Faronics

DEEP FREEZE™

ABSOLUTE Workstation Integrity

Deep Freeze - McAfee ePolicy Orchestrator

TECHNICAL WHITEPAPER

Last modified: June 13, 2005

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Introduction

The process of updating virus definitions on workstations protected by Deep Freeze Enterprise involves three fundamental steps:

1. Rebooting the workstations into a *Thawed* state so the updates are kept upon restart.
2. Updating the virus definitions
3. Shutting down or restarting the workstation into a *Frozen* state.

This white paper provides technical information on how to approach these steps with McAfee's ePolicy Orchestrator.

Deep Freeze is not marketed as an antivirus product. However, Deep Freeze will protect workstations from any virus. Just restart the Frozen workstation and the virus is gone. Many viruses require a fundamental change to be made to the core files and only become active on restart. With Deep Freeze installed and activated, these viruses will be deleted upon restart and therefore never become active.

Ensure the BIOS is set to boot directly to the C: drive and that the BIOS is protected with a password; failure to do so can result in boot sector viruses being transferred to the hard disk drives via infected floppy disks.

Setting the Workstations to a Thawed state

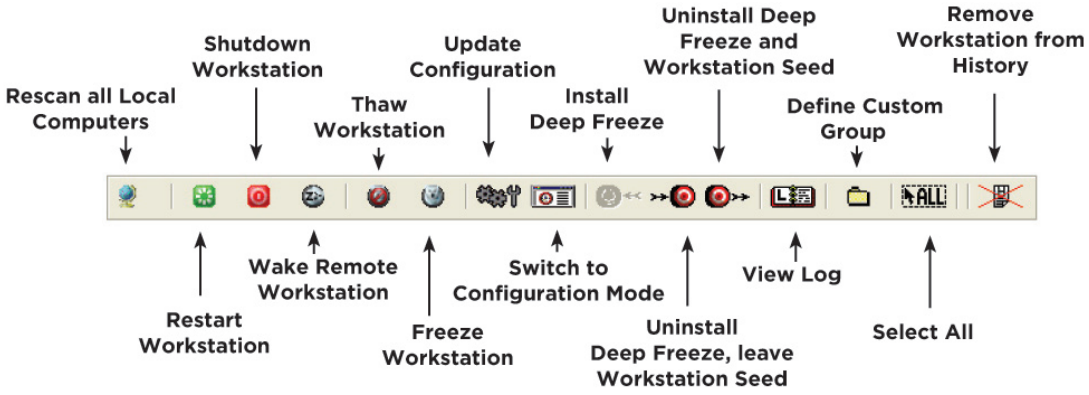
In order to make any permanent changes, the workstations protected by Deep Freeze have to be set into a *Thawed* state. Those permanent changes include antivirus updates; therefore, the workstations must be rebooted into a *Thawed* state before applying these updates.

There are basically three ways to remotely set workstations into a *Thawed* state:

- By manually using the Deep Freeze Enterprise Console
- By setting up an Scheduled Maintenance Period
- By using the Command Line Control

