

Configuring Broadcom Teaming with RDM

A White Paper

May 9, 2006

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Contents

Contentsi	ii
1 Preface 1.1 Who should read this White Paper 1.2 Further reference 1.2.1 Guides	1 1 1
1.2.2 White papers 1.2.3 Online help 1.2.4 Links 1.3 Limitations	1 2 2
2 Procedure	23
2.1 Create an RDM image 2.1.1 Import an image 2.1.1 1 Unzin the attached file	333
2.1.2 Create the image yourself.	4 7 8
2.1.2.2 Create the CONFIG.BAT File	8 1
2.1.2.4 Create the POOLED.BAT file	2 3 7
2.2.1 Windows Native Install	7
2.3 Test the Windows deployment Task 2 3 Notices 2	2
3.1 Edition notice	3 4
4 Glossary2	5

1 Preface

This White Paper explains how to use IBM® Remote Deployment Manager (RDM) 4.30 and Broadcom software to configure multiple Broadcom network interface cards (NICs) in a team. You can include this configuration in an RDM Windows Native Install task or an RDM Windows Clone Install task. You can configure shared NICs for such operations as:

- Pooled operations.
- Rollover (or "failover") operations.

1.1 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.

1.2 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

1.2.1 Guides

The following product documentation is available for RDM:

- Remote Deployment Manager 4.30 User's Reference The main reference manual for RDM
- Remote Deployment Manager 4.30 Installation and Configuration Guide Describes the complete installation process of RDM
- Remote Deployment Manager 4.30 Compatibility Guide Lists RDM-supported hardware and software

Check the IBM Web site at <u>http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-56662</u> to get the current versions of the above documents.

1.2.2 White papers

The various RDM white papers are available on the IBM Web site at <u>http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-53487</u>.

1.2.3 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.

1.2.4 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 <u>http://www.ibm.com/support</u> or <u>http://service.software.ibm.com/supportline.html</u>. For more information about e-mail support, refer to the RDM home page.

Important: Before using RDM 4.30, 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.

1.3 Limitations

The approach defined in this paper requires the use of the Broadcom BASP installation and silent configuration utility programs (available on the Broadcom NetXtreme Gigabit Ethernet Software CD) and is limited to configuring on-board and add-on Broadcom NICs.

It is beyond the purview of this White Paper to be a tutorial on writing shared NIC configuration scripts. For further information on creating shared NIC configuration scripts, please refer to the Broadcom documentation on the Broadcom CD.

1.4 Change History

This section describes significant changes in this document:

 May 9, 2006 – Updates for RDM 4.30 functional enhancements and fixes. Changes how to add the Broadcom Teaming application to a Windows Clone Install task. Eliminates the use of user parameters, using RDM built-in parameters instead. Embedded file contains a newer version 8.3.9 of the Broadcom utilities.

2 Procedure

The approach of this paper can be broken down into the following basic steps:

- 1. Obtain and create the files needed to configure the NICs.
- 2. Create an RDM image that contains the files that will configure the NICs.
- 3. Create an RDM task that deploys Windows.
- 4. Add statements that implement NIC teaming to the task's command list.
- 5. Test the task.

2.1 Create an RDM image

You must choose one of two possible ways to accomplish this step:

• Import the image attached to this document.

Because RDM 4.30 (actually, 4.20 or later) has the ability to import an image, you can use the attached file (which contains an exported copy of the image created in the steps below) to create your image. This is much easier and faster than creating the image yourself.

• Create the image yourself.

This entails downloading and extracting the Broadcom files, plus creating several other files yourself. It is somewhat more time-consuming than importing the image.

Important: Regardless of which image-creation method you choose, you may have to modify some files from what are shown in this document. For example, you may be using a different version of the Broadcom software that uses newer or different files, you may be using a different type of NIC teaming than what is shown below, or your NICs may require different configuration parameters.

2.1.1 Import an image

There are 2 parts to this step:

- 1. Unzip the attached file.
- 2. Import the image.

0

2.1.1.1 Unzip the attached file

1. Extract the attached self-extracting ZIP file, *TeamingImage.EXE*, by right clicking on the paperclip icon and saving the file to disk.

Note: You may need Adobe Acrobat Reader 6.0.1 or later to be able to extract the file. If you are using Adobe Acrobat Reader 7.0 or later, you may need to modify your Windows Registry to be able to extract the file. See http://www.adobe.com/support/techdocs/328671.html and http://www.adobe.com/support/techdocs/328671.html and http://www.adobe.com/support/techdocs/328671.html and http://www.adobe.com/support/techdocs/328671.html for configuration instructions.

