server, SAS BI Dashboard indicators that are based on SAS Strategy Management providers contain URLs with incorrect hostnames. As a result, BI Dashboard portlets that are based on SAS Strategy Management providers cannot be displayed properly. You must edit the indicator files to correct the host name in the URLs.

BI Dashboard 4.3

For BI Dashboard 4.3, follow these steps:

1. To list all of the providers of BI Dashboard indicator data, open a command window on the metadata-tier machine and run the following command:
   - On Windows:
     `brm indicators`
   - On UNIX:

   `./brm.sh indicators`

   This command prints the metadata path for each BI Dashboard provider (.imx file).
2. Log on to SAS Management Console as the SAS Administrator.
3. On the **`Folders`** tab, navigate to a folder in which a BI Dashboard provider was saved.
4. In the right-hand pane, right-click the .imx file and select **`Write Contents to External File`**.
5. Complete the target file dialog. Save the destination file with the same name that is used in SAS Management Console.
6. Using Windows Explorer or some other means, navigate to the directory in which the file was saved. Open the .imx file for editing.

   Note: We do not recommend using Notepad to edit the .imx files. If you use WordPad, select **`View > Options`**. On the **`Text`** tab, select **`No wrap`** in order to better manipulate the text in this XML-format file.
7. In the .imx file, search for URL text that resembles the following:

   `authenticationServiceURL="http://default.host.com:7201/SASStrategyManagement"`

   The host name is typically the name of the SAS Strategy Management server for the source system.

   If the file does not contain the keyword `authenticationServiceURL`, proceed to step 11.

   Otherwise, replace the host name with the name of the SAS Strategy Management server for the destination system. Update the port number if necessary. Be careful not to accidentally remove a quotation mark or change any other part of the URL.
8. Save the file.
9. In SAS Management Console, right-click the folder in which the BI Dashboard indicator was located and select **`Add Content From External File(s) or Directories`**.
10. In the Specify Source File(s) or Directories dialog box, select **`Files of type: Dashboard types`**.

    Browse to the .imx file and click **`Open`**. Replace the original file in the metadata folder.
11. Repeat steps 2 through 10 for each of the BI Dashboard indicators that contain SAS Strategy Management Providers.

BI Dashboard 4.2

For BI Dashboard 4.2, follow these steps:

1. To list all of the providers of BI Dashboard indicator data, open a command window on the metadata-tier machine and run the following command:
   - On Windows:
     `brm indicators`
   - On UNIX:
     `./brm.sh indicators`

   This command prints the file path for each BI Dashboard provider (.imx file).
2. Using Windows Explorer or some other means, navigate to the directory containing the first .imx file listed by the "brm indicators" command.

   Open this file with a text editor.

   Note: We do not recommend using Notepad to edit the .imx files. If you use WordPad, select **`View > Options`**. On the Text tab, select **`No wrap`** in order to better manipulate the text in this XML-format file.
3. In the .imx file, search for URL text that resembles the following:

   ```
   authenticationServiceURL="http://default.host.com:7201/SASStrategyManagement"
   ```

   The host name is typically the name of the SAS Strategy Management server for the source system.

   If the file does not contain the keyword `authenticationServiceURL`, proceed to step 5.

   Otherwise, replace the host name with the name of the SAS Strategy Management server for the destination system. Update the port number if necessary. Be careful not to accidentally remove a quotation mark or change any other part of the URL.
4. Save the file.
5. Repeat steps 2 through 4 for each BI Dashboard provider.

Restart SAS Remote Services and Web Application Servers

Follow these steps after all of the steps above are completed:

1. Restart SAS Remote Services.
2. Restart the Web application servers.

No other servers need to be restarted. After these steps are completed, the destination system is ready for use.

Reconfigure Client Machines

After moving content, you must reconfigure the client machines, as follows:

1. On each client machine, delete the SAS configuration directory.
2. Rerun the SAS Deployment Wizard. Select **`Configure SAS Software`** as the deployment type, but do not select **`Install SAS Software`**.