Manually Using the Deep Freeze Enterprise Console

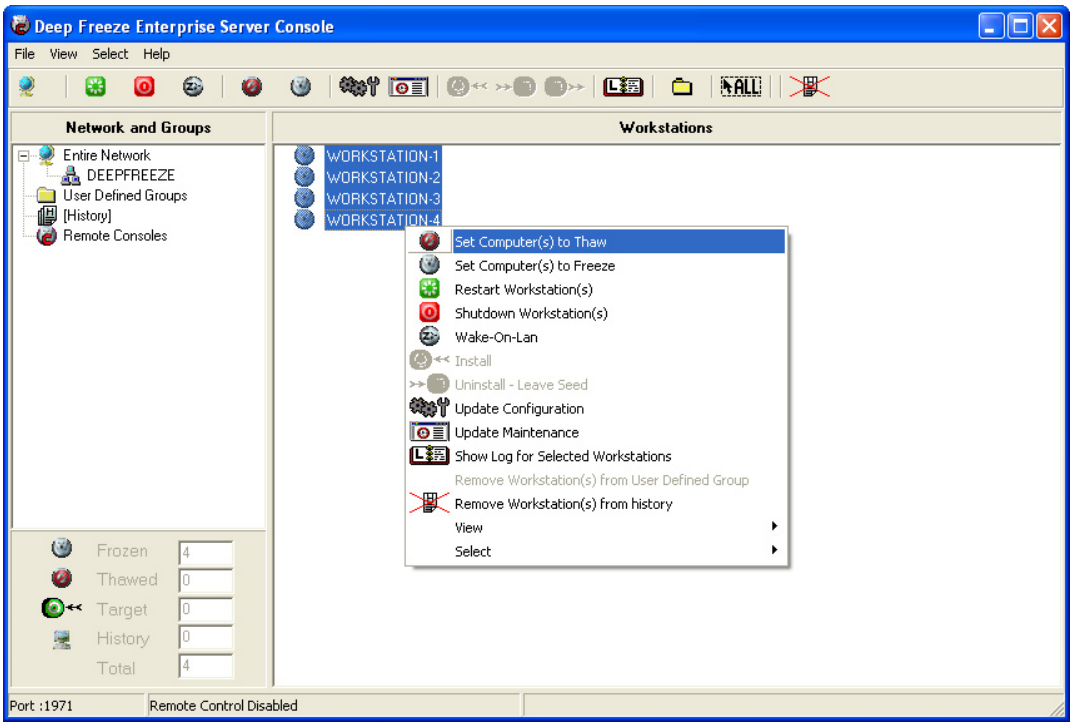
The Enterprise Console contains a toolbar at the top of the screen that allows quick access to the functions of the Console.



To boot a workstation into the *Thawed* state, complete the following steps:

1. Select the workstation and click the *Thaw Workstation* icon on the toolbar.

   Alternatively, right-click and select the *Set Computer(s) to Thaw* option in the context menu.