- 2. Run TeamingImage.EXE.
- 3. Change the target folder name appropriately (e.g., to C:\), and then click the Unzip button.

WinZip Self-Extractor - TeamingImage.exe	×
To unzip all files in TeamingImage.exe to the specified folder press the Unzip button.	Unzip
Linzin to folder:	Run <u>W</u> inZip
Browse	<u>C</u> lose
verwrite files without prompting	About
	<u>H</u> elp

4. Click the *OK* button when the unzip is complete.

WinZip Self-Extractor 🛛 🔀
3 file(s) unzipped successfully
OK 2

5. Click the *Close* button to exit WinZip.

WinZip Self-Extractor - Teamin	gImage.exe	×
To unzip all files in TeamingImage.e specified folder press the Unzip but	exe to the ton.	<u>U</u> nzip
Unzin to folder:		Run <u>₩</u> inZip
	<u>B</u> rowse	
verwrite files without prompting	9	About
		<u>H</u> elp

2.1.1.2 Import the image

6. From the Director console, select the Tasks, Remote Deployment Manager, Import/Export, and Import RDM Data... menus.

IBM Director Console			×
Director Tasks Associations Option	s Window Help		
🚓 👝 Discover Systems	▶		
Message Browser			
Build Custom Query	Group Contents (17)	Tasks	_
Edit Software Dictionary	3 2865431Y-23B5110	Configure Alert Standard Format	^
View Inventory	3 286695RX-78Z6882	☐ ☐ ☐ ☐ Configure SNMP Agent	
Event Action Plan Builder	3 2867442×-78Z9527		
Scheduler	89353U-23FPMFP	Event Action Plans	
Active Console Viewer	36473BX-KPWM930	Event Log	
Remote Deployment Manag	ger 🕨 Options 🔹 🕨	File Transfer	
Hardware Status Warning	🗌 📒 Image Management 🕨	Hardware Status	
IBM Director Systems	Import/Export	Import RDM 3.x Systems	
Physical Platforms	Network Storage	Import RDM 4.x Systems rocessor Assistant	
Platforms	- 🖳 (Wakeup Tool	Export RDM 4.x Systems er Browser	
Platforms and Platform Mem	- le 86473BX-KPWM930	Export RDM Tasks	
Scalable Systems and Memt	-le 86695RX-78Z6882	Export RDM Images pement	
Systems with ASF	-le 867252X-78FN817	Import RDM Data	
Systems with ASF Secure Re	-le 867313Z-23A0718	🗗 🕰 Remőte Deployment Manager	
Systems with Asset ID	-867442X-78Z9527	CMOS Update	
Systems with CIM		Custom	\square
Systems with SNMP Agent	- 📇 SANDS	Donor Image	
Systems with Windows Servi		Linux Native Install	
		Restore	
		RAID Clone Configuration	
		RAID Custom Configuration	
		Remote Storage Configuration	
		🖓 🖏 Scan	Ŧ
Ready	Host:	:: RDMSERVER1 User ID: RDMSERVER1\murphrey 1:37 PM EST	

7. Make sure that you are not running any other RDM tasks. Then click OK on the warning message.



8. Select the Browse button on the Import Data window.

Import data which the d	to RDM. Provide the fully-qualified path of the folder to Ita was exported.
Import folde	:
	<u> </u>

9. Navigate to the *TeamingImage* folder, select the *TeamingImage.xml* file, and select the *OK* button.

Remote Deployment Manager - Select Im	port Data File	×
File Name TeamingImage.xml TeamingImage.xml	Directories: C:\TeamingImage C:\ TeamingImage TeamingImage Tepository	Cancel
List Files of Type	Drives:	Source:
*.xml	- C	- Local -
Ready		

10. Select the OK button on the Import Data window.

Remote Deployment Manager - Import Data	<u>- 0 ×</u>					
Import data to RDM. Provide the path and name of the file that contains the data that is to be imported.						
Import file:						
C:\TeamingImage\TeamingImage.xml	e					
<u>O</u> K <u>C</u> ancel	<u>H</u> elp					

11. Select the OK button on the final Import Data Progress message window.



12. Open the *Image Management* window (using the **Tasks**, **Remote Deployment Manger**, **Image Management**, and **Create and Modify Images** menus) to validate that the new image is there.

