



Using DeployCenter 5.51 with RDM 4.11

A White Paper

July 17, 2004

Note:

Before using this information and the product it supports, read the general information in “Notices,” on page 8.

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Preface

This White Paper explains how to use IBM® Remote Deployment Manager (RDM) 4.11 with Symantec/PowerQuest DeployCenter 5.51.

RDM contains a limited-function version of DeployCenter. These limitations include:

- Capture or restore only the boot partition.
- Minimal partition resizing.
- ZLIB compression.
- Unicast.

To get the full DeployCenter capabilities, you must purchase licenses for a full-function version of DeployCenter. In particular, you will then be able to enhance RDM's functionality to include the following:

- Capture or restore multiple partitions.
- Resize partitions any way you like.
- Better compression.
- Multicast.
- Faster performance.

You can use this document to learn how to do the following:

- Update your RDM installation so that it uses the full-function version of DeployCenter.
- Modify RDM *Get Donor* and *Windows Clone Install* tasks.
- Modify RDM DOS system environments.

The tasks described in this paper accomplish their desired functions in a specific way. There are alternate techniques available for doing all of these functions. The intent is to illustrate various methods, as well as to describe a way to implement these particular functions.

Important: This document is not intended to be a primer on how to use DeployCenter. Use the Symantec/PowerQuest documentation to learn about DeployCenter.

Who should read this White Paper

This paper is intended to help skilled RDM administrators to create deployment procedures and to understand the concepts involved. To effectively use this paper, you should already have an extensive knowledge of your Network environment, your RDM environment, and DOS batch files.

It also assumes that you already have an extensive knowledge of how to use DeployCenter.

Further reference

In addition to this paper, there are various other sources of information that you can consult for RDM and for RDM Custom tasks.

Guides

The following product documentation is available for RDM:

- *Remote Deployment Manager 4.11 Getting Started* – Step-by-step examples of using several tasks
- *Remote Deployment Manager 4.11 Operations Guide* – The main reference manual for RDM
- *Remote Deployment Manager 4.11 Installation Guide* – Describes the complete installation process of RDM
- *Remote Deployment Manager 4.11 Compatibility and Configuration Guide* – Lists RDM-supported hardware and software
- *Remote Deployment Manager 4.11 Additional Information* – Describes new features in RDM Updates 1, 2, and 3; includes corrections and enhancements to the RDM 4.11 documents

White papers

Some topics that are not covered in the Guides are described in white papers. You can find those on the public IBM Web site:

<http://www-306.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-53487>

Online help

In general, every window has online help available (except for some message windows or other windows where no help is applicable), either using a **Help** menu or a **Help** button.

Links

The following links are available for further information:

- Support is available for supported systems (IBM and non-IBM) through e-mail or fee-based telephone support. Telephone support is not available in all countries. For more information about the fee-based telephone support, go to <http://www.ibm.com/support> or <http://service.software.ibm.com/supportline.html>. For more information about e-mail support, refer to the RDM home page.

Important: Before using RDM 4.11, check the compatibility test results and browse the rest of the RDM Web site for additional information and tips concerning the installation and use of RDM.

1 Procedure for adding DeployCenter to RDM

This section describes how to incorporate the full-function DeployCenter files into your RDM installation. It assumes you will use the PowerQuest Unicast Server.

It also assumes you have installed RDM into the C:\Program Files\IBM\RDM directory. If you used a different directory, adjust the procedure accordingly.

Several of the sections below refer to using PowerCast. If you don't intend to use PowerCast, you can skip those sections.

1.1 Install the latest RDM version

1. Make sure that you are using RDM 4.11 with Update 3 or later. You can obtain Update 3 from the IBM web site:

http://www-1.ibm.com/servers/eserver/xseries/systems_management/sys_migration/rdm.html

Note that:

- o Update 3 is a two-part install.
- o You might have to modify the batch file that does the second part.

1.2 Locate the DeployCenter files

There are a couple of different ways to do this. The specific files that you need depend on which DeployCenter functions that you intend to use, as well as which technique you use to locate the files.

