brainware

Columbus OSDeploy

Version 6.7

columbus6

Brainware Consulting & Development

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Table of Contents

Welcome to Columbus <Product_MajorVersion

We are pleased that you have chosen Brainware and Columbus 6.

Columbus 6 provides you with a powerful software and client management system. In developing this system, we have tried to take note of the requirements and wishes of our customers and partners.

About this manual

In this manual we want to provide you with a detailed view into the OS Deployment module of Columbus 6. This manual concentrates on the specifics of OS deployment and requires a knowledge of the basics of Columbus.

The manual Columbus First Steps guides you through the first time installation of a Columbus system..

The manual Columbus Basics provides information about the basic functions and operation of the Columbus Management Console as well as the configuration of the infrastructure and setting up of authorizations.

How to migrate from previous AutoSetup version is explained in chapter ***Migration von AutoSetup*** (See "Migration of AutoSetup environmments" on page 99)

Typographical conventions

Before reading through this manual it is important that you have understood the concepts used therein and the typographical conventions.

Detailed information about the concepts used can be found in the glossary at the end of the document.

The following formatting is used for special information.

Formatting	Type of information
Triangular symbol '➢ '	Step-by-step procedure. Follow these steps to complete a task.
Bold special	Selection points, such as menu options, buttons or elements in a list.
Cursive	Stresses the importance of a point. Also used for variables and parameters.

CAPITAL LETTERS	Names of keys on the keyboard. Examples: SHIFT, CTRL or ALT.
KEY+KEY	Key combinations where the user must hold a key down and press another key. Examples: CTRL+P or ALT+F4.

Do you want to send us information?

We are constantly striving to optimize Columbus 6 and are therefore looking for new and improved options for documentation and use of our products. If you have any suggestions, criticisms or praise, please contact us.

You can reach us as follows

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Columbus OS Deploy

Columbus OS Deploy ensures automated operating system installation and complete configuration and integration of client and server systems. This includes:

- Operating system installation
- Hardware configuration (drivers, settings and security)
- Desktop and personal settings
- Network configuration (name, TCP/IP, domain affiliation)
- Other items such as registry settings, files, connection to a software distribution, etc.

Columbus OS Deploy is based on Microsoft Unattended Installation Technology, and extends the technology by means of so-called 'jobs'. These ultimately allow for the automation of individual configuration and integration of installed clients and/or servers.

In addition, Columbus OS Deploy supports cloning procedures based on Paragon's Disk imaging tools. Symantec Ghost™ (up to Version 7.5) is also supported out of the box and further tools can be integrated upon request. OS Deploy is capable of using existing images for quick basic installation. After an image has been successfully applied, OS Deploy takes over the individual and time-consuming configuration and integration steps automatically by means of predefined 'jobs'. Columbus OS But Deploy goes even further. It is possible to generate a Ghost Image during a normal, unattended installation, and to use this image for further, image based rollouts.

OS Deploy supports the following boot media and technologies:

- PXE Preboot Execution Environment (including Preboot Inventory)
- Network boot (F12)
- Boot floppy
- Bootable CD-ROM and DVD
- Local hard drive
- Removable drives (ZIP & JAZZ drive)

Differences between OS Deploy Standard and OS Deploy Enterprise

The following performance features are only available in the Enterprise Edition:

- Installation of server operating systems
- Support for disk images (e.g. Symantec Ghost™)

Terms used

We would like to familiarize you with the base components of OS Deploy, by means of the following explanations. Please read this section carefully to familiarize yourself with terminology used. The following sections build on the terms used here.

Here you can find out what

- terminology is used.
- The components of the OS Deploy system
- The functionality of these components

Here we refer to the base elements of OS Deploy that are used in a local area network (LAN), and the most frequently used environments for OS Deploy. Later we will also discuss OS Deploy in other environments (remote access, WAN, MAN)

Staging

This refers to the complete installation of a computer, i.e. the user can operate the computer at the end of the installation process It includes the boot process, partitioning of the hard drive(s), the installation of the operating system and the configuration of the system according to company standards.

Windows

In this manual the term Windows refers to all versions of Microsoft Windows that are based on NT technology (Microsoft® Windows® NT, Windows® 2000 and Windows® XP). Windows® 9x and ME are not supported by OS Deploy.

Unattended Windows Setup

The so-called Unattended Setup is a process whereby Windows systems can be installed without manual intervention. This is provided for Original Equipment Manufacturers (OEMs), system administrators, Value Added Resellers (VARs) and others.

Distribution point

Distribution point describes the location at which the source for the Windows installation is provided. The computer links to the distribution point to execute the setup during installation. Typically, this is a directory on a server that can be addressed via a release. Alternatively, you can use a CD-ROM, a Jaz Drive, an additional hard drive, extended partitions or similar.

OS Deploy release

OS Deploy release is made available at a distribution point and makes a version of an operating system available. This can be Windows 4.0, Windows 2000 (Workstation or Server), Windows XP or Windows 2003 Server. OS Deploy release includes certain languages such as Japanese, Chinese and Korean. In addition to the operating system, it includes various OS Deploy jobs that contain the drivers necessary for your hardware, and configuration settings for your environment. A release not only installs a certain operating system, but also configures your computers entirely according to your standards. As such, a release is the foundation of a stable IT infrastructure.

OS Deploy job

A job is a module for a release that performs a certain function for OS Deploy. That can be a modification of the unattend.txt file, a driver installation or the configuration of a setting. Owing to its modular composition, OS Deploy is very flexible and easy to maintain and update.

PXE

By now, the Pre-Boot Execution Environment replaces the boot diskette, for connecting to the distribution point. All actions possible by means of the boot diskette can also be performed by PXE, with the advantage that it is no longer necessary for someone to locally boot the computer from a diskette.

WoL

Wake on Lan enables you to remotely power up a computer via a connected network.

Boot disk

A boot diskette can be used to link to the distribution point when performing a Windows installation. Normally partitioning of the local hard drive is performed prior to the installation of Windows; a boot diskette can also be used for this. If your computer has setup partitions or boot managers, even small errors can lead to a complete loss of the hard drive contents. Our partition manager can automatically format your hard drives as desired, without the risk of losing data.

OS Deploy is supplied with a modular boot diskette that is equipped with many options for connecting to the distribution point. Additional modules for the boot diskette are available on our web site, or can be added personally. The actual Windows setup runs under DOS and requires a FAT16 partition.

When using a boot diskette, it is possible to change the function of the diskette used to that of a rescue disk; only one keyboard entry is then required to reinstall the computer - in some cases no keyboard entry is required.

Floppy Maker

Floppy Maker is a tool for managing boot diskettes. Diskettes can be created and changed, and reusable images can be stored.

Profiler workstation

Profiler is a Windows application that enables you to determine all the information needed for the installation of a computer by using a user-friendly front end. All entries can be predetermined so that options can be limited. Passwords used are stored in an encrypted form so that maximum security can be ensured.

Hardware models and network environments are stored as templates so that easily understood default values for machine configurations and locations can be made available.

Mandatory and optional jobs can be integrated by means of additional job lists. In this way it is also possible to integrate 'exotic' hardware that is not recognized by Windows Setup. It is also possible to include a version of MS Office on the computer. This mechanism is supported by a script language that is easy to learn. It is possible to integrate other familiar script languages such as Perl, VB, etc.

OS Deploy account

If the distribution point is in a network release, it is necessary to enter a user ID that is authorized to connect to this release. We recommend giving this account the authority to add machines to the domain.

Columbus Management Console

The preferred tool for the installation of computers and central distribution of software from Columbus 6.

Connector

Floppy Maker uses connectors to connect to the respective installation source (network, CD-ROM etc.) They contain the necessary drivers.

CHAPTER 1

Setting up OS deployment

The installation of Columbus is described in detail in the manual First Steps. Here, we only deal with the details of an OS deployment installation. This includes subsequent adding of additional operating systems, for example.

In this chapter

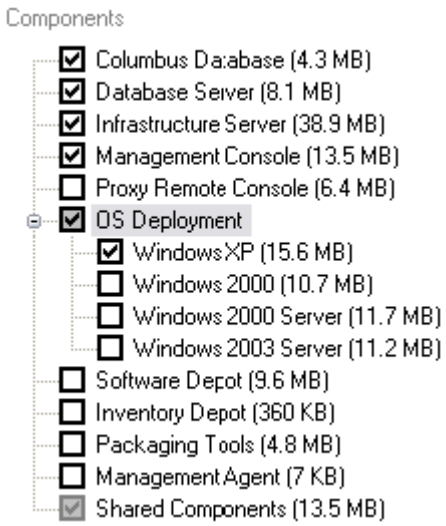
Installation options

As a minimum, you need the following components for a functioning OS deployment

- Management Console
- Columbus database server
- Columbus infrastructure server

  contains the Columbus Preboot environment (PXE)
- OS Deployment Depot with at least one operating system release

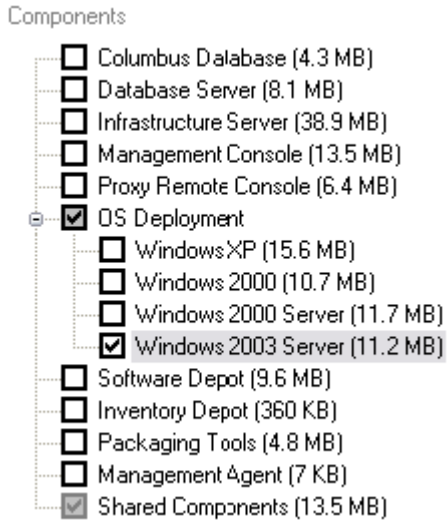
Select the following options in the setup dialog for a complete installation of OS deployment on a server



Adding additional operating systems

You can add extra frameworks for additional operating systems to your OS Depot at any time. To do this, start the setup again and make sure that the path to the data directory and the Columbus release correspond to the previous installation. Setup should be able to take over this information correctly from the report of the last installation.

All you need to do is select the Option OS deployment and the required operating system in the Options dialog



Because a different system account can be used for every operating system release, the dialog for entering the Columbus system account appears.

Important: The password is not taken over from the original installation. Enter the correct password.

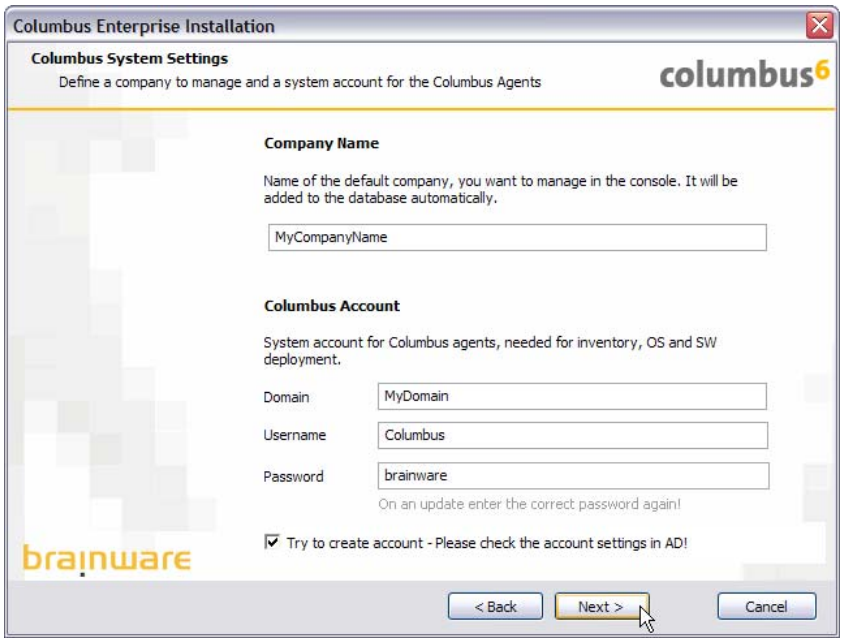
The OS Deployment dialog then appears. Here you need to enter the path to the Windows source, the volume license key and the password for the local administrator on new computers, for every release selected.

Setup then copies the required files. If you entered the i386 directory, this can take some time.

Columbus System Settings

The highest level structural element in a Columbus structure is the *company*. Enter the name of the company you want to manage with Columbus. The Setup Wizard ill create this company in the tree structure. You may change the name in the console at any time.

Various Columbus components need specific access permissions for instance to access the OS sources, software packages, for adding newc omputers to the Active Directory or for installing Software. Setup will create an own user account for this.



If an user account with appropriate rights already exists, you may enter this one. Of course you may change the account later.

Confirm your choice with Next>.

Hint: According to your privilegies or depending from which server you have started the setup, the user cann't get created automatically. So in case of an error message, you have to create the account manually. It is recommended to check this account in the Active Directory anyway and to make sure that the account has the needed permissions.

This user account has the following characteristics:

- Write access to the data directory entered by you on the Columbus server
- For certain OS deployment functions such as disk imaging the account has write access to certain directories in OS Depot.
- Can add computers to the domain
- is automatically added to the local administrator group on all computers where Columbus is installed, so that the Columbus client has the rights necessary for software installation.

Generally, a domain account is used for this purpose. For security reasons, the Columbus account should under no circumstances have domain administrator rights.

OS Deployment dialog

If you selected the components *OS Deployment* and a subordinate operating system structure, you are asked at this point to enter the necessary values for the operating systems selected.

Abbildung 1: Betriebsystem Optionen

Confirm your selection with Next >>.

A new page is started for each release selected.

If you have a special Windows 2000 volume license version, you do not need to enter a Windows license number.

If you do not have the Windows source, i.e. the i386 directory from your Windows CD-ROM handy, you can copy it into the corresponding release directory in the OS subdirectory at a later stage.

Setup creates an i386 directory with a modified OOBINFO.IN_ (and OOBINFO.INI) file for Windows XP and 2003 Server. Do not overwrite this file if you are copying the Windows files manually, otherwise you will not be able to set up a computer with a fully automatic OS Deploy.

Updating a OSDepot

Updating existing OS Sources is only very limited possible as Setup can not detect manual changes you have applied after the original installation. Therefore make sure to backup the system before adding new components.

Setup can only update the standard Release-folders WinXP, Win2000, Win2000.Srv and Win2003.Srv.

If you have done extensive adaptations to a release, the most secure way to protected the modifications against unintentional updates, is to rename the release folder. With an update you install the original release again and afterwards you update your own release manually.

On a typical update mostly the following files/folders get replaced. With a migration on Columbus 6. <Product_MinorVersion> all components listed below must be updated.

OSDepot	All batch files and tools must be replaced with the new versions
Computer.img	Support for new imaging tools may be added and batch files and input scripts (Imageload.txt) may get upgedated.
FpyMaker	In Floppy Maker the master bootdisk image often gets updated and new netcard drivers will be added. If you customize the parameter file Params.txt, it is recommended to create a seperate folder for this so an update cann't overwrite your settings.
Job	In the job folder mainly the ASetup, ASetup.img and Col6 job will get updated regularely by Brainware. We recommend to not customize these jobs directly. Create seperate jobs with for example additional scripts. You will be able to continue to use this jobs after updates without modifications. All other jobs are optional and often just samples, which you may customize.
ASetup	The ASetup job must always be replaced completely with the new version. Don't mix different versions!
ASetup.img	This job also should get replaced by new versions.
Col6	In this job the Columbus Client files will get updated regularely. Watch out, that an eventually customized Columbus.cfg survives an update.

Configuration files

You will find the standard OSDeploy configuration files in the folder `[Release]\Site\MySite\Config\Generic.`

You should customize these files according to your needs. Create a new site or at least rename the default config *Generic*, when you make modifications. An update will create a config *Generic* again. You may compare your configuration files with the new ones and copy eventually added entries into your existing files.

Tailoring the OS Deploy configuration

Setup is only partially suitable for subsequent modifications to the configuration such as passwords, accounts, domains etc. The setup is designed for establishing a basic, functioning default environment. It still needs to be tailored to your requirements, however.

Because OS Deploy operates not only via a database but also purely on a file basis, you will find all configuration parameters in separate configuration files, which are best tailored using a text editor. Precise information in this area can be found in the chapter ***Sites & Configs*** (on page 68).

OS Deploy allows you to tailor the Windows setup parameter and to configure the computer exactly according to your requirements. The OS Deploy jobs are available to you as powerful tools for this purpose. More information can be found in the chapter ***OS Deploy Jobs*** (on page 76).

Important: Every time the configuration files are modified and jobs are added, the corresponding OS deployment must be selected in the console in the Infrastructure view and a Schedule list refresh must be executed. In this way, the modifications are also taken over into the database.

Refreshing the database

If you make changes to the releases, sites, configs or jobs, the database must be refreshed so that the changes are also reflected in the console.

Select the Infrastructure tab in the console, and then the OS Deployment service from the list.

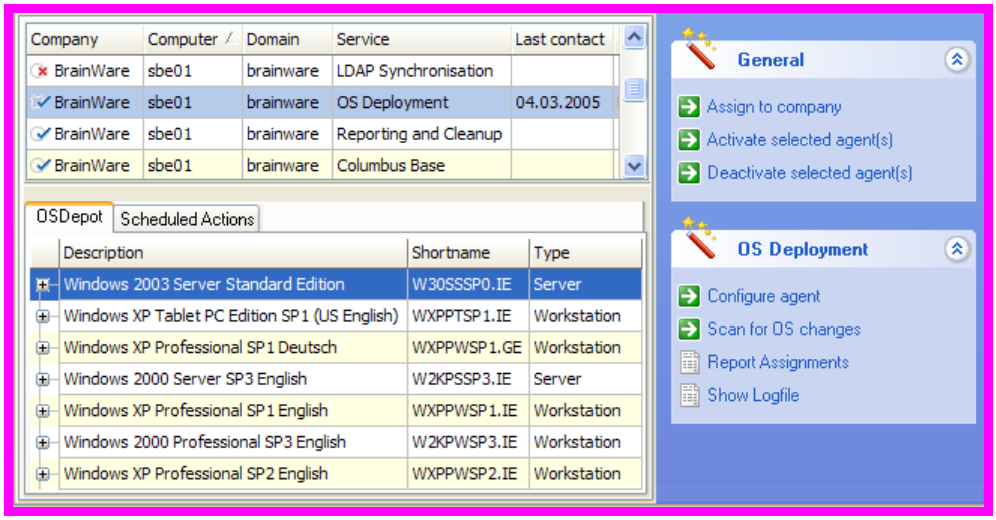


Abbildung 2: CMC Reiter Infrastructure

Now select 'Schedule list refresh' on the right hand side."

Abbildung 3: CMC Tab Infrastructure Refresh OS Depot

Click on 'Next >' to begin the configuration.

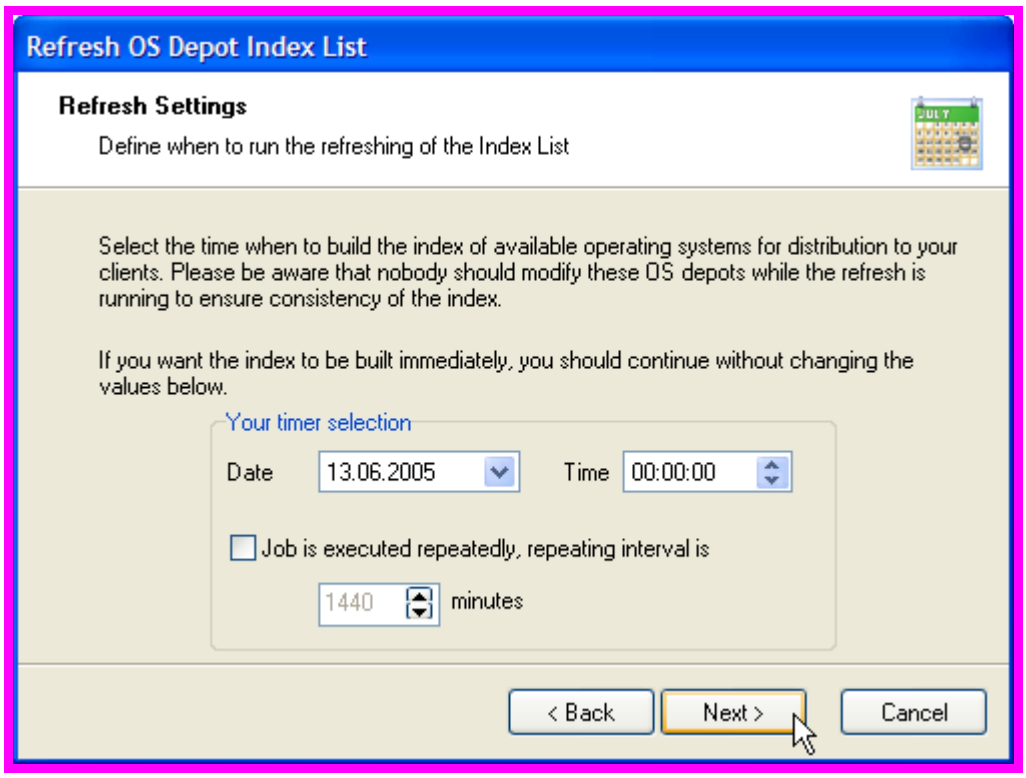


Abbildung 4: CMC List refresh für OSDeploy konfigurieren

You can now enter the time at which the refresh should occur. If you do not make any changes and you remove the check from 'Job is executed...', the refresh is performed immediately.

To have a refresh performed periodically (e.g. every 24 hours), check the box and enter the interval at which a refresh should occur. If you enter a time of '00:15:00' and an interval of 60 for example, a refresh will be performed every 60 minutes from 00:15 on the day specified (00:15, 01:15, ...)

Once you have configured your settings, click on 'Next >' to continue.

Abbildung 5: CMC Aktualisierung konfiguriert.

Finally, the settings that you have configured are displayed once more. You can complete the dialog using 'Finish'.

Checking the refresh

Please select the Scheduled Actions tab from the field below to check a refresh configuration.

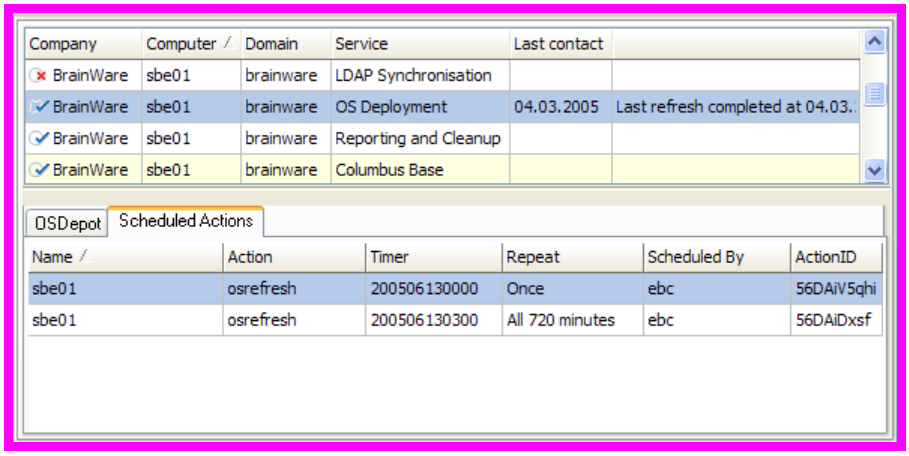


Abbildung 6: CMC Infrastructure Aktualisierung überprüfen

- Name: Displays the name of the computer on which OS Deploy is installed.
- Action: Shows which action will be performed. Here an 'OS refresh' is indicated - this means a refresh of an OS Depot.
- Timer: When the named action is to be performed.
- Repeat: At what interval the action is to be performed.
- Scheduled by: Who scheduled the action.
- Scheduled at: When the action was scheduled.
- ActionID: The ID of the action in the database.

CHAPTER 2

Setting up computers

The easiest way to set up computers is to use the PXE functionality of Columbus. In this way, the administrator is able to perform the operating system configuration via the Columbus Management Console (CMC) and trigger its installation without someone physically being at the computer.

If PXE is not used or if the network card is not PXE compatible, OS Deploy will be performed by means of diskettes. The diskettes are created by means of the FloppyMaker and must be used locally. Another option is to create a bootable CD with the assistance of the generated diskettes that contains the boot diskette as well as the corresponding source for installation.

In this chapter

Setup with Columbus Console and PXE

Before you can set up a computer from the database with OS Deploy by using PXE, this computer must be recorded in the database and its MAC address must be entered. The MAC address of the network card is the only identification characteristic of a computer under PXE.

Integrating computers by means of PXE

A further, very practical option for integrating a computer into the Columbus administration is by means of a rollout using PXE (Preboot eXecution Environment).

To refresh computers by means of OS Deploy, switch on PXE on these computers (Preboot eXecution Environment) and execute a PXE boot procedure. Insofar as your computer supports the PXE standard, configure the BIOS of the computer in such a way that when it starts up it sends PXE requests and the network card is the first in the boot sequence.

You can only try this function once. To do this, press the F12 key during the boot phase to boot directly from the network card. Observe the message on the screen. It is possible that you will have to choose another key or first switch on PXE in the BIOS.

For all PXE requests received, Columbus checks whether a system with the MAC address in question is already recorded in the Columbus database. Basically two scenarios are possible at this point:

The system is not recorded in the Columbus database

Columbus determines that no system with the MAC address in question has been recorded. The computer is sent a special PXE image, which reads configuration details for the system from the BIOS, automatically records the new system in the Columbus database and transmits hardware information such as computer model, network and video cards, etc. After this the system is switched off again.

By default, the new system will appear under Views - All inactive, in the Columbus Management Console. The MAC address is given as the system name. No further information is known during the PXE boot process. The Columbus administrator now needs to rename and configure the new system accordingly. The computer can then be set up again with OS Deploy.

The system was previously recorded in the Columbus database

Columbus determines that a system with the MAC address in question has already been recorded in the Columbus database. Columbus then checks for possible outstanding actions such as PowerON, operating system installation, software assignment, etc., and performs these as defined. In a new system with an outstanding operating system installation, installation of the relevant boot image and the subsequent installation of the operating system are now started by means of PXE.

Record computer manually

When recording a computer manually, the computer is set up manually in the Columbus Management Console under a company or a specific site.

To do this, switch to the Display *Workplace in the Columbus Console*. In the tree structure, highlight the company or site in which the new computer should be set up. Select the **New Computer** function **from the action menu** or click on a blank space in the *Computer window* and select the New action from **the context menu**.

Enter information about the new computer in the following template:

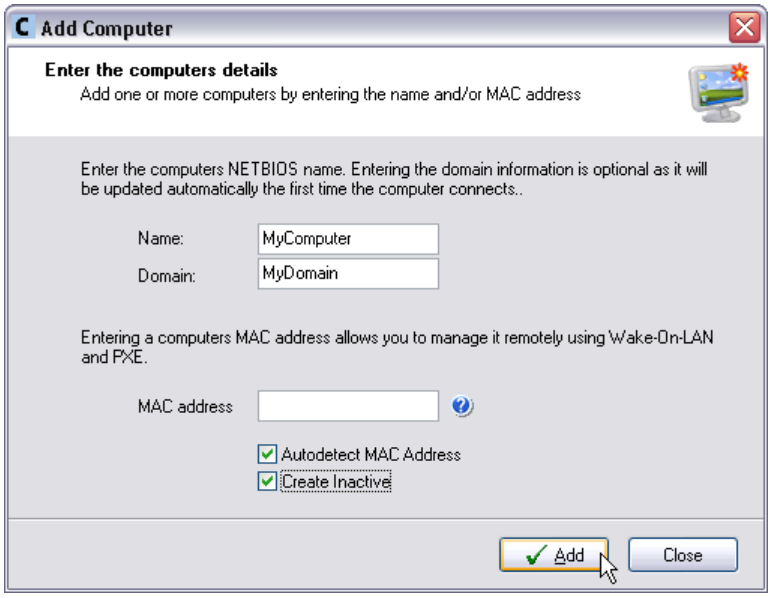


Abbildung 7: Computer hinzufügen

Name	NetBIOS name of the new system
Domain	NetBIOS domain name of the new system
MAC address	The MAC address (Media Access Control) is used by Columbus for operation with PXE (PreBoot Execution Environment).
Create Inactive	If this box is checked, the computer in question is designated as inactive in the Columbus database. Computers marked as inactive are not processed by Columbus during operating system installation and software distribution.