Cre <u>a</u> te	<u>E</u> dit	<u>D</u> elete	<u>R</u> ep	olicate	
lmag	je Name	Туре		Image Description	Internal Name
3850 bios 1.04		System Firmw	are		05213121719203.zip
Adobe Acrobat Rea	ader 7.0.0	Windows Nativ	ve In		053917266703.zip
Broadcom firmwar	e 1.20.9	Custom			05145115435703.zip
Broadcom Teamin	g	Windows Nativ	ve In		05140171438578.zip
Director 4.22 Agen	t	Windows Nativ	ve In		0516583337625.zip
Microsoft Server 20	03 Standard Update	es Windows Nativ	ve In		0545153725906.zip
Office 2003 - Profe	ssional Enterprise E	Windows Nativ	ve In	MSDN	052410107953.zip
Office 2003 - Servi	ce Pack 1	Windows Nativ	ve In	MSDN	052592324875.zip
SCSI firmware 1.1	7	Custom		Contains files extracted from the FLAS	05201115649984.zip
/isio 2003		Windows Nativ	ve In		0428919835750.zip
W2000 AS SP4		Windows Nativ	ve In		0518114951984.zip
W2003 Standard		Windows Nativ	ve In		04289102848359.zip
W2003 Standard w	vith SP1	Windows Nativ	ve In		05200104251438.zip
W2003Std (Visio V	Vinzip OfficeSP1 Ado	Windows Clor	ie In	4.22	1118761789031
Winzip 9.0 SR-1		Windows Nativ	ve In		04275144422531.zip
<p< td=""><td></td><td>Windows Nativ</td><td>ve In</td><td></td><td>0553165653219.zip</td></p<>		Windows Nativ	ve In		0553165653219.zip
(P SP1		Windows Nativ	ve In		0553165239312.zip

13. Note the file name of the image's zip file (05140171438578.zip in this example).

2.1.2 Create the image yourself

We are going to create an RDM image that contains the files in the following table.

File name	How obtained
BASFND.SYS	Tools\BASPSCFG\IA32 folder on the Broadcom CD
BASPSCFG.EXE	Tools\BASPSCFG\IA32 folder on the Broadcom CD
BMAPI.DLL	Tools\BASPSCFG\IA32 folder on the Broadcom CD
CONFIG.BAT	Created by the user
LCCUSTOM.EXE	Program Files\IBM\RDM\repository\environment\dos folder on the RDM server
POOLED.BAT	Created by the user
SETUP.EXE	MgmtApps\IA32 folder on the Broadcom CD
TEAMCFG.TXT	Created by the user

2.1.2.1 Obtain Broadcom files

- Download the appropriate Broadcom(R) NetXtreme (TM) Gigabit Ethernet Drivers Software CD from the IBM web site. We used this URL: <u>http://www-307.ibm.com/pc/support/site.wss/document.do?sitestyle=ibm&Indocid=MIGR-43815</u> for version 8.3.9 of the Broadcom software.
- 2. Unpack the CD image, by running the executable file from the above web site. You can unpack it to your hard drive (without creating a CD).
- 3. Create a temporary folder called BASP on the RDM server.
- Copy the following Broadcom BASP installation files from the MgmtApps\IA32 folder on the Broadcom CD to the temporary BASP folder on the RDM server:

SETUP.EXE

 Copy the following Broadcom BASP configuration tool files from the Tools\BASPSCFG\IA32 folder on the Broadcom NetXtreme Gigabit Ethernet Software CD to the temporary BASP folder on the RDM server:

BASPSCFG.EXE BASFND.SYS BMAPI.DLL

2.1.2.2 Create the CONFIG.BAT File

The CONFIG.BAT file actually configures the NIC teaming. It uses BASPSCFG.EXE to do it.

6. Depending on the specific type of pooled NIC configuration you want, the Broadcom BASPSCFG.EXE configuration utility can require one or more parameters to perform configuration tasks. To work with multiple target systems under RDM, the task logic needs to be written so that RDM replaces all "variables" with machine-specific values. You can run BASPSCFG.EXE with command-line parameters, or you can run it with the parameters contained in a file. We use the latter, because it seems to work better in some instances. The following statement, from our example file below, references the parameters in the TEAMCFG.TXT file:

```
BASPSCFG.EXE -restore TEAMCFG.TXT
```

However, the call to the BASPSCFG configuration utility is made in a batch file that you can customize (in case you prefer to use a different technique).

