



# **HP Rapid Deployment Pack Evaluation**

**By Citrix Consulting Services**

**Citrix Systems, Inc.**



## Table of Contents

<b>OVERVIEW</b> .....	1
<b>HP RAPID DEPLOYMENT PACK</b> .....	2
<b>INSTALLATION PROCESS</b> .....	5
BEFORE YOU INSTALL.....	5
<i>Location of Rapid Deployment Server</i> .....	5
<i>Windows 2000 Source Files</i> .....	5
<i>Database</i> .....	5
<i>Computer Accounts in Active Directory</i> .....	6
<i>Win 9x CD or Boot Disk</i> .....	6
<i>License File</i> .....	6
<i>PXE-Enabled NICs</i> .....	6
<i>Wake On LAN</i> .....	6
<i>TCP Ports</i> .....	6
DURING INSTALLATION.....	7
<i>PXE Server</i> .....	7
AFTER INSTALLATION.....	7
<i>Database</i> .....	7
<i>Modifications</i> .....	7
<i>Boot Disk Creator</i> .....	7
<i>BootWorks Disk</i> .....	7
DEPLOYMENTS .....	8
<i>Base Build - W2K.TXT</i> .....	8
<i>Windows 2000 License Number</i> .....	9
<i>Password</i> .....	9
<i>System Clock of Deployment Server</i> .....	9
<i>Adding Multiple Servers Simultaneously</i> .....	9
<b>PROOF OF CONCEPT / IMPLEMENTATION</b> .....	10
<b>CURRENT COMMON SERVER DEPLOYMENT OPTIONS</b> .....	11



## Notice

The information in this publication is subject to change without notice.

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT. CITRIX SYSTEMS, INC. ("CITRIX"), SHALL NOT BE LIABLE FOR TECHNICAL OR EDITORIAL ERRORS OR OMISSIONS CONTAINED HEREIN, NOR FOR DIRECT, INCIDENTAL, CONSEQUENTIAL OR ANY OTHER DAMAGES RESULTING FROM THE FURNISHING, PERFORMANCE, OR USE OF THIS PUBLICATION, EVEN IF CITRIX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE.

This publication contains information protected by copyright. Except for internal distribution, no part of this publication may be photocopied or reproduced in any form without prior written consent from Citrix.

The exclusive warranty for Citrix products, if any, is stated in the product documentation accompanying such products. Citrix does not warrant products other than its own.

Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies.

**Copyright © 2002 Citrix Systems, Inc., 6400 NW 6th Way, Ft. Lauderdale, Florida 33309 U.S.A. All rights reserved.**

<b>Version History</b>		
Version 1.0	Citrix Consulting Services	May 3, 2002
Version 1.1	Citrix Consulting Services	July 19, 2002
Version 1.2	Citrix Consulting Services	August 2, 2002
Version 1.3	Citrix Consulting Services	August 19, 2002



## Overview

In early 2002, Hewlett Packard (HP) launched its Rapid Deployment Pack , which provides a GUI front-end for both scripted and cloned server deployments. This tool, which is based on Altiris and includes the SmartSmart Scripting Toolkit, has been validated for MetaFrame XP™ Feature Release 2 and was demonstrated at iForum Europe in June 2002. It is also planned for demonstration at iForum USA in November 2002.

Dell has recently made available a module similar to HP's Rapid Deployment Pack called OpenManage Client Administrator, which is also based on Altiris. This tool was not evaluated as part of this discussion; however, it highlights that the emergence of easy-to-use third-party GUI scripting tools that complement existing server build technologies. IBM does not have a similar tool, and based on discussions with Altiris in August 2002, such is not planned.

This document focuses on how to implement and use the HP Rapid Deployment Pack. This tool/software is designed to increase the efficiency of building and configuring servers in the Enterprise environment. Considerations and tips uncovered throughout the evaluation process are detailed for the reader, and a limited comparison of server build options is presented.

# HP Rapid Deployment Pack

This section includes a brief summary of the newest version of the HP Rapid Deployment Pack.

Version 1.10 of the HP Rapid Deployment Pack is an OEM version of Altiris Express Deployment Server software with an additional customized module that supports HP DL, ML, and BL servers. Basic information about the offering can be found at <http://www.compaq.com/products/servers/management/rapiddeploy.html>.