2. Install DeployCenter on your RDM server, including the optional PowerCast feature.
3. Build a PowerCast boot image (store it in a directory). You will get the following files from that directory:

File name	File location
PQPCAST.EXE	PowerCast boot image
PQDPLCTR.RTC	PowerCast boot image

4. Build a Unicast boot image (store it in a directory). You will get the following files from that directory:

File name	File location
PQIMGCTR.EXE	Unicast boot image
PQDPLCTR.RTC	Unicast boot image

1.3 Copy the DeployCenter files

1.3.1 PowerCast files

5. Copy the C:\Program Files\IBM\RDM\local\env\71c directory structure to C:\Program Files\IBM\RDM\local\env\71cp.
6. Copy the following files from step 3 above into the C:\Program Files\IBM\RDM\local\env\71cp directory:

```
PQPCAST.EXE
PQDPLCTR.RTC
```

Note: Prior versions of this document suggested copying the following files, instead:

7. If you will be crossing routers, create a WATTCP.CFG file in the C:\Program Files\IBM\RDM\local\env\71cp directory, with an appropriate *MCTTL* value.

1.3.2 UniCast files

8. Copy the following files from step 4 above into the C:\Program Files\IBM\RDM\local\env\71c directory:

```
PQIMGCTR.EXE
PQDPLCTR.RTC
```

Note: Prior versions of this document suggested copying the following files, instead:

```
PQIMGCTR.EXE
PQIMGCTR.OVL
PQIMGCTR.PQG
PQDPLCTR.RTC
```

If you already did it this way, and it is working properly, there is no need to change anything. Just be aware that the PQIMGCTR.EXE file that is used with the PQIMGCTR.OVL file is different from the PQIMGCTR file that you get from the Unicast boot image.

1.4 Modify RDM's script file

9. Change the C:\Program Files\IBM\RDM\local\env\71c\capture\PQSTORE.SCR and C:\Program Files\IBM\RDM\local\env\71cp\capture\PQSTORE.SCR files to look like this:

```
SELECT DRIVE 1
SELECT PARTITION ALL
SET DESCRIPTION ""
STORE WITH COMPRESSION HIGH
```

That is, change "SELECT PARTITION 1" to "SELECT PARTITION ALL".