MAC address: It is recommended that you record the MAC address if you are considering using PXE for staging of your clients. For example, manual recording of new clients in the Columbus Management Console has the advantage that all the configuration steps associated with a system rollout (e.g. determining the computer name, domain, client config, assignment of operating system release, software, etc.) can be performed in advance, and the rollout can be started manually or by means of a scheduler. If the new systems are now started via wake on LAN and PXE, they can be identified by Columbus by means of the pre-assigned MAC address, and be installed according to the planned operations. See also ***Rollout via PXE*** (See "Integrating computers by means of PXE" on page 20).

Selecting the Computer

After starting the console and selecting the Workplace tab, you can find the newly registered computers in the Computers window after expanding the structure on the left hand side and clicking on 'Computers' or 'All inactive'.

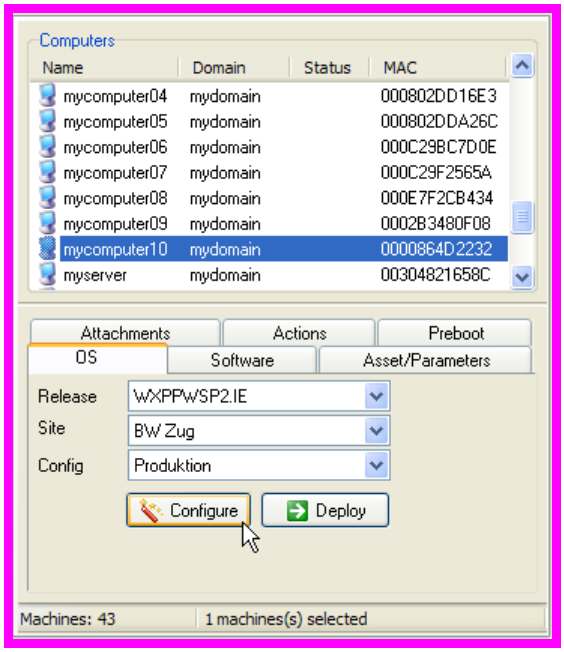


Abbildung 8: CMC Fenster Computers

Click in the Computers window to be able to call up the View item via the menu. This offers various views. For example when you select 'Detail', the domain, cost center, status and MAC address are displayed in addition to the computer name.

The Status column is only populated if you add the value _UDPPORT= 9880 to the ..\Programs\Columbus\Infrastructure\PXETemplates\oemparam.txt file. After this, a status is displayed in the console by means of UDP, from which you can determine what the computer is currently doing.

Staging one computer per console

Before installing an operating system, you need to give the computer a name. Computers that have a MAC address only cannot be staged.

You can change the name of the computer by right clicking the computer and selecting 'Rename'.

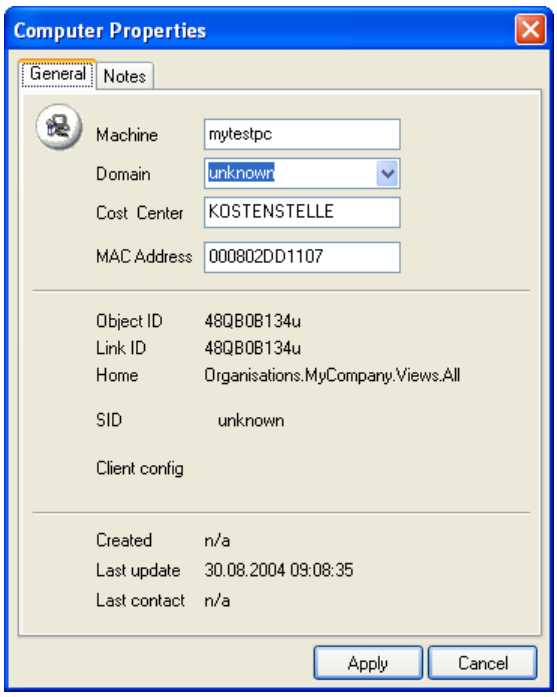


Abbildung 9: CMC Rename Computer

Enter the desired computer name in the Machine field. In addition, a cost center can be assigned here. A domain can be assigned by the Domain drop down menu; this can change later though, e.g. if another domain is available in the release you selected.

After specifying the name, you must assign a release, a site and a config to the computer.

In order to describe the following instructions better, we assume that:

a release of WinXP and

a site MySite and

a config Generic exist with the corresponding file structure. This is in effect the default configuration that exists after Columbus OS Deploy has been installed.

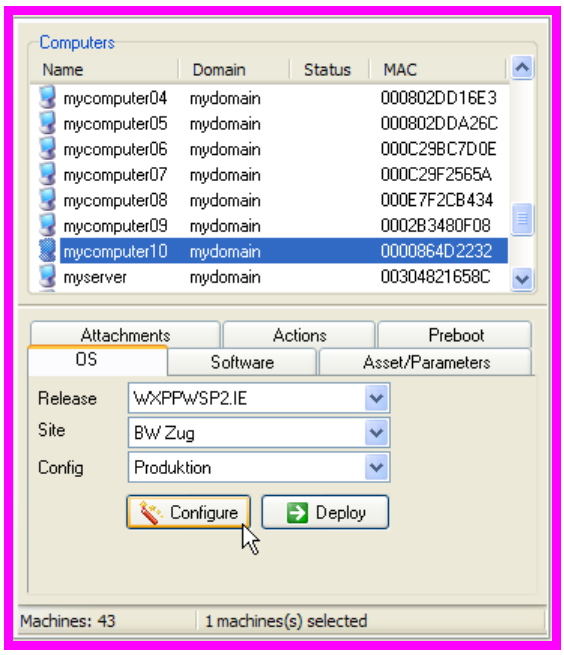


Abbildung 10: CMC Release, Site und Config zuweisen

After you have assigned the release, site and config, you can perform additional settings via 'Configure'.

General

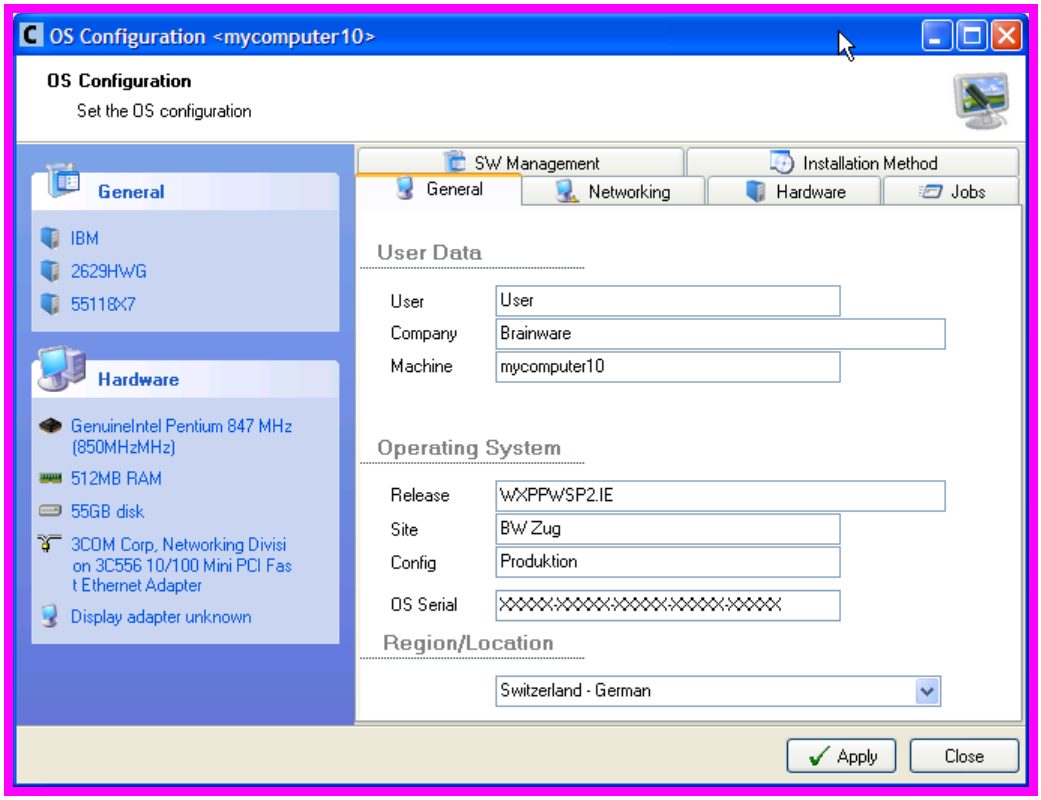


Abbildung 11: CMC Configure Reiter General

user data

- User: The entry is assumed from the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\unattend.txt
- Company: The entry is assumed from the ..\OSDepot\WinXP\Sites\MySite\Config\Generic\unattend.txt file.
- Machine: The name that you have given the machine is assumed from the database

Operating system

- release: The release that you selected for your machine in the 'Computers' window
- Site: The site that you selected for your machine in the 'Computers' window
- Config: The configuration that you selected for your machine in the 'Computers' window
- OS serial: ProductID is assumed from the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\unattend.txt

Region / location

- Here you select a regional setting for your machine, for which you have created a regional job.

Network

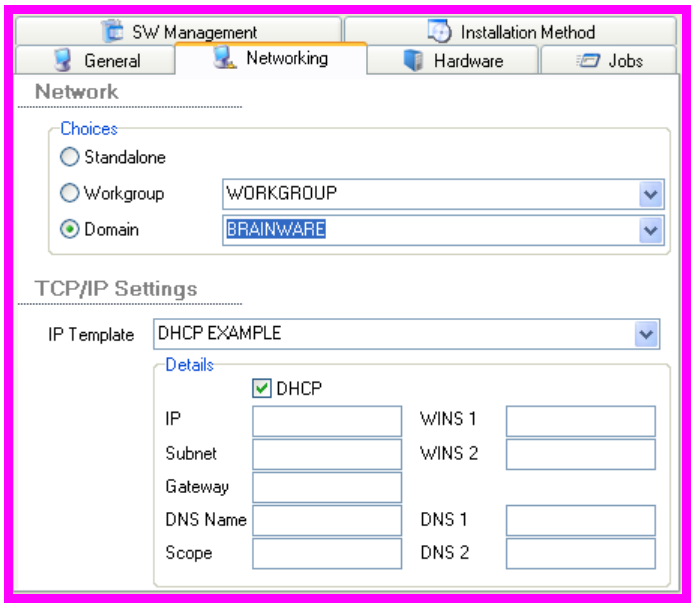


Abbildung 12: CMC Configure Reiter Network

Network

Here you can select the affiliation of this machine to a domain or workgroup, or decide whether the machine should be built 'standalone'. The relevant selections are made in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\choices.ini in the [Domains] and [Workgroups] sections.

TCP/IP settings

Here you can select a TCP/IP template that has been stored in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\tcpip.ini. If you use DHCP, you need not make any changes here.

Hardware

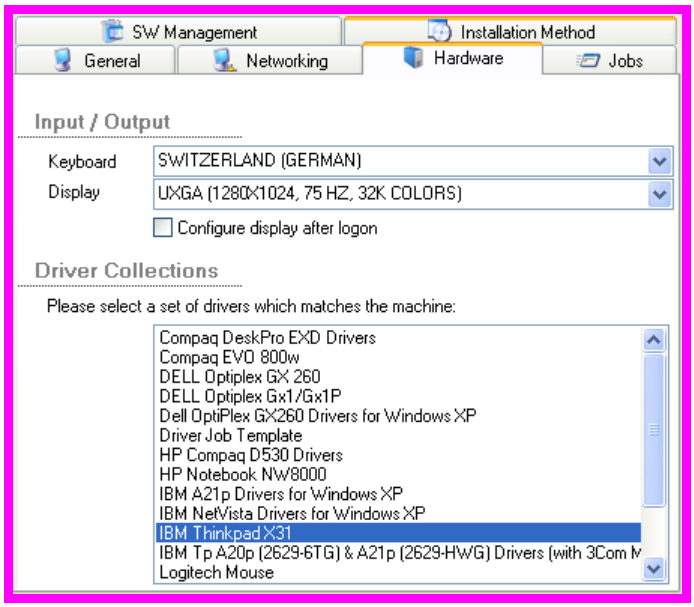


Abbildung 13: CMC Configure Reiter Hardware

Input / output

- Keyboard: Here you can specify the keyboard layout to be used. Selection options are set in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\Choices.ini, in the [Keyboard] section.
- Display: Here you can select the monitor resolution after completion of the setup. Selection options are entered in the file..\OSDepot\WinXP\Sites\MySite\Config\Generic\choices.ini, in the [DisplaySettings] section.

Driver collections

Here you select the driver job required for your hardware.

Jobs

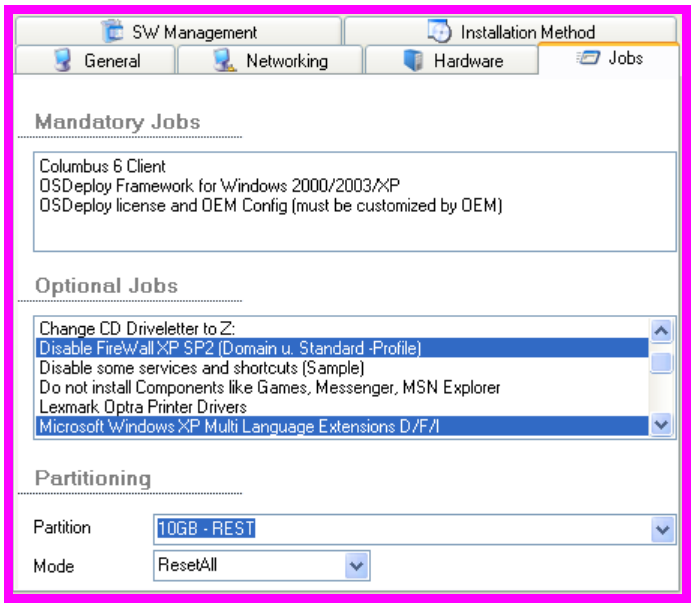


Abbildung 14: CMC Configure Reiter Jobs

Mandatory jobs

Jobs whose installation on the computer is mandatory, are displayed here. This is done by means of the entry *Usage=Mandatory* in job.ini of the corresponding job.

Optional jobs

Here you can click on, and thereby select optional jobs for this machine; several jobs can be selected by pressing the **CTRL key**.

Partitioning

- Partition: Here you can select one of the partition schemas that have been created in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\choices.ini, in the [Partition] section.
- Mode: Here you can select whether all (ResetAll) or only the boot partition(ResetFirst) of the computer should be deleted prior to starting the setup. ResetFirst, for example, is useful where machines are rebuilt and where the data in other partitions should be preserved. If you select ResetFirst, the schema set under the partition is ignored, and only the system partition is restored to the previous size.

SW management

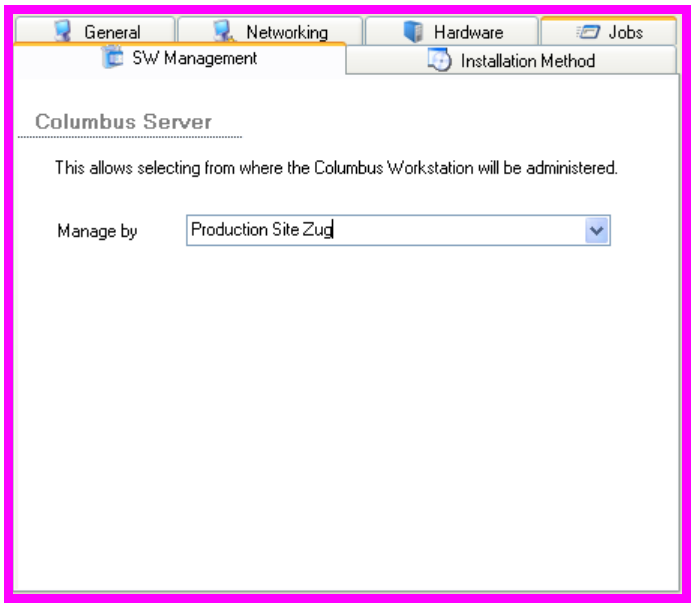


Abbildung 15: CMC Configure Reiter SW Management

Columbus server

Here you can store an alternative configuration for the Columbus client where necessary, if you use the Columbus software distribution mechanism. The corresponding entries must be made in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\Columbus.ini; every section created ([text in square brackets is a section]) is displayed in the 'Manage by' drop down menu, including the text.

Method of installation

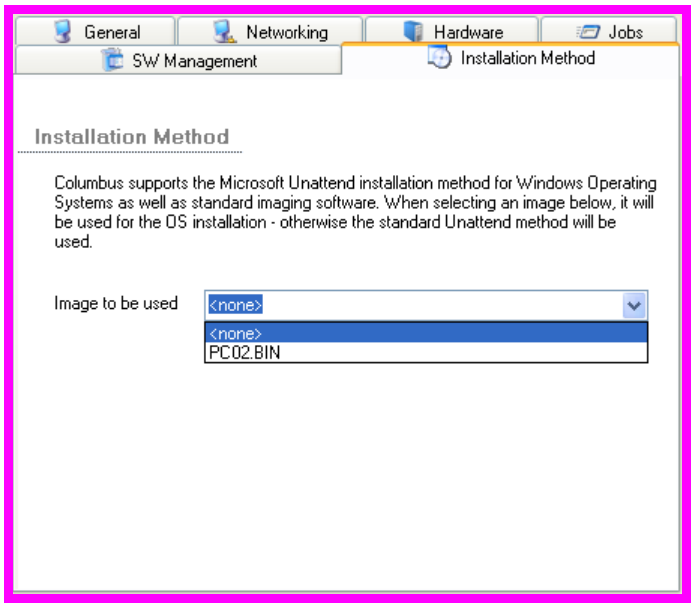


Abbildung 16: CMC Configure Reiter Installation Method

Method of installation

You can use this method to build up the computer with so-called images. The transmitted source image must be contained in ..\OSDepot\WinXP\Images.

Click on 'Close' to complete the configuration.

Starting the installation

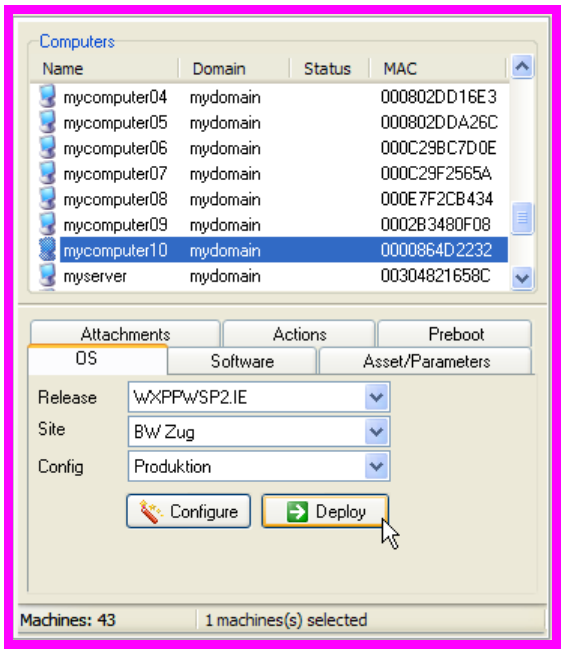


Abbildung 17: CMC Computers Window Deploy

Click on 'Deploy' to start the installation of the computer.

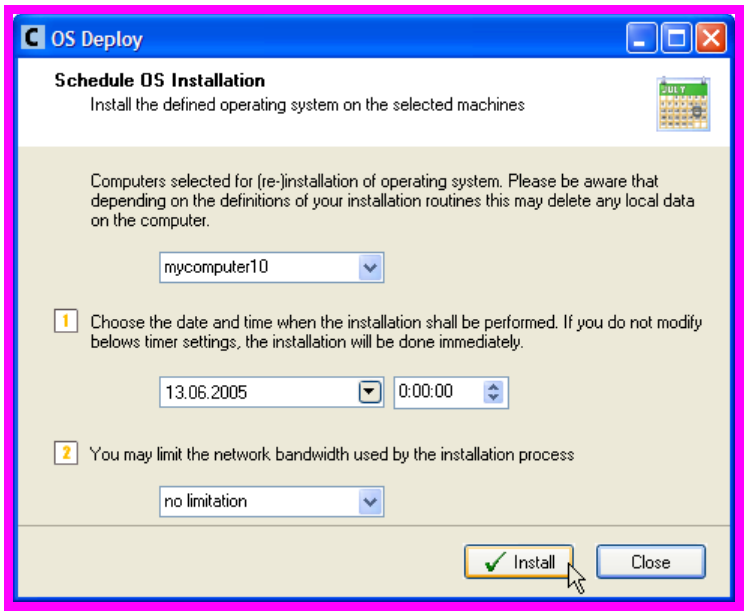


Abbildung 18: CMC Computers Deploy Zeitplan

You can select the timing of the installation in this window; for example, you can build up the computer during the night when the network is not as busy.

By selecting the drop down menu in the Date field, you can set the date. You can enter the time by means of the up/down keys or manually.

Abbildung 19: CMC Select Date

Once you have applied your settings, click 'Install'. If you want the computer to be staged immediately, click 'Install' without amending the date.

The Actions tab contains the actions that can be performed on the computer.

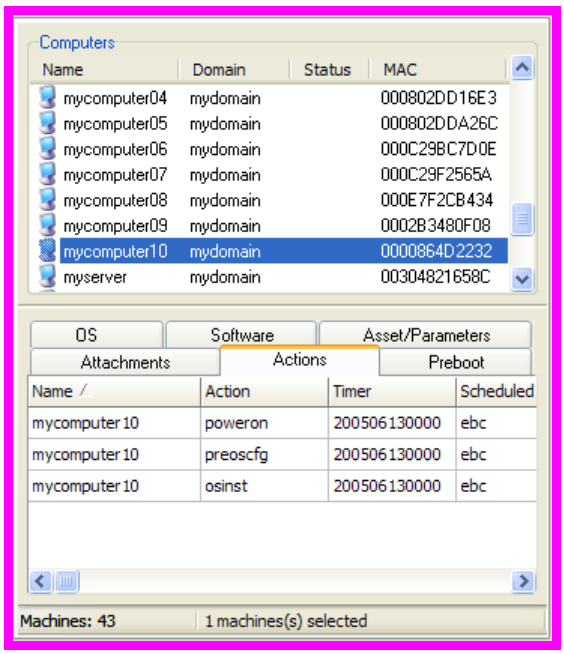


Abbildung 20: CMC Computers Reiter Actions

- Name: Computer name
- OID: The Object ID of the computer is displayed here
- Action: The action to be performed by the computer is displayed here
- poweron: Switching the computer on by means of the WoL command
- preoscfg: Preparing the computer, partitioning the hard drive
- osinst: Installing the operating system
- Timer: Time after which the installation will be performed
- Scheduled by: Name of the person who triggered the installation process
- Scheduled at: When the installation process was triggered.
- ActionID: ID of the action in the database

Setup with boot diskettes

If for any reason it is not possible, or required, to stage a computer by means of the Columbus Management Console or PXE, you can set up the computer with boot diskettes. The computer is then integrated into the Management Console by the Columbus client at the end of the setup process.

If PXE is not used, OS Deploy is performed via the diskettes. These are created by means of FloppyMaker and must be used locally. In this case the configuration is not performed via the database, but via the Workstation Profiler. In this way, the computer profiles can be predefined, or created only during setup.

This method is also particularly advantageous when setting up computers without network connections. You have the option to create a bootable CD with the assistance of the generated diskettes. The boot diskettes as well as the corresponding source for installation will be on the CD. Application examples are laptops belonging to field service personnel, home office workers etc. The CD can also be used as an emergency CD for mobile computer repairs.

Creating a boot diskette

The Floppy Maker wizard guides you through the process required to create a boot diskette for building a computer.

If required, you can extend the following functions of Floppy Maker.

- Drivers required to enable the diskette to connect to a Windows or Netware Server, or to execute OS Deploy from a CD or other local medium.
- Additional keyboard layouts
- Hard drive partitioning schemas
- Parameter templates for different environments, e.g. different servers or IP segments

Diskette requirements

You require a standard 1.44 MB diskette to create the Windows NT/2000/XP Setup routine.

The diskettemust not be a bootable diskette

- must not be blank
- must not be formatted, as Floppy Maker can optionally also perform a quick format of the diskette.

Note: All data on the diskette inserted will be overwritten

Starting Floppy Maker

Execute floppymaker.exe with path ..\OSDepot\Support\FpyMaker to start Floppy Maker.

Abbildung 21: Floppy Maker - Start Screen

The Floppy Maker wizard appears, with the 'Generate a boot floppy' box already checked.

Click 'Next' if you want to create a boot diskette.

Selecting the boot image

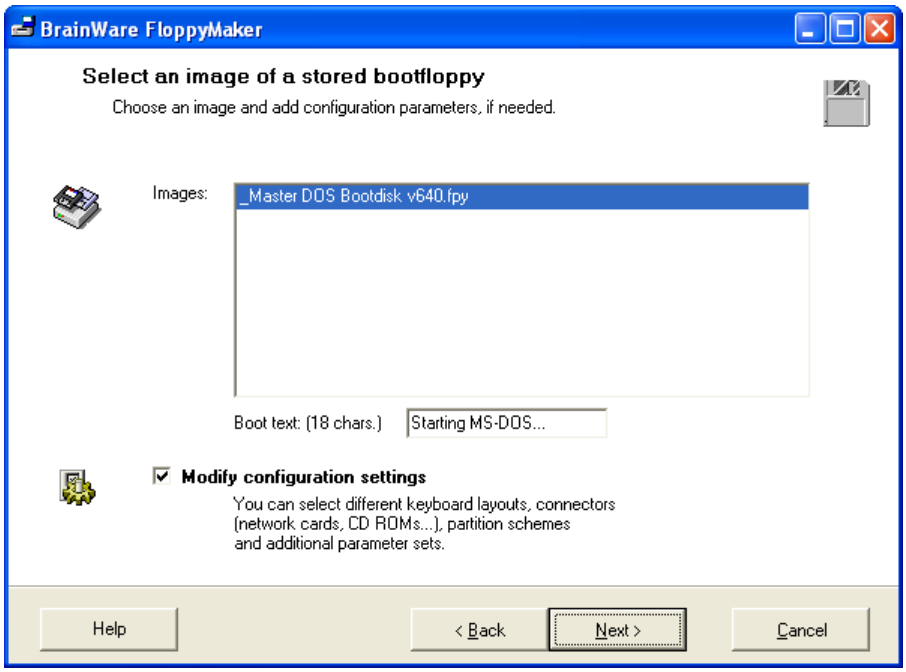


Abbildung 22: Floppy Maker - Select Image

The Floppy Maker wizard presents you with selection options.

Images	When you use Floppy Maker for the first time, only the master boot image is shown here. This image is a template that you still need to use for performing additional configurations. After you have compiled a boot disk according to your requirements, you can create an image from this disk and make it available for selection from this dialog. If you then select this image, you must of course omit the modification of the configuration (modify configuration settings)
Boot text	This allows you to provide a title for your boot diskette. This function replaces the original MS DOS entry ("Starting MS.DOS...") and is useful for providing boot diskettes with the name of the computer, the release or the network adapter. Unfortunately the text is limited to 18 characters.
Modifying configuration settings	If the image selected already contains all your settings, remove the check mark and continue with the generation of the diskette. Normally you will still need to define options so that the boot diskette can be used in your environment.

The 'Next >' button takes you to the selection of the connection types.