For those with Altiris experience, this tool is much the same and easy to use; it is likely that Altiris users will adapt this tool readily. For those without Altiris experience, the GUI is fairly straightforward and should require only a few hours to learn and start using for deployments. However, there are a number of considerations and “gotchas” which are detailed in the [Installation Process](#) section that should be reviewed. Figure 1 shows the main screen.

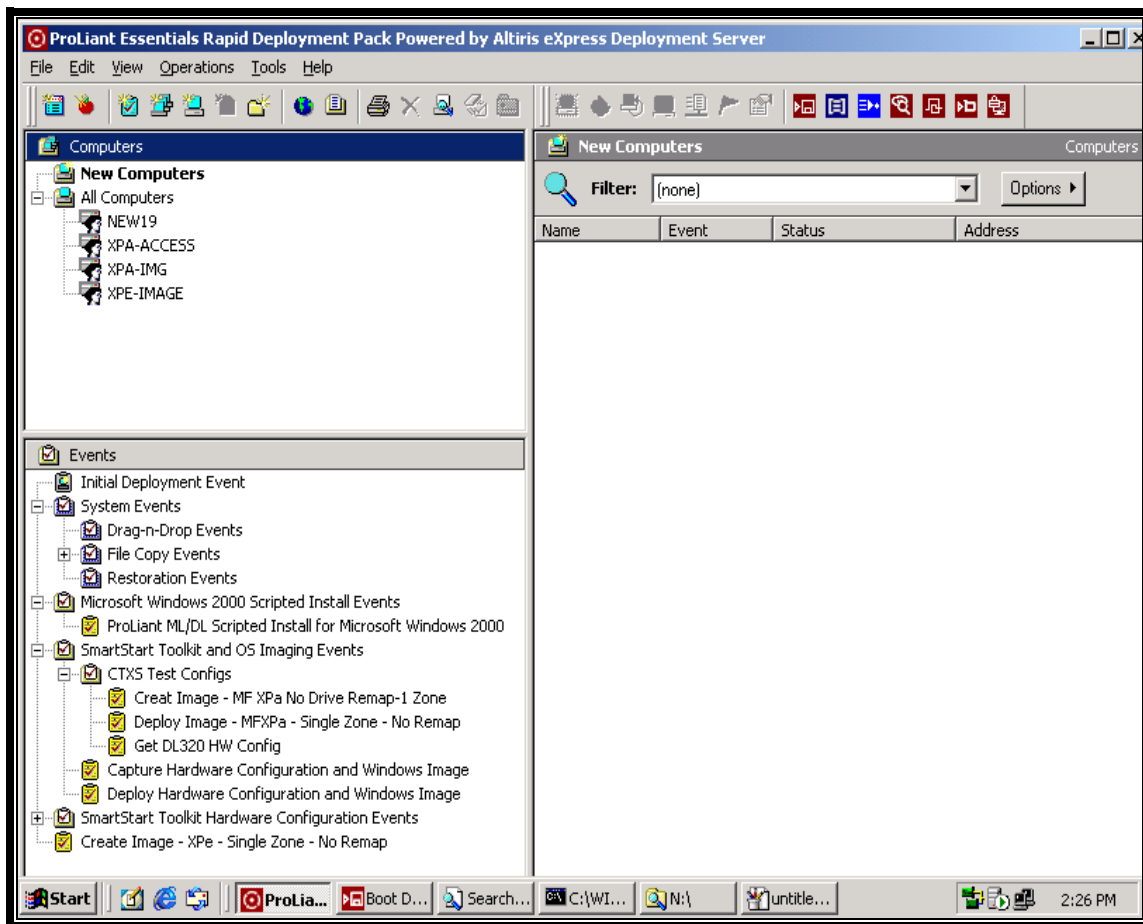
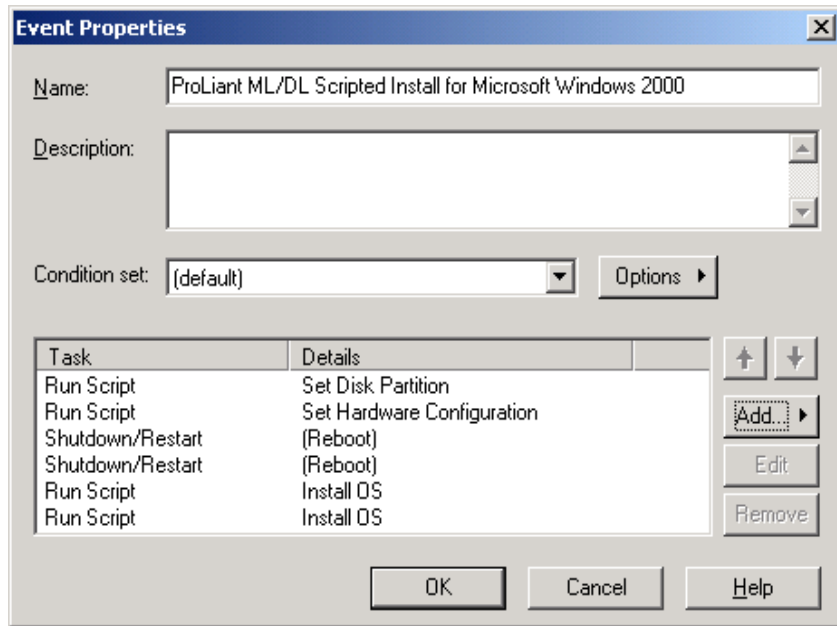