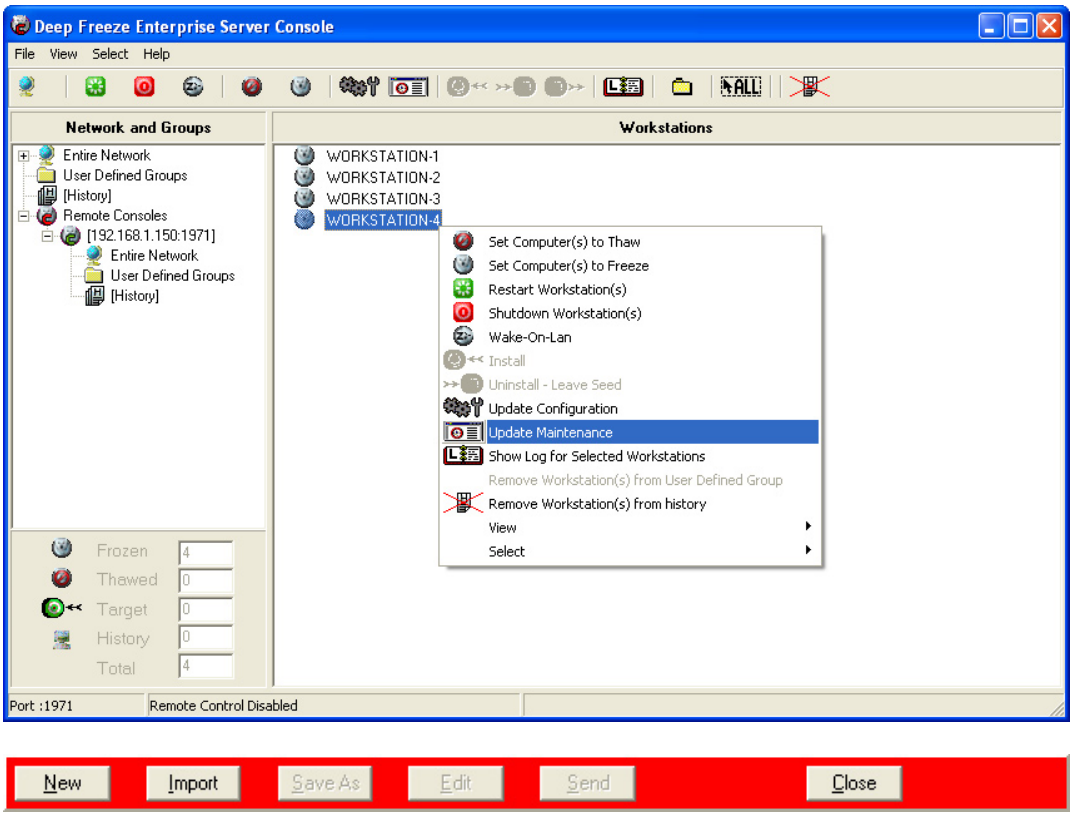


2. Click *OK* in the confirmation window.
3. The selected workstations now restart in the *Thawed* state.

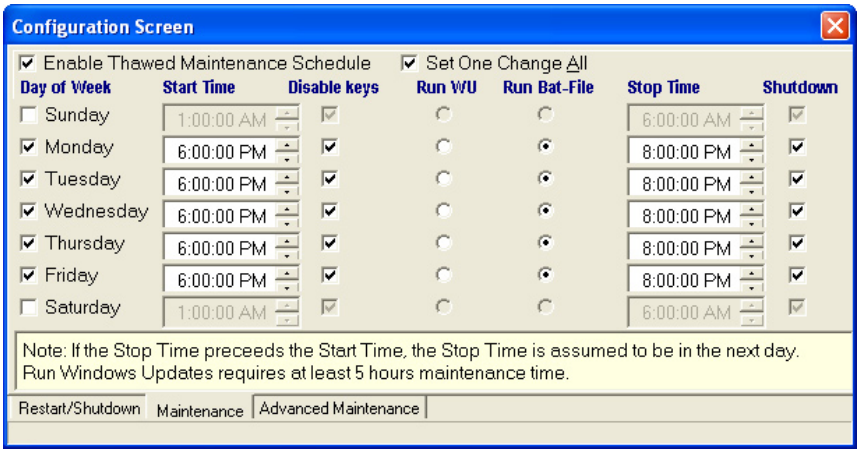
Setting up a Scheduled Maintenance Period

There are two ways to set up a Scheduled Maintenance Period. One is to set it up when configuring the Deep Freeze Enterprise installation files with the Configuration Administrator (best method for new deployments). The other way is to create or update the Maintenance Period using the Enterprise Console. Assuming you have already deployed Deep Freeze throughout your network, the following instructions elaborate on how to create/update the Maintenance Period with the Enterprise Console.

1. Open the Enterprise Console. Select any workstation, right-click on it and select *Update Maintenance Period.* A red bar appears at the bottom of the screen.



2. Click *New*. The Configuration screen appears as shown below. It contains only the *Restart/Shutdown*, *Maintenance*, and *Advanced Maintenance* tabs.



4. On the *Maintenance* tab, check the *Enable Thawed Maintenance Schedule* check box. Also place a check beside each day you want the Maintenance Schedule to run.
5. Enter Maintenance start time in the *Start Time* column, and the end time in the *Stop Time* column.
6. It is recommended that the *Disable keys* option is checked so the keyboard and mouse are disabled while the workstations are in the *Thawed* state.

   It is important to check the *Shutdown* box so Deep Freeze shuts the workstations down at the end of the Maintenance Period. Otherwise the workstations are restarted after the Maintenance Period is complete.
7. Close the *Configuration Screen*. A pop-up message appears, requesting the administrator to select the workstations to send the new configuration to.
8. Select the workstations to be updated and click *Send*.

   This action updates all the selected workstations' configuration on the fly. This means the workstations don't have to be in the *Thawed* state for the configuration updates to take place.

Controlling Deep Freeze Through the Command Line Control - DFC

The Deep Freeze *Command Line Control* (*DFC*) offers network administrators increased flexibility in managing Deep Freeze workstations. DFC works in combination with third-party enterprise management tools and/or central management solutions. This combination allows administrators to update workstations on the fly and on demand.