1.5 Modify RDM's DEPLOY.BAT file for PowerCast use

10. Change the C:\Program Files\IBM\RDM\local\env\71cp\deploy\DEPLOY.BAT file to look like this:

```
REM *****
REM * DEPLOY.BAT
```

```

REM * Copy PowerQuest image from D-Server to client
RDM * Modified to use PowerCast.
REM *****
@ECHO OFF

ECHO Running DEPLOY.BAT to deploy images stored within %CloneFolder% to client.

REM Check to see if PowerQuest image file exists.
mtftp get %SERVER_IP% image\%CloneFolder%\%CloneFileName% A:\%CloneFileName% -r
if errorlevel 1 goto TFTPERR

mtftp get %SERVER_IP% environment\dos\scrub3.exe A:\scrub3.exe

REM Wipe the boot record of the first disk in case disk is corrupt
A:\SCRUB3 /D=1 /L=1 /S=NO

SET RDSTATUS=RMPQC002I
IF EXIST PQImgCtr.EXE GOTO FULL
IF EXIST PQPCAST.EXE GOTO PCAST

mtftp get %SERVER_IP% environment\dos\pqidplyz.exe A:\pqidplyz.exe
if errorlevel 1 goto TFTPERR
mtftp get %SERVER_IP% environment\dos\pqidplyz.rtc A:\pqidplyz.rtc
if errorlevel 1 goto TFTPERR
PQIDplyZ
    /IMG=\\.\imgsrv\%SERVER_IP%\repository\image\%CloneFolder%\%CloneFileName%
    /CMD=deploy\PQRESTR.SCR /IFC
GOTO RETURN

:FULL
IF EXIST PQPCAST.EXE GOTO PCAST

IF NOT %IDE% == TRUE GOTO RAID
PQImgCtr
    /IMG=\\.\imgsrv\%SERVER_IP%\repository\image\%CloneFolder%\%CloneFileName%
    /CMD=deploy\PQRESTR.SCR /IFC /NOCDR /NMD
GOTO RETURN

:RAID
REM Renaming script file to handle commandline 127 character length
cd deploy
ren PQRESTR.SCR R.SCR
cd ..
PQImgCtr
    /IMG=\\.\imgsrv\%SERVER_IP%\repository\image\%CloneFolder%\%CloneFileName%
    /CMD=deploy\R.SCR /IDE=OFF /IFC /NOCDR /NMD
GOTO RETURN

:PCAST
PQPCAST /MSN=%SESSIONNAME% /DSK=1 /NRB /DBG=DEBUG.TXT /ERR=ERROR.TXT
GOTO RETURN

:RETURN
set RDSTATUS=RMPQC003I
IF ERRORLEVEL 2 goto ERROR
IF ERRORLEVEL 1 SET RDSTATUS=RMPQC001w
GOTO END

:TFTPERR
CALL MFTFPRC.BAT
GOTO END

:ERROR
call pqerror.bat
IF EXIST DEBUG.TXT MTFTP PUT %SERVER_IP% DEBUG.TXT %BOOTMAC%.PCASTDBG.TXT
IF EXIST ERROR.TXT MTFTP PUT %SERVER_IP% ERROR.TXT %BOOTMAC%.PCASTERR.TXT
IF EXIST LOG.TXT MTFTP PUT %SERVER_IP% LOG.TXT %BOOTMAC%.PCASTLOG.TXT

:END
ECHO Exiting DEPLOY.BAT.

```

1.6 Rebuild the DOS71C System Environments

1.6.1 DOS71C

11. Run the C:\Program Files\IBM\RDM\local\env\MKIMAGES.BAT program. Check for error messages.

1.6.2 DOS71CP

12. Create a C:\Program Files\IBM\RDM\local\env\MYMKIMGS.BAT program that contains the following text:



```
@echo OFF
REM *****
REM * Remote Deployment Manager
REM * (C) Copyright IBM Corp. 1996, 2004 All rights reserved.
REM *****
REM * This file builds all of the customer-created DOS images
REM * used during RDM processing.
REM *****

echo . Building DOS disk images...
echo .
echo . Making dos71cp image
copy baseimg dos71cp
bpdisk -d dos71cp -i b
bpdisk -d dos71cp -i 71s\dos
bpdisk -d dos71cp -i o\h
bpdisk -d dos71cp -i o\e
bpdisk -d dos71cp -i 71cp
move dos71cp ..\..\repository\environment\dos71cp

PAUSE
:END
```

13. Run the C:\Program Files\IBM\RDM\local\env\MKIMAGES.BAT program. Check for error messages, and then select a key to exit the batch file.

1.7 Upgrade the PowerQuest Unicast Image Server

14. Compare the version of UCSERVICE.EXE that shipped with RDM versus the version from the PowerQuest CD. For example, if you copied the CD version to C:\, run a command like:

```
COMP "C:\Program Files\IBM\RDM\bin\UCSERVICE.EXE" C:\UCSERVICE.EXE
```

If the files compare OK, then skip the rest of the steps in this section and proceed to section 1.8 below.

15. On the RDM server, and on each remote RDM Deployment Server, open a CMD.EXE window. Run the following commands:

```
CD "C:\Program Files\IBM\RDM\bin"
UCSERVICE /unregserver
RENAME UCSERVICE.EXE UCSERVICE.OLD
```

This will stop and uninstall the service and clean up the registry.

16. Copy the new UCSERVICE.EXE file into the "C:\Program Files\IBM\RDM\bin" directory.
17. Run the following command in the command window:

```
UCSERVICE.EXE /service /startup auto /imagedir "C:\Program  
Files\IBM\RDM" /logfile "C:\Program Files\IBM\RDM\log\PQLOG.TXT"
```

Note that this is a single command that should be entered all on one line. This will install and start the new service.