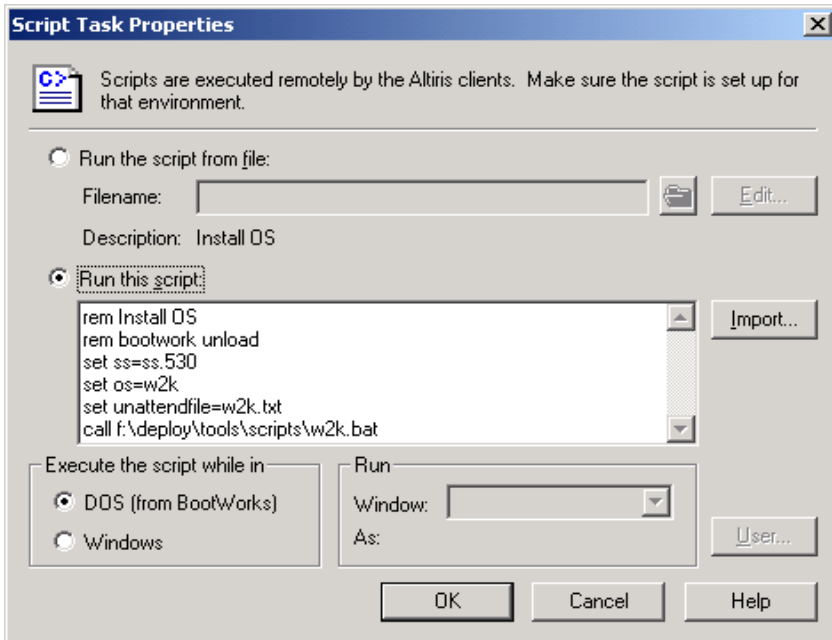
Figure 1: Main Screen

If the user clicks the ProLiant ML/DL Scripted Install for Windows 2000, the following screen is shown with default conditions:



**Figure 2: Scripted Install Process**

At this point, a task can be added or one of the existing tasks can be selected and edited or removed. Figure 3 demonstrates the screen that appears when one of the tasks is chosen and edited.



**Figure 3: Operating System Installation**

As shown, scripts can be imported, executed from DOS or Windows, and/or RunAs. Various script types can be imported, including .msi and .vbs. If RunAs is chosen, an administrator logon can be entered, which does not appear in clear text.

When choosing the server deployment parameters, one or more conditions can be required. For example, if the installation should only occur on all servers with two 800 MHz processors and a computer name that starts with META, these conditions can be specified as shown in Figures 4 and 5.