It is important to note that DFC is not a stand-alone application. DFC integrates seamlessly with any solution that can run script files, including standard run-once login scripts.

The DFC executable is installed in same directory as the Configuration Administrator: *C:\Program Files\Faronics\Deep Freeze Enterprise\Dfc.exe*

DFC commands require passwords with command line rights; One Time Passwords can't be used.

DFC Boot Control

Syntax	Description
`DFC password /BOOTTHAWED`	Restarts workstation into a Thawed state. Only works on Frozen workstations.
`DFC password /THAWNEXTBOOT`	Sets up workstation to restart Thawed on next restart. Works on Frozen workstations; does not force workstation to restart.
`DFC password /BOOTFROZEN`	Restarts workstation into a Frozen state. Only works on Thawed workstations.
`DFC password /FREEZENEXTBOOT`	Sets up workstation to restart Frozen the next time it restarts. Only works on Thawed workstations. Does not force workstation to restart.

DFC Status Query

Syntax	Description
`DFC get /ISFROZEN`	Queries workstation if it is Frozen. Returns 0 if Thawed. Returns 1 if Frozen.

Configuration Update

Syntax	Description
`DFC password /CFG=[path] depfrz.rdx`	Replaces Deep Freeze configuration information. Works on Thawed or Frozen workstations. Password changes are effective immediately. Other changes require restart.

Example Batch File

Below is a sample batch file that can be modified for use with any antivirus software that supports updating through a command line.

```
@ECHO OFF
\\SERVER\SHARE\FOLDER\DFC.EXE get /isfrozen
IF ERRORLEVEL 1 GOTO FROZEN
IF ERRORLEVEL 0 GOTO THAWED
ECHO Errors where encountered running the command line control on this
workstation.
:FROZEN
\\SERVER\SHARE\FOLDER\DFC.EXE password /bootthawed
GOTO END
:THAWED
REM ************************************************************************
REM * Insert the command to update the antivirus software here.  *
REM ************************************************************************
\\SERVER\SHARE\FOLDER\DFC.EXE password /freezenextboot
REM Send commands to reboot the system.
REM For Windows 95/98/ME
RUNDLL32 SHELL32.DLL,SHExitWindowsEx 2
REM For Windows 2000 (may need to be called 2x)
RUNDLL32 USER32.DLL,ExitWindowsEx 2
RUNDLL32 USER32.DLL,ExitWindowsEx 2
REM For Windows XP
SHUTDOWN -s -t 01
GOTO END
:END
```

Updating the Virus Definitions

This document provides six different ways to approach virus definitions (DAT files) updates for McAfee ePolicy Orchestrator (ePO) clients.

The Master Repository update process is briefly addressed. For more information in that regard, please refer to the ePO Admin Guide.