Following the examples in the Broadcom document *Silent Configuration for Broadcom Advance Server Program*, a batch file used to create a Smart Load Balance and Fail Over team with 2 "teamable" physical network adapters and to configure the team with a static IP address would look like this:

```
TITLE "CONFIG.BAT: Configure the NIC team."
REM With no command-line parameters, BASPSCFG will create a
REM default Load Balance SLBTeam with all 'teamable' physical
REM network adapters and configure SLBTeam with DHCP
ECHO Configuring multiple NICs for pooled operations. Please wait...
REM This statement can be used if you want the parameter values on the command line:
REM BASPSCFG.exe -name Teamed -type 0 -pnic %MACADDRESS_1% -snic %MACADDRESS_2% -ip
%ComputerIP_1% -smask %SubnetMask_1% -gw %DefaultGateway_1% -dns %DNSPreferredIP_1%
REM This example uses the parameter values from a file:
SET >%SYSTEMDRIVE%\MYSET.TXT
LCCUSTOM TEAMCFG.TXT
BASPSCFG.EXE -restore TEAMCFG.TXT
IF ERRORLEVEL 557 GOTO ERR_557
IF ERRORLEVEL 556 GOTO ERR_556
```

IF ERRORLEVEL 555 GOTO ERR_555 IF ERRORLEVEL 554 GOTO ERR_554 IF ERRORLEVEL 553 GOTO ERR_553 IF ERRORLEVEL 552 GOTO ERR 552 IF ERRORLEVEL 551 GOTO ERR_551 IF ERRORLEVEL 550 GOTO ERR_550 IF ERRORLEVEL 514 GOTO ERR_514 IF ERRORLEVEL 513 GOTO ERR_513 IF ERRORLEVEL 512 GOTO ERR_512 IF ERRORLEVEL 511 GOTO ERR_511 IF ERRORLEVEL 510 GOTO ERR_510 IF ERRORLEVEL 509 GOTO ERR_509 IF ERRORLEVEL 509 GOTO ERR_509 IF ERRORLEVEL 508 GOTO ERR_508 IF ERRORLEVEL 507 GOTO ERR_507 IF ERRORLEVEL 506 GOTO ERR_506 IF ERRORLEVEL 505 GOTO ERR_505 IF ERRORLEVEL 504 GOTO ERR 504 IF ERRORLEVEL 503 GOTO ERR_503 IF ERRORLEVEL 502 GOTO ERR_502 IF ERRORLEVEL 501 GOTO ERR_501 IF ERRORLEVEL 500 GOTO ERR_500 SET RDRASLEVEL=0 SET RDSTATUS=RDMNIC000I BASPSCFG.EXE completed with no errors. GOTO FINISH :ERR_557 SET RDSTATUS=RDMNIC557E Wrong BMAPI GOTO FAILURE :ERR_556 SET RDSTATUS=RDMNIC556E Cannot get all created teams GOTO FAILURE :ERR 555 SET RDSTATUS=RDMNIC555E Cannot get all unassigned adapters number GOTO FAILURE :ERR 554 SET RDSTATUS=RDMNIC554E Cannot create team GOTO FAILURE :ERR_553 SET RDSTATUS=RDMNIC553E Cannot get adapter PCI information GOTO FAILURE :ERR_552 SET RDSTATUS=RDMNIC552E Cannot get all unassigned adapters data GOTO FAILURE :ERR 551 SET RDSTATUS=RDMNIC551E Cannot check BASP status GOTO FAILURE :ERR_550 SET RDSTATUS=RDMNIC550E Cannot initialize BMAPI GOTO FAILURE :ERR_514 SET RDSTATUS=RDMNIC514E Team already exists, please use a different team name GOTO FAILURE :ERR_513 SET RDSTATUS=RDMNIC513E & is not a legal character for the team name GOTO FAILURE :ERR 512 SET RDSTATUS=RDMNIC512E Duplicate adapter physical MAC address GOTO FAILURE