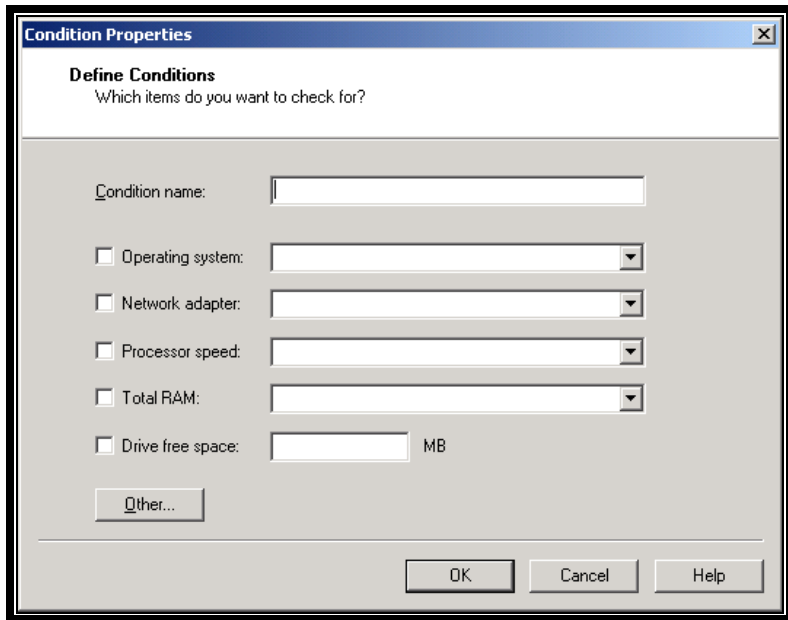


Figure 4: Condition Properties

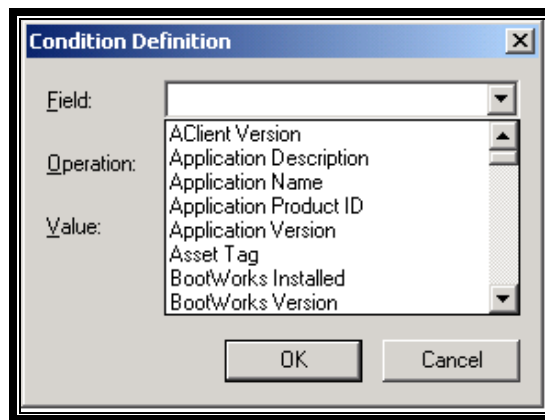


Figure 5: Other Condition Definitions

This tool will create and deploy both scripted and cloned server builds.

# Installation Process

## Before You Install...

### Location of Rapid Deployment Server

The Rapid Deployment server should be located on the same subnet as the MetaFrame servers. Although it is possible to locate it on another subnet, a DHCP relay agent is going to be required and issues relating to the PXE server may arise. The easiest solution is to logically place the Rapid Deployment server near the MetaFrame servers. The Deployment server does not need to be a HP server.

### Windows 2000 Source Files

Rapid Deployment requires Windows 2000 source files to build the base operating system. Ensure that the Windows 2000 source files are up to date with the latest service pack and any other required files. There is a document named *SPDeploy.doc* on the Windows 2000 Service Pack 2 CD that describes the specific steps required to update the source files. It follows the same basic concept of slipstreaming.

Although most companies place their Windows 2000 source files on a network share for deployment ease, it is recommended that these files be copied onto the Rapid Deployment server. Rapid Deployment inherently looks for the Windows 2000 source files in `\Program Files\Altiris\Express\Deployment Server\Deploy\CDS\Windows\W2K` folder. Thus, if the source files are located there, the built-in scripts will function without modification, and any potential issues related to not being able to access the network share are alleviated. However, doing so will require that the any future updates the Windows 2000 source files occur on the Rapid Deployment server. An alternative may be to use DFS, SAN, or NAS to make the files appear as if they were local.

### Database

Rapid Deployment requires a database to store information regarding computers, configurations, etc. Either MSDE or SQL Server (7.0 or 2000) can be used. It is expected that most enterprise environments will want to use SQL Server with NT Authentication. The database does not need to be created in advance, but SQL Server needs to be available. The server that houses SQL Server should be on the same subnet. As part of the configuration process (see [After Installation – Database](#)), the tool will create a database, which is named “eXpress” by default, and populate it.