Selecting the connectors

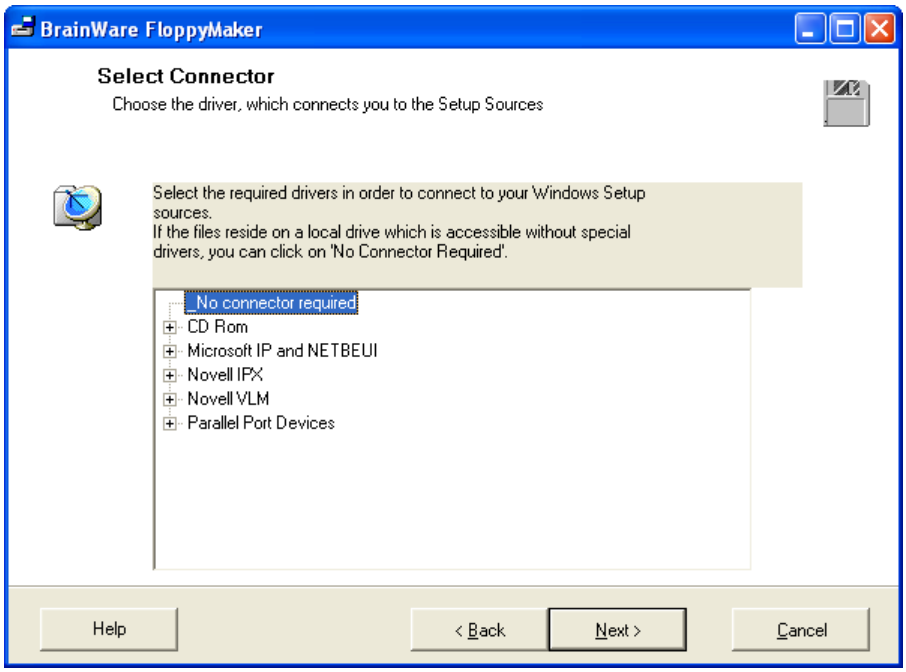


Abbildung 23: Floppy Maker - Select Connector

This allows you to select the connection type to be executed with OS Deploy. You can use CD-ROM drives, network devices, a JAZ or ZIP drive or the parallel connection of the computer.

See the following chapter for an explanation of how to add a drive, if a required driver is missing.

"Next >' takes you to the selection of the partitioning schemas.

Selecting the partitioning schema

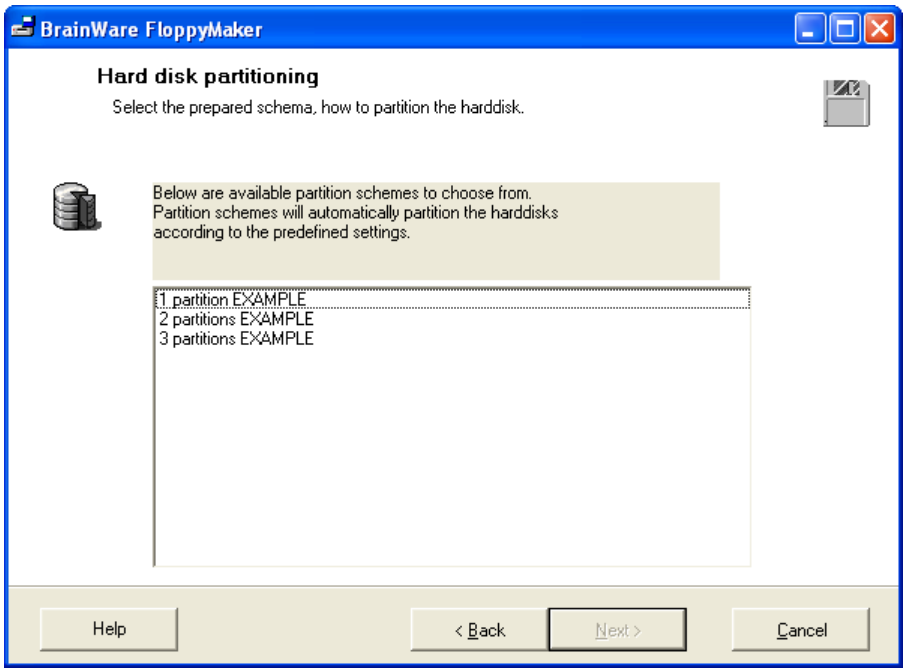


Abbildung 24: Floppy Maker - Select Partitioning

If the partitioning schemas have been set up, all it takes is a mouse click to select the correct one. The next chapter describes how to configure the template for partitions.

'Next >' takes you to the window in which you can select the keyboard layout.

Selecting the keyboard

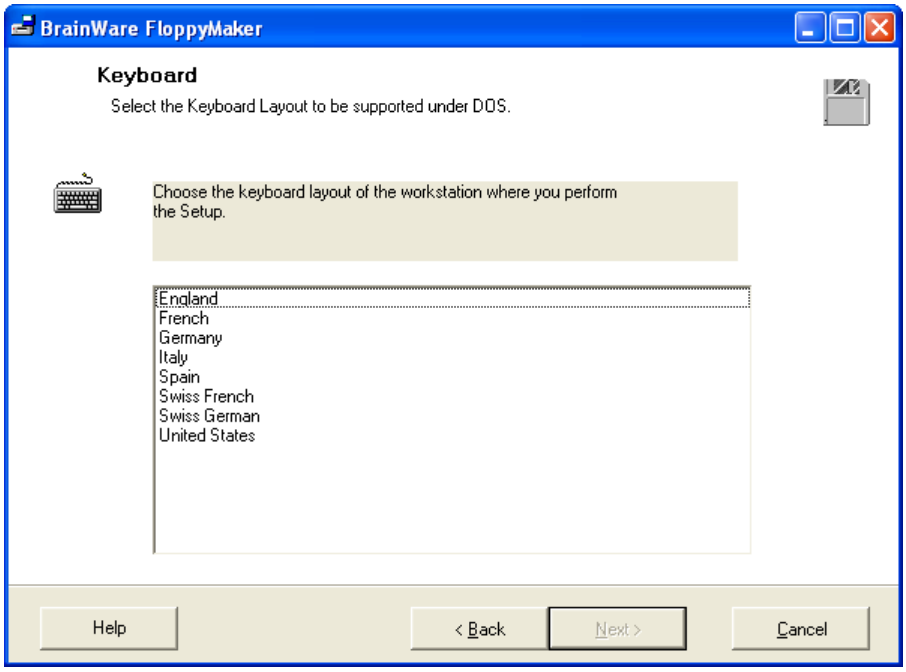


Abbildung 25: Floppy Maker - Select Keyboard

Here you select the keyboard layout that you want to use in DOS mode.

'Next >' takes you to the last section, namely the selection of the configuration.

Selecting parameters

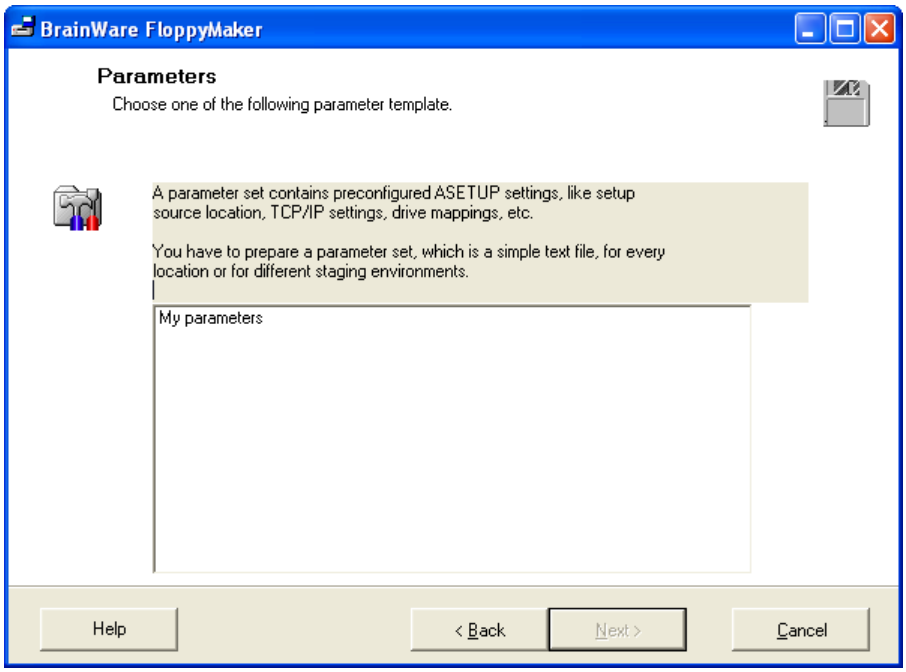


Abbildung 26: Floppy Maker - Select Parameters

Finally, you must select the configuration parameters for your environment. Every environment is defined by means of different parameters.

For example:

- Server names
- IP addresses
- Passwords for connecting to the OS Deploy server

You can find an explanation as to how these parameters can be set in the next chapter.

Use'Next >' to create the diskette.

Create diskette

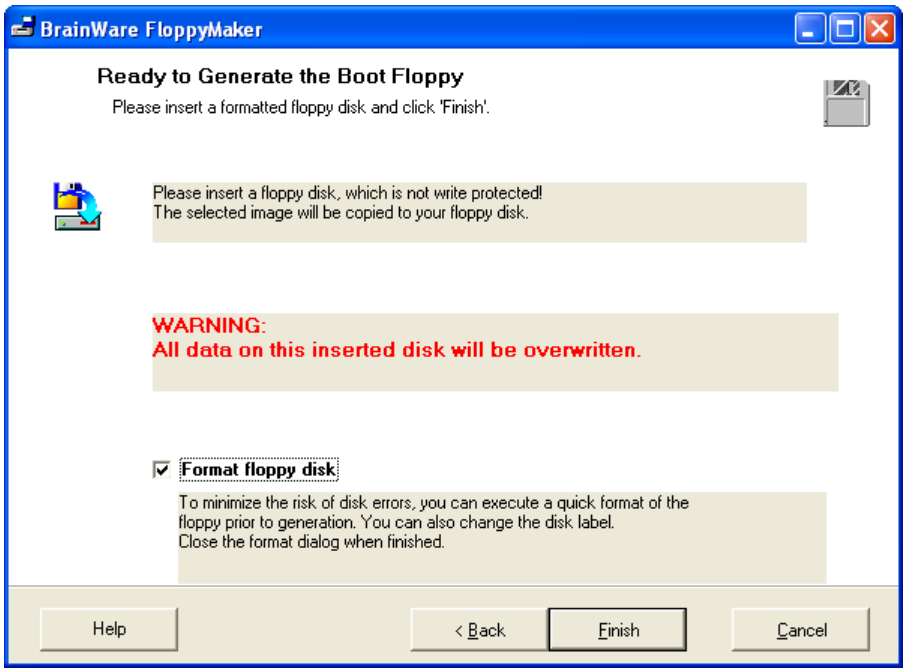


Abbildung 27: Floppy Maker - Create Diskette

Please insert a diskette in the A: drive of your local computer.

Floppy Maker needs a formatted diskette to be able to write an image to the diskette. We recommend that you format every diskette before using it as a boot diskette. In this way, you will avoid problems of 'old data' on the diskette.

If you activate 'Format boot disk' and click on 'Finish >', Floppy Maker performs a quick format of the diskette inserted.

Alternatively, click on 'Finish >' and the diskette will be generated immediately.

Format diskette

If you selected 'Format boot disk', you are now asked for options.

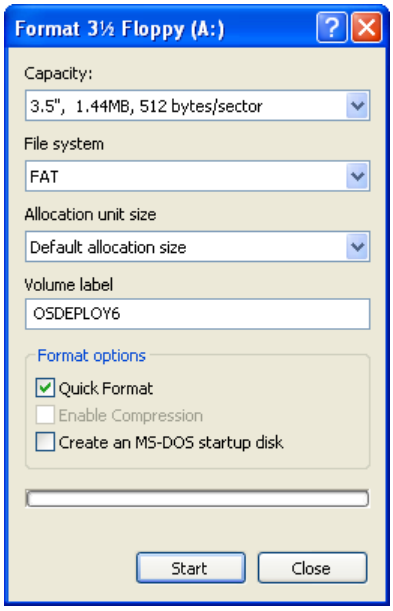


Abbildung 28: Floppy Maker - Format Diskette

Click on 'Start' to perform a quick format of the diskette.

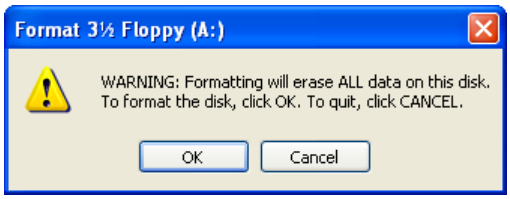


Abbildung 29: Floppy Maker - Formatting Warning

If you are sure, click on 'OK'"

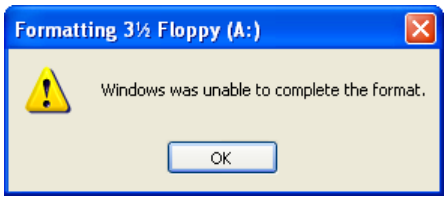


Abbildung 30: Floppy Maker - Formatting Not Possible

Please check the diskette, and remove the write protection if necessary.

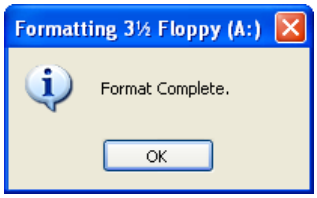


Abbildung 31: Floppy Maker - Formatting Complete

Click on 'OK'"

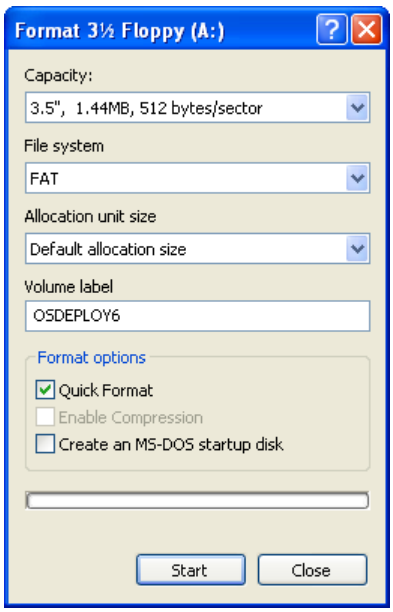


Abbildung 32: Floppy Maker - Format Diskette

Click on 'Close'. Floppy Maker then creates the diskette.

Creating a boot diskette

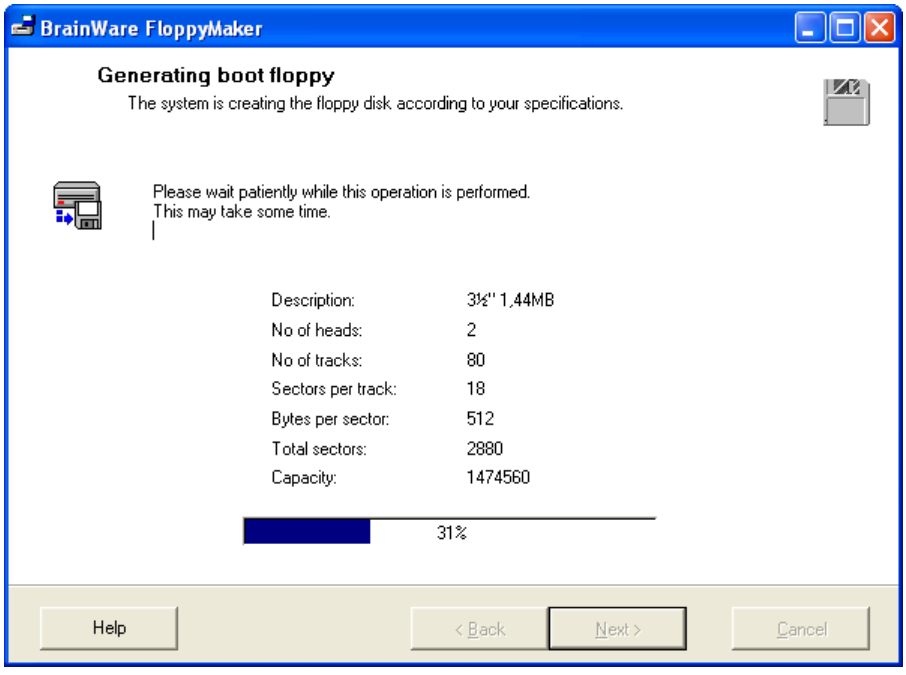


Abbildung 33: Floppy Maker - Create Disk

This window displays the progress during the creation of the boot diskette.

Boot diskette successfully created

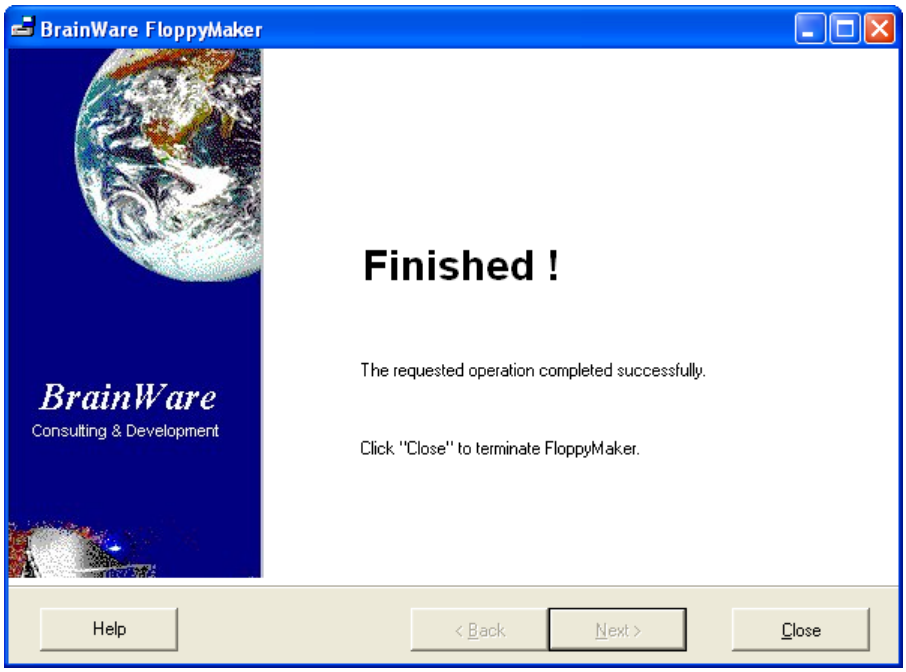


Abbildung 34: Floppy Maker - Successfully Completed

Creation of the boot diskette has been completed. Click on 'Close' to exit the program.

Staging a computer by means of a boot diskette

You can find out how to create the appropriate boot diskette in the section 'Floppy Maker'

Introduction page

After you have created a boot diskette for your environment and machine type, you can start Windows Setup. To do this, please insert the diskette in the diskette drive and start the computer.

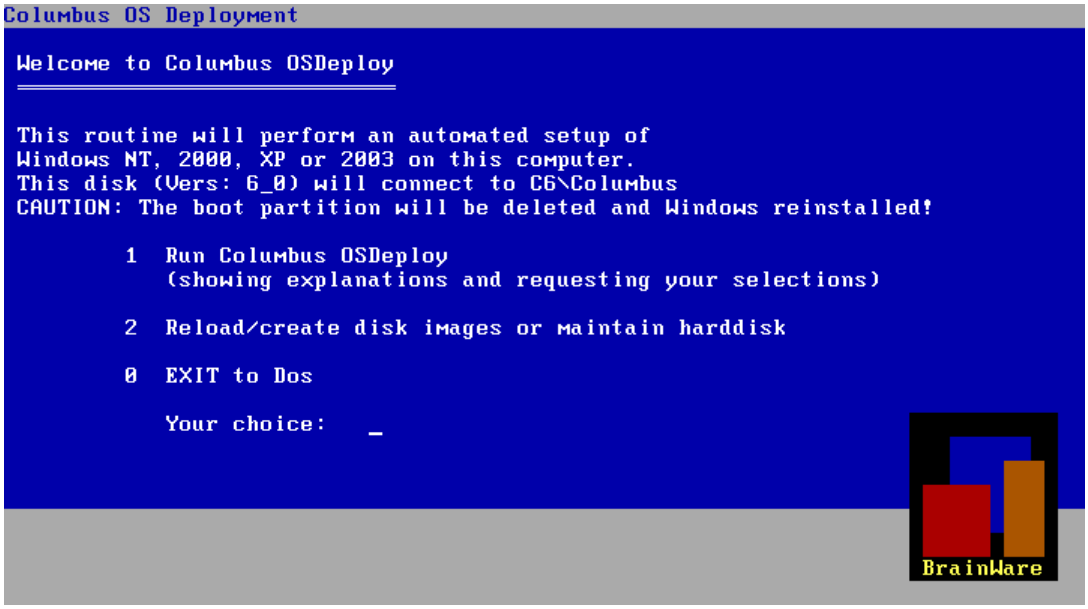


Abbildung 35: Welcome page

Select '1' to stage the computer. You can use option '2' to create an image of the computer.

Partitioning

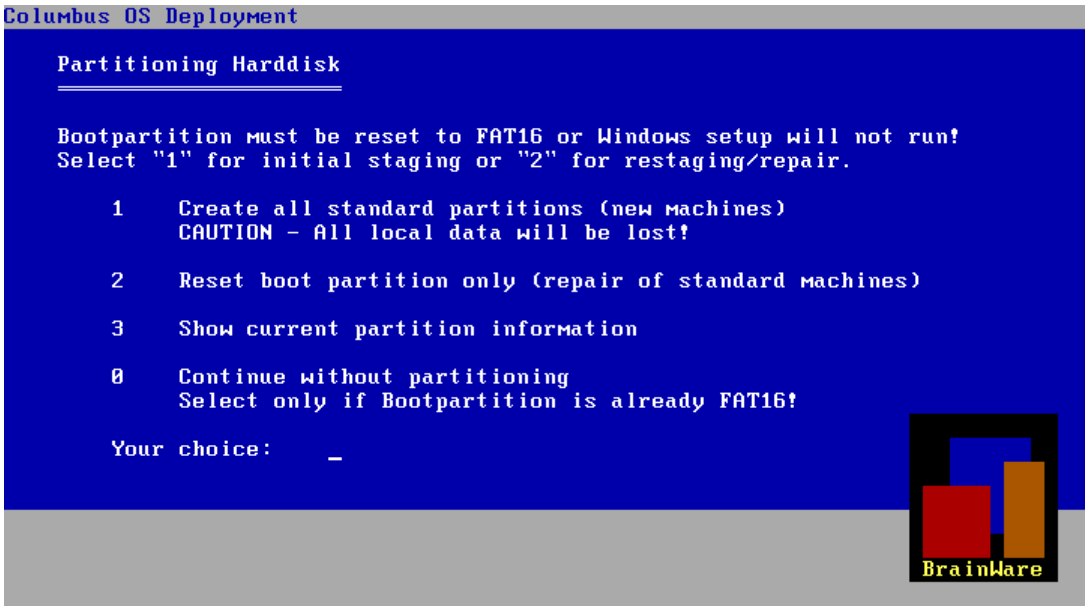


Abbildung 36: Partitioning

Select '1' if the partitions are to be created according to the schema selected in Floppy Maker.

Select '2' if only the boot partition is to be reset (data in other partitions is preserved).

Select '3' to display partition information.

Select '0' to continue without partitioning. If you select this item, the boot partition must already be formatted with FAT16.

View displayed if '1' is selected

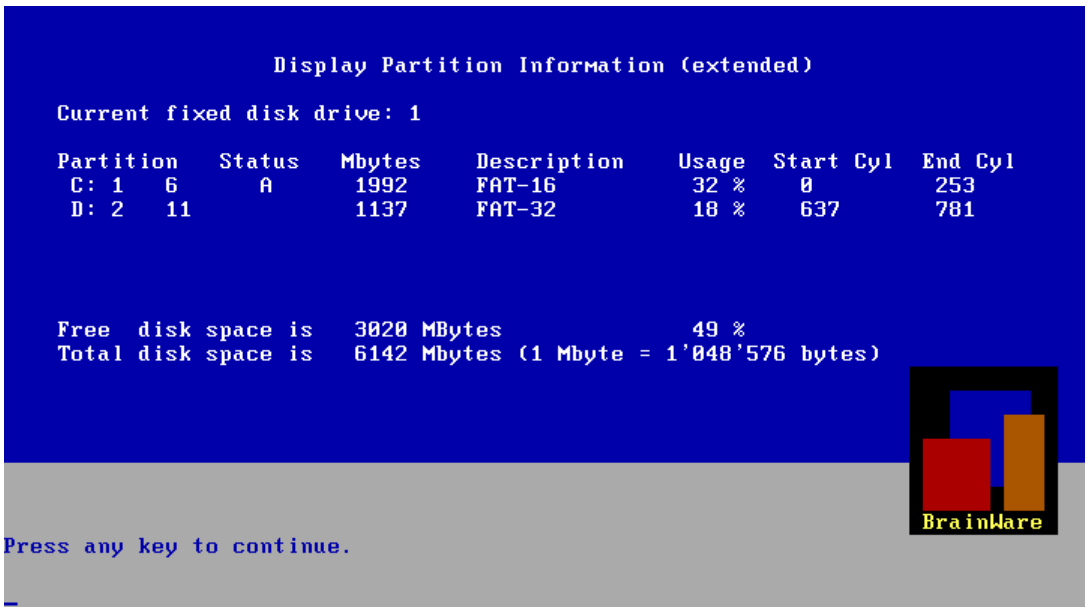


Abbildung 37: Display of partitioning performed

After pressing a key the computer is rebooted and the installation proceeds.

View displayed if '3' is selected

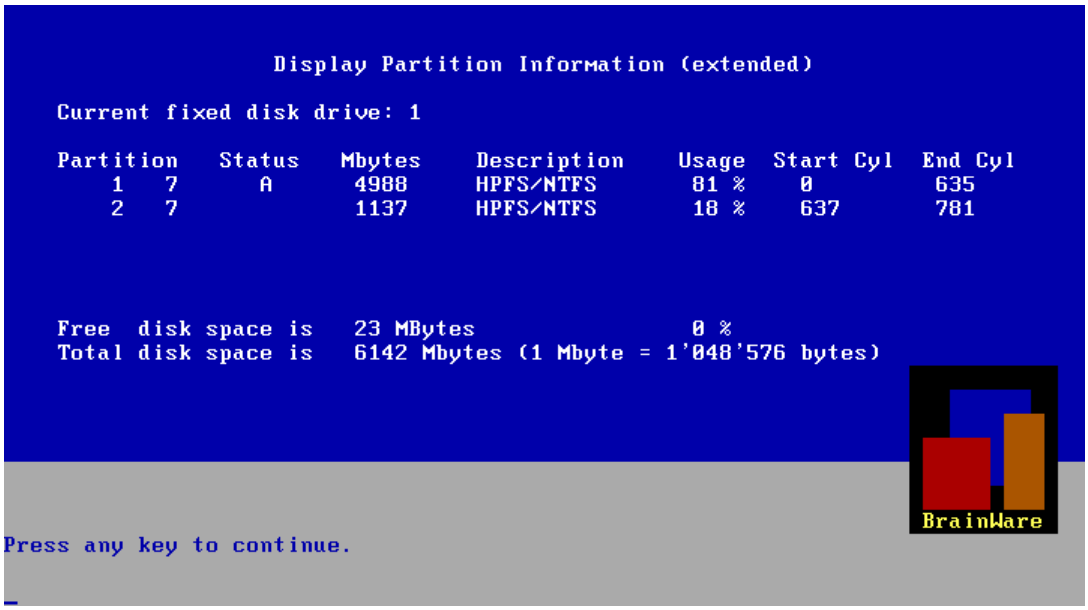


Abbildung 38: Display of current partitioning

After pressing a key, you have the option to return to the previous menu or to exit the program if you do not want to perform partitioning.

Selecting a release

This screen is displayed following the restart.