:ERR 511 SET RDSTATUS=RDMNIC511E Only Broadcom certified adapters are supported in VLAN GOTO FAILURE :ERR_510 SET RDSTATUS=RDMNIC510E Cannot create FECGEC or 802.3ad with a standby adapter GOTO FAILURE :ERR_509 SET RDSTATUS=RDMNIC509E Incorrect parameter passed to BASPCFG.EXE GOTO FAILURE :ERR_508 SET RDSTATUS=RDMNIC508E Cannot set static IP Address GOTO FAILURE :ERR 507 SET RDSTATUS=RDMNIC507E BASP is not installed and cannot create any team GOTO FAILURE :ERR 506 SET RDSTATUS=RDMNIC506E No team to configure GOTO FAILURE :ERR_505 SET RDSTATUS=RDMNIC505E Cannot open the input file GOTO FAILURE :ERR 504 SET RDSTATUS=RDMNIC504E Cannot create more than 64 VLANs GOTO FAILURE :ERR_503 SET RDSTATUS=RDMNIC503E Cannot create more than one team from command line GOTO FAILURE :ERR_502 SET RDSTATUS=RDMNIC502E Team has no member GOTO FAILURE :ERR_501 SET RDSTATUS=RDMNIC501E Cannot allocate memory GOTO FAILURE :ERR 500 SET RDSTATUS=RDMNIC500E Not supported OS GOTO FAILURE :ERR 1 SET RDSTATUS=RDMNIC001E Unspecified error in CONFIG.BAT :FAILURE SET RDRASLEVEL=1 :FINISH ECHO.

In the example above, there are no machine-specific values. However, the configuration batch file *may* require machine-specific values for the *name*, *type*, *pnic*, *snic*, *vname*, *vid*, *ip* and/or *smask* command-line parameters. The TEAMCFG.TXT file uses built-in RDM parameters for this purpose.

Any instances of MAC addresses *must* be handled by the user. RDM provides only one parameter for a MAC address: %BOOTMAC%. It is the MAC address of the NIC being used for PXE. The comments in the above file use variable names in the format %MACADDRESS_*n*% where *n* is the number of the NIC containing the MAC address. In a script configuring two NICs, each of which has its own MAC address, the variables would be %MACADDRESS_1% and %MACADDRESS_2%. It will be your responsibility to create user parameters and to set those environment variables if you intend to use MAC address in your command or text file..

In the example above,

- The LCCUSTOM.EXE line substitutes all parameter values in the TEAMCFG.TXT file.
- All of the configuration work is done by the BASPSCFG.EXE line.
- The following lines are simply to trap for error levels that the BASPSCFG.EXE executable can possible generate.
- The REM BASPSCFG.EXE line is an example of how you might use command-line parameters instead of encapsulating the parameters in a text file.

Following the examples in the Broadcom document *Silent Configuration for Broadcom Advance Server Program*, the sample batch file above creates a default Load Balance SLBTeam with all "teamable" physical network adapters and configures the SLBTeam with DHCP. If you replace the fourth line with the following line, the configuration batch file will create a FEC/GEC FGTeam with one load balanced physical adapter:

```
BaspSCfg.exe -name FGTeam -type 1 -pnic %MACADDRESS_1%
```

Similarly, changing the fourth line to the following line would create a Load Balance BRCMTeam with two VLANs and configure VLAN100 and VLAN200 with DHCP:

```
BaspSCfg.exe -name BRCMTeam -pnic %MACADDRESS_1% -snic %MACADDRESS_2% -vname VLAN100 -vid 100 -vname VLAN200 -vid 200
```

2.1.2.3 Create the TEAMCFG.TXT file

TEAMCFG.TXT contains the parameter values for BASPSCFG.EXE.

7. The content of our example file is the following:

```
name: Teamed
type: 0
pnic: %PCI_BUSNUM_1%:%PCI_DEVNUM_1%.%PCI_FUNCNUM_1%
snic: %PCI_BUSNUM_2%:%PCI_DEVNUM_2%.%PCI_FUNCNUM_2%
ip: %computerip_1%
smask: %subnetmask_1%
gw: %defaultgateway_1%
dns: %dnspreferredip_1%
```

These parameters are documented in *Silent Configuration for Broadcom Advance Server Program* (*BASP*), a document contained on the Broadcom CD.

Important: It is your responsibility to choose the appropriate parameters and to set their values appropriately.

Here is an explanation of the parameters in our example:

- name This is the name of the team. It is what appears as the name of the Ethernet adapter in the output from a Windows IPCONFIG command.
- type This is the type of teaming. Our example, 0, means that it is a Smart Load Balance and Fail Over team.
- snic This defines which physical NIC is the secondary NIC. We use the bus:dev.func format of
 this parameter, because we want to force the same NIC to be the secondary NIC on all our target
 systems. An alternate way to do this would be to use the MAC address as the value of this
 parameter.