If the MetaFrame Data Store is on SQL Server, there should be no issues with co-locating the Rapid Deployment database on the same server. However, network bandwidth is likely to be an issue, so it is recommended that at least two teamed NICs be installed as per Citrix KB Article *CTX434260*. If a significant number of deployments are planned or redeployments at the same time, four or perhaps even eight NICs may be required to support the required connectivity. Please note that this has not been stress tested, so as part of the testing and deployment, monitor the network traffic on the NIC via System Monitor or Network Monitor to determine if it is excessive.

## Computer Accounts in Active Directory

When a new computer is built using the HP Rapid Deployment Pack tool, it is dropped into the Computers OU in Windows 2000 Active Directory. Alternatively, if the MAC address is identified within the Computer Accounts in Active Directory, the new server can be placed wherever designated.

## Win 9x CD or Boot Disk

The Rapid Deployment Pack requires a DOS or Win9x boot disk. These required files were not included in the version evaluated for this document.

## License File

The licensing file, .lic, should be placed locally on the Rapid Deployment server. Make sure that NTFS permissions allow access to it. The best place for this file is in \Program Files\Altiris\express\Deployment Server. Deployment Server becomes a shared folder with the appropriate NTFS permissions as part of the installation.

The free 30-day trial that can be downloaded from <http://www.compaq.com/products/servers/management/rapiddeploy.html> will allow for the deployment of up to 10 servers. Please note that the 30-day trial starts with the date that the license is downloaded from the web page, *not* the day that it is installed.

## PXE-Enabled NICs

Newer servers will have PXE-enabled NICs, which means that the NIC will automatically search for a DHCP server during startup. Older servers may not have PXE-enabled NICs, so you may be required to use a boot disk for deployment. Note that some servers may feature PXE-enabled NIC's, where PXE is available, but not enabled by default and may have to be manually enabled prior to deployment. Generally, if the server is a Pentium III or newer, the NICs will be PXE enabled. This should be researched prior to starting the deployment process.

## Wake On LAN

The BIOS of the servers should be set to enable "Wake On LAN," which means that a signal from the Rapid Deployment server will cause the server to wake up. If the server supports PXE and has a recent BIOS version, the BIOS will likely have Wake On LAN enabled.

## TCP Ports

By default, Rapid Deployment uses TCP port 402, so this port will need to be opened and available. It is highly unlikely that this port will be closed or used for another purpose, especially on an internal subnet.

## During Installation...

### PXE Server

The installation screens will ask whether a PXE server should be created. The installer should choose to create a PXE server.

## After Installation

### Database

If SQL Server is used, the Rapid Deployment database needs to be created. Go to File->Open Site->Edit Site->ODBC Administrator->System DSN->Configure->Next->Next->Next->Finish->Test Data Source. This will automatically create the database, which is named "eXpress" by default, and associated tables.

The "eXpress" database should be backed up and available for restoration if necessary. Much like the MetaFrame XP Data Store, a regular full backup should be scheduled at regular intervals.

### Modifications

Especially in an Active Directory environment, it is important to synchronize the computer names in Rapid Deployment with the directory service. Go to View->Options->Global and check the box for "Synchronize names for computers in database with Windows computer names." Also, on this same screen, check the box for "Reschedule failed image deployment events to immediately retry the failed task."

### Boot Disk Creator

If you will be using Boot Disk Creator to create boot disks, make sure that you choose the Compaq Ethernet/Fast Ethernet NIC. If you choose the generic Intel NIC as specified in the white paper on HP web site, it will work for the BL servers but may not work for other server models.

### BootWorks Disk

If the BootWorks disk is used, do NOT remove it during the installation unless you are specifically advised to do so on the screen. Wait for ALL steps associated with the installation to complete before removing the disk. During reboots, the processes associated with the disk will appear to repeat themselves, and this is normal. Let all processes proceed without hitting the disk eject button.