1.8 Test the procedure

18. Create a donor system that is configured to have 2 or more partitions.
19. Run a *Get Donor* task on that donor system. This creates the image that you will use in a *Windows Clone Install* task.
20. Immediately after the Starting PC DOS... message appears on the target system's monitor, press the F8 key. This allows you to step through all of the batch files, statement-by-statement.
21. Press the "y" key to execute each statement in-turn. Observe each statement, and watch for any errors that may occur.

Note: If an error occurs, debug it, fix it as appropriate (usually in one of the files you created or modified above), and then rerun the test.

Before you rerun the test, you will usually need to do the following:

- a. Power off the target system with the power switch.
- b. Right-click on the target system in the middle pane of the RDM console.
- c. Click the **Remote Deployment Manager** and the **Cancel Tasks** menu items.

Important: It is mandatory that you test using F8 as described above. Although CAPTURE.BAT (the RDM program that runs PQIMGCTR.EXE) contains error-handling logic, it cannot report a specific error that came from PQIMGCTR.EXE. This is because PQIMGCTR.EXE usually displays an error message on the target system and then sets ERRORLEVEL to a generic value. So even though RDM may mark the task as "failed", it gives a generic failure message because it cannot report the actual error message. You need to observe that message on the target system's monitor to determine what went wrong.

22. Now you are ready to test the whole RDM cloning scenario:
 - a. Create a donor system that contains the Windows operating system and applications that you want. Make sure that it contains 2 or more partitions, and that each partition contains some files.
 - b. Run Microsoft's SYSPREP.EXE on the donor system.
 - c. Run an RDM *Get Donor* task on the donor system. This creates an RDM image of the de-personalized donor system.
 - d. Create an RDM *Windows Clone Install* task that uses the image you created in step 22c.
 - e. Run the Windows Clone Install task that you created in step 22d on a target system that is similar to your donor system. For example, you can run it on your donor system.
 - f. Boot the target system used in step 22e, logon, and verify that it is configured as you intended.

2 Procedure for using PowerCast with RDM

If there is only one network adapter enabled in the operating system for the PowerCast server, there seems to be no problem getting the target systems to see the server sessions.

If the PowerCast server is multi-homed, in order to get the sessions communicating, you may need to ensure that both of the following conditions are satisfied:

- The PowerCast session must be configured to run on the network adapter (NIC) with the lowest PCI Bus priority. This is usually the adapter with the highest number as seen by Windows.
- The adapter on which the PowerCast server is running must be the broadcast interface listed in the routing table.

These conditions seem true even if you specify the PowerCast session discovery and session addresses using the */PCD* and */PCS* parameters.

2.1 Create your RDM Windows Clone Install task

1. Create your RDM task in the normal way.
2. Modify the task's Command List to use the new DOS71CP image.
3. Define a user variable `SESSIONNAME` that will be used as the PowerCast session name. If you always intend to use the same session name, enter that name as the default value for this parameter.

2.2 Start the PowerCast Server session

4. Via the Start menu on the RDM D-Server, start the PowerCast Server.
5. Enter an appropriate session name.
6. Select the appropriate image from the RDM repository by navigating to its PQI file in the `C:\Program Files\IBM\RDM\repository\images\...` directory.
7. `C:\Program Files\IBM\RDM\local\env\71c` Set the *Autostart client count* to the number of systems that you intend to deploy concurrently.

2.3 Deploy systems with the RDM task

8. Select the systems. This should be the same number that you specified in section 7 above.
9. Drag the RDM task and drop it on the selected systems.
10. Select `Configure systems...`, and enter the appropriate configuration data. In particular, use the session name from step 5 above as the value of the `SESSIONNAME` user parameter.
11. Select the check box that runs the task right away, and select the OK button. Schedule the task to run at the appropriate time.