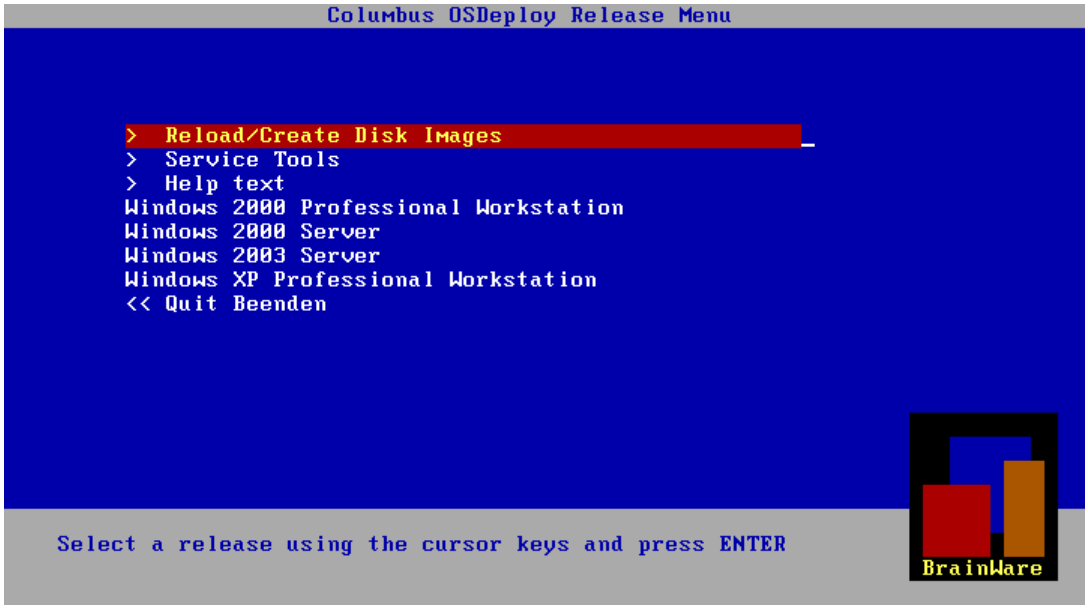


Abbildung 39: Release menu

Here you can choose different actions.

Reload/create disk images	Generate/recover copies of hard drives (partitions)
Service tools	Executing service tools (PartitionMagic, Norton Commander, etc.)
Help Text	Help for this menu

Windows 2000 Professional Workstation	Continue with the release for Windows 2000 Professional Workstation
Windows 2000 Server	Continue with the release for Windows 2000 Server
Windows 2003 Server	Continue with the release for Windows 2003 Server
Windows XP Professional Workstation	Continue with the release for WinXP Professional
Quit	Aborting the procedure

Profiler

The configuration of a computer is executed by a so-called Profiler, which accesses its data from the OS Depot. Similarly, the configuration accesses its data via the console.

Selecting site and config

After selecting a release, the following screen is displayed.

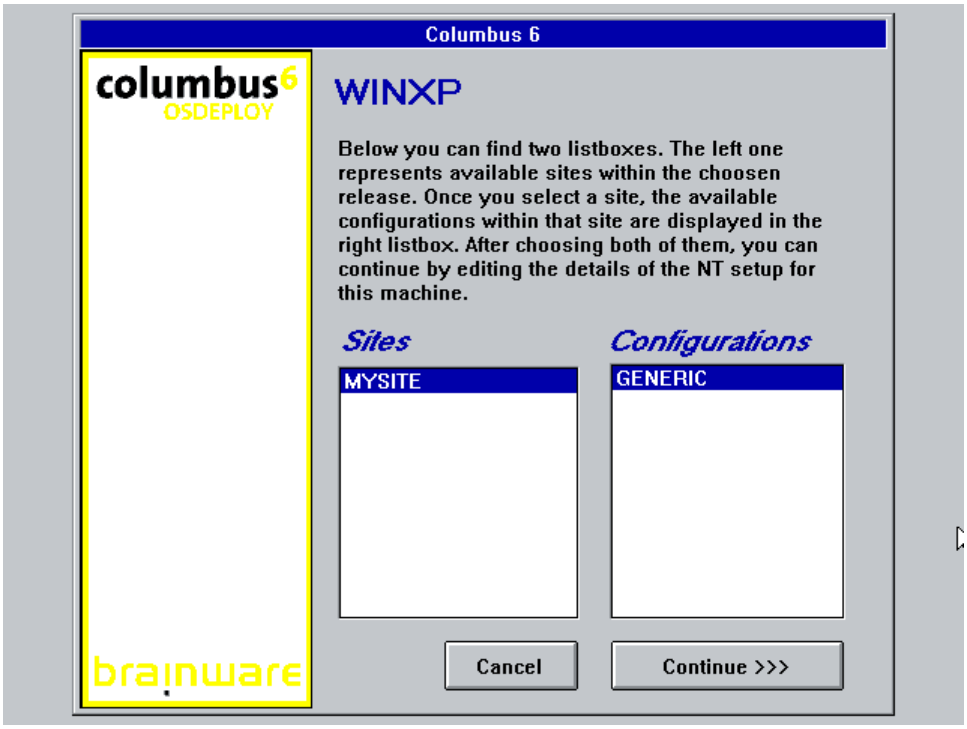


Abbildung 40: Selecting release and config

Here you can specify the site and config that are to be valid for your computer. After making your selection, proceed with 'Continue >>>'.

Designating the computer

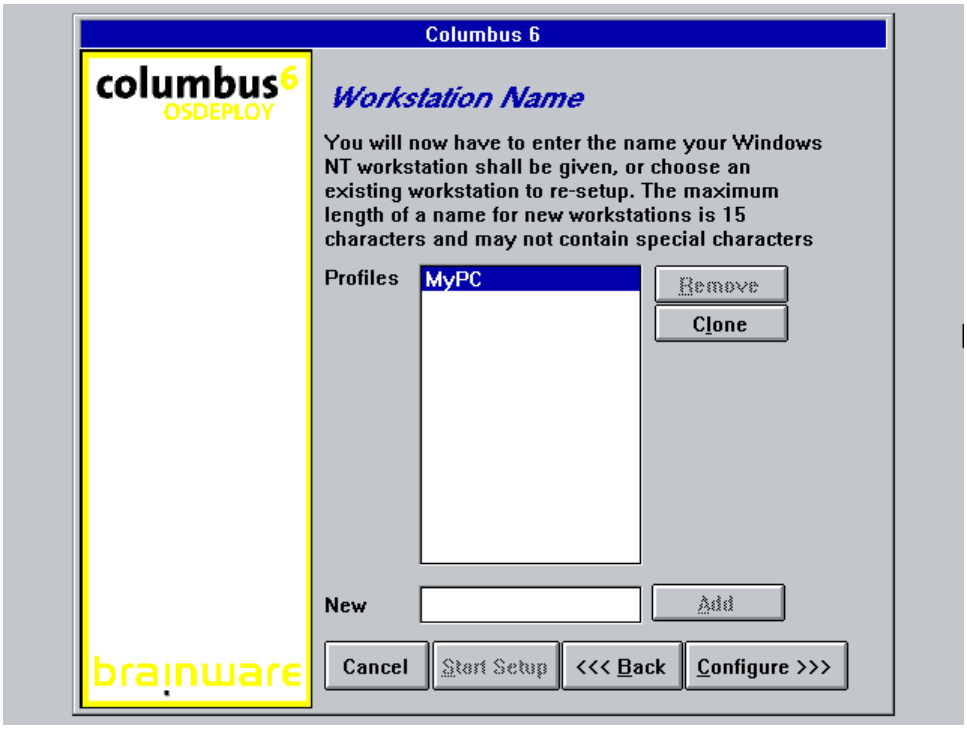


Abbildung 41: Designate computer

Here you can select the computer that you want to configure or stage. If this is a new computer, or your computer is not yet available, add the name to NEW and press 'Add'. Then highlight the computer in the upper window and press 'Configure >>>' to configure the computer.

If the computer has been previously configured and is already in the list, you can highlight the computer and begin the setup by means of 'Start setup' without having to perform further configuration.

If you need to set up a computer that is similar to one in the list, except for the name, you can highlight the computer and select 'Clone'.

General tab

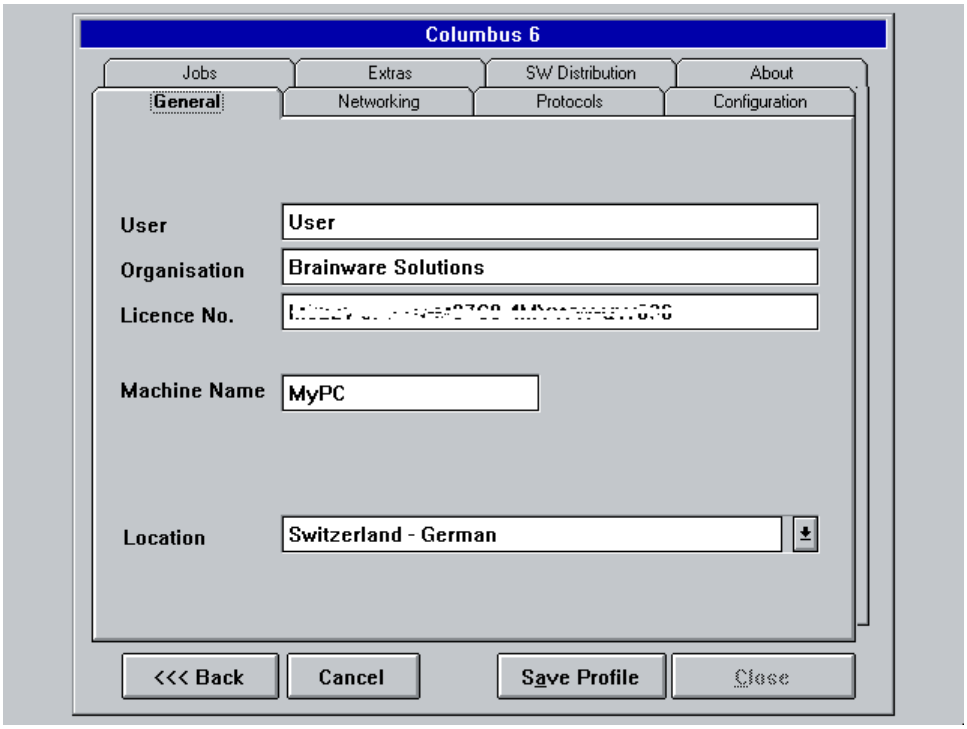


Abbildung 42: Profiler tab General

- User: The entry is assumed from the ..\OSDepot\WinXP\Sites\MySite\Config\Generic\unattend.txt file.
- Organization: The entry is assumed from the ..\OSDepot\WinXP\Sites\MySite\Config\Generic\unattend.txt file.
- License No. ProductID is assumed from the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\unattend.txt
- Machine: The name that you have given the machine.
- Location: Here you select a regional setting for your machine - a setting you have created as a regional job.

Networking tab

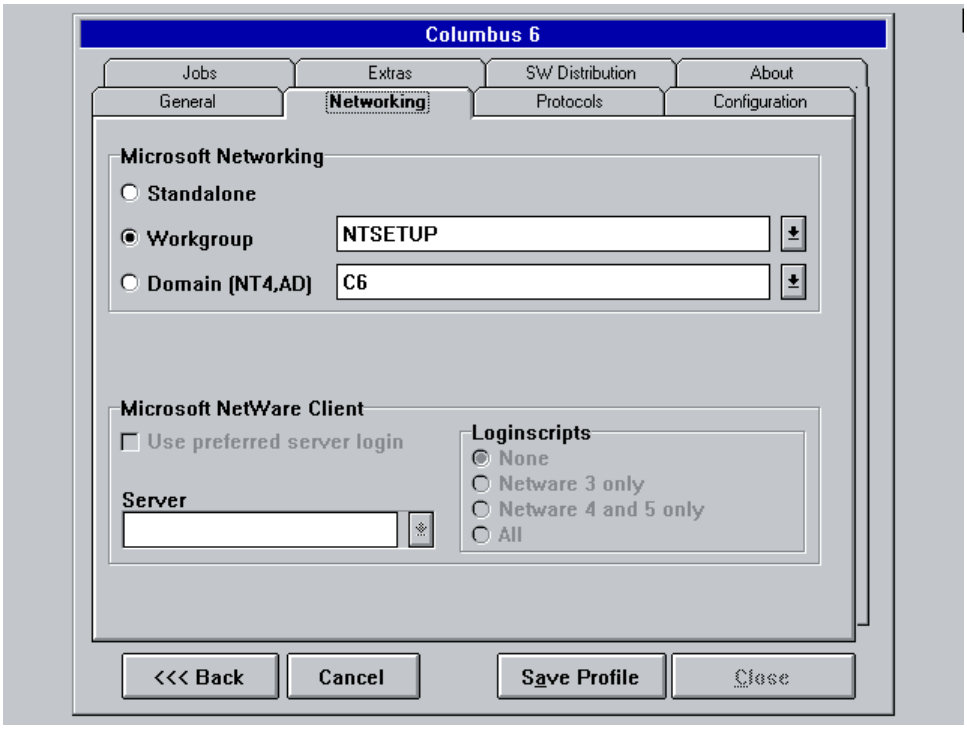


Abbildung 43: Profiler tab Networking

Microsoft Networking

Here you can select the affiliation of this machine to a domain or workgroup, or decide whether the machine should be built 'standalone'. The appropriate specifications are entered in the file..\OSDepot\WinXP\Sites\MySite\Config\Generic\choices.ini in the [Domains] and [Workgroups] sections.

Microsoft Networking client

This offers compatibility with earlier versions that can also be installed on Netware server.

Protocols tab

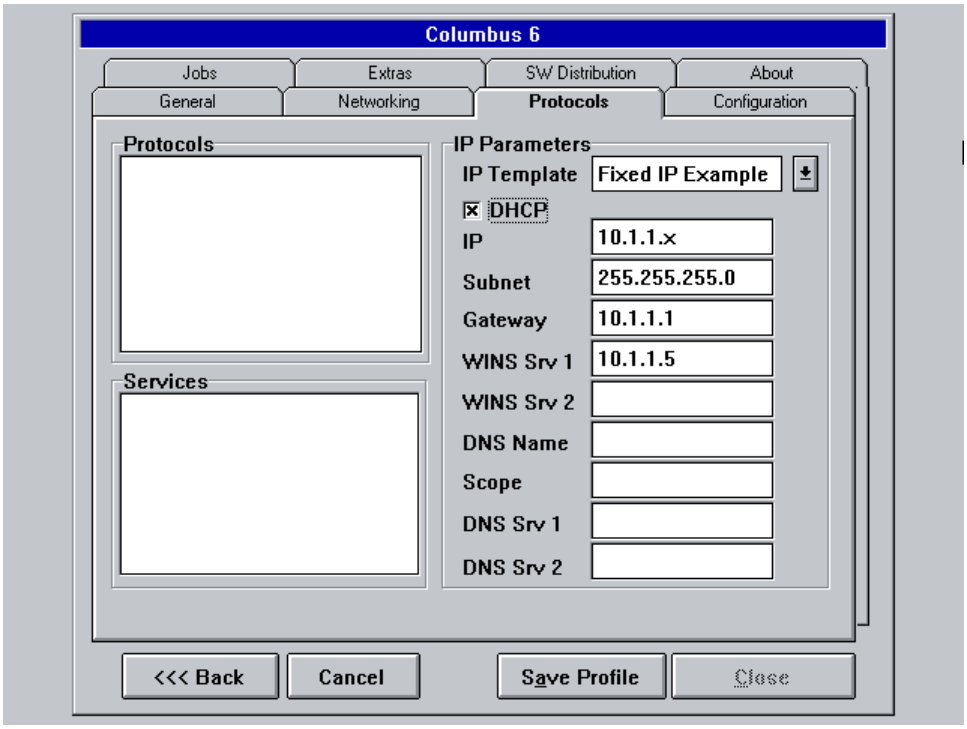


Abbildung 44: Profiler tab Protocols

IP parameters

Here you can select a TCP/IP template that has been stored in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\tcpip.ini. If you use DHCP, you need not make any changes here.

Configuration tab

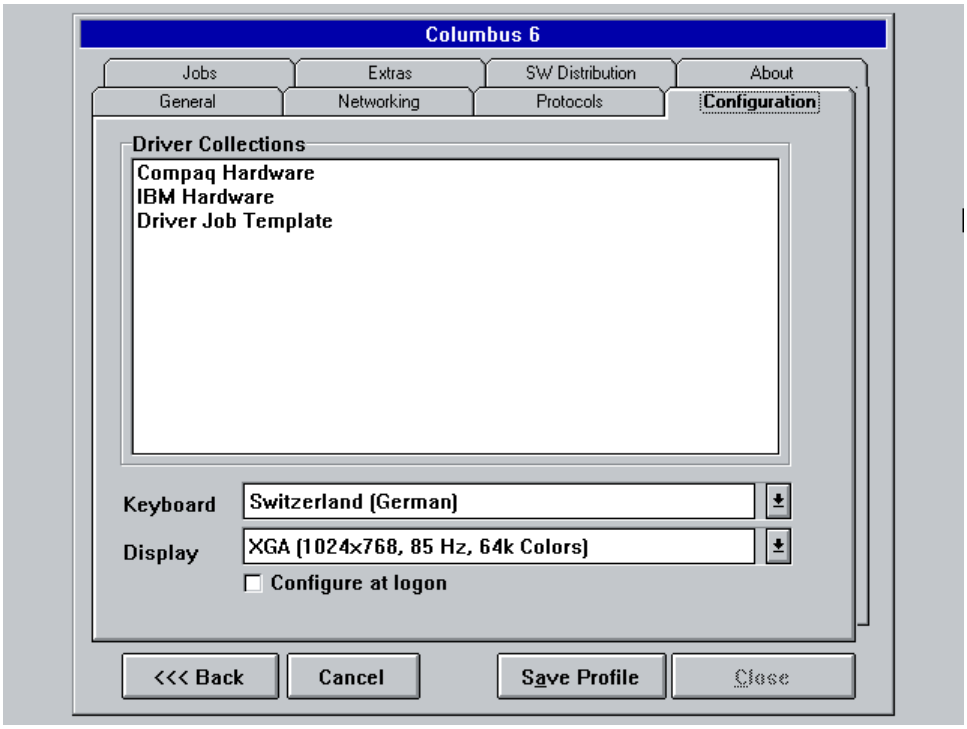


Abbildung 45: Profiler tab Configuration

Driver collections

Here you select the driver job that is suitable for your hardware.

Keyboard / display

- Keyboard: Here you can enter the specification for the keyboard to be used. This is set in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\choices.ini in the [Keyboard] section.
- Display: Here you can select the monitor resolution after completion of the setup. Selection options are entered in the file..\OSDepot\WinXP\Sites\MySite\Config\Generic\choices.ini, in [DisplaySettings] section.

Jobs tab

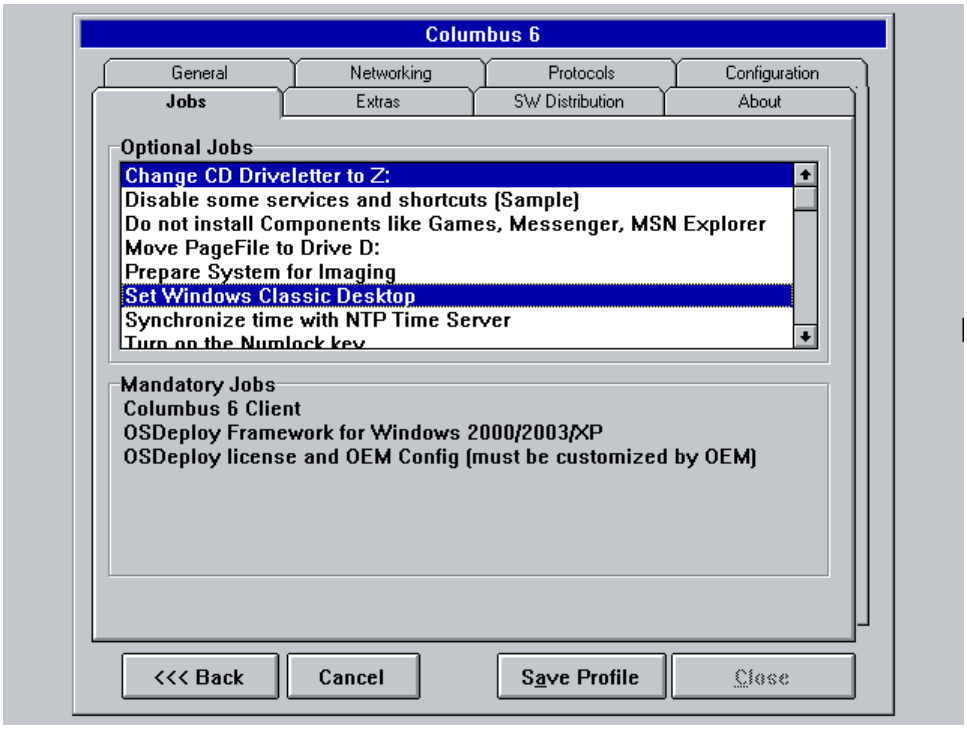


Abbildung 46: Profiler tab Jobs

Optional jobs

Click here to select optional jobs for your machine. You can select multiple jobs by pressing the **CTRL key**.

Mandatory jobs

Jobs whose execution on the computer is mandatory are displayed here. This is done by means of the entry *Usage=Mandatory* in job.ini of the corresponding job.

Extras tab

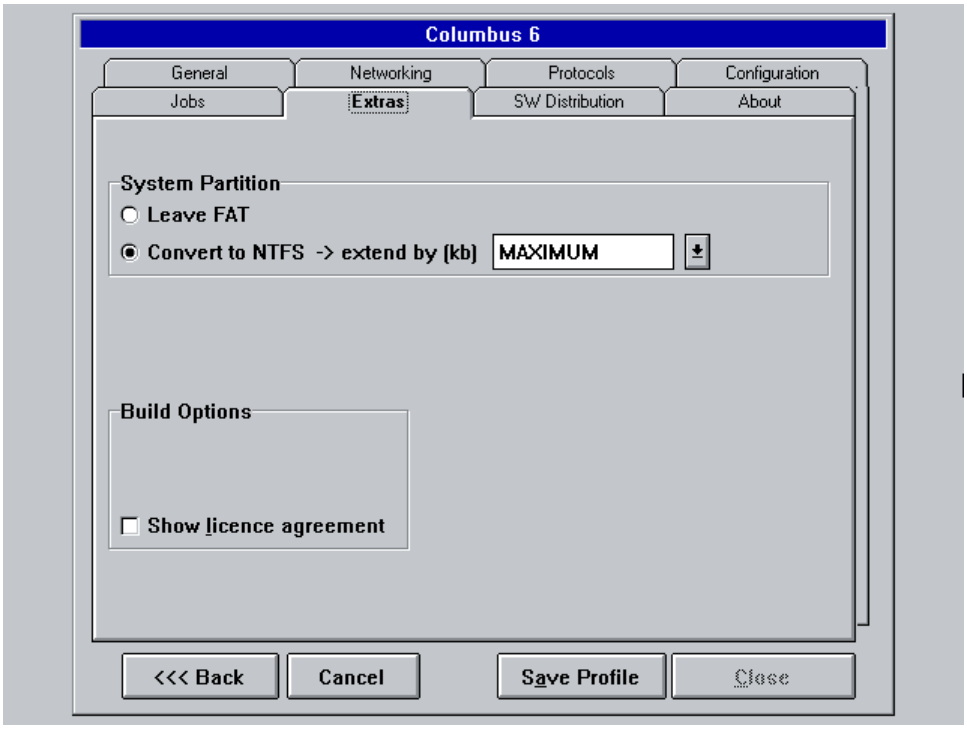


Abbildung 47: Profiler tab Extras

System partition

- Leave FAT: Leave partition with FAT formatting (not recommended)
- Convert to NTFS -> extend by (KB): Convert partition to NTFS and extend the partition to the maximum size available (recommended setting).

Build options

Here you can set whether the license agreement should be displayed during the installation.

SW distribution tab

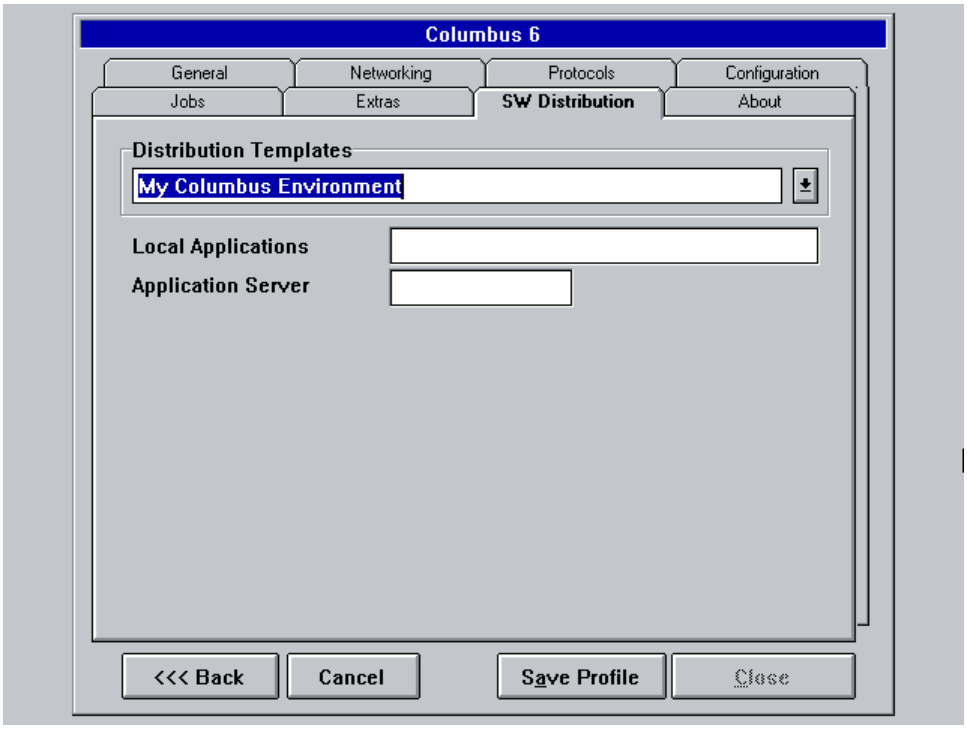


Abbildung 48: Profiler tab SW Distribution

Distribution templates

Here you can store an alternative configuration for the Columbus client where necessary, if you use the Columbus software distribution mechanism. The appropriate entries must be made in the file ..\OSDepot\WinXP\Sites\MySite\Config\Generic\Columbus.ini. Every section ([text in square brackets is a section]) is displayed with the text in the drop down menu.

About tab

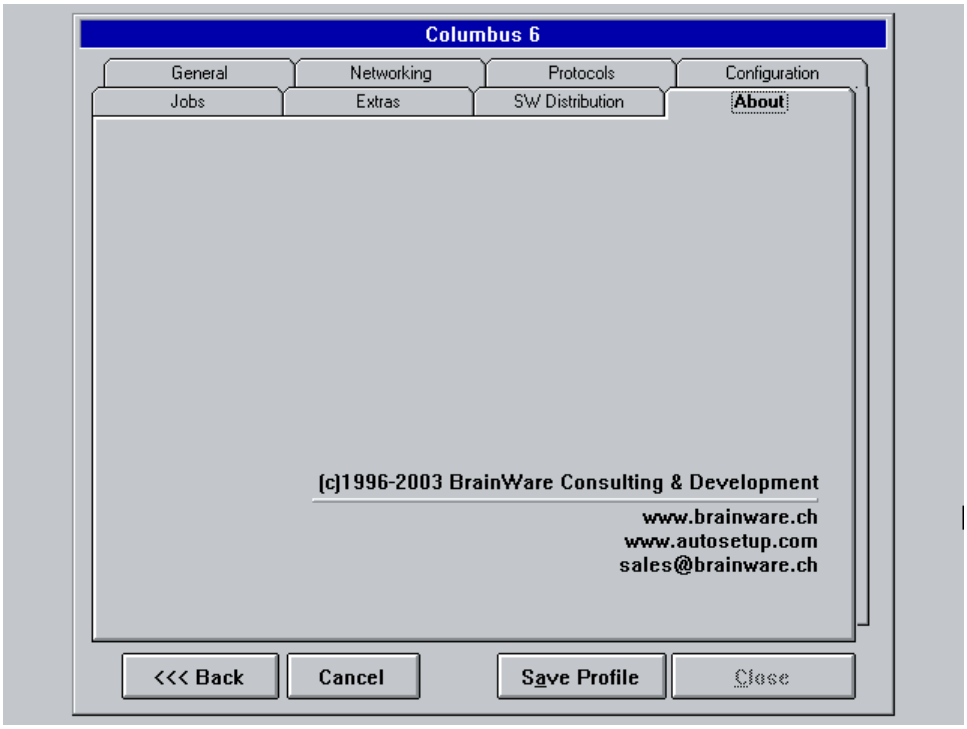


Abbildung 49: Profiler tab About

The configuration you have just created is saved using 'Save profile'. You can then use 'Close' to exit the dialog. The installation is then started.