1) Do Nothing

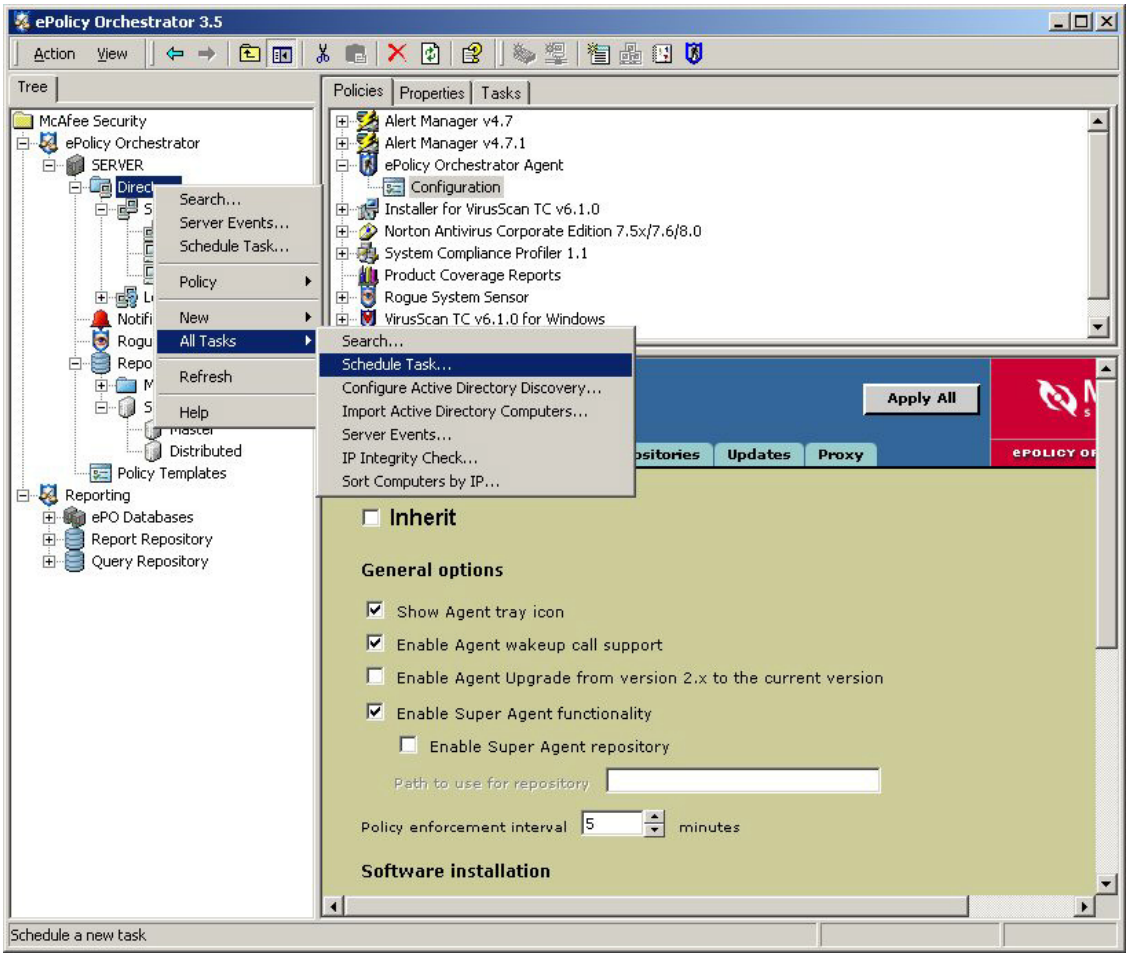
The virus definitions keep getting updated every time the workstations are restarted or whenever the updates are pushed down, but the changes are lost upon reboots. On fast-switched networks this has have negligible impact on the boot-up time.

The workstations have the latest definitions at all times; the only down side of this method is that, with time, definitions keep growing bigger. Therefore, it is recommended to schedule a *Thawed* Maintenance Period at least twice a year to make the updates permanent.

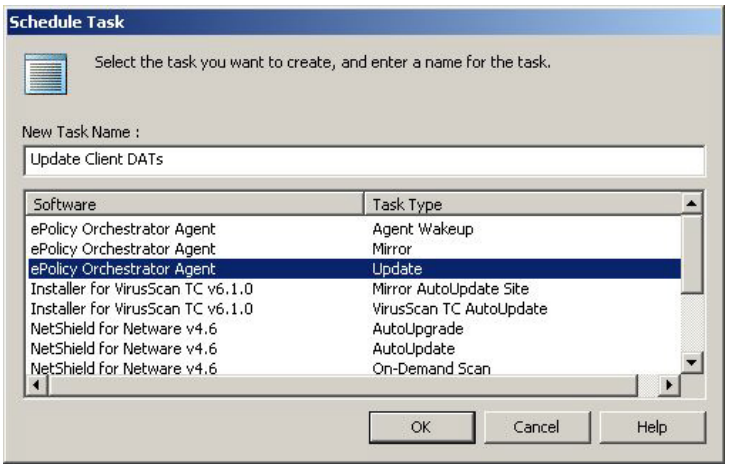
2) Manually Update the New Virus Definitions

To manually update the new virus definitions, complete the following steps:

1. Using the Enterprise Console, set the workstations to reboot into the Thawed state. Once the computers are back on, open the ePolicy Orchestrator Console on your antivirus server.
2. In the left pane, right-click *Directory*. Select *All Tasks* > *Schedule Task*.



