



Imaging MetaFrame XP Using Ghost 6.5.1

By Citrix Consulting Services

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Introduction

Project Overview

The objective of this white paper is to provide information on imaging member MetaFrame XP servers using Symantec Ghost 6.5.1 and Microsoft Sysprep. This paper demonstrates important imaging topics for MetaFrame XP servers that point to a SQL Server Data Source. This paper does not demonstrate MetaFrame XP imaging using Oracle or Access as a Data Source. For cloning information on the Oracle or Access Data Source options, reference the Advanced Concepts for MetaFrame XP, Feature Release 1 (SP1) Guide that is available at http://citrix.com/products/metaframexp/docs/Advanced_Concepts.pdf.

The target audience for this white paper should be familiar with MetaFrame XP rapid deployment strategies. For technical questions regarding Ghost, consult Symantec documentation and the Ghost 6.5.1 website: <http://www.symantec.com/techsupp/enterprise/products/symghost/sym-ghost-65/index.html>

Citrix Consulting Services does not recommend the use of imaging as a rapid deployment practice. The automated build process is a more efficient method to deploy MetaFrame XP servers, especially during frequent changes in client requirements. However, in certain client situations imaging is the only means available to deploy a MetaFrame farm. It is for these cases that this white paper was developed. The following table provides a quick comparison between the CCS automated build process and the imaging process.

MetaFrame Rapid Deployment Process	Advantages	Disadvantages
CCS MetaFrame Automated Build	<ul style="list-style-type: none"> ✓ A fully tested and documented MetaFrame Automated Build exists and only needs environment configuration for deployment ✓ Proven, customizable process that can be adapted to any server configuration ✓ Easy drive remapping ✓ Can be used to build the Zone Data Collector and member servers ✓ Can install MetaFrame 1.8 or MetaFrame XP 	<ul style="list-style-type: none"> ✓ Slower deployment time per server, as the server must be automatically built step-by-step ✓ Strong knowledge of scripting, particularly VB Script to customize and maintain process is required
Ghost Imaging	<ul style="list-style-type: none"> ✓ Rapid deployment of a Ghost image is possible if the Ghost server and Ghost client are isolated to a separate network. ✓ Drive remapping is difficult ✓ No maintenance 	<ul style="list-style-type: none"> ✓ The Ghost Server and client have to be configured on an isolated network to prevent network congestion caused by the transfer of images ✓ The Ghost image must be properly created from scratch for the target servers

		<ul style="list-style-type: none"> ✓ Created images are static and cannot be modified. The images must be recreated for any server configuration changes ✓ When deploying images, the farm configuration must be identical to the farm used to create images ✓ Cannot be used to deploy the Zone Data Collector ✓ Cannot image servers with SSL certificates
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Table 1: Comparison of Rapid Deployment Processes

Document Overview

This white paper will provide users a step-by-step methodology to create a MetaFrame XP farm using imaging. This imaging process is broken down into the following sections:

1. **Environmental Requirements.** The first stage refers to the MetaFrame XP environment that must be in place prior to taking an image. The user must consider these requirements prior to imaging.
2. **Image Creation.** The second stage discusses the instructions on creating the actual Ghost images for member MetaFrame XP servers. This stage has the following steps.
 - a. Manually install and configure the SQL Data Store
 - b. Manually install and configure the Zone Data Collector
 - c. Manually install and configure a MetaFrame XP Member Server
 - d. Manually prepare the Member Server for imaging, and create a Member Server Image
3. **Image Deployment and Configuration.** The third stage describes the step-by-step process on using Ghost images to deploy any number of member MetaFrame XP servers, and points out the final steps necessary to complete a farm that is created using imaging.
4. **Advanced Tips.** This final section discusses advanced imaging options.

Environmental Requirements

This section identifies the server environmental requirements that must be defined prior to starting the imaging creation and deployment.

Network Variables

Setup the Ghost Server with two NICS. Configure one NIC for regular network access. Isolate the other NIC on a 100 Mbps hub. Place all MetaFrame servers on this hub when uploading (creating) and downloading (deploying) images. If the image traffic is not isolated, the transfer of Gigabyte sized images will slow down the network and will affect the SQL Server (MetaFrame XP data store) performance causing the IMA service to fail.