Emergency diskette

After completing the configuration, you can select whether you want the inserted diskette to be converted into an emergency diskette.

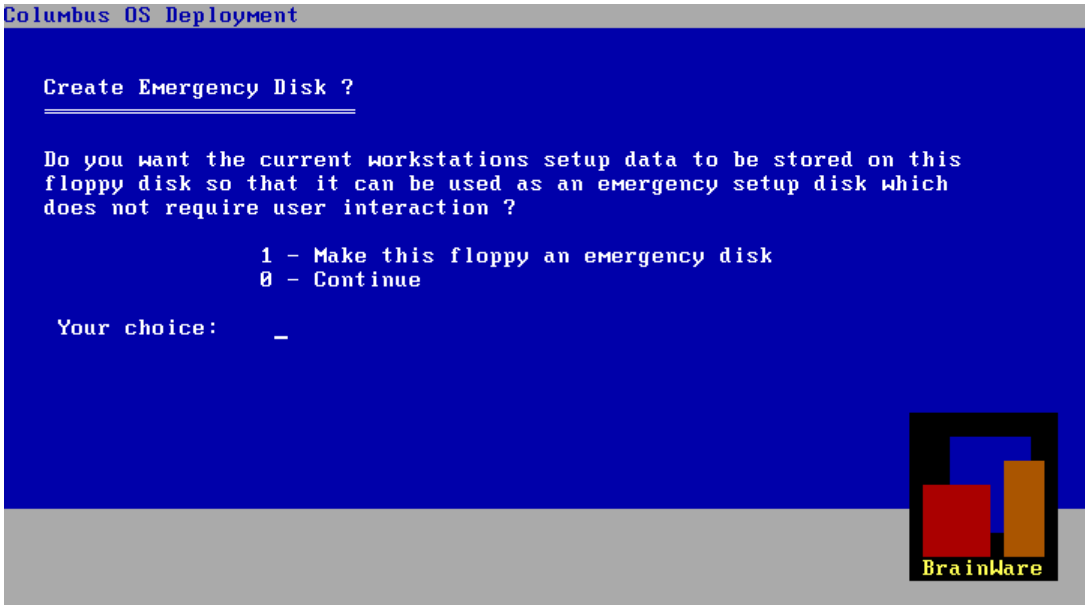


Abbildung 50: Request for emergency diskette

If you select '1 - Make this floppy an emergency disk', the computer profile is stored on the diskette, so that the computer can be rebuilt with this diskette without any user entry. The following screen then appears.

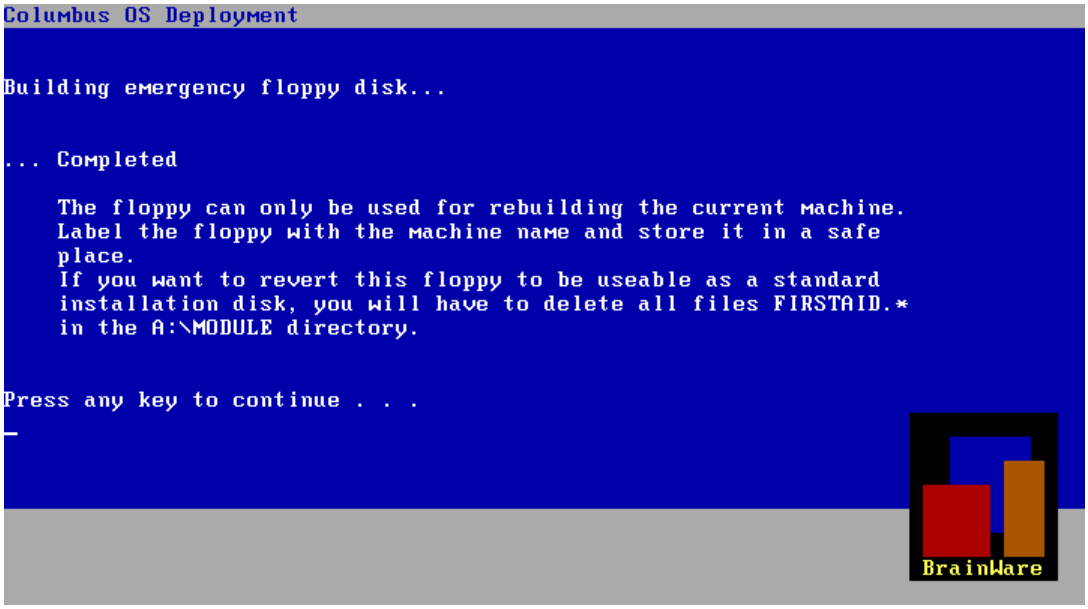


Abbildung 51: Emergency diskette created

Press any key to continue...

Completing the configuration

If you set the parameter _RequestName to 'T' in params.txt, the system asks you for the name of the person performing the processing.

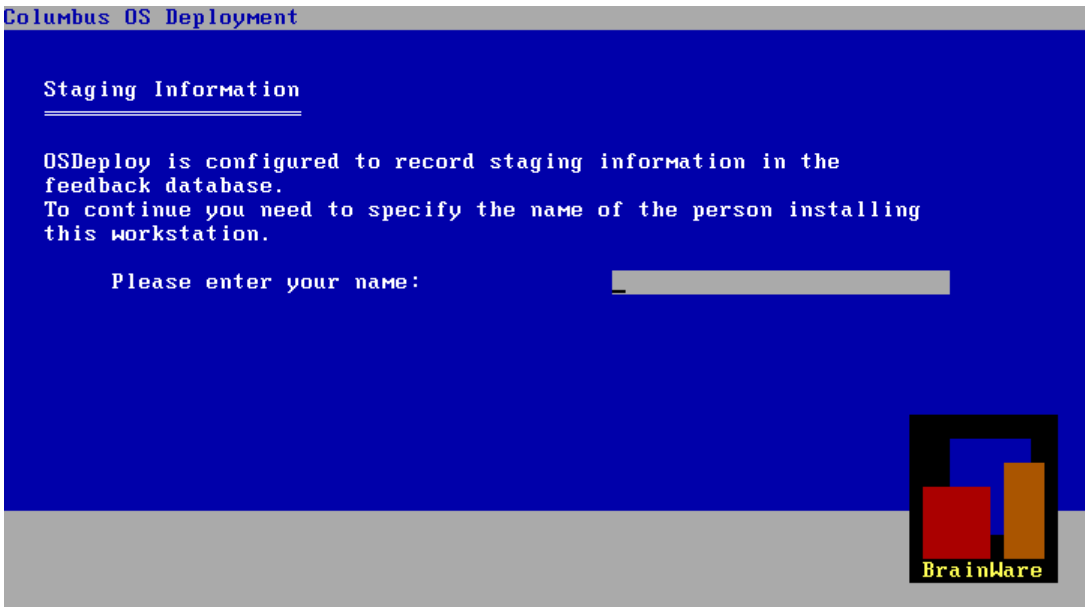


Abbildung 52: Request for operator

After you have entered your name, you are asked to remove the diskette.

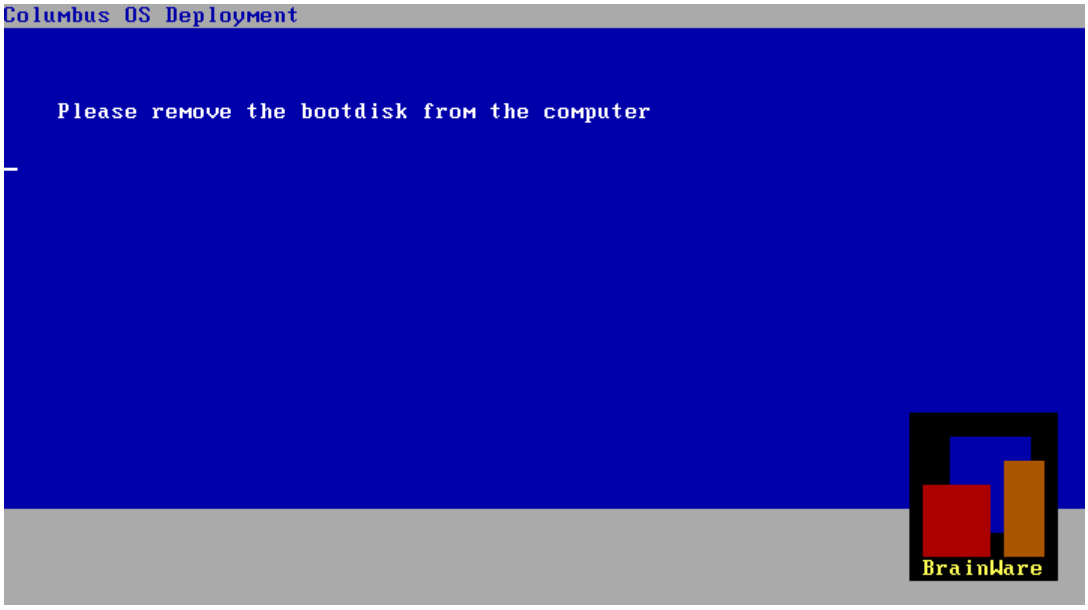


Abbildung 53: Request to remove inquiry diskette

The Windows installation begins after the diskette has been removed.

Floppy Maker

By using Floppy Maker, it is possible to create boot diskettes for computers that are not PXE capable (..\OSDepot\Support\FpyMaker\floppymaker.exe). In addition, it is possible to create an image from a diskette, which can then be used to create a boot CD, for example.

Creating a boot diskette image

Not only can you create boot diskettes with Floppy Maker, you can also create images from these diskettes.

We recommend that you create an image of every boot diskette used in production. This is a big time saver, especially where you are creating multiple diskettes.

Generating the image

Please start FloppyMaker and select 'Store boot disk on harddisk'.

Abbildung 54: Floppy Maker - Start Screen

Continue with 'Next >' ...

Naming the image

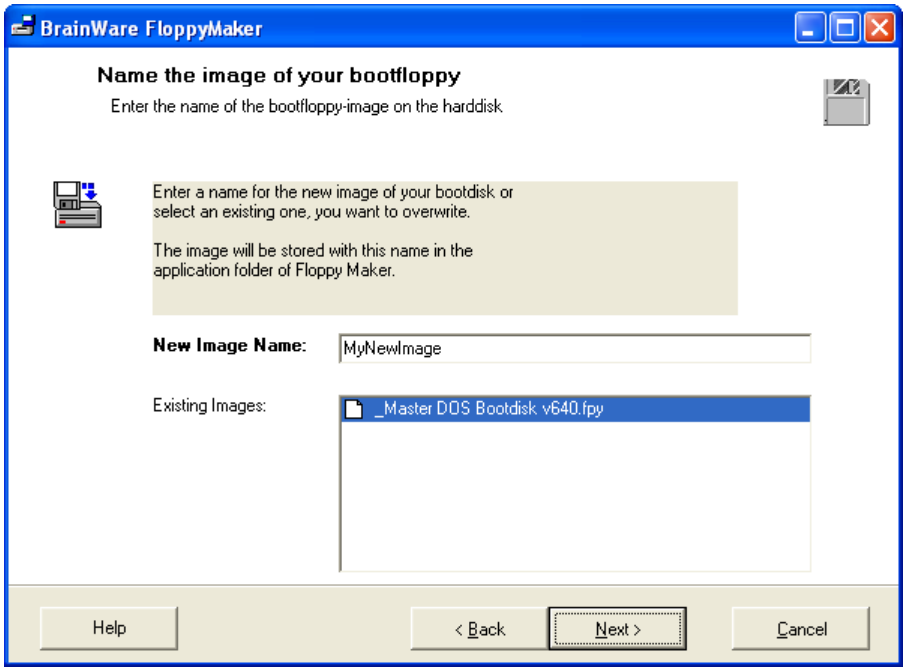


Abbildung 55: Floppy Maker - Name Image

Here you can give the image to be created a name; you can also see which images are already available.

Click on 'Next' > to continue.

Insert diskette

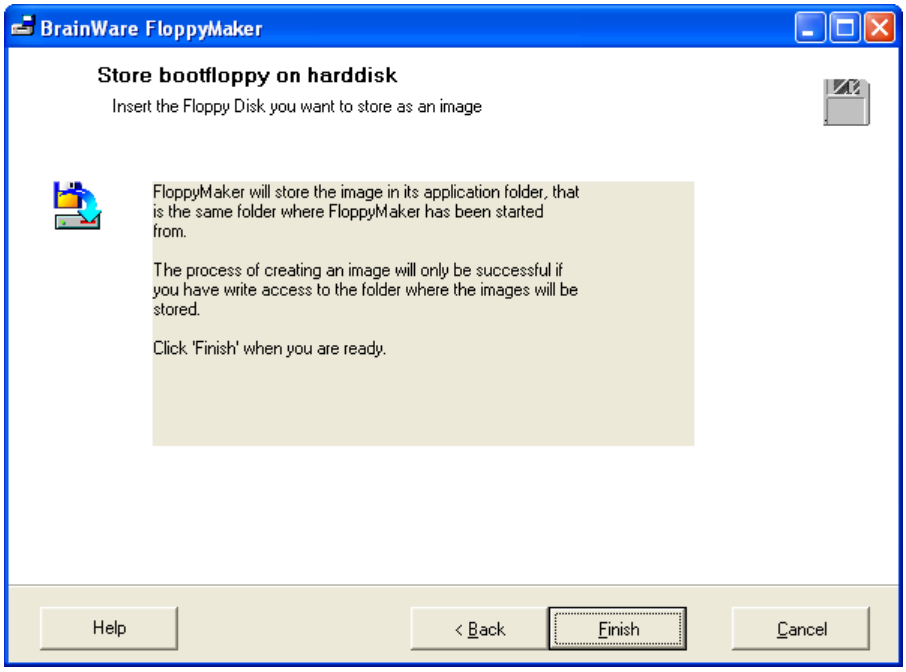


Abbildung 56: Floppy Maker - Insert Disk

Please insert the diskette from which you want to create an image and click on 'Finish'"

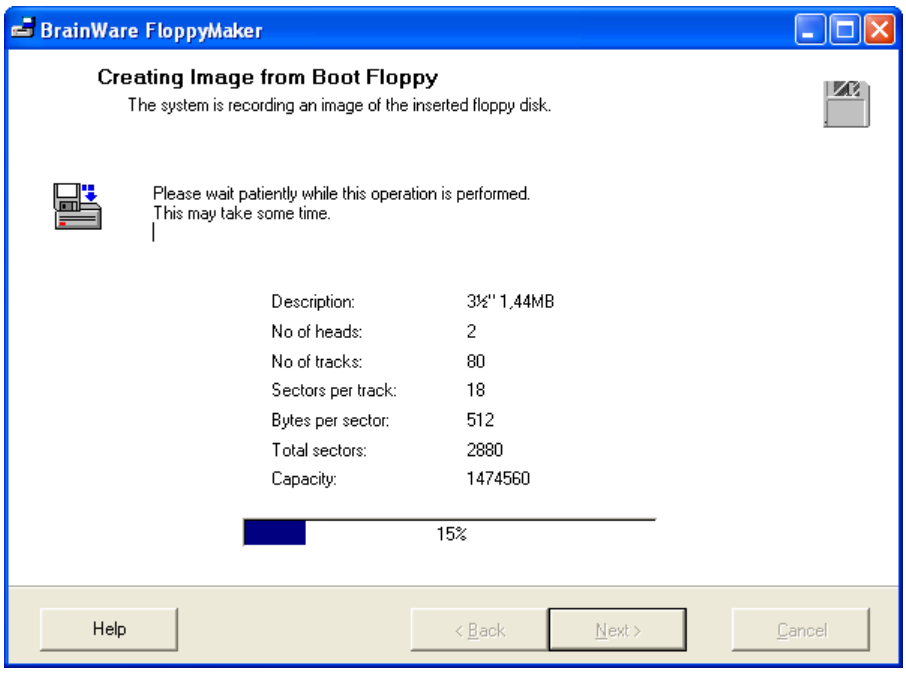


Abbildung 57: Floppy Maker - Create Image

Progress during a creation process is displayed here.

Image successfully created

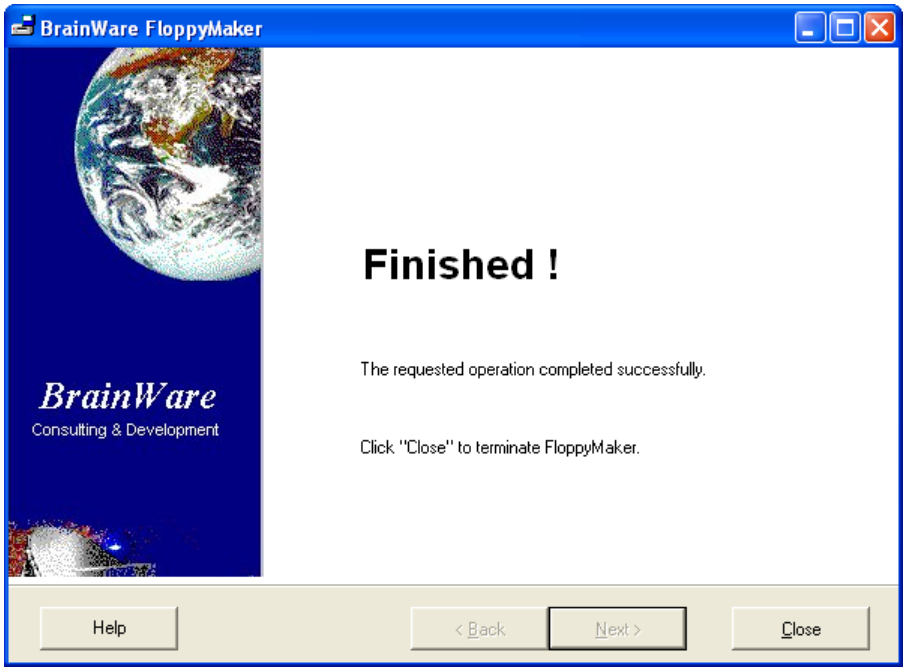


Abbildung 58: Floppy Maker - Create Image Complete

The creation was successful; click 'Close' to exit the program.

CHAPTER 3

Getting to grips with OS deployment

In this chapter

CHAPTER 4

Configuration

By means of simple utilities, OS Deploy can be adapted in such a way that the optimal result for you is always achieved - in this case the optimally configured computer.

The following pages describe tasks for the releases, jobs, sites and configs, and how you can achieve your desired result.

In this chapter

Structure

All data required for OS Deploy are available in an ordered structure on the Columbus server.

After a standard installation you can find the OS Depot directory in the Columbus release (unless the name has been changed). This contains all required configuration files, the setup source etc.

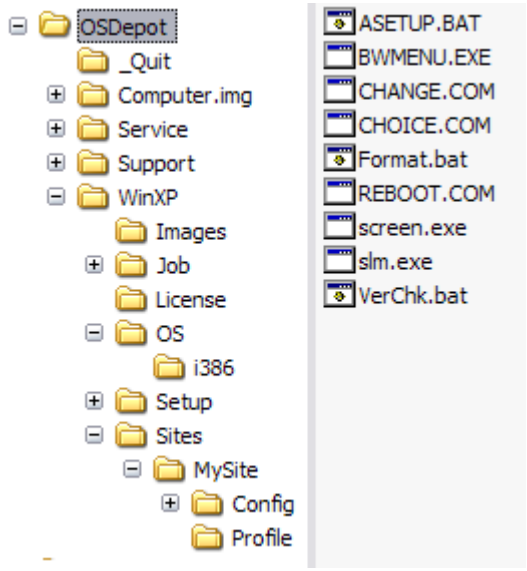
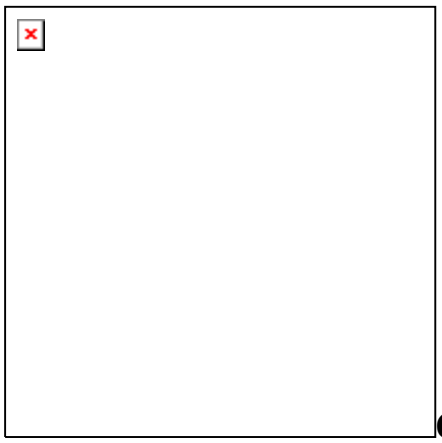


Abbildung 59: OS Deploy folder contents



Quit

Used for internal functions of OS Deploy. No settings are possible here.

computer.img

This must contain ghost.exe from Norton Ghost, for example, if the imaging function of OS Deploy is used.

Service

The tools for the so-called service boot are stored here. You can use the service boot to perform particular functions in the client, such as changing partitions, for example.

Support

The Support directory contains tools and programs that you need for working with OS Deploy, including Floppy Maker and both password encryption programs cryptit.exe and publicrypt.exe (in the Tools subdirectory)

Win2000, Win2000.Srv, Win2003.Srv, WinXP

These directories contain the corresponding OS Deploy releases. The configuration of the individual releases also takes place here. Please note that you can only stage server operating systems with the Columbus Enterprise edition.

Files

The files contained in the directory are required for the functions of OS Deploy. You cannot change the configuration here.

Releases

As described in the previous section, the actual releases that can be used for staging are contained in the Win2000, Win2000.Srv, Win2003.Srv and WinXP directories. In principle, you can rename these directories. It is important, however, that you adhere to the 8.3 notation and do not include any special characters.

Directory / file	Description
<WinXP>	Example of a release directory This directory can be named as desired, as long as the 8.3 notation standard is observed.
Release.txt	This file contains text that is displayed in the console instead of the restricted (8.3) directory name, e.g. `Windows XP Professional Workstation` This is particularly important if you have multiple releases of the same operating system, e.g. Windows XP with SP1, Windows XP with SP2, or even different language versions.
Images	This directory must contain the file ghost.exe to be able to use the imaging process in OS Deploy. The images that were created with OS Deploy are also stored in this directory. If you have set up a computer completely, for example, and want to be able to recover it quickly by means of imaging, the appropriate file is stored here. Caution: Image files can be several GB in size. If you use images, please ensure that you have sufficient space.

Job	The jobs assigned to the release are stored in this directory. This can be driver jobs, jobs for particular settings, etc. A detailed description is provided in the next section.
License	This directory contains your Columbus license, which is checked at every OS Deploy execution. The license is stored in this directory by default by the installation program.
OS\I386	This directory contains the i386 directory of the corresponding CD of the operating system. You must copy the i386 directory, including all files and possible subdirectories to this directory, if this did not occur during installation.

source.ini	If your operating system is a server version, you must enter this in source.ini:
	`[Source]`
	`I386 = server`
	`;I386= Workstation`

Setup	Contains a mini Windows 3.11 that allows you to use a convenient interface when using a boot diskette.
profiler.exe	A graphic front end that allows you to collect the data for a computer after booting with a boot diskette.
Profiler.bmp	This bit map is displayed when the Profiler is called up. It can be modified to your corporate design.
Sites	Contains the configuration settings for different locations or environments as well as the profiles created by the Profiler. These enable a re-installation to be performed easily.

Sites & configs

The Release directory contains a Sites directory, which is intended to make the administration of different locations containing different configurations easier. These different configurations can be stored in this directory.

Possible settings are described in the following entries.

Structure

Sites	This is the base directory used for storing all sites.

 <SiteName>	Using this directory, you can start a new site, so to speak. This could be a country (Switzerland, France, etc.) or also a branch within a country for example, where multiple branches exist. When you create a new site, simply copy the directory of another site and make the necessary changes.
 Config	Contains different pre-defined configuration templates
 <Config Name>	Name of the configuration template
 Choices.ini	Contains the selection options for configuring the computers in the console or in the Profiler
 Columbus.ini	Contains configuration templates for the Columbus Management client, in case the client is to be distributed with OS Deploy.
 Options.ini	Contains special configuration settings for OS Deploy services.
 TCPIP.INI	Contains pre-defined IP templates, in case fixed IP addresses are used instead of DHCP.
 Unattend.txt	Microsoft control file for Unattended Setup
 Profile	This directory contains the configuration files for OS Deploy, in case you need to stage computers with the assistance of Floppy Maker.
 $wslist$	The file $wslist$ contains the computer names and the WS-ID of a computer, if a computer has been configured with the Profiler.
 WS<nn>.txt	This file contains an automatically generated Unattend.txt file according to Microsoft standards. You can establish from the $wslist$ file for which computer this file was generated.
 WS<nn>.ini	The file contains an automatically generated options.ini, which contains the configuration options of the corresponding computer. You can establish from the $wslist$ file for which computer this file was generated.

choices.ini

Various specifications concerning monitor settings, available domains and workgroups, time zones, keyboard layouts etc. can be made in the choices.ini file. The options selected are for the most part transferred to the unattend.txt file. Domain membership is transferred to the options.ini (not in this directory, but rather one set up during staging), as the 'domain join' by means of an OS Deploy is regarded as more reliable. If the network connection to the domain controller is unreliable, the OS Deploy job will make multiple attempts.

Examples:

```
[Partition]
Full Disk=REST/NTFS
3gb - Rest=3000/NTFS,REST/NTFS
8gb - Rest=8000/NTFS,REST/NTFS
4gb - 4gb - 2gb - Rest=4000/NTFS,4000/NTFS,2000/FAT,REST/NTFS
```

In the specifications of the Partition section, the part before the equals sign is displayed as a selection in the Jobs tab in the OS Deploy console. The required partitioning can be entered thereafter.

```
[DisplaySettings]
XGA (1024x768, 85 Hz, 64k Colors)=1024,768,85,16
XGA (1024x768, 70 Hz, 64k Colors)=1024,768,70,16
XGA LCD (1024x768, 60 Hz, 64k Colors)=1024,768,60,16
SVGA (800x600, 70 Hz, 256 Colors)=800,600,70,8
VGA (640x480, 60 Hz, 16 Colors)=640,480,60,4
Special (1152x882, 72 Hz, 32k Colors)=1152,882,72,15
Special (1152x882, 85 Hz, 32k Colors)=1152,882,85,15
UXGA (1280x1024, 60 Hz, 32k Colors)=1280,1024,60,15
UXGA (1280x1024, 85 Hz, 32k Colors)=1280,1024,85,15
HIRES (1600x1200, 85 Hz, 32k Colors)=1600,1200,85,15
```

Specifications as to what resolution, screen refresh frequency and color depth the monitor should have after completion of Microsoft Windows Setup can be entered in the Display Settings section. The selection is performed in the Hardware tab in OS Deploy via the console.

```
[Domains]
;Password may be encrypted with publiccrypt.exe
;If joining causes problems on some machines, it is possible to include the name
of the domain controller
;Using DNS names instead of NetBios can also reduce domain joining problems. DC
may not be specified in this case
; DomainAlias=Domain,Account,Password
; DomainAliasWithDC=Domain\server,Account,Password
; DomainAliasWithOU=Domain,Account,Password,OU=Company,OU=Department,DC=Group
; CryptedDomainAlias=Domain,Account,H#692635EF5ADF201EC8
```

Different domains, which can later be joined by the computer, can be made available. The corresponding OU in which the computer should be accommodated can also be entered, on request. A different combination of account and password can be entered for every domain. If problems are experienced when adding these, a DC on which the registration is performed directly can also be entered. In this case, it is not necessary to search for a domain controller. The password can be encrypted by means of the publicrypt.exe (..\OSDepot\Support\Tools\publicrypt.exe) program

```
[Keyboard]
Switzerland (German)="0807:00000807"
Switzerland (French)="100c:0000100c"
Switzerland (Italian)="0810:00000410"
Switzerland (all keyboards)="0807:00000807","100c:0000100c","0810:00000410"
Germany="0407:00000407"
Argentina="2c0a:0000080a"
Spain (Traditional)="040a:0000040a"
Taiwan="0404:00000404"
```

```
Thailand="041e:00000409"
Turkey="041f:0000041f"
United Arab Emirates="3801:00000409"
United Kingdom="0809:00000809"
United States="0409:00000409"
```

The layouts of the keyboards connected to the computers are determined here. Please use valid entries from the documentation for the unattend.txt file. This can be found on your Windows product CD.

```
[TimeZones]
Switzerland/Germany = "110"
```

The values for the time zones required are entered here.

```
[Workgroups]
NTSETUP=NTSETUP
Workgroup=Workgroup
```

If you do not want the computer to join a domain, you can enter one or more workgroup names as an alternative here.