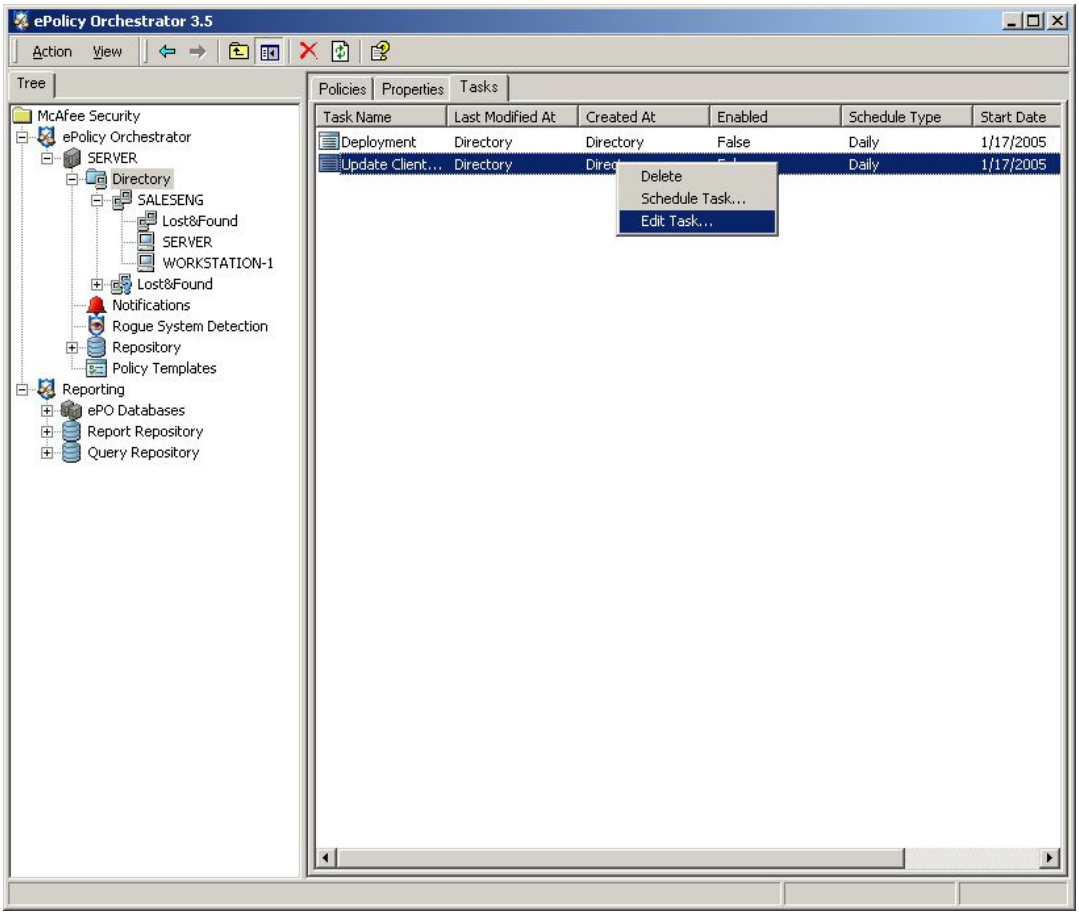
3. In the *Schedule Task* dialog box, type a name into the *New Task Name* field, such as Update Client DATs.
4. In the software list, select *ePolicy Orchestrator Agent Update* to create an update task for VirusScan Enterprise. Click *OK*.