When the scheduled time occurs, RDM will wake up the systems and start the task on each system. The task will pause until all of the systems establish connections to the PowerCast Server. At that time, the image download will start on all the systems. The task will eventually complete in the normal way.

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Glossary

BAT file. A file that contains a batch program (that is, a set of commands).

bind. Associating one or more systems to a task. This causes all information to be verified (by one of the STC modules) and a resulting job to be scheduled to run.

console, or RDM Console. The group of programs that make up the user interface to RDM. RDM is client/server in nature so that the Console might run on any computer and not necessarily be running on the same computer as the RDM server or other RDM components. The RDM Console is actually an IBM Director Console on which the RDM Console component is installed.

image. An image is the software stored on a deployment server that is downloaded to a system during an operation. Images vary in size and in the type of software they provide to the system. The purpose and content of each image depends on the task to be accomplished, as well as the method used to download the image from the deployment server to the system. A *native* image is built off a product installation CD. A *clone* image is copied from a donor system.

job. An object managed by the scheduler and created by STC. A job is a binding of one task and one or more systems. A job can be scheduled to run once or to recur. Sometimes a job is called by a different name (Scheduled Task, Running Task), to emphasize some aspect of the job.

managed system. The IBM Director term for its system. Mentioned here only for clarity; the term *system* is preferred when referring to an RDM system.

preboot DOS agent. The preboot DOS agent is a DOS operating system with a communications stack that is booted from the network by the bootstrap agent. The preboot DOS agent performs actions on a system as directed by the RDM server.

Preboot Execution Environment (PXE). PXE is an industry standard client/server interface that allows networked computers that are not yet loaded with an operating system to be configured and booted remotely. PXE is based on Dynamic Host Configuration Protocol (DHCP). Using the PXE protocol, clients can request configuration parameter values and startable images from the server.

The PXE process consists of the system initiating the protocol by broadcasting a DHCPREQUEST containing an extension that identifies the request as coming from a client that uses PXE. The server sends the client a list of boot servers that contain the operating systems available. The client then selects and discovers a boot server and receives the name of the executable file on the chosen boot server. The client downloads the file using Trivial File Transfer Protocol (TFTP) and executes it, which loads the operating system.

Redundant Array of Independent Disks (RAID). RAID is way of storing the same data in

different places (thus, redundantly) on multiple hard disks. By placing data on multiple disks, I/O operations can overlap in a balanced way, improving performance. Multiple disks increase the mean time between failure (MTBF) and storing data redundantly increases fault-tolerance.

system. An individual, target system being deployed or managed by RDM. In IBM Director terminology, an RDM system is always a platform managed object. These can represent any of the supported-by-RDM systems. They cannot represent an IBM Director object that RDM does not process, such as a chassis or an SNMP object.

task. An already defined and configured unit of work that is available to be applied to a system or a group (of systems). You create a task by clicking on the applicable task template from the RDM main console. RDM is installed with predefined tasks, such as data disposal and scan.

task template. A prototype of a specific kind of RDM task. This is a term used to describe the different kinds of tasks shown on the task pane in the main window of the RDM console. Each task template has its own characteristics and attributes. RDM comes with a set of task templates.

Wake on LAN. Technology developed by IBM that allows LAN administrators to remotely power up systems. The following components are essential for the Wake on LAN setup:

- Wake on LAN-enabled network interface card (NIC).
- Power supply that is Wake on LAN-enabled.
- Cable which connects NIC and power supply.
- Software that can send a magic packet to the system.

If the system has the first three of the previous components, the system is called a Wake on LAN-enabled system. Even though a system might be powered off, the NIC keeps receiving power from the system power supply to keep it alive. A network administrator sends a magic packet to the system through some software, for example, RDM or Netfinity IBM Director. The NIC on the system detects the magic packet and sends a signal to the power supply to turn it on. This process is also called *waking up the system*. Using RDM, this process can be scheduled for individual systems. The Wake on LAN feature and RDM together make it very easy for you to deploy software on individual systems on a scheduled basis.



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