Important: All information concerning unattend.txt can be found on your Windows product CD or the Microsoft web site.

Columbus.ini

The settings for the Columbus client are entered in the Columbus.ini file, insofar as these have been installed on the computer in question.

Detailed information about configuring the Columbus client can be found in the manual 'Columbus 6 - First Steps'

```
[My Columbus Environment]
;COMMENT: account used by the Columbus client to connect to SW Depot and to
install SW packages (will be local admin on client computer)
Domain=
User=Columbus
;COMMENT: Create encrypted passwords with the utility cryptit.exe (Columbus 5
style, example: Password=H#B777973B2483E148B95B1086E9D8B3DD3C52)
Password=H#B777973B2483E148B95B1086E9D8B3DD3C52
```

Specifications by which the Columbus client connects to the Software Depot responsible for the client are entered here. If a domain user is entered as a user, this user is added to the local group of administrators. If the user is not a domain user, an account is created on the computer and added to the administrators group. Encrypting of the password is performed using cryptit.exe. Ensure that the H# is present at the beginning of the password.

```
;COMMENT: Path to the software administration area
;only needed for C5 compatibility. Necessary if %_AdminPath% has been used in
packages, e.g. for path to config files
;example: SWAdmin=\\MyServer\ColumbusShare\Admin
SWAdmin=
;COMMENT: If LocalApplications is not set, the default path for 'Program Files' is
used
;LocalApplications=%_ProgramFiles%
;COMMENT: If Cache is not set, the default points to c:\windows\cache\
;Cache=%_Windows%\Cache\
;COMMENT: DefaultApplServer is only needed when packages are installed on the file
server for shared usage
DefaultApplServer=
```

Here different characteristics of the Columbus client are specified, e.g. the location of the Software Administration Area (only required for compatibility with Columbus 5) and the local Package Cache etc.

Options.ini

The options.ini file and the unattend.txt file form the computer profile that is required for setting up the computer. The unattend.txt file contains all settings for the Windows setup, and the options.ini contains all settings and specifications that the OS Deployment service needs for execution of its scripts when setting up a new computer.

The options.ini file is also used for pre-selecting certain parameters in the configuration dialog. You can enter options from the choices.ini file in the Defaults section. These options are then already selected when a new computer is configured.

Important:

- The local administrator password is defined in this file.
- The specifications for the Columbus database must be entered correctly, so that the OS Deployment service and the Columbus client function correctly on the new computer.

Entries in options.ini

```
[Defaults]
DomainAlias=MYBWDOMAIN
ResolutionAlias=XGA LCD (1024X768, 60 HZ, TRUE COLOR)
```

The default values for domain selection and screen resolution for the Profiler can be set here. These parameters are not supported in the console.

```
[Defaults]
Domain=MYBWDOMAIN
Workgroup=
Display=XGA LCD (1024X768, 60 HZ, TRUE COLOR)
Keyboard=SWITZERLAND (GERMAN)
PartitionLayout=20  GB - Rest
PartitionMode=ResetFirst
RegionJob=R_SWISS.GE
IPTemplate=DHCP
DriverJob=HPD530
```

Various default values can be set here for the OSDeployment configuration dialog in the console . These parameters are not supported by the Profiler.

```
[Administrator]
; Specify password for local administrator
; Create encrypted passwords with the utility cryptit.exe (found in the folder
OSDepot\Support\Tools)
Password=H#B777973B2483E148B95B1086E9D8B3DD3C52
```

The password for the local administrator is set here. The encryption of the password is performed by cryptit.exe. Ensure that the H# at the beginning of the password is present.

```
[Impersonation]
; If a Setup service is required for impersonation, the following options must be
specified
; Create encrypted passwords with the utility cryptit.exe (can be downloaded from
www.brainware.ch)
Domain=
User=
Password=
```

A user account can be entered in the [Impersonation] section. The OS Deploy service will execute its jobs in this context.

```
; Data of the default domain to be joined
[JoinDomain]
Domain=
User=
Password=
```

The default values for a domain can be stored here. These are then used by default in the Profiler.

```
[Columbus]
;Default: company for computer auto registration. Needed if multiple companies are
defined in the console
Company=Brainware Solutions
```

The standard company to which a client is added is set up here.

```
[database]
DBHost=C6
DBFile=C:\Columbus\database\Columbus.fdb
DBUser=columbusrw
DBPW=H#B777973B2483E148B95B1086E9D8B3DD3C52
AuditDBHost=C6
AuditDBFile=C:\Columbus\database\BWlogging.fdb
AuditDBUser=columbusrw
AuditDBPW=H#B777973B2483E148B95B1086E9D8B3DD3C52
```

The specifications with which the OS Deploy service can connect to the database are entered here.

```
[Jobs]
R_SWISS.GE=1
```

You can pre-select jobs by entering them in the [JOBS] section, in the format Directory name=1 (also for those jobs not designated as 'Mandatory').

tcpip.ini

You can create predefined TCP/IP templates in this file. These are then available in the OS Deploy console in the Networking tab. Using DHCP is the most straightforward - you won't need any templates.

The selected entries are transferred to unattend.txt during staging.

```
; ==============================================================================
; (c) Copyright 1998-2003 by Brainware Consulting & Development
; www.brainware.ch
; ==============================================================================
; Filename : tcpip.ini for Windows NT4/2000/2003/XP
; Directory : ..\[Site]\Config\[Configuration]
; Description : Options available in drop down boxes
; Add or modify templates and entries according to your needs
; Delete templates that are not required
; Version : 6.00
; ==============================================================================

[DHCP> Example]
DHCP=1
IP=
Subnet=
Gateway=
PrimaryWins=
SecondaryWins=
DNSName=
Scope=
DNSServer1=
DNSServer2=
DNSServer3=

[Fixed IP Example]
DHCP=0
IP=10.1.1.x
Subnet=255.255.255.0
Gateway=10.1.1.1
PrimaryWins=10.1.1.5
SecondaryWins=
DNSName=
Scope=
DNSServer1=
DNSServer2=
```

unattend.txt

This is the standard Microsoft Windows unattend.txt file that is created with Setup Manager (setupmgr.exe on the Windows product CD).

Generally, this file consists of sections and keys that are assigned parameters. Most sections are predefined; some can, however, be extended by the user.

You should specify the following in this file

- FullName (standard user displayed in the console)
- OrgName (standard company displayed in the console)
- ProductID (If you entered the license number during the installation of Columbus, this entry already exists.)

Please consult the appropriate Microsoft documentation on your product CD or the Microsoft web site for further information on the unattend.txt file.

```
;SetupMgrTag
[Data]
 AutoPartition=1
 MsDosInitiated="0"
 UnattendedInstall="Yes"

[Unattended]
 UnattendMode=FullUnattended
 UnattendSwitch=Yes
 OemSkipEula=Yes
 OemPreinstall=Yes
 DUDisable=Yes
 TargetPath=\WINDOWS
 FileSystem=ConvertNTFS
 ExtendOEMPartition=1

 [GuiUnattended]
 AdminPassword="*"
 EncryptedAdminPassword=No
 OEMSkipRegional=1
 TimeZone=110
 OemSkipWelcome=1

[UserData]
 Full name="User"
 OrgName="Brainware Solutions"
 ComputerName="MyComputer"
 ProductID="XXXXX-XXXXX-XXXXX-XXXXX-XXXXX"

[TapiLocation]
 CountryCode=41
; Dialing=Tone
; AreaCode=041

[RegionalSettings]
 LanguageGroup=1
 SystemLocale=00000807
 UserLocale=00000807
 InputLocale="0807:00000807"

[SetupMgr]
; DistFolder=c:\winxpdist
; DistShare=winxpdist

[Identification]
 JoinWorkgroup=AUTOSETUP

[Networking]
 InstallDefaultComponents=No

[NetAdapters]
 Adapter1=params.Adapter1

[params.Adapter1]
 INFID=*

[NetClients]
 MS_MSClient=params.MS_MSClient

[NetServices]
 MS_server=params.MS_server
```

```
[NetProtocols]
 MS_TCPIP=params.MS_TCPIP

[params.MS_TCPIP]
 DNS=No
 UseDomainNameDevolution=No
 EnableLMHosts=Yes
 AdapterSections=params.MS_TCPIP.Adapter1

[params.MS_TCPIP.Adapter1]
 SpecificTo=Adapter1
 DHCP=Yes
 WINS=Yes
 NetBIOSOptions=0
```

OS Deploy jobs

OS Deploy gives you the option to influence the Windows installation before or after the actual setup. During the staging of computers, you can select so-called jobs that perform tasks that cannot be executed by Windows Setup. These are, for example, changing registry settings, executing computer configurations, adding users or installing drivers that are not automatically recognized.

Note: The 8.3 notation for directories and files is also relevant here. These jobs are executed in DOS mode, or are copied in DOS mode.

Job components

Every job must contain a definition file (job.ini). The remaining structure depends on the functions required from the job.

Setting up job.ini

This file mainly defines under which name and where in the console the job is to be displayed.

Syntax

```
[Identification]
Title=<Text>
Type={COMMON|COLLECTION|REGIONAL|SERVER}
Usage={OPTIONAL|MANDATORY}
```

Entry	Value	Meaning
Title	<Text>	Name shown in the console.
Type	COMMON	Common jobs are shown in the Jobs tab in the console. This type of job can contain any type of action.

	COLLECTION	Collections contain driver packages for particular computers, such as video, sound and network drivers, for example. There should be one job per hardware model, such that the job contains the driver for this model. You can select these jobs in the Hardware tab in the console.
	REGIONAL	Regional jobs determine settings such as time zones and TAPI zones. These jobs can be found in the General tab in the console. The settings selected are stored in the unattend.txt file.
Usage	OPTIONAL	These jobs are optional, and do not have to be installed.
	MANDATORY	These jobs must be installed - they cannot be deselected. For example, if you supply all jobs whose installation is mandatory on every computer with this parameter, you will not be able to 'forget' them.
;	(remark)	Lines beginning with a semicolon are comment lines.

Example

```
[Identification]
Title=My First Job
; For selection in the jobs list in the console, using above title
Type=COMMON
; usage defines if the job can be de/selected (optional) or if it will always be
installed (mandatory)
; Usage=Optional
Usage=Mandatory
```

Naming standards

Every job must be stored in the directory ..\OSDepot\Release\Job\.. The directory names must adhere to 8.3 notation, as they are copied in DOS mode to the hard drive of the computer to be staged. The number of jobs can be large, and the number of available letters is restricted. Consequently, we provide some suggestions as to the naming convention for the directories.

Most jobs created by Brainware are named according to this specification. You can, however, use your own standards at any time.

You can use our Job Manager Tool tool (..\OsDepot\Release\Job #\jobmgmt.exe) to get an overview of the jobs.

Syntax: I_XXXXnn

Letter	Description	
I_	Indicator of the type of job	
	c	Common or configuration jobs
	r	Regional job (time zone, etc.)
	s	Driver package for a particular hardware model
XXXX	Abbreviation for the functionality of the job or the hardware manufacturer - max. 4 characters.	
	Example: CPQ, IBM, DELL, HP, BW	
nn	Running number to differentiate between identical jobs.	

Additionally, the three letters after the period can be used for further identification.

Example: s_IBM01.drv, R_Swiss.fr, R_Swiss.ge

Pre-setup processing

This part of a job is executed before the Windows installation is started.

File / directory	Description
 insert.txt	The insert.txt file adds the lines defined in each section to the unattend.txt file.
 replace.txt	The file replace.txt replaces complete sections of the unattend.txt file with those named in this file.
 special.bat	The file special.bat executes special actions after the contents of the OEM and $ directories have been copied to the C: drive. Zipped driver packages are often copied to the system drive with the assistance of this file. In this way the limitations of path and file name length can be overcome.
 ASETUP	If the directory Asetup exists, it is copied to the system directory. This directory contains OS Deploy scripts that will be executed later under Windows.
 OEM	If this directory exists, the contents of the directory are copied to the system drive (C:). The contents of subdirectories are automatically integrated into the Windows Setup program.

All the files/directories mentioned above can exist in a job, although this is not compulsory.

Microsoft OEM extensions

The Microsoft OEM extensions were created to extend Windows Setup functionality. Please read the appropriate Microsoft documentation describing how this structure can be used.

 OEM	If this directory exists in a job, its contents will be copied to the system drive to C:\$. The contents of subdirectories are automatically integrated by Windows Setup at installation. Because OEM gets copied to C:\$ anyway, you may simply use $ in an OSDeploy job instead of OEM.
 $1, $2, $3	Files in this directory are copied to the 1st, 2nd, 3rd ... drive (C:, D:, E:...). Windows 2000/XP support multiple system drives. If you already have a Windows installation on C: and want to copy data to D:, you must use $2. This is only applicable to Windows 2000/XP.
 $$  $$\system32	Files in this directory are copied to the system directory (e.g. C:\WINNT) before the setup starts the graphic section of the installation.
 C, D	Files in these directories are copied to C: or D:D: .
 Text modes	Files in this directory are copied to the temporary setup directory on the system drive, so that the setup can use these files when the text based section of the setup starts. In this way, you can integrate SCSI or RAID drivers that are needed right at the beginning of the setup.

Note: The directories $1, $$, C, etc. Text modes must be subdirectories of OEM or $, so that the functionality can be ensured.

Post setup processing

These files are executed after the Windows Setup of the OS Deploy service has been completed.

 ASETUP	If this directory exists, the contents are copied to the system drive C:. This directory contains the OS Deploy scripts.
 <Name>.wms	OS Deploy scripts that are executed after the Windows Setup of the OS Deploy service has been completed. The scripts are executed in alphabetical order and are deleted after processing. The OS Deploy service uses the Columbus Script Engine. Consequently, all Columbus commands can be used.

Creating a job

Here we describe how to create different jobs, by means of examples.

Driver job

In Windows 2000 and XP you have the option of a Plug & Play driver installation. This type of installation allows for easy integration of drivers of so-called Plug & Play hardware in OS Deploy. All you need to do is to copy the drivers to the Drivers directory in the system drive. The unattend.txt file must then be extended by one entry so that Setup searches the named directory for the drivers during installation.

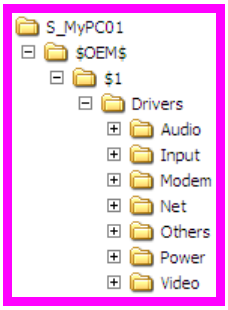
Once Windows Setup is running, Plug & Play capable hardware is identified (this can take up to 20 mins) and the correct drivers are traced. If Windows Setup is unable to find the correct driver in its database, it will search the Drivers directory. Windows is able to select the hardware by means of the unique Plug & Play identifier. Setup can then install the correct driver (*.INF file) for this hardware.

Hardware that is not Plug & Play capable can also be supplied with drivers by means of OS Deploy scripts.

Driver job structure


Job directory (here S_MyPC01)

The directory name of the job in 8.3 notation. The more jobs you have, the more difficult it is to select corresponding directory names.



The entire structure of a driver job is contained in the directory OEM; it could also simply be called $.


job.ini

The identification file for the job is job.ini. Except for the title, all other entries for driver jobs are identical to those in Windows2000/XP.

```
[Identification]
Title=Description of the computer model
Type=COLLECTION
```

Usage=OPTIONAL


insert.txt

The insert.txt file contains the specifications that must be added to the unattend.txt file.

The variable OemPnPDriversPath shows Setup an alternative path in which drivers can be found if no matching drivers are found in the driver database. Only directories listed here are searched.

```
[Unattended]
DriverSigningPolicy = Ignore
OemPnPDriversPath = "Drivers\Audio;Drivers\Net;
Drivers\Video;Drivers\Power;Drivers\Input;Drivers\Mode
m;Drivers\Others"
```


OEM\$1

Files in this directory are copied to the system drive (normally C:).


Drivers

The Drivers directory must exist in the C:\ drive ($1) with exactly the same name.

In some knowledge base items, Microsoft recommends creating subdirectories for every driver type. In this way problems where different drivers have the same file name can be avoided.

Each of these directories must be defined in the variable OemPnPDriversPath in the unattend.txt file (or in the job - insert.txt).

Use the same directory structure for every driver job; this minimizes errors and allows for simple porting to other systems.

Brainware driver jobs use the following directories.


Audio

The directory for audio drivers


Input

The directory for input device drivers, such as pointing devices, touch pads or special keyboards


Modem

The directory for modem drivers


Net

The directory for network card drivers


Others

The directory for drivers that are not suitable for any of the other directories


Power

The directory for power management drivers


Video

The directory for graphic card drivers

Creating a driver job

Collect all the drivers required for your computer model. These drivers can mostly be found on the CDs supplied or on the manufacturer's web site. Use only current drivers, to avoid problems. At time of delivery, larger companies such as HP or IBM have already made more current drivers available on their web site.

Create the necessary directory structure, or copy the job s_new.drv, which is available as a template in every job directory.

Edit the file job.ini and label the job with a meaningful name for your hardware.

Copy the driver files to the relevant directories.

- Copy network card drivers to the Net directory,
- graphic card drivers to the Video directory
- etc.

Drivers are not installed with their setup programs (Setup.exe) during Plug & Play detection (these are provided for installation by the end user). Rather, *.inf is executed. You can therefore omit the setup programs (setup.exe) and in this way preserve space in your driver job.

Windows 2000, and in particular Windows XP, setup programs prefer signed drivers. This means, drivers must originate from a Microsoft test laboratory. A signed driver contains a *.cat file; by double clicking this file, a certificate is displayed. Although we set DriverSigningPolicy=Ignore in the job (see insert.txt) so that unsigned drivers can also be installed, these are not installed by the setup program in some cases. To a large extent, however, hardware manufacturers make signed drivers available.

Your job is now ready for testing.

Optimizing a driver job

Some driver jobs can be fairly comprehensive. You can compress the driver job by means of a ZIP tool (e.g. WinZIP) to save time during the copy procedure and to avoid problems with DOS restrictions (8.3 notation, path length, number of subdirectories).

Create a Zip File of the Drivers directory, named 'drivers.zip'. It is important that the Drivers directory itself is contained in the ZIP file, in order to unzip the file into the correct directory.

Next, create a file called special.bat, containing the following.

```
@echo off
echo ... expanding drivers
c:>nul
cd \>nul
pkunzip -d %1\drivers.zip>nul
```

During execution, the batch file switches to the system drive (C:) and unzips the ZIP file there. Because the Drivers directory is contained in the ZIP file, directories such as the following result - C:\Drivers\Audio, C:\Drivers\Net etc.

The batch file copies (unzips) the drivers directly to C:\Drivers and not to C:\$\$1\Drivers, as would be necessary for Microsoft OEM functionality. For this reason, the setup procedure need not copy the data from C:\$\$1\Drivers to C:\Drivers. The result is thus the same.

Your job would then consist of the following elements.


job.ini

The file job.ini contains the appropriate title for the job.


insert.txt

The insert.txt file adds the entries for the unattend.txt file, which defines the OemPnPDriversPath.


drivers.zip

The drivers in a zipped file.


special.bat

The batch file for unzipping the ZIP file.

You can find examples of this file in the s_new.drv job template. This also contains the appropriately packed drivers.zip file.

Regional job

Microsoft's Unattended Setup allows you to define locality-dependent parameters such as country settings, time zones, dialing rules etc. in the unattend.txt file.

You can simply create one OS Deploy job for every region to avoid having to create multiple unattend.txt files for different regions.

These jobs are displayed in the General tab in the OS Deploy console.

Regional jobs are very similar to driver jobs. Every job must have a definition file (job.ini) and an insert.txt file that contain the data that needs to be added to the unattend.txt file.

Structure of a regional job


Jobfolder

The directory name for the job in 8.3 notation. Where there are many regional jobs, it is possible that cryptic directory names can occur, such as R_USA, R_SW, R_German, R_Swiss.fr, R_Swiss.ge


job.ini

The identification file of the job must contain the following entries. The title of every job is different. The other entries are identical for Windows 2000/XP.

The title is displayed in the General tab in the console in OS Deploy.

```
[Identification]
Title=<Land or Standort>
Type=LOCATION
Usage=Optional
```


insert.txt

This file contains the settings that are transmitted to the unattend.txt file when the job is selected.

Example: insert.txt for German settings

```
 [GuiUnattended]
 OEMSkipRegional=1
 TimeZone=110

[TapiLocation]
 CountryCode=49

[RegionalSettings]
 LanguageGroup=1
 SystemLocale=00000407
 UserLocale=00000407
```

Example: insert.txt for French settings.

```
 [GuiUnattended]
 OEMSkipRegional=1
 TimeZone=105

[TapiLocation]
 CountryCode=33

[RegionalSettings]
 LanguageGroup=1
 SystemLocale=0000040c
 UserLocale=0000040c
```

The entries for unattend.txt can be defined using the Microsoft Setup Manager, which can be found in the Tools directory on the Windows 2000 or XP CD. You may have to install the deployment tools using the instructions in the readme files.

You can, however, also perform the settings manually. Please read the documentation on the unattend.txt file on the Windows product CD for further information.

Administering OS Deploy jobs

Due to directory restrictions (8.3 notation), most jobs have cryptic directory names. A Job Manager, which provides a better overview of the jobs, can be found in the Job directory. The Job Manager provides an overview of all jobs including the description, and also allows jobs to be switched between 'Mandatory' and 'Optional'.

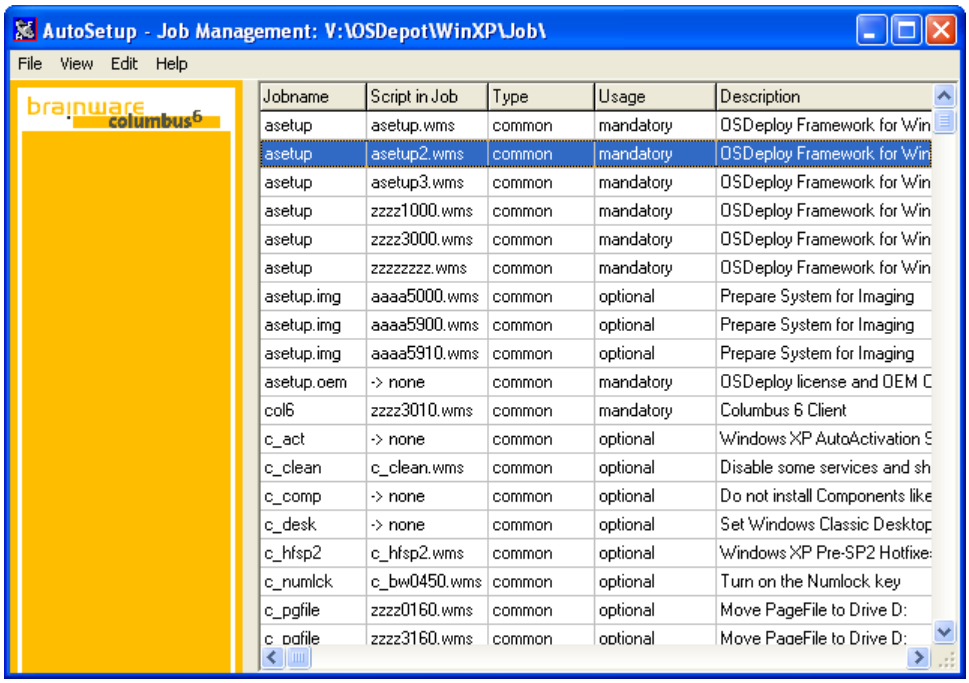


Abbildung 60: Job Manager window

The View menu item allows you to sort the jobs according to different criteria.

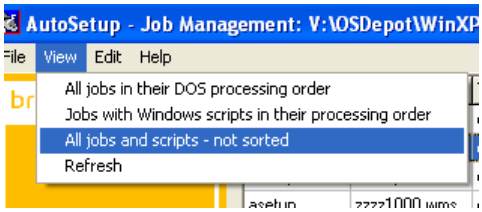


Abbildung 61: Job Manager sorting

The Edit menu point allows you to toggle the job status between 'Mandatory' and 'Optional'.

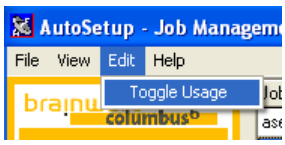


Abbildung 62: Job Manager toggle use

Configuring Floppy Maker

The technology behind Floppy Maker

Brainware OS Deploy boot diskettes use a standardized structure, which offers the following functions:

- An option to boot the machine (by default a US MS-DOS 6.22 is supplied; other DOS systems can be made available on request).
- Creating a RAM drive and its configuration
- Analyzing and partitioning the hard drives
- Various keyboard layouts
- Executing additional batch files prior to the setup
- Starting Windows Setup

All modules are contained in a simple directory structure (..\FpyMaker). You can therefore add your own extensions.

The directory structure

Floppy Maker uses a special directory structure to store the different configurations.

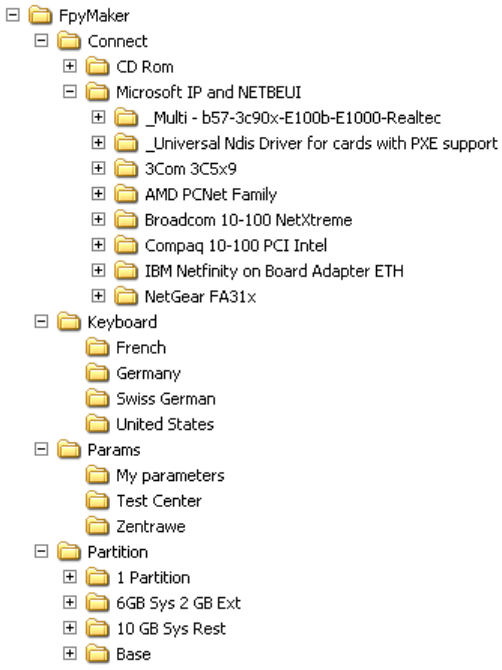


Abbildung 63: Floppy Maker - Directory Structure

Description of the directories

Directory	Description
FpyMaker	The main directory of the application; it contains floppymaker.exe. This directory can be renamed as desired and can be copied to other locations. All diskette images (*.fpy) are stored in this directory.

Connect	This directory contains the various 'connectors' needed in Floppy Maker. This directory must always be available and may not be renamed. The directory contains subdirectories such as CD-ROM, Microsoft IP and NetBEUI, Novell IPX, Novell VLM, Parallel Port Devices.
CD-ROM	A subdirectory that contains the drivers necessary for supporting CD-ROM under DOS. This directory contains additional subdirectories with the name of the CD-ROM drive. General files that are identical for all drivers are filed in the subdirectory *BASE*.
Microsoft IP and NetBEUI	The subdirectory that contains the drivers necessary for Microsoft IP or NetBEUI protocol under DOS. This directory contains subdirectories with the name of the network card. General files that are identical for all drives are filed in the subdirectory *BASE*.
Keyboard	This directory contains the different types of keyboard layouts. This directory must always be available and may not be renamed. This directory contains subdirectories in which various keyboard layouts are stored, e.g. French, German, Swiss German, United States,...
Params	Different parameters such as Servername, IP address, etc. are stored here. This directory may not be deleted or renamed. The different parameters can be found in the params.txt file, in designated subdirectories.
Partition	This directory contains the various partitioning schemas; it may not be deleted or renamed. Subdirectories should be labeled with names such as '6GB system partition and rest partition'. General files that are identical for all drives are filed in the subdirectory *BASE*.