CHAPTER 6

Miscellaneous Topics

Enabling BRM Debug Logging

To enable debug output in the BRM log:

1. Edit the brm-log4j.properties file in the **`BRM-install-dir\config`** directory.
2. In the following lines, change the word `info` to `debug`:

```
log4j.logger.com.sas.solutions.brm.migrate.MainMigrator=info, file
log4j.logger.agentAnt=info, file
```

3. Save the file.

The next time that the **`brm backup`**, **`brm restore`**, or **`brm fixpaths`** command is run, significantly more output is placed in the BRM log file.

Suppressing the BRM Restore Confirmation Dialog

After running the brm restore command, BRM will display a confirmation dialog and wait for the user to enter Y or Yes to continue. (Or, on UNIX with no DISPLAY environment variable set, it will print a message and wait for keyboard input.) Sometimes it is desired to suppress this confirmation dialog. For example, this could be useful when running brm restore as one of several commands in a batch script, or in other situations where pausing for user input is not desired.

Note: Suppressing the BRM Restore confirmation dialog should be done with care. The **`brm restore`** command will overwrite all solutions data with data from the indicated BRM backup directory. The purpose of the confirmation dialog is to give the user a chance to cancel the operation if it was initiated by mistake.

To suppress the BRM Restore confirmation dialog, add the option

`-DBRM.skip.restore.prompt=1` after the "restore" keyword. For example:

On Windows:

`brm restore -DBRM.skip.restore.prompt=1 BRM-backup-directory`

On UNIX:

`./brmrunas.sh sassrv restore -DBRM.skip.restore.prompt=1 BRM-backup-directory`

Troubleshooting

Unexpected Debug Messages in BRM.log

You turn on debug logging and see several messages like this:

```
2010-08-17 20:12:09,877 DEBUG [misfmddev1[agent]] agentAnt - Could not
load definitions from resource org/apache/tools/ant/antlib.xml. It could
not be found.
```

This message is generated by Ant and does not indicate a BRM problem. It might be a minor defect in Ant, but it causes no damage.

Nothing Happens When Running BRM Command

When you run a BRM command, such as **`brm backup`**, nothing happens and nothing is printed in the command window.

This is most likely due to a problem with your brm.ini file, which is in the same directory as your brm.exe file.

Edit your brm.ini file. Make sure that the `MASTERPROP` property value is set according to the instructions. If this property does not point to the correct file, then brm.exe cannot run.

If that does not fix the problem, check the log messages in the Bootstrap.log file. The location of the Bootstrap.log file depends on your operating system:

Platform	Bootstrap.log Location
Windows XP	**`"%USERPROFILE%\Local Settings\Application Data\SAS\SASDeploymentWizard\9.2"`**
Windows Vista, Windows 7, or Windows 2008 Server	**`"%USERPROFILE%\AppData\Local\SAS\ SASDeploymentWizard\9.2"`**
UNIX	**`$HOME/.SASAppData/SASDeploymentWizard/9.2`**

Error During BRM Backup: Multiple Master Servers in SAS_ODCS_SERVER Table

When you run the brm backup command, you get an error like the following:

```
2011-02-16 17:30:52,853  WARN [d20491.na.sas.com[mysql]] agentAnt - There
are 2 rows in the SAS_ODCS_SERVER table with SERVER_TYPE=1
2011-02-16 17:30:52,853 ERROR [d20491.na.sas.com[mysql]] agentAnt -
Cannot back up SASSDM database: Found 2 ODCS Master servers, expected 1
```

This problem appears when **`brm backup`** is run on the destination system and there is an invalid entry in the SAS_ODCS_SERVER table.

The problem is caused when the name of the ODCS master server is changed and the server is restarted. At startup time, the server adds a row to the SAS_ODCS_SERVER

with the new server name. However, this new row is invalid because it is not linked to the existing data and because only one master server entry should exist in the SAS_ODCS_SERVER table at a time. For **`brm backup`** to work correctly, you must clean up the SAS_ODCS_SERVER table on the source system and run **`brm backup`** again.