MetaFrame Variables

To ensure a successful image, consider these notes on MetaFrame XP configuration parameters:

- **SQL Server Name** – Can be a specific name, such as one based on location
- **Data store Name** – Can also be a specific name
- **Farm Name** – Must be a generic farm name that can exist on different data stores across different SQL Servers
- **Zone Name** – Do not configure zones when creating or deploying images. Leave servers in the default (subnet) zone until all MetaFrame XP servers are up. At this point, zones can be configured as needed.
- **CMC Administrator** – Must be an account that can be accessed by an imaged server regardless of where the image is deployed. Refer to the *Network Configuration and Account Authority Issues* section in the **MetaFrame XP Administrator's Guide**.
- **MetaFrame XP Licenses** – Do not install any licenses when creating or deploying images. However, the product code can and should be specified.

Image Creation

This imaging process stage details the creation of MetaFrame XP images using the following steps:

1. Setup SQL Server
2. Setup MetaFrame XP Zone Data Collector
3. Setup MetaFrame XP Member Server
4. Create the MetaFrame XP Member Server Image

The following sections provide detail on each of these steps.

Setup SQL Server

The SQL Server should be setup using Microsoft and Citrix best practices. As previously stated, the SQL Server and data store can be given any name.

Setup MetaFrame XP Zone Data Collector

The first MetaFrame XP server must be installed manually, and must be up when the member server images are created or deployed. The name of the farm that it creates will be a static part of the member server images, and must be selected carefully. It is very important to note that the farm name cannot be changed, as it does not appear in the mf20.dsn file.

The first MetaFrame XP server must be added to the default zone. If zones are configured before the member server image is created, the imaged Local Host Cache will cause the IMA service to fail upon image deployment.

Setup and Prepare a MetaFrame XP Member Server

The second MetaFrame XP server in the farm must also be installed manually, and will be used to create the MetaFrame XP Member Server image. This Member Server image will be used to deploy all remaining servers. Follow Citrix best practices to install this server, and in addition, note the following items to prepare the server for image creation:

- Do not remap drives
- Do not include this server in the list of servers configured to host any applications
- Leave the server in the default zone
- In Zone settings, demote the member server to “Not Preferred”
- Install applications. Any applications that depend on the computer SID will not work after the image is created because Sysprep will remove the SID.

Create the MetaFrame XP Member Server Image

Once the server is prepared, perform the following steps on the MetaFrame XP Member Server to create the member server image:

1. Login to the CMC at least once
2. Stop the IMA service, and set its startup option to manual
3. Open the TCP/IP properties, remove all specifications, and set the server to receive IP addresses automatically. As a result, when the image is deployed successfully, the member server will not generate a duplicate IP address found on the network error.
4. Remove the following line from the mf20.dsn file: "WSID=..."
5. Delete the wfname.ini file

Run Microsoft Sysprep. Make sure that all programs and windows are closed. Sysprep will remove all domain membership information. <http://www.microsoft.com/windows2000/downloads/tools/sysprep/default.asp>

Image Deployment and Configuration

This imaging process stage details the deployment of MetaFrame XP images. It is best to use the Multicasting functionality in Ghost to minimize traffic and deploy numerous MetaFrame XP member servers. Once the image has been downloaded to the servers, use the following steps to complete the imaging process:

1. Give the server a unique name.
2. Login to the computer after it restarts.
3. Configure the TCP/IP properties, and assign the server a manual IP address as well as other information.
4. Add the server to the appropriate domain.
5. Set the IMA service startup option to automatic. Do not start the service.
6. Edit the mf20.dsn file:
 - a. "DATABASE=" parameter should be set to the desired data store with an existing Zone Data Collector, no configured zones, and the same farm name as the one used during image creation
 - b. "SERVER=" parameter should be set to the SQL Server where the desired data store is located
 - c. "UID=" field should have the correct ODBC username with SQL db_owner rights to allow for data store access
- 7. Restart the computer.**
8. Open the Services window and verify that the IMA service started.
9. Login to the CMC and check farm, zone, and member server properties.
10. After all member servers can login to the CMC, add MetaFrame licenses and configure zones as needed.
11. Publish the necessary applications on member servers.
12. It is very important to note that images created in farm A on database X located on SQL Server 1 cannot be deployed to farm B. They can however, be deployed to database Y located on SQL Server 2 if a similar farm A exists there. This means that only the name of the farm must be the same, the SQL Server, data store, Zone Data Collector names can be different.