Modifications to the boot diskette

Settings that can be performed on the boot diskette are stored in the directory structure described earlier. The actual modification options are explained here.

The parameter file

OS Deploy uses text files to determine the configurations. If you add a new site or config in the release, you must update and adapt the settings in the Floppy Maker directory. This applies to Floppy Maker in the file ..\Support\FpyMaker\Params\<Description>\params.txt.

params.txt	Description
_ASetupSrv=MyServer	The name of the servers on which the OS Deploy source can be found.
_ASetupShare=Columbus	The name of the release on the server mentioned above that the OS Deploy source makes available. It is recommended that you use a hidden release with 8.3 notation, as the release should be accessed from DOS. After the standard installation this release is known as Columbus.
_SourceDrv=M:	The release is incorporated in these drive letters.
_SourceDir=M:\OSDepot	This entry indicates the directory in which the release source (asetup.bat) can be found (including drive letters).
_ASetupAcc=MyAccount	The user account that has the rights to read the source directory, write to the profile directory and add computers to the domain.
_ASetupAccPW=MyPassword	The password of the user account mentioned above.
_ASetupDomain=MyDomain	The domain in which the user account mentioned above is a member.
_MP=1500	The minimum size of the system partition in MB. Recommendations: NT4 - 350MB, Win2000 - 2000MB, WinXP - 2000MB.

Network-specific parameters

The following parameters are not required when a standalone installation is performed.

_MSPROTOCOL=T	'T' indicates TCP/IP, 'B' indicates NetBEUI.
_DHCP=yes	If DHCP is not available, set this parameter to 'no' and set up an IP configuration as indicated below.
_IPAddr= 10 20 30 40 _IPAddr1=10 _IPAddr2=20 _IPAddr3=30 _IPAddr4=40	If the parameter _IPAddr is defined, a selection dialog for the IP address is not displayed. By using _IPAddr1, _IPAddr2, etc. you can restrict the selection to specific subnets.

_IPSubnet=255 255 255 0 _IPSubnet1=255 _IPSubnet2=255 _IPSubnet3=255 _IPSubnet4=0	If the parameter _IPSubnet is defined, it cannot be changed in the menu. This parameter is the same as _IPAddr in other respects.
_IPGate=10.20.30.250 _IPGate1=10 _IPGate2=20 _IPGate3=30 _IPGate4=250	If the parameter _IPGate is defined, the gateway cannot be selected. This parameter is the same as _IPAddr in other respects.

General parameters

_LANG=EN	'EN' (English) and 'GE' (German) are supported. This determines the language of the boot diskette.
_Yes=Y	The 'JA' parameter for answers in DOS. 'Y' for English DOS or 'J' for German DOS (This parameter is dependant on the DOS version used and not on the language selected above.)
_Disk=6_0	The version of the boot diskette. The version must correspond to the disk6_0.flg file stored in the release (directory setup). If this is not the case, the setup is terminated.
_SysDrv=C:	The drive on which Windows is installed.
_FmtC=T	This parameter must be set to 'T' if the C: drive is to be formatted during the setup, and to 'F' if it is not to be formatted.
_FmtD=F	This parameter must be set to 'T' if the D: drive is to be formatted during the setup, and to 'F' if it is not to be formatted.
_AUTO=	Set this parameter to 'T' if you want OS Deploy to operate in fully automatic mode. Not even the intro screen is not displayed (recommended for experienced users only).
_MAINT=Y	Set this parameter to 'Y' if the OS Deploy release contains an extended menu for disk images or tools such as PartitionMagic (..OSDepot\service)
_Mode=/3	If this parameter is set to '/S', Windows 3.11 starts the 'Profiler' in Standard mode. If the parameter is not set or is set to '/3', Extended mode is used. Some machines, and Win98 for example, do not support the Extended mode of Windows 3.11.

_CDONLY=	This parameter must be set to 'T' if the OS Deploy source is on the same CD-ROM from which it was started. The _SourceDrv and _SourceDir parameters must point to the drive letters used by the CD-ROM drivers.
_RequestName=	Set this parameter to 'T' if the name of the person performing the staging is to be requested and written as feedback.
_MemorySaver=	Set this parameter to 'Y' to save DOS memory. Some modules (e.g. keyboard) are then not loaded, in order to prevent memory problems.
_UDPPort=	Set this parameter to the port number (normally 9880) via which the status of the installation is transmitted to the console.
_TabletPC=	Set this parameter to 'T' if the computer is to be staged as a Tablet PC with Microsoft Windows XP Tablet PC Edition.

Setting the following parameters allows pre-selection of the release, the site and the config, to enable the process to be further automated. If the parameters are set, the selection of the release is not displayed and the corresponding profile is started.

_Release=RELEASE.MY

_Site=SITE.MY

_Config=GENERIC

Adding connectors

Many connectors are delivered with Floppy Maker, although the exact ones required for your network card may not be included. In this case you need to add the relevant connector yourself.

One of the biggest advantages of the OS Deploy boot diskette is its modular structure, which allows different connections to be set up with one diskette image.

Classification of connectors

All classes of connectors are defined in the directory ..\FpyMaker\Connect\. You can add additional classes by creating a directory.

The \BASE directory

Every class has a matrix of drivers and batch files. The connect.bat file is (must) be used by all drivers in a class. This matrix of files is stored in the subdirectory \Base. An example of connect.bat for a CD-ROM drive is

```
rem ====== CD-ROM drivers ===========================================================
@echo off
echo CD-ROM drivers
%RD%\mscdex.exe /D:LOCCD /M:15 /L:L

rem switch site-specific parameters to local CD, if not set correctly in
params.txt
if exist %_SourceDir%\asetup.bat goto END

set _ASetupSrv=
set _ASetupShare=
set _SourceDrv=L:
if exist %_SourceDrv%\Asetup\asetup.bat set _SourceDir=%_SourceDrv%\Asetup
if exist %_SourceDrv%\asetup.bat set _SourceDir=%_SourceDrv%

:END
```

The file for a CD-ROM is fairly simple. By looking at a connect.bat file for the IP/NetBEUI environment, you will notice that these can be fairly complex, depending on your requirements.

For example, for the integration of a network adapter for an IP connection into the boot diskette, it should be sufficient in most cases to copy the driver files (*.DOS) and to enter the name of the driver.

Driver selection

In turn, a list of drivers that can be selected exists within a connector class, e.g. for different network cards. The content of these directories can vary, depending on what was specified in the \BASE directory.

For example, for a network driver that will load TCP/IP, you need a params.txt file containing the name of the card driver.

```
_MSNETDRV=EL90X
```

The driver files for this network card must then be in the corresponding directory (..\<Name>\connect\msnetdrv).

Microsoft IP and NetBEUI

Create a directory with the name of the card in the directory ..\FpyMaker\CONNECT\Microsoft IP and NetBEUI. This directory then appears in the connectors selection in Floppy Maker.

We recommend that you copy an existing directory and swap the corresponding files.

Everything that you copy to this directory is copied to the Connect directory on the boot diskette.

The Connect directory must exist in the directory that you created.

Use a file editor to create or modify the params.txt file .

Add a line with the following entry:

```
_MSNETDRV=[file name of the driver without extension]
```

Example:

```
_MSNETDRV=EL59X ;COMMENT Name of the network driver to be loaded
```

Create the MSNETDRV in the Connect directory (if it does not already exist), and copy the driver files across.

If your network card requires additional files, you can simply add these; e.g. if the card requires a special config.sys file, copy the amended config.sys file to the directory that you have created for this card *(..\FpyMaker\CONNECT\Microsoft IP and NetBEUI\<Name der Karte>*). This is required, for example, for some Token Ring or PCMCIA network cards.

Changing the Microsoft client

This information is based on Microsoft Knowledge Base articles.

The OS Deploy boot diskette contains a pre-configured Microsoft Network client.

If you want to change the client for one boot diskette only, please do this in the directory A:\Connect. If you want to change the client for all boot diskettes, change the client in the msnet.zip file in the directory ..\FpyMaker\CONNECT\Microsoft IP and NETBEUI\Base

Modifying the startup disk for NWLink frame types

Extract the file protocol.ini from the msnet.zip file and open it using Notepad or a text editor. Look for the protocol section of the file; it is preceded by a header, which appears as follows:

```
[ms$nwlink]
```

Below the title, find the value that appears as follows:

```
FRAME=Ethernet_802.2
```

This is the default setting. Change 'Ethernet_802.2' to the appropriate frame type for your network. The frame types available must be entered exactly as they appear here. The choices are as follows:

Ethernet_802.2
Ethernet_802.3
Ethernet_II
Ethernet_SNAP
TOKENRING

Save the changes in the file and update the file msnet.zip with the new version. You can also add this modified protocol.ini file to the \MSNETDRV sub folder. During the staging process it will be copied to the Net folder together with the driver file and will overwrite the protocol.ini file provided with the msnet.zip file.

Additional TCP/IP settings for the Microsoft Network client for MS-DOS

Specifying WINS servers

If your Microsoft Network client for MS-DOS uses DHCP (the default setting for MS-DOS TCP/IP), it will automatically receive the address for the Windows Internet Naming Service (WINS) server. If you want to statically configure your WINS server IP address, you must edit the client's protocol.ini file and add the IP address to the [TCPIP] section.

For example, if you have two WINS servers available, add them to the [TCPIP] section as shown in the example below. Note that there are no dots (.) in the IP addresses.

```
[TCPIP]
WINS_SERVER0 = 11 101 13 53
WINS_SERVER1 = 11 101 12 198
```

Name queries will be sent to the WINS servers in the order in which they appear in the .ini file. The ipconfig command may show a different order of WINS servers (or even different WINS servers altogether) - these are the WINS server names sent by DHCP, and the protocol.ini settings override them.

Important: There is a difference in functionality available in TCP/IP for Microsoft® Windows® for Workgroups, Windows NT Workstation, and Windows NT server, as compared to MS-DOS TCP/IP. Specifically, an MS-DOS TCP/IP client does not:

- Support DNS resolution using WINS.
- Support WINS resolution using DNS.
- Register its name with the WINS database - it performs queries only.
-

Logging on with TCP/IP across a router

If the domain controller is across a router from the Microsoft Network client for MS-DOS computer, you must add a line to the client's LMHOSTS file (located in the msnet.zip file. If there is no LMHOSTS file, you need to create one) for logons to be validated. The line has the following format:

```
www.xxx.yyy.zzz SRV_Name #DOM:DOM_Name
```

where:

- www.xxx.yyy.zzz is the IP address of the domain controller.
- SRV_Name is the NetBIOS name of the domain controller.
- DOM_Name is the name of the domain.

You must also ensure that the domain controller can contact the Microsoft Network client for MS-DOS using one of the following methods:

- Enter the client's IP address and name in the domain controller's LMHOSTS file.
- Register the client with a WINS server that is accessible by the domain controller (placing a static entry in WINS for the Microsoft Network client for MS-DOS).

ipconfig.exe and controlling DHCP leases

The ipconfig.exe utility provides DHCP configuration information only. The version of ipconfig.exe provided with the Microsoft Network client for MS-DOS does not support command-line switches for controlling DHCP address leases. You must use the DHCP administration utility instead.

Save the changes and update the file msnet.zip with the new version. You also can add this modified LMHOSTS file to the \MSNETDRV sub folder. During the staging process it will be copied to the Net folder together with the driver file and will overwrite the LMHOSTS file provided with the msnet.zip file.

Adding Network Interface Cards to Microsoft standard startup disks

Modifying the startup disk for Network Interface Cards (NIC) that are not provided with the Microsoft delivery requires the installation of the appropriate MS-DOS driver and the editing of two system files.

Install an NDIS2-compatible MS-DOS driver for the NIC. These are usually provided with their drivers on the boot disk supplied by the manufacturer. If no drivers are available, download the appropriate driver from the manufacturer's web site.

Appropriate drivers for the Microsoft Network client for MS-DOS will always have a .dos extension. For example, the driver for Intel's EtherExpress Pro/10 EISA is:

Epro.dos

This driver should be placed in the Net directory on the computer (C:\Net, unless named differently) or on the MS-DOS startup disk (A:\Net).

Modifying the system.ini file. The NIC driver needs to be referenced in the system.ini file. This entry is found in the [network drivers] section, as illustrated below:

```
[network drivers]
netcard=elnkii.dos
transport=ndishlp.sys,*netbeui
devdir=A:\NET
LoadRMDrivers=yes
```

For 'netcard=,' replace the current driver with the file name of the NDIS2-compatible driver placed in the Net directory (for example, Epro.dos).

Modifying the protocol.ini file. The NIC driver needs to be referenced in the protocol.ini file. This entry is found in the [ms$ driver_Name] section (the driver name will reflect what was originally chosen in the network installation startup disk process), as shown below:

```
[ms$elnkii]
drivername=ELNKII$
; INTERRUPT=3
; IOADDRESS=0x300
; DMACHANNEL=1
; MAXTRANSMITS=12
```

For 'drivername=,' replace the driver listed with the file name of the NDIS2-compatible driver. Use a dollar sign ($) to replace the .dos file extension (for example, EPRO$).

Using OS Deploy...

It is much easier to make all these changes using OS Deploy As described above, copy the MS-DOS driver file to the directory ..\Connect\MSNetDrv on the diskette and edit or create the params.txt file in the Connect directory using an editor.

Add the following line to the file, or edit it appropriately to indicate the name of your MS-DOS driver.

```
_MSNETDRV=Epro
```

All other changes to protocol.ini and system.ini that are required are automatically performed on the boot diskette by connect.bat.

References

The following articles in the Microsoft Knowledge Base provide additional information on this topic.

Q135465 - README.TXT: Microsoft Network client version 3.0

Q128800 - How to Provide Additional NDIS2 Drivers for Network client 3.0[winnt]

Q142857 - How to Create a Network Installation Boot Disk

Q130875 - Troubleshooting MS Network client 3.0 and DHCP

Q128751 - No "Advanced" button in client TCP/IP Configuration Box

Q123285 - IPCONFIG Displays Invalid Results

Q130538 - DHCP-Enabled MS-DOS Clients Do Not Resolve Host Names

Adding keyboard layouts

Floppy Maker offers you a selection of keyboard drivers/settings that can be used during the DOS part of the setup. Please read the following information if you require a keyboard layout that has not been supplied by us or if you want to limit the number of layouts on offer.

All keyboard layouts available in Floppy Maker are subdirectories of the \Keyboard directory. Additional options can be added by adding a subdirectory with the corresponding name. A file with the name keyboard.bat must be stored in this directory. This file loads the appropriate keyboard.

Structure of keyboard.bat

This keyboard.bat file is called via autoexec.bat on the boot diskette.

```
rem ====== Keyboard ========================================
@echo off
echo US layout
loadhigh %LD%\Dos\keyb us,850,%LD%\Dos\keyboard.sys>nul
```

The above code is an example of what the contents of a batch file should look like. Please consult a DOS manual to find out how to load the keyboard driver you selected.

Changing the intro screen

Replacing the intro screen

It is recommended that you do not edit the intro.bat file (A:\Module), as this file could be updated in a subsequent version of the boot diskette. This would mean that you would have to re-enter all your changes. You can, however, execute your own file before the intro.bat file.

Create a file named**oemintro.bat** in the \Module directory of the boot diskette. This batch file is then executed before intro.bat. If you execute the

```
set _OEMINTRO=T
```

command in your oemintro.bat file, intro.bat will no longer be executed. If the variable has a value other than 'T', intro.bat is executed directly after oemintro.bat.

Switching off the intro screen

The intro screen was set up to make it easier for new users to become familiar with the process. As soon as you have become familiar with the product and you feel that the intro screen bothers you, add the line _OEMINTRO=T to your params.txt file, or delete the file ..\module\intro.bat from the generated boot diskette.

Modifying the menu

The text displayed in the intro screen is activated by simple echo commands in intro.bat. It is a simple task to change this text.

Copy the intro.bat file into the oemintro.bat file; in this way the original file remains unchanged. Add the command set _OEMINTRO=T. Then modify the file as you wish. We recommend that you leave the number of lines unchanged to ensure that the readability of the display is preserved. Use 'echo' to send a blank line. Ensure that there is an English and a German text.

Converting an emergency diskette back to a normal boot diskette

You have the option of converting a boot diskette back to an emergency diskette during the setup of a machine. Using this diskette you can restore the relevant computer without keystroke entries. In this way, an end user can, for example, recover his/her machine at a remote location without the help of an administrator.

If you want to convert the diskette back to a 'normal' diskette that can be used for multiple machines, all you need to do is delete all files with the name 'FIRSTAID.*' in the ..\module directory.

Changing the boot diskette

The installation process is clearly divided between the boot disk functionality and the execution of the Windows Setup process by means of batch files in the OS Deploy release.

If you want to develop your own boot diskettes or boot procedure, you must ensure that the following variables are set before the asetup.bat file is called by the OS Deploy release.

TEMP	Indicates the directory to which the temporary files can be copied.
_SOURCEDRV	The variable for the drive on which the setup source can be found.
_SOURCEDIR	The variable for the drive and path on which the setup source can be found.
_FMTC	The variable indicating whether the C: drive should be formatted (T) or not (F).

Master boot diskette

Brainware supplies an image of a boot diskette with OS Deploy. In this way, you can use the functionality of OS Deploy even without PXE.

This image is normally called '_Master DOS Bootdisk vXXX.fpy', where XXX describes the version of the image, e.g. 650. This is stored in the FloppyMaker directory and can normally be found under ...\OSDepot\Support\FpyMaker.

For licensing reasons, the supplied image is MS-DOS 6.22. Under PXE, from Columbus 6.5 a Windows 98 boot diskette is used. This is not yet suitable for staging with boot diskettes, due to the Workstation Profiler.

Structure of the boot diskette

If you create a boot diskette with the supplied image, you will find the following files and directories on the diskette.

Directory / file	Description
 io.sys	This file is needed for booting the computer.
 msdos.sys	This file is needed for booting the computer.
 command.com	This file is needed for booting the computer.
 config.sys	The config.sys is prepared for loading network drivers. CD-ROM connectors (if selected when generating the diskette) replace this file for loading CD-ROM drivers.

 autoexec.bat	The autoexec.bat file controls the entire 'staging' process and should not be changed.
 DOS	This directory contains the necessary DOS 6.22 files.
 Module	This directory contains the -necessary OS Deploy-specific files and configuration files.
 Connect	The corresponding drivers and configurations for connecting to the OS Deploy release are stored here.
 Part	This directory contains the partitioning schema selected.
 Tools	This directory contains additional tools needed to guarantee functionality.

Migration of AutoSetup environmments

Columbus OSDeployment brings a lot of new features and enhancements compared with AutoSetup. But we tried to keep the structures as compatible as possible in order to ensure a migration of existing AutoSetup releases.

Important differences

AutoSetup	OSDeployment
Folders	
ASetup	*OSDepot* with new batch files and tools
ASetup folder shared as ASetup$	Columbus Data folder shared as Columbus$. Beneath is OSDepot
Images	*Computer.img* and in every release a seperate folder *Image*
	New batch and input files. Diskimaging support in the console over PXE
Tools	Service, which is used for the PXE Service Boot.
no naming conventions for release folders	Setup installs and maintains the release folders WinXP, Win2000, Win2000.Srv and Win2003.srv. You may manually rename those folders.

Jobs	
site specific jobs underneath the site folder	Sitespecific jobs are not supported in the console. All jobs must reside in the job folder underneath the release.

Config files	
Choices.ini	added partitioning schemas, other entries are compatibel.
Options.ini	new section [Database] with the database connection parameters, other entries are compatibel. For preselection of certain options in the configuration dialog in the console, there are new entries under the section [Defaults], this is optional.

Operations	
Boot diskette	PXE
workstation profiler (profiler.exe)	Columbus Console (CMC.exe), computer windows, tabs *OS*
By default individual ASetup account	By default a Columbus account for SW and OS deployment
Changes and new jobs available immediately	Every modification requires an update to the database via a *List Refresh* in the OS Deployment agent

How to migrate?

The following steps are tips from a real world scenarioand should guide you through the process of a migration.

Setup of a new OSDepot

- Install a new OSDepot release for the appropriate operating system.
- Transfer the i386 folder from your existing release. Take the chance and integrate the current ServicePack into your windows sources (slipstream).
- Remove unused jobs from the release.
- Remove not needed or not wanted options from choices.ini.
- Delete connectors and partitioning schemas from FloppyMaker.
- Test your release, if everything is working.

Transfer your old adaptations

- Copy over your own Jobs. USe this opportunity to clean up and check if you really still need those jobs
- Copy your existing sites into the new structure
- Jobs beneath a site have to be moved to the job folder in the root of the release folder, if you plan to use PXE.
- Add the new entries to your existing configuration files Choices.ini and Options.ini.
- If you haven't modified those files a lot, we recommend to continue to use the new configuration files and customize them.
- Existing profiles können für das Aufsetzen mit Bootdisketten grundsätzlich wieder verwendet werden. You have to add the sektion Database to all the Options.ini files, wich are named after the workstation ID in the profile folder (for instance S01.ini). This also takes place, when you open a computer profile in the workstation Profiler and save the configuration again.

Do not transfer

- Batch files and tools from the ASetup folder
- the ASETUP job
- the master boot disk from FloppyMaker

Configuring infrastructure services

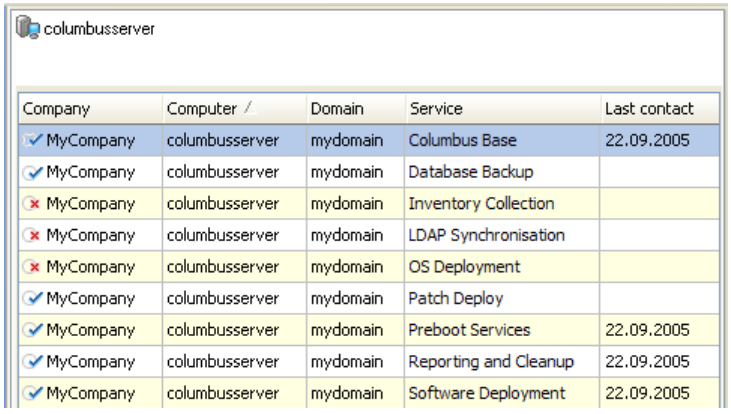
The Columbus infrastructure server has an agent that administers the OS Depot required for the OS deployment. The OS Deployment agent reads the configuration settings and jobs for the available operating system releases into the database. Only then can computers be configured for an OS deployment. For this, the agent needs to know the location of the OS Depot and with which users from the computers to be set up it can access the Depot.

Setup provides the default settings to the agents once only. This can be changed at any time, however. A reconfiguration is particularly necessary if you want to change the user or the OS Depot server.

If you add further infrastructure servers that are also to offer OS Deployment services, these must be configured manually in the database, as the setup can only execute the initial configuration in an empty database. You might need additional infrastructure servers particularly at external locations where computers are to be set up and you do not want to overload the network connections between the locations.

The infrastructure services can be configured as follows

Switch to the Infrastructure view in the console. All services registered in the current Columbus database can be seen in the overview table. The column Computer contains the name of the appropriate Infrastructure server. Different services are available on every server. The column Service contains the designation of the current service.



To edit this, choose the desired service from the appropriate server by selecting the corresponding line.

OS deployment

The *OS Deployment service is* responsible for linking and managing the Operating System Source Depot.

Carry out the following steps:

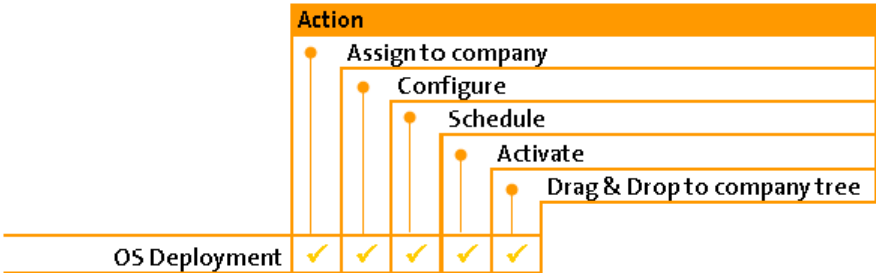


Abbildung 64: OS deployment

Assign to company

See Assign service to company (assign to company)

Configure

The path to the Operating System Source Depot is a central source of information for the OS Deployment server. To enter configuration information, highlight the OS Deployment service and select the Configure task pane function. The *Add OS Source wizard* is started.

Abbildung 65: Add OS Source wizard

You now have the option of specifying a network drive as the Operating System Source Depot. Enter the UNC path of the network drive, as well as the necessary user information for an external connection to the sources.

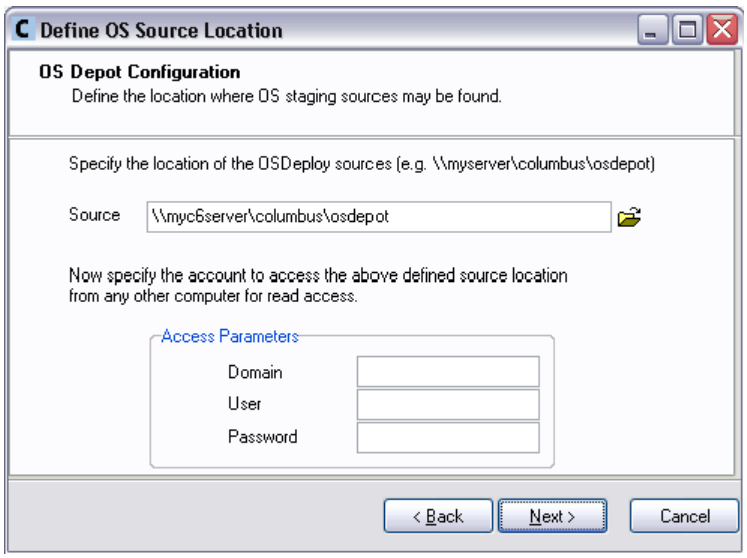


Abbildung 66: Specifying an OS Depot

Source directory that contains the OS sources. Use only UNC notation (\\servername\release\directory1\directory2).

The path may be entered manually or it can be found via the Browse button.

Where OS sources to be linked are stored on an external file server, user information necessary for network access must also be recorded. If the OS sources can be found on the same server where the OS Deployment service is running, the fields in question may be left blank.

Domain Domain name

User User name

Password Password of the user entered

Abbildung 67: The Add OS Source wizard is complete

Schedule

The list must be refreshed manually or in regular intervals if changes to the OS source list are to be propagated in the Columbus system. To do this, start the Schedule List Refresh task pane functionvia the *OS Deployment Index wizard*.

Abbildung 68: OS Deployment Index wizard

Enter the start date and time of the first list refresh in the template shown below. If required, select the repeat interval for regular refresh.

Abbildung 69: Refreshing the OS source list

Date	Date of first refresh (format: dd/mm/yyyy).
Time	Start time of first refresh{(format hh:mm:ss).

Job is executed repeatedly	If this box is checked, the list is repeatedly refreshed at the intervals specified. In all other cases a refresh is only performed once.
Repeating interval is .... minutes	Interval in minutes for repetitive refresh.

The planned refresh is confirmed by the wizard after successful configuration. In addition, the planned action is listed in the Infrastructure view in the Scheduled Actions tab.

Data | Scheduled Actions

Name	OID	Action	Timer	Repeat	Scheduled By
myc6server	42PFML276N	osrefresh	200403271200	All 180 minutes	cir

Abbildung 70: Liste der geplanten Aktionen (Actions)

Activate

See Activate service

Drag & drop to company tree

See Functional responsibility (drag & drop)

Preboot services

The *Preboot services* agent is responsible for dealing with all PXE requests.