Important: In the current version of BASPSCFG.EXE, you are required to code the pnic value above the snic value in TEAMCFG.TXT.

pnic – This defines which physical NIC is the primary NIC. We use the bus:dev.func format of
this parameter, because we want to force the same NIC to be the primary NIC on all our target
systems. An alternate way to do this would be to use the MAC address as the value of this
parameter.

Important: In the current version of BASPSCFG.EXE, you are required to code the pnic value above the snic value in TEAMCFG.TXT.

- ip This is the static IP address of the team. We use a variable for its value. That variable is a standard parameter of the RDM *Windows Native Install* or *Windows Clone Install* task. The task should define a static IP address for its first NIC.
- smask This is the subnet mask of the team. We use a variable for its value. That variable is a standard parameter of the RDM *Windows Native Install* or *Windows Clone Install* task. The task should define a subnet mask for its first NIC.
- gw This is the gateway address of the team. We use a variable for its value. That variable is a standard parameter of the RDM *Windows Native Install* or *Windows Clone Install* task. The task should define a gateway address for its first NIC.
- dns This is the DNS address of the team. We use a variable for its value. That variable is a standard parameter of the RDM *Windows Native Install* or *Windows Clone Install* task. The task should define a DNS address for its first NIC.

2.1.2.4 Create the POOLED.BAT file

POOLED.BAT is the file that the RDM deployment task's command list will call to implement the NIC teaming.

8. The content of our example file is the following:

TITLE "POOLED.BAT: Install software and configure NIC team." ECHO Running POOLED.BAT to install/configure multiple NICs... RDAGENT /L "POOLED.BAT: Installing the Broadcom Advanced Control Program and Advanced Server Program (for NIC teaming)." SETUP /s /v/qn RDAGENT /L "POOLED.BAT: Configuring the NIC team." CALL CONFIG.BAT RDAGENT /L "POOLED.BAT: Waiting for the teamed network adapters to connect to the network." SLEEP 20 ECHO.

This batch file installs the *Broadcom Advanced Control Suite 2* application (via SETUP.EXE), and then it configures the NIC team (via CONFIG.BAT).

If you are running RDM under Linux, make sure you match the cases of the file names being copied by the MTFTP lines in the POOLED.BAT file. If you are running RDM under Windows, the case of the file names is not important, as Windows is not case-sensitive for file activities.

Important:

- The SLEEP 20 statement is intended to give the network team time (i.e., 20 seconds) to connect to the network. You may need to use a different value than 20.
- Previous versions of this document, for RDM 4.20.x, showed POOLED.BAT without an EXIT statement. Because of the RDM 4.30 changes in the area of application handling, we now need the EXIT statement.

2.1.2.5 Create the RDM image

We will create an RDM image to contain all the files that we use to implement NIC teaming. This image will be an *Application* image associated with the *Windows Native Install* template. Note that you will also be able to use this image in a *Windows Clone Install* task.

- 9. Open the *Image Management* window (using the **Tasks**, **Remote Deployment Manger**, **Image Management**, and **Create and Modify Images** menus).
- 10. Select the Create... button.

inaye.	
Template selection:	
Windows Native Install	•

11. Select the Windows Native Install template, and then select the OK button.

Create Windows Native Install Image	<u> </u>
General Setup	
An image can be configured on this page.	
Image name:	
Broadcom Teaming	
Image descrip <u>t</u> ion:	
-	
-	
OK Cancel H	Help
	1016

12. Enter an image name, and then select the Setup page.

Create Windows Native Install In	nage	
General Setup A Windows Native Install In General Setup A Windows Native Install image of Select the image type: Operating system Service pack Desktop wallpaper file Software Delivery Assistant System Migration Assistant Application Executable name: Executable parameters:	can be configured on this page. Select Language: English	<u>∎</u> rowse
	OK Cancel	Help

13. Select Application as the image type.

Create Windows Native Install Image	
General Setup	
A Windows Native Install image can be configured on this page.	
Select the image type:	
Application	
Provide source:	
	Browse
Executable name:	
	<u> </u>
Executable parameters:	
Note: include %appdir%\ before parameter that is a filename.	
<u>O</u> K <u>C</u> ancel	<u>H</u> elp

14. Then select the *Browse…* button and navigate to the C:\BASP folder that contains the files that will comprise the image. Then select the *OK* button.