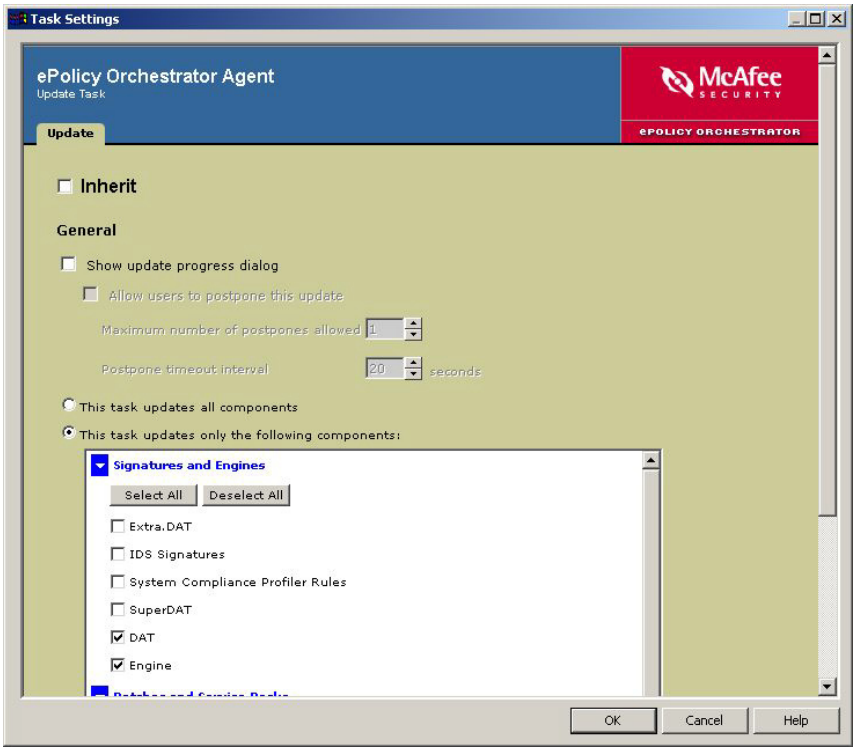
5. Press *F5* to refresh the console.

   The new task appears in the list in the *Task* tab.

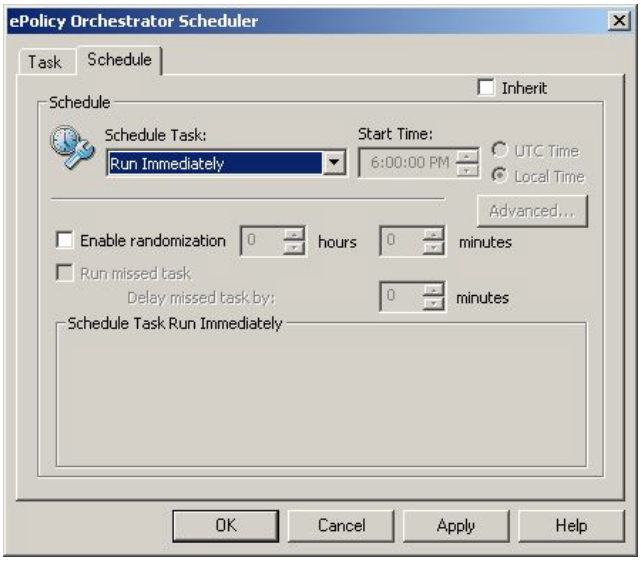
   Right-click the new task in the task list and select *Edit Task*, as shown below.



6. As shown below, under the Schedule Settings section of the ePolicy Orchestrator Scheduler dialog box, deselect *Inherit*.
7. Select *Enable* (specified task runs at specified time). The task does not run unless first enabled here.
8. Click *Settings* to configure task settings. On the *Task Settings* dialog box for the agent update task, deselect *Inherit* to enable configuration options.
9. Under Signatures and Engines, select *DAT* and *Engine*. Click *OK*.