Carry out the following steps:

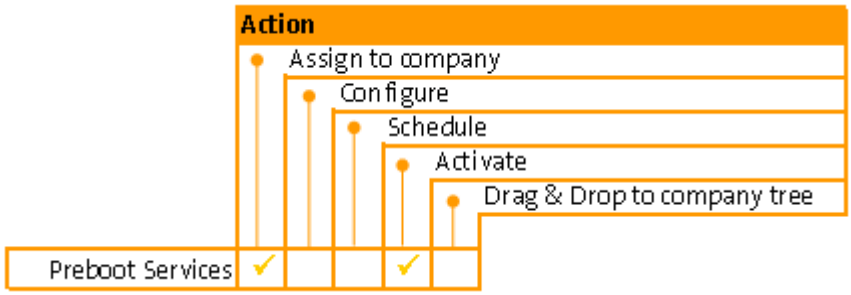


Abbildung 71: Preboot services

Assign to company

See Assign service to company (assign to company)

Activate

See Activate service

Pre-Boot Execution Environment (PXE)

Abbreviation for P re-boot E xecution Enviroment. PXE is one of the components of WFM (Wired for Management), as specified by Intel. It allows a computer to connect to a server in a network before the actual operating system has been started from the local hard drive. Using PXE, a machine is connected to the network even if it is not switched on.

WakeOnLan

'WakeOnLan' (WoL) must be available on the computers to be able to achieve full PXE functionality. This allows a machine to be switched on remotely, as long as one knows the MAC address of the built-in network card. With WoL, it is no longer necessary for an administrator to switch on the machine locally. At the same time, one can load diagnostic programs by means of PXE, for example, or in the case of OS Deploy an inventory program for the preparation of an unattended setup on the computer.

In the infrastructure, the Columbus Base Agent must be assigned to the site for WOL to work.

The console passes the WOL action over to the local infrastructure server of the site, where the computer is placed. There the Base Agents sends out the broadcast to the computer. This is a unique feature of Columbus and allows to wake up computer in different subnets, even over routers in different locations!

WoL is based on a Magic Packet broadcast that is sent on the network. To ensure that WoL operates successfully, you first need to get the assurance of the network team that the broadcast will not be filtered. Furthermore, you need to check that the PC accepts WakeOnLan. Not every network card that appears to be able to accept WoL does in fact accept it. A BIOS upgrade often helps to resolve this issue.

PXE images

A TFPT server (Trivial File Transfer Protocol) is used as part of PXE; this makes images available for computers. These images are copies of normal boot diskettes that are then executed on the computer as a type of 'virtual' diskette drive.

The following diskette images are available in OS Deploy.

 configure.bin	This image can be used to partition the hard drive of a computer.
 netsetup.bin	This image can be used to trigger the installation of the operating system.
 service.bin	This image can be used to create access to the OS Deploy server to make tools available for support personnel.
 unknown.bin	This image is responsible for the recording of computers that have not yet been recorded in the console. Hardware recognition is also performed here.

PXE and OS Deploy

This staging example explains the use of PXE in OS Deploy.

The prerequisite for this example is a ready configured OS Deploy server and a newly delivered, empty computer.

1. Inventory (unknown.bin)

   When a computer is started for the first time in the network, it requests a so-called inventory image from the TFTP server (that is installed on the OS Deploy machine) and executes this image. This inventory image reads the hardware information of the computer and transmits it to the database of the OS Deploy servers. The computer is then automatically switched off again. The computer is then added to the console by means of its MAC address, and can be renamed and staged from here.

2. Preparation of the computer(configure.bin)

   After the computer has been assigned a configuration in the console, it is switched on remotely by WoL. The computer requests the appropriate image via the network and executes it. In this case, this is the partitioning of the hard drive. The machine is then restarted.

3. Installing the operating system (netsetup.bin)

   After the hard drive has been prepared, the actual installation of the operating system can begin. After the second restart, an image is again requested from the server. On this occasion, the installation of the operating system is triggered.

In this way, an operating system can be installed on a computer without any local activity by an administrator. The recording of the machine in the database can either occur manually, by means of a bar code scan at delivery time or by the local technician switching on the device after setup.

CHAPTER 5

Columbus PXE filtering

More and more suppliers are offering network functions based on PXE services. PXE architecture is based purely on UDP broadcasting, and as such is not able to control which client is served by which PXE server. As a result, the installation of multiple PXE servers by different suppliers in the same subnet leads to the servers taking away client requests from one another.

The purpose of Columbus Preboot Services to avoid this irrecoverable design error in the PXE specification, in two phases:

1. Introduction of a filter file that allows the Columbus PXE server to decide which client requests to respond to and which ones to ignore.
2. Active receipt of all PXE requests in a subnet, whereby all services that are not performed by Columbus are forwarded to the responsible PXE server.

Phase 1 will be released in Columbus 6.7; phase 2 is still being developed.

In this chapter

What is the potential of PXE filtering

By entering the MAC addresses, the computers to which a PXE server must respond can be specified. In this manner, it is possible to operate multiple Columbus PXE servers on one subnet. For example, test computers can be assigned to a specific PXE server, or a different PXE server can be assigned to a Terminal Server farm instead of the desktops in a company.

This ensures that Columbus does not grab PXE requests from another system, but rather remains inactive. However, this does not prevent different PXE servers, which do not support filtering, from answering the requests from Columbus stations.

In addition to the MAC address limitation, it is possible to define time frames during which the PXE functionality should be available. By setting time frames, it is possible to limit the functionality during the morning load, thereby counteracting the inevitable need of having to extend the PXE infrastructure.

The introduction of phase 2 in 2006 will massively extend the function, allowing for load balancing, failover etc., in addition to being able to control all PXE traffic. More information regarding this at a later stage.

The PXE filter file

PXE filtering is based on a filter file that contains definitions as to which clients should receive responses. In principle and in structure, it can best be compared to a HOSTS file.

For PXE filtering to be active, the file PXERules.txt must be contained in the application directory of the PXE server together with the appropriate entries. This is generally the Columbus\Infrastructure directory on the corresponding Columbus Infrastructure Server.

```
%ProgramFiles%\Columbus\Infrastructure view in the CMC\PXERules.txt
```

Filter file setup

This file is purely a text file, which can be edited with any text editor. The following commands are available:

Command	Description
ExcludeDevice	This command defines which MAC addresses NOT to respond to. Either the entire MAC address can be specified or a placeholder (*) can be used. The "*" may only be used at the end of a MAC address in each case, or as a placeholder for all addresses. `Example: ExcludeDevice, 000423523710`
IncludeDevice	This command defines which MAC addresses to respond to. The entire MAC address can be specified, or a "*" placeholder may be used. The "*" may only be used at the end of a MAC address in each case, or as a placeholder for all addresses. `Example: IncludeDevice, 0004*`
ExcludeTime	This command defines the times during which the PXE server must not serve a client. As this is a "reduction of service" setting and not an exclusion, the client also receives a reply during this type of time frame. However, this reply only states that no action is required - without the PXE server ever having checked with the Columbus database. As a result, it merely ensures that OS deployment cannot start on the client at 8:00, for example. `Example: ExcludeTime, 06:00-10:00`
;	Rows beginning with a semicolon ; are comment rows. `; This is a remark`

Example File PXERules.txt:

```
; Managed Preboot sample script

; Exclude all MAC addresses (answer to none)
ExcludeDevice, *

; Exclude specified MAC addresses (answer to none)
ExcludeDevice, 000423523710
ExcludeDevice, 000423523710

; Exclude specified group of MAC addresses
ExcludeDevice, 000423*

; include all MAC addresses (answer to all)
; This is the default, if nothing is specified
IncludeDevice, *

; include specified MAC addresses
IncludeDevice, 000423523710

; include specified group of MAC addresses
IncludeDevice, 0004*

; Define time window to exclude
ExcludeTime, 0600-1000
```

Evaluating the filter file

The filter file is evaluated according to the sequence of the entries. The basic setting is that all requests are answered.

If you want to process certain MAC addresses only, all MAC addresses must first be excluded. Then add all the permitted addresses again in rows:

```
ExcludeDevice, *
IncludeDevice, 000423*
```

Troubleshooting OS deployment

In practice, most problems are caused by PXE functionality. Unfortunately, the stability of PXE is extremely dependent on the implementation of this functionality in the network cards, switches and routers. Devices that are newer than 1998 (the year in which PXE was normalized) should in fact be able to support this standard. However, in reality the picture is not that good. Faulty BIOS versions are common, as are cheap components that do not even support PXE.

If problems occur when booting PXE, such as Access Denied messages, emm386 errors or other unusual errors, we recommend that you proceed as follows:

1. Update the BIOS to the very latest version
2. Check the policy entries in Windows 2003 servers
3. Usage of an LMHOSTS file
4. Usage of a native NDIS driver
5. Trace the network components responsible for the error.

BIOS update

If you activate PXE in the computers' BIOS or tailor the boot sequence for PXE, we recommend that you also perform a BIOS update to the latest level as a matter of urgency. In this way, numerous instabilities and unusual errors that are not easily explained can be avoided.

Note that even new computers from well-known brand names are often supplied with completely out of date BIOS versions.

Follow the computer manufacturer's specifications for updating the BIOS. New versions can generally be downloaded from the suppliers' web sites.

Check the policy entries in Windows 2003 servers

When using a Windows 2003 Server, Microsoft issues a system message indicating that access by DOS clients to the server is no longer supported by default. But who bothers to read this?

To turn on support for DOS clients again, you need to modify the following policy entries.

- All entries with *signing* and *always* must be inactive, and
- *send NT& NTLM responses* must be allowed.

If Columbus is installed on a domain controller, these entries must be set in the separate domain controller policy, as this overrides group and local policy. You can execute gpedit.msc to tailor local policies.

In the appropriate Policy editor, change to

- \computer Configuration\Windows Settings\Security Settings\Local Policies\Security Options

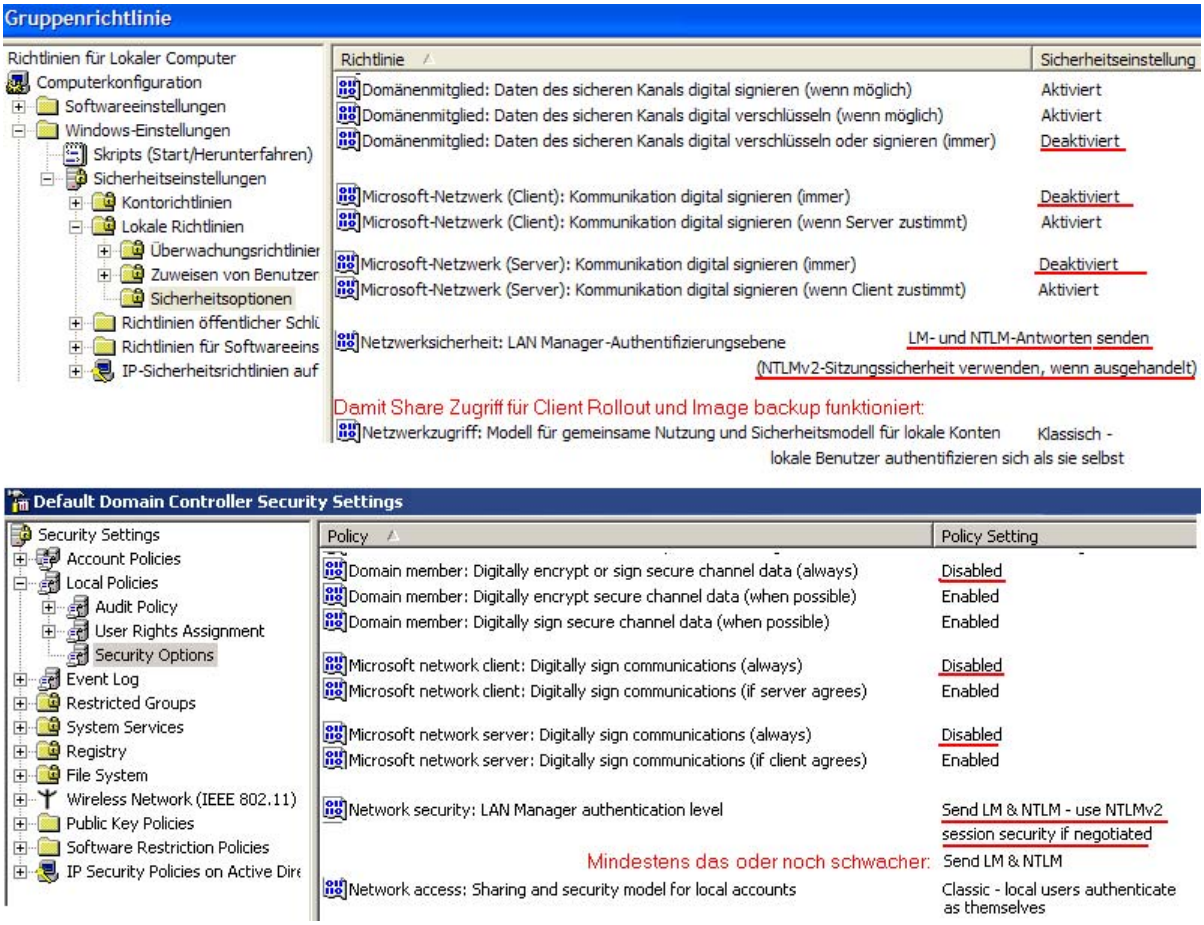
Ensure that the following entries have been set

- Domain member: Digitally encrypt or sign secure channel data (always)
  Disabled
- Microsoft Network client: Digitally sign communications (always)
  Disabled
- Microsoft network server: Digitally sign communications (always)
  Disabled
- Network security: LAN manager authentication level

  Send LM & NTLM - use NTLMv2 session security if negotiated

- or even weaker: Network security: LAN manager authentication level

  Send LM & NTLM responses



Allow remote administration functions

On Windows XP workstations the *sharing model* must be set to *classic* so that remote administration functions such as client rollout, real time monitor etc. can be used.

- Network access: Sharing and security model for local accounts

  Classic - local users authenticate as themselves

You can achieve the same effect by changing the following settings in Windows Explorer:

Select the menu:

Tools\Folder Options\View

Deactivate the option:

Use simple files sharing (recommended)

LMHOSTS file

In modern networks, name resolution occurs exclusively via DNS. Consequently it is possible that the client is unable to find the Columbus OS Deploy server or the domain controller in the network. If access is denied, the client has found the OS Deploy server, but no domain controller that can execute user authentication. In this case it is useful to add the domain controller and the OS Deploy server to the LMHOSTS file.

When the native NDIS driver is not used, you can find the standard LMHOSTS file in the directory ..\Columbus\Infrastructure\PXETemplates\netsetup.bin.net\

The entries must occur as described below.

[IP-address] [Netbiosname of the domaincontroller] [#DOM:Domainname]

[IP-address] [Netbiosname of the Columbus server]

Example:

```
# This is a sample LMHOSTS file used by Microsoft TCP/IP
#
# For example:
# 149.124.10.2 dc #DOM:mydomain #PRE
# 149.124.10.4 server1              # main office server


10.0.0.1       MYDC    #DOM:MYDOM
10.0.0.2 MYDBSERVER
10.0.0.3 MYCISSERVER
```

Native NDIS driver and PXE

Due to incompatibilities between network cards (e.g. Broadcom, 3COM, Intel), System Bios and PXE, the staging by means of PXE can sometimes fail to function. After the image has been loaded and the computer is to connect to the release to perform the setup, a 'hang' condition can occur without a message being displayed, or the following message can be displayed: "EMM386 has detected error #12".

From version 6.4 of Columbus, it is possible to use the native NDIS driver for the network card instead of the generic UNDI driver.

To activate this functionality, create the following entry in the registry for the Columbus OS Deploy server.

```
Key: HKLM\SOFTWARE\Brainware\Columbus\6\OS Management\StagingParams
String:NativeNDISDrivers=1
```

After the next restart of a client with PXE, the OS Deploy agent creates a directory in the directory ..\Columbus\Infrastructure\PXETemplates based on the name of the network card. If it is not possible to determine the name of the card, the 6 characters (the manufacturer code) of the MAC address are used.

The following example shows a new directory '000e7f' for a Broadcom adapter. If it had been possible to read the name from the SMB BIOS, the directory would have been called BroadcomNetXtremeEtherlink or similar.

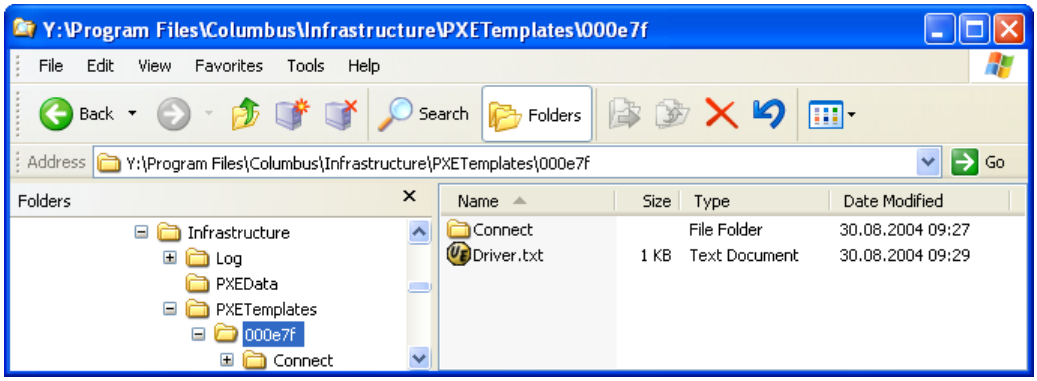


Abbildung 72: PXE templates directory

Now you can copy the NDIS driver belonging to the network card to the directory ..\PXETemplates\000e7f

- Navigate to the directory ..\OSDepot\Support\FpyMaker\Connect\Microsoft IP and NETBEUI\Broadcom 10-100 Nextreme and
- copy the Connect directory and all subdirectories as well as the file driver.txt to the directory ..\PXETemplates\000e7f

Your client will load the driver assigned at the next PXE boot.

Important

- This works only from Columbus version 6.4 with hotfix 1 (please contact Brainware for the current files)
- If you use an LMHOSTS file, you must store this in every \Connect\msnetdrv directory.

Finding network components causing errors

Customers have told us that they were able to use PXE in their test environments without any problems, but that they are now experiencing problems in the production network, with the same computers and Columbus settings. A wrongly configured switch or router, or even just a different time characteristic can often prevent PXE from functioning correctly. For example, the Spanning Tree function in new Cisco switches must be switched off, or the IP Helper function must be activated, ports must be open, name resolution must be working, etc. You will need to consult the networking team specialists.

PXE is also more susceptible to network problems such as switches, routers or even cabling. A damaged cable could still carry normal network traffic because the error protocols are more developed. PXE, however, cannot deal with this and crashes immediately with various errors if network problems occur. No customer would change their entire cabling due to PXE problems - but how should one proceed?

The easiest is to isolate the suspected components. First of all, connect the computer directly behind the server and test whether PXE functions; this is usually the case. Then attach the computer behind the router, in the next segment etc. until PXE no longer functions. Following this, check the intermediate components and replace the switch or router, for example. If this still does not help, try using another cable for this device.

Hard disk images

OS Deploy can take advantage of hard drive images (so-called 'cloning'). The leading product here is Symantec's 'Ghost' (www.symantec.com) and Drive Image from PowerQuest (www.powerquest.com).

We do not recommend building up a computer by means of the 'cloning' process as it becomes difficult to manage a cloned environment after 1 or 2 years. 'Cloning' in conjunction with OS Deploy can offer the advantages of both worlds.

The imaging solution in OS Deploy can be used to backup important machines on one server.

To do this, use the Special tab in the console to create or restore partitions. You can make use of these functions by means of the boot diskettes, via the 'Reload/Create Disk Images' menu item.

Important: Ghost and Drive Image are not part of the Columbus software and must be acquired separately.

Preparing a disk image for OS deployment

You can also create a disk image by means of OS Deploy, which will later save you time when setting up other computers with this image. For this, set up a computer as if you were building it normally. In addition to the jobs that you require, you need to select the job**Prepare system for imaging** in the Jobs tab. After this, stage the computer as normal. When the image below appears, the computer has reached a stage where you can make any other desired modifications to the system. You can pre-install applications, make configuration settings, etc. When you have completed this, click on **Image Now**.

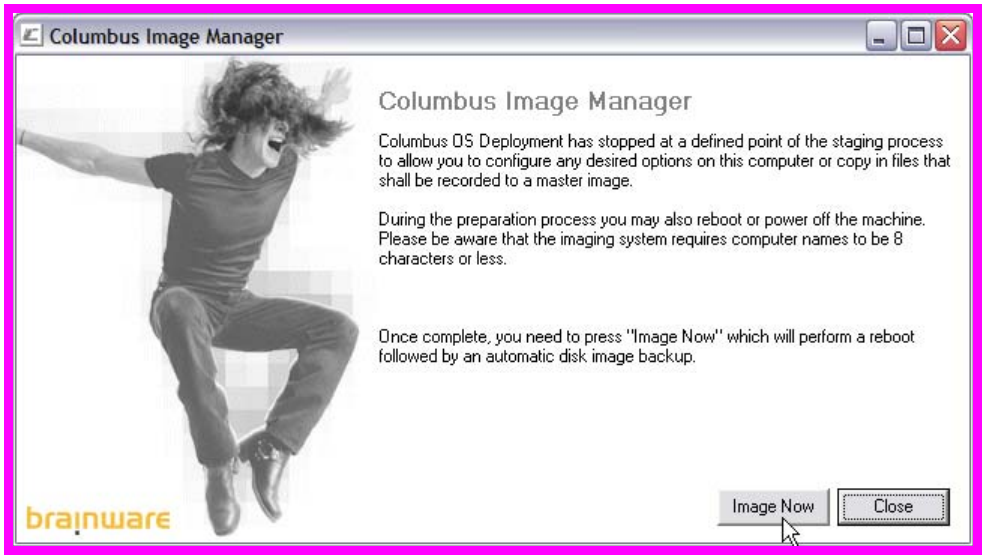


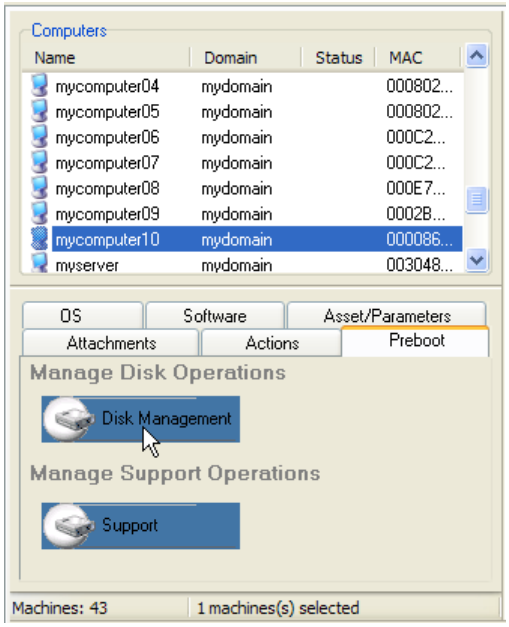
Abbildung 73: Imaging - Maschine vorbereiten

This will generate a PXE action to backup the hard disk. Your computer will reboot and a disk image of the computer will be created after restarting by means of PXE.

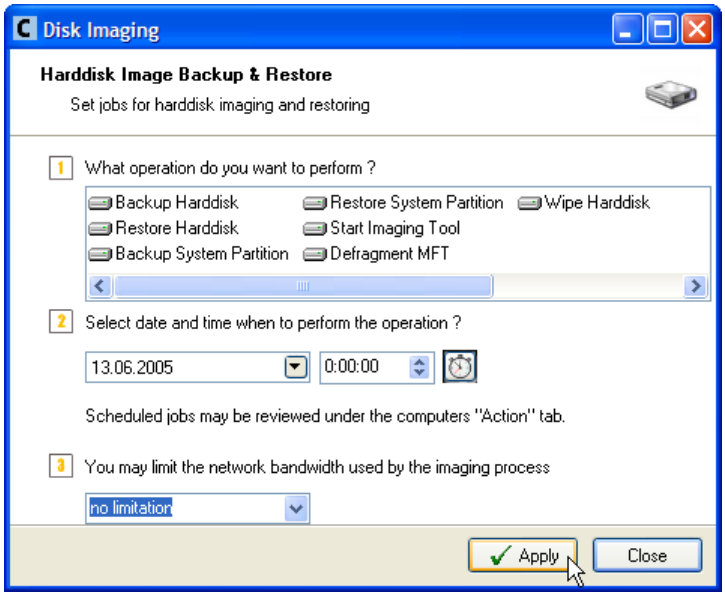
In the console you have to refresh the OSDeployment agent in the infrastructure view. After that, You can may use this image for staging new computers; naturally only when the hardware of the other computer is the same as the hardware on which the image was created.

Creating an image

Select this computer in the console in the Computers window.



Select the **Special**tab and the **Disk imaging option**



Select the operation **Backup hard disk** if you want to create an image of the entire disk.

Select the operation **Backup system partition** if you just want to use the operating system to create an image of the first partition.

Click on **Apply** to switch on the computer via WakeOnLan and to generate the image.

The Image directory

Disk images are stored in special directories in OS Depot.

Folder/file	Description
 computer.img	The directory containing the necessary files and structures for imaging computers that have no configured release. This directory allows you to create/play back images when using boot diskettes.
 Release\Images	The directory containing the required files and structures for hard disk imaging for a particular release. Every release has its own image directory. If a computer is assigned to a release, the images are created in the corresponding release.
 AMenu.bat	The batch file that makes the menu available when using diskettes.
 Image.bat	The batch file that starts the imaging tool
 params.txt	The parameter file in which the imaging tool to be used can be configured.
 release.txt	The text shown in the Release menu when using diskettes. The text can be modified as required. > Reload/Create Disk Images
 [MacAddress]	The generated images are stored in a directory, which contains the MAC address of the computer in 8.3 notation. (The first character of the MAC address is skipped). In this folder you'll find a file image.ini, which contains the netbios name of the computer.
 Paragon	This directory contains the Paragon disk imaging tool, which is a part of Columbus.
 Ghost	This directory contains prepared scripts for the Ghost disk imaging tool, which must be purchased separately.

Important: The imaging tool that you choose must be entered in the params.txt file. The name must correspond to the name of the folder containing the imaging tool. Currently, Symantec Ghost and Paragon are supported. Other tools can be easily integrated.

CHAPTER 6

Security

Once your installation is running smoothly you should implement security settings on your system.

In this chapter

Release security

Directory	Release	Rights
Columbus	Columbus	Everyone: change

Some companies restrict the use of the group 'Everyone'. 'Domain users' should be used in this case.

Directory security

The Columbus account (or the account used for this) should have read access to the OS Depot directory and all subdirectories.

The Columbus account must have modification rights to the Profile directory of the respective site in order to store the Profiler profiles.

Directory	Authority
OSDepot\[Release]\SITE\[Site1]\Profile	Columbus: change
OSDepot\[Release]\SITE\[Site2]\Profile	Columbus: change
OSDepot\[Release]\SITE\[SiteX]\Profile	Columbus: change

The Columbus account must have modification rights to the Images directory of the respective site in order to store images.

Directory	Authority
OSDepot\[Release1]\Images	Columbus: change
OSDepot\[Release2]\Images	Columbus: change
OSDepot\[ReleaseX]\Images	Columbus: change

Columbus account

The Columbus account (or the account used for this), must not be an administrator in the corresponding domain. Ordinary user rights are sufficient. The only exception is that the user account must be able to set up accounts in the domain. Where some computers are often set up again (e.g. test computers), it is advisable for the Columbus account also to be able to add computers to the domain again.

Note: Where computers were added by an administrator of the domain, it is possible that a user with non-administrative rights may not be able to add a computer to the domain again.

Index