# Deployments

## Base Build - W2K.TXT

The principal file that is used for the Windows 2000 operating system base build is W2K.TXT. Although there is a file named UNATTEND.TXT, and it is located in the eXpress share, it is not used for the deployment. The settings within W2K.TXT will prevail. This file is located as follows:

File	Location
W2K.TXT	C:\Program Files\Altiris\eXpress\Deployment Server\deploy\configs

Rename W2K.TXT to W2KBAK.TXT. Create a copy and modify as follows:

- [GUIRunOnce]
  - Includes line for installing MetaFrame XPe 1.0 and Installation Manager
    - (customizations)
  - Includes REM'd lines for installing Resource Manager and Network Manager. Remove REM if these components are required.
- [TerminalServices]
  - ApplicationServer has been set to 1 (true).
  - PermissionsSetting has been set to 0, meaning that Windows 2000 permissions are in effect. Change this setting to 1 if Terminal Server 4.0 users are required.
- [Components] – All capitalizations represent modifications.
  - AccessOpt has been set to off
  - Cluster has been set to off
  - Deskpaper has been set to off
  - Dialer has been set to off
  - Freecell, minesweeper, pinball, and solitaire games have been set to off
  - IIS has been set to off (this was not modified from the original file)
  - LicenseServer has been set to off
  - Media\_Clips has been set to off
  - TSClients and TSEnable have been set to on (this was not modified from the original file)

- [NetOptionalComponents]
  - NetMonTools has been added
- [UserData]
  - ProductID has been added. **A valid Windows 2000 license number must be entered within unless the customer installed the Windows 2000 files from the Select CD. If the files came from the Select CD, then REM out this line by placing a semicolon at the beginning of it.**

## Windows 2000 License Number

The ProductID field requires that a valid Windows 2000 license number be inserted. Please note that no 120-day evaluation license numbers will produce successful installations. A popup will appear asking for a valid license, and even at that point, the 120-day evaluation license will not be accepted.

## Password

The default password is "compaq" and this can be modified by changing the W2K.TXT file. When the server is joined to the domain, the Administrator password will automatically become that which is assigned by the domain.

## System Clock of Deployment Server

The Deployment server is used to schedule server rebuilds, so the system clock the Deployment server cannot be behind the current system clock of the servers to which scripts will be deployed. Alternatively, select All Computers→Change Client Settings→General and check the box marked, "Synchronize this systems time with the Deployment Server" at the bottom of the screen.

## Adding Multiple Servers Simultaneously

When adding multiple servers simultaneously, add the computer accounts to Active Directory prior to creating the computer accounts within Rapid Deployment. If the computer accounts are not present within an OU when the servers are added to the domain, Active Directory will place them within the Computers OU.

Within Rapid Deployment, choose New Computers→New Computer→Add. Go to the Microsoft Networking icon and click Define Range. Here you will choose the number of computers, fixed text for name, and starting number. For example, 8 new MetaFrame servers can automatically be named Meta01 through Meta08. Click the radio button for "Domain" and enter the domain name. Then go to the TCP/IP icon and click the radio button for "Assign a static IP address." Here you will enter the IP address, subnet mask, default gateway, DNS, and WINS data for the first server. The remaining IP addresses will automatically be added sequentially. When you click OK, you will be able to preview and/or modify the computer name and IP address information that will be assigned to the new servers.

# Proof of Concept / Implementation

When planning to implement the Rapid Deployment tool, the following hardware and software should be available:

- Hardware for Rapid Deployment – 1 server
  - 18 GB hard drive or larger
  - Mirrored or RAID-5
  - Two teamed NICs recommended (full duplex and 100 speed)
- Rapid Deployment server should be on same subnet as MetaFrame servers
- SQL Server 2000 media and license (MSDE is supported but cannot support large installations)
  - Service Pack 2 (as of August 2002)
- Windows 2000 media and license
  - Service Pack 2 (as of August 2002)
- Citrix MetaFrame XP media
  - Feature Release 2/Service Pack 2 (as of August 2002) and licenses
  - Media for any additional management components

**Please note:** HP Rapid Deployment cannot be tested without a valid Windows 2000 license. An evaluation license is not sufficient.