To clean up the SAS_ODCS_SERVER table, use any MySQL administrative tool to connect to the sassdm database **on the source system**. The examples below use the MySQL command-line tool. Adapt these commands for the MySQL administrative tool that you are using.

1. Query the rows in the SAS_ODCS_SERVER table. For example:

```
mysql> select * from sas_odcs_server;
+-----------+--------------------------+--------------------+-------------+-------------+
| SERVER_ID | SERVER_CD                | SERVER_HOSTNAME    | SERVER_PORT | SERVER_TYPE |
+-----------+--------------------------+--------------------+-------------+-------------+
|         8 | server5.example.com_MASTER | server2.example.com |        7301 |           1 |
|        10 | server2.example.com_MASTER | server2.example.com |        9814 |           1 |
+-----------+--------------------------+--------------------+-------------+-------------+
```

Rows with SERVER_TYPE=1 are master servers. There should only be one master server row at a time in the database. The example above shows a case with two master servers.

2. Find out which of the master server rows has a SERVER_ID that is linked with the SAS_OP_FORM or SAS_VCUBE table. To do so, query these tables for the number of rows with SERVER_ID equal to the values found in the SAS_ODCS_SERVER table. (On some installations, the SAS_OP_FORM table might not have any entries.)

   For example, with SERVER_ID values of 8 and 10, you would use the following commands:

```
mysql> select count(*) from SAS_OP_FORM where SERVER_ID=8;
+----------+
| count(*) |
+----------+
|     6613 |
+----------+
1 row in set (0.02 sec)

mysql> select count(*) from SAS_OP_FORM where SERVER_ID=10;
+----------+
| count(*) |
+----------+
|        0 |
+----------+
1 row in set (0.02 sec)

mysql> select count(*) from SAS_VCUBE where SERVER_ID=8;
+----------+
| count(*) |
+----------+
```

```
|        4 |
+----------+
1 row in set (0.00 sec)

mysql> select count(*) from SAS_VCUBE where SERVER_ID=10;
+----------+
| count(*) |
+----------+
|        0 |
+----------+
1 row in set (0.00 sec)
```

Note: Be sure to run these queries and updates on the source system, not the destination system.

3 From the results of these queries, determine which row to keep and which row to delete.

In this example, the results show that a SERVER_ID of 8 is linked with multiple rows in the SAS_OP_FORM table and the SAS_VCUBE table, whereas a SERVER_ID of 10 does not appear in either of those tables. Therefore, the row with SERVER_ID=8 is the row to keep. (In your own queries, substitute the actual SERVER_ID values from rows in your SAS_ODCS_SERVER table with SERVER_TYPE=1.)

If both server IDs are associated with data, do not delete any rows from the SAS_ODCS_SERVER table. Instead, consult with SAS Technical Support for instructions on how to resolve this issue.

If the SERVER_ID values in SAS_OP_FORM and SAS_VCUBE are zero, and do not match any SERVER_ID values in SAS_ODCS_SERVER, then keep the row in SAS_ODCS_SERVER with SERVER_ID=1 and SERVER_TYPE=1, deleting any additional rows with SERVER_TYPE=1 that do not have SERVER_ID=1.

4 In the SAS_ODCS_SERVER table, update the row you want to keep, as follows:

- If the SERVER_HOSTNAME field does not match the primary ODCS server name on the destination system, update that field with the correct value.
- If necessary, make a similar change to the SERVER_PORT field.

Note: The SERVER_CD field is ignored by the software.

5 In the SAS_ODCS_SERVER table, delete the row with a SERVER_ID that is not linked with the SAS_OP_FORM and SAS_VCUBE tables, as described above.

When you have completed these updates to the SASSDM database on the source system, run **`brm backup`** again on the source system.