Advanced Tips

This section discusses the following suggestions for imaging MetaFrame XP:

1. Re-imaging a MetaFrame XP Member Server
2. Imaging MetaFrame XPe Servers
3. Drive Remapping In Ghost Imaging
4. Using a Base Operating System Image
5. Using a Hybrid MetaFrame Deployment Process

The following sections provide detail on each of these steps.

Re-Imaging a MetaFrame XP Member Server

The information in this section is from the Advanced Concepts for MetaFrame XP, Feature Release1 (SP1) Guide. It is important to note that if a server is not removed from the server farm before an image is applied to it, performance problems can result. The Citrix Management Console can display invalid data if the server is added back to the same server farm. This is because the old server's host record in the data store is applied to the newly imaged server. Therefore, the following steps must be taken before re-imaging a member server that is already part of the server farm.

1. From the Citrix Management Console, remove the server to be re-imaged from the list of servers configured to host any applications
2. Remove the server from the server farm by uninstalling MetaFrame XP
3. From the Citrix Management Console of another server in the server farm, remove the server to be re-imaged from the server list
4. Deploy the MetaFrame XP Member Server image by using the steps in the [Image Deployment](#) section.

Imaging MetaFrame XPe Servers

The information in this section is from the Advanced Concepts for MetaFrame XP, Feature Release 1 (SP1) Guide. If Resource Management (RM) is installed on member servers, the RMLocalDatabase must be recreated prior to creating the Member Server image. To recreate this database, follow these steps:

1. Delete C:\%Program Files%\Citrix\Citrix Resource Manager\LocalDB\RMLocalDatabase.*
2. Open the ODBC Data Source Administrator
3. Select the System DSN tab in the ODBC Data Source Administrator dialog box
4. Select RMLocalDatabase from the list
5. Click Create
6. Enter C:\%Program Files%\Citrix\Citrix Resource Manager\LocalDB\RMLocalDatabase.mdb in the database name box
7. Click OK in each dialog box to exit the ODBC Data Source Administrator

8. Close the Control Panel

No additional changes to this procedure are required to clone Installation Management.

Drive Remapping In Ghost Imaging

The following knowledge has been compiled from Citrix email threads. Citrix Consulting Services has not verified or tested this information, and therefore recommends no drive remapping with Ghost imaging.

In addition to the information below, reference the following Microsoft articles: "Unable to Log on if the Boot Partition Drive Letter Has Changed" ([Q249321](#)), and "How to Change the System/Boot Drive Letter in Windows 2000" ([Q223188](#)). The Microsoft method will only work if the user can log in to the server after the image has been deployed.

If drives are remapped before the Ghost image is created, the deployed image will come up with the server drive letters as C:, D:, etc. The server drive letters are reset because of a feature in Ghost that does not apply the disk signature of the image. A way to keep the remapped drives is to apply a command line flag when deploying the Ghost image. Execute "Ghost.exe -FDSP". The FDSP is a command line option that stands for Force Disk Signature Preserve. Note that the FDSP command line option does not work in Windows NT 4.0 Terminal Services.

Using a Base Operating System Image

A Base Operating System image (with all service packs, MDAC updates, etc.) should be created to use in deploying all servers that need manual installs. Such servers include the SQL Server, Zone Data Collectors, and the first member server. After the Base Image is deployed, users can manually install all additional software.

Hybrid MetaFrame Deployment Process

The major disadvantage for the CCS Automated Build is that it takes hours to complete, depending on the configuration options. This time can be cut in half if Ghost imaging is used to deploy a Base Operating System image (as discussed above), and a VBS script is used to install and configure MetaFrame and all applications.

Acknowledgements

The following table lists resources and their contributions to this white paper.

Resource	Contribution
Erik Abbott Citrix Consultant	Tested and verified that changing the Data Store name and SQL Server name in the mf20.dsn file of a deployed image can be used to point the MetaFrame Server elsewhere.
Rick Dehlinger Citrix Systems Engineer	Use of the Ghost FDSP command line option to maintain remapped drives.
Dan Simmons Citrix Senior Consultant Larry Sweeney Citrix Manager	Reviewed and provided feedback on this white paper.
Advanced Concepts for MetaFrame XP, Feature Release 1 (SP1) Guide	Reference for this White Paper, and Provided Content for Advanced Concepts Section



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