# Current Common Server Deployment Options

There are a variety of ways to deploy HP servers:

<i>Type of Server Build</i>	<i>Special Tools Required and Associated Hard Dollar Cost</i>	<i>Pros</i>	<i>Cons</i>
<b>Manual</b>	None	<ul style="list-style-type: none"> <li>No additional cost</li> </ul>	<ul style="list-style-type: none"> <li>Labor intensive and takes several hours</li> <li>Inexact and subject to installation errors</li> <li>Varies by administrator</li> <li>Not commonly documented</li> </ul>
<b>Microsoft Unattended</b>	None	<ul style="list-style-type: none"> <li>No additional cost</li> <li>Sysprep GUI utility can create Unattend.txt file with basic customization</li> <li>Generally takes ~10-15 minutes</li> </ul>	<ul style="list-style-type: none"> <li>Unattend.txt file can be further customized but this is a manual process</li> <li>Only Windows 2000 and components (e.g., Terminal Services) can be inherently incorporated; however, scripts can be called</li> <li>Servers built individually by inserting diskette</li> </ul>

<b>Type of Server Build</b>	<b>Special Tools Required and Associated Hard Dollar Cost</b>	<b>Pros</b>	<b>Cons</b>
<b>Microsoft Unattended with Ghost or DriveImagePro</b>	Ghost or Drive Image Pro	<ul style="list-style-type: none"> <li>• Low additional cost</li> <li>• Sysprep GUI utility can create Unattend.txt file with basic customization</li> <li>• Supported by Microsoft and Citrix</li> <li>• Generally takes ~10-15 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• Unattend.txt file can be further customized but this is a manual process</li> <li>• Only Windows 2000 and components (e.g., Terminal Services) can be inherently incorporated; however, scripts can be called</li> <li>• Servers built individually by inserting diskette</li> <li>• Cloned servers can perpetuate improper configurations (e.g., registry keys)</li> <li>• Requirements management of images</li> </ul>
<b>HP Rapid Deployment Tool</b>	Altiris Rapid Deployment Pack	<ul style="list-style-type: none"> <li>• Creates and deploys scripted or cloned installations via GUI</li> <li>• Includes SmartStart, NIC teaming, etc.</li> <li>• Additional scripts can be inserted at any point</li> <li>• GUI front-end</li> <li>• Can be centrally managed</li> <li>• Scripts can incorporate RunAs using encrypted administrator credentials</li> <li>• Cloned base installation takes ~10-15 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• Requires base knowledge of Altiris eXpress</li> <li>• Requires scripting capabilities to customize scripts</li> <li>• Scripted base installation takes ~1.5 hours</li> </ul>

<b>Type of Server Build</b>	<b>Special Tools Required and Associated Hard Dollar Cost</b>	<b>Pros</b>	<b>Cons</b>
<b>HP Rapid Deployment Tool Customized by Professional Services (Scripted option only)</b>	<p>Altiris</p> <p>Rapid Deployment Tool</p> <p>CCS Professional Services – based on complexity and scope</p>	<ul style="list-style-type: none"> <li>Creates and deploys scripted or cloned installations via GUI</li> <li>Includes SmartStart, NIC teaming, etc.</li> <li>Additional scripts can be inserted at any point</li> <li>GUI front-end</li> <li>Can be centrally managed</li> <li>Scripts can incorporate RunAs using encrypted administrator credentials</li> </ul>	<ul style="list-style-type: none"> <li>Requires base knowledge of Altiris eXpress</li> <li>Scripted base installation takes ~1.5 hours</li> </ul>
<b>Citrix Automated Server Build</b>	<p>CCS Professional Services – based on complexity and scope</p>	<ul style="list-style-type: none"> <li>Methodical process, most robust</li> <li>Fully customized scripted installation, repeatable</li> <li>Insert and go – minimized admin</li> </ul>	<ul style="list-style-type: none"> <li>Administrator credentials not encrypted during initial build nor in script</li> <li>The actual build can take more than an hour</li> </ul>



**851 West Cypress  
Creek Road**

**Fort Lauderdale, FL 33309**

**954-267-3000**



<http://www.citrix.com>

Copyright © 2000 Citrix Systems, Inc. All rights reserved. Citrix, WinFrame and ICA are registered trademarks, and MultiWin and MetaFrame are trademarks of Citrix Systems, Inc. All other products and services are trademarks or service marks of their respective companies. Technical specifications and availability are subject to change without prior notice.