E Locate the application install directory.	×
Directories:	ок 📐
C:\BASP	Cancel
🗁 C:1	
BASP	
Drives:	Source:
🖃 C: 🔹	Local 🝷
IBM Ready	

15. Now select the *File...* button.

General Setup	
A Windows Native Install image can be configured on this page.	
Select the image type:	
Application	
Provide source:	
C:\BASP B	rowse
Executable name:	
	<u>File</u>
Executable parameters:	V
Nata include (/ annulio/) before november that is a filenesse	
Note, include %appoir%i belore parameter that is a mename.	
<u>O</u> K <u>C</u> ancel	<u>H</u> elp

16. Navigate to the POOLED.BAT file, select the file, and then select the OK button.

Locate the application install file (i.e.,	setup.exe, install.bat, etc.)	X
File Name pooled.bat	Directories: C::BASP	ок
BASFND.sys BaspSCfg.exe BMAPI.dll config.bat Iccustom.exe pooled.bat pooled.reg setup.exe teamcfg.bt	CΛ BASP	Cancel
List Files of Type	Drives:	Source:
**	• @ C	▼ Local ▼
EM Ready		

17. Now select the OK button to create your image.

Create Windows Native Install Image	_ 🗆 ×
General Setup	
A Windows Native Install image can be configured on this page.	
Select the image type:	
Application 👻	
Provide source:	
CABASP	<u>B</u> rowse
Executable name:	
pooled.bat	<u>F</u> ile
Executable parameters:	
Note: include %appdir%\ before parameter that is a filename.	
<u>OK</u> <u>C</u> ance	el <u>H</u> elp

18. Select the *OK* button on the final message box, and then verify that your new image appeared in the *Image Management* window.

2.2 Add the new image to your task

You will use the teaming image in the same way that you use any other application image. See the *Using RDM to Deploy Applications and Windows* white paper for detailed information about application install with RDM.

All you have to do is to include the teaming image in the task. You can do that when you first create the task, or you can do it later. We assume that you have already created such a task, and that you have tested the task. That is, the task works the way you want, except that it does not configure the NICs as a team.

To that end, make sure that your task has the first NIC configured for a static IP address. The task should not configure more than one NIC. When you run the task, the IP address that you enter in the *System/Task Configuration* window will become the IP of the team.

The following sections describe how to add the image to your *Windows Native Install* or *Windows Clone Install* task. The procedures (for the 2 kinds of tasks) are somewhat different, but the end result is essentially identical in each case.

2.2.1 Windows Native Install



1. Right click on the task, and select the Edit task menu.

2. Select the Setup page and the Images category.

Remote Deploymer	nt Manager - Windows Native Install			
Category Disk Configurati Images Personal	Select images to deploy or download	to the client.	Tune	
Password Liconcing	Name Adaba Acrobat Reader 7.0.0	Application	туре	
Regional	Director 5 1 Agent	Application		
Network Environ	W(2003 Standard	Onerating sys	stem	
Network Protocol	Winzin 9.0 SR-1	Annlication	16111	
		<u>o</u> k	<u>C</u> ancel	<u>H</u> elp

3. Click the *Select...* button, and then select *Application* from the drop-down list.

Application	•	C <u>r</u> eate
Name		
Adobe Acrobat Reader 7.0.0		
🗹 Broadcom Teaming		
Director 4.22 Agent		
Director 5.1 Agent		
Microsoft Server 2003 Standard Updates		
Office 2003 - Professional Enterprise Edition		
Office 2003 - Service Pack 1		
R2 for W2003 Standard		
Minzip 9.0 SR-1		

4. Check the box for your teaming image, and then select the OK button.

Remote Deploymer	nt Manager - Windows Native Install			
Category Disk Configurati Images Personal	Select images to deploy or download to the client. Select Remove			
Password	Name	Туре		
Licensing Device of	Adobe Acrobat Reader 7.0.0	Application		
Regional Network Environ	Broadcom Teaming	Application		
Network Protocol	Director 5.1 Agent	Application		
TCP/IP	W2003 Standard	Operating system		
	Winzip 9.0 SR-1	Application		
		OK Cancel	<u>H</u> elp	

5. Notice that your teaming image is now added to the list. Now select the *Advanced* page to view the Command List.

Remote Deployme	nt Manager - Windows Native Install	
General Setup	Advanced	
Category Command list	Changes to the command list can be made here.	
User parameters Task folder Miscellaneous	Inset Reload ;;protect marker : do not remove ;Installing application Adobe Acrobat Reader 7.0.0 IMTFTP get \$\$SEKVER_IP\$\$ image\053917266703.bat c:\app.bat !c:\app.bat !del c:\app.bat !	
	;;unprotect marker : do not remove	Ŧ
	<u>OK</u> ancel	<u>H</u> elp

6. Notice that it now has 4 new lines that will install your teaming image. Select the *OK* button to save the task.

2.2.2 Windows Clone Install

1. Right click on the task, and select the Edit task menu.



2. Select the Advanced page to view the Command List.

Remote Deployment Manager - Windows Clone Install		
General Setup	Advanced	
Category Command list User parameters Task folder	Changes to the command list can be made here. Insert Reload	
	TIMEOUT 240 !!SETENV !deploy\deploy.bat !custimg\setUser.bat !!SETENV !custimg\custimg.bat !mtftp get \$\$\$EKVER_IP\$\$ template\\$\$TASKTEMPLATEID\$\$\\$\$TASKTOID\$\$\diragt.bat diragt.bat !diragt.bat BOOTTYPE !BOOTLOCAL	
	!!REBOOT BOOTTYPE !LOADDOS /environment/dos7lc !!REBOOT UpdateAssetID !!SHUTDOWN END	-
	<u>O</u> K <u>C</u> ancel	<u>H</u> elp

3. Insert a blank line as shown in the above picture. Place the cursor on the blank line, and then select the Insert... button.

elect an image to be cop	led to the target system	I.		
mage type: All impages	_			
Airimages	•			_
Name	Туре	Description	Internal Name	٩.,
O 8843 BMC 1.07	Integrated System Ma		052208957656.zip	_ ^
🔿 8843 DIAG 1.04 and	System BIOS		052208723141.zip	
🔿 Adobe Acrobat Rea	Application		053917266703.zip	
🖲 Broadcom Teaming	Application		05140171438578.zip	
🔿 Broadcom firmware	Custom Image		0521615420391.zip	
🔿 Broadcom firmware	Custom Image		05278102538812.zip	
🔿 Broadcom firmware	Custom Image		0639101430766.zip	
O Broadcom firmware	Custom Image		05145115435703.zip	
O DE 7969 BIOS 19A	System BIOS		052788611344.zip	
O DE 7969 BIOS 20B t	System BIOS		05283914331.zip	
O Director 4.22 Agent	Application		0516583337625.zip	
O Director 5.1 Agent	Application		0529811830609.zip	
O Dummy PQI file for	Import/Donor clone op	Dummy PQI file for us	1106777726969	
O Dummy PQI file for	Import/Donor clone op	Dummy PQI file for us	1104781478047	
🔿 Fake CMOS imade	CMOS Update Image		0523111818859.zip	-

4. Select the NIC teaming image that you created earlier, and then select the Next button.

Remote Deployment Manaç	er - Command List Editor Wiza	ard	
Build commands to insert i	nto the command list editor.		
Ta <u>rg</u> et operating system: Windows	Transfer mode: ● <u>U</u> nicast ○ <u>M</u> ulticast		
MTFT <u>P</u> destination file path:			MTFTP destination file name:
Generate an unzip comn Jnzip destination path:	nand		
Gene <u>r</u> ated commands:			
;Installing applics !MTFTP get %%SERVEN !c:\app.bat !del c:\app.bat	ation Broadcom Teaming IP%% image\051401714	; 138578.b:	at c:\app.bat
		<u>B</u> ack	<u>Finish</u> <u>C</u> ancel

5. Notice that RDM automatically filled in the fields of the Command List Editor Wizard. Then select the *Finish* button. The wizard will add the 4 statements to the command list, as shown below.

Remote Deployment Manager - Windows Clone Install			
General Setup	Advanced		
Category Command list User parameters Task folder	Changes to the command list can be made here. Insert Reload WAKE TIMEOUT 240 !!SETERV !deploy/deploy.bat !custing\setUser.bat !isterENV !custing\custimg.bat !mftp get \$*SERVER_IP\$* !tmftp get \$*SERVER_IP\$* !*TASKTENPLATEID** \\$*TASKTOID** \diragt.bat diragt.bat !diragt.bat BooTTYPE !BooTLOCAL !IREBOOT !Installing application Broadcom Teaming !MTFTP get \$*SEKVER_IP\$* image \05140171438578.bat c: \app.bat !c: \app.bat BOOTTYPE !LOADDOS /environment/dos71c		
	<u> </u>	<u>H</u> elp	

6. Select the OK button to save your changes.

2.3 Test the Windows deployment Task

Following standard RDM procedures, execute your *Windows Native Install* or *Windows Clone Install* task on the target systems.

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4 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.

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.

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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