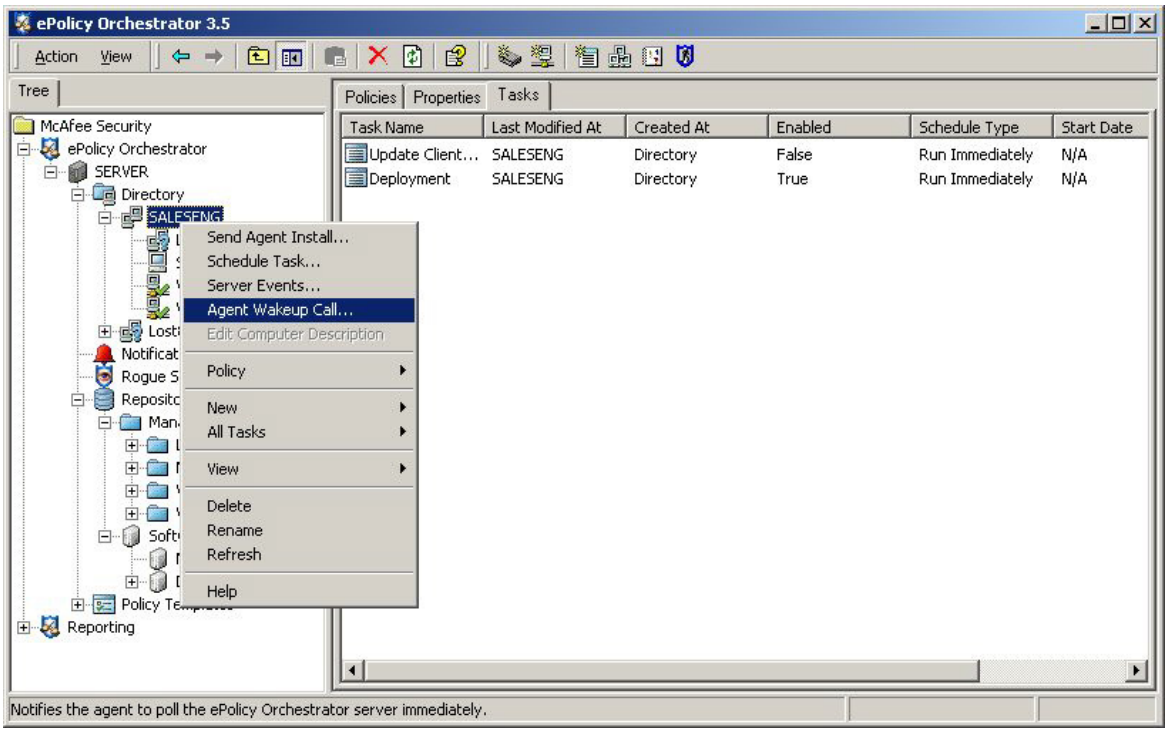


10. Click the *Schedule* tab and deselect *Inherit*. Set the Schedule Task option to run immediately. Click *OK* to close the ePolicy Orchestrator Scheduler.

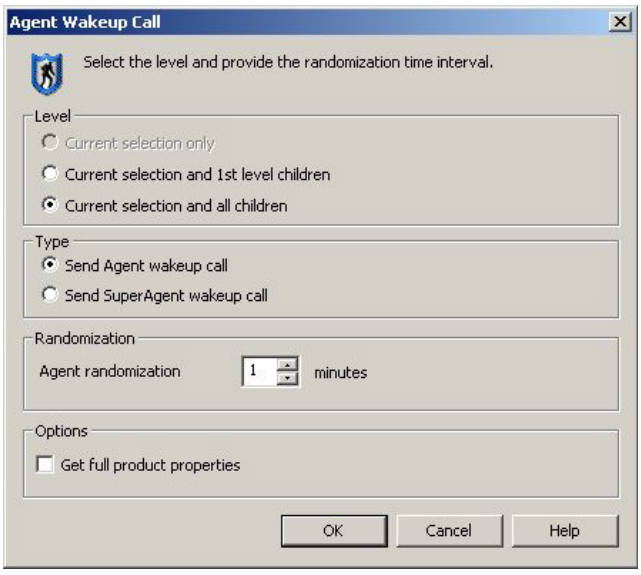


Agents get new virus definitions (DAT files) the next time they communicate with ePolicy Orchestrator server.

11. To make that communication immediate, an Agent Wakeup call must be made. On the right pane, right-click on the server and select *Agent Wakeup call*.



12. The Agent Wakeup call dialog box appears. Select the *Current selection and all children* radio button. Click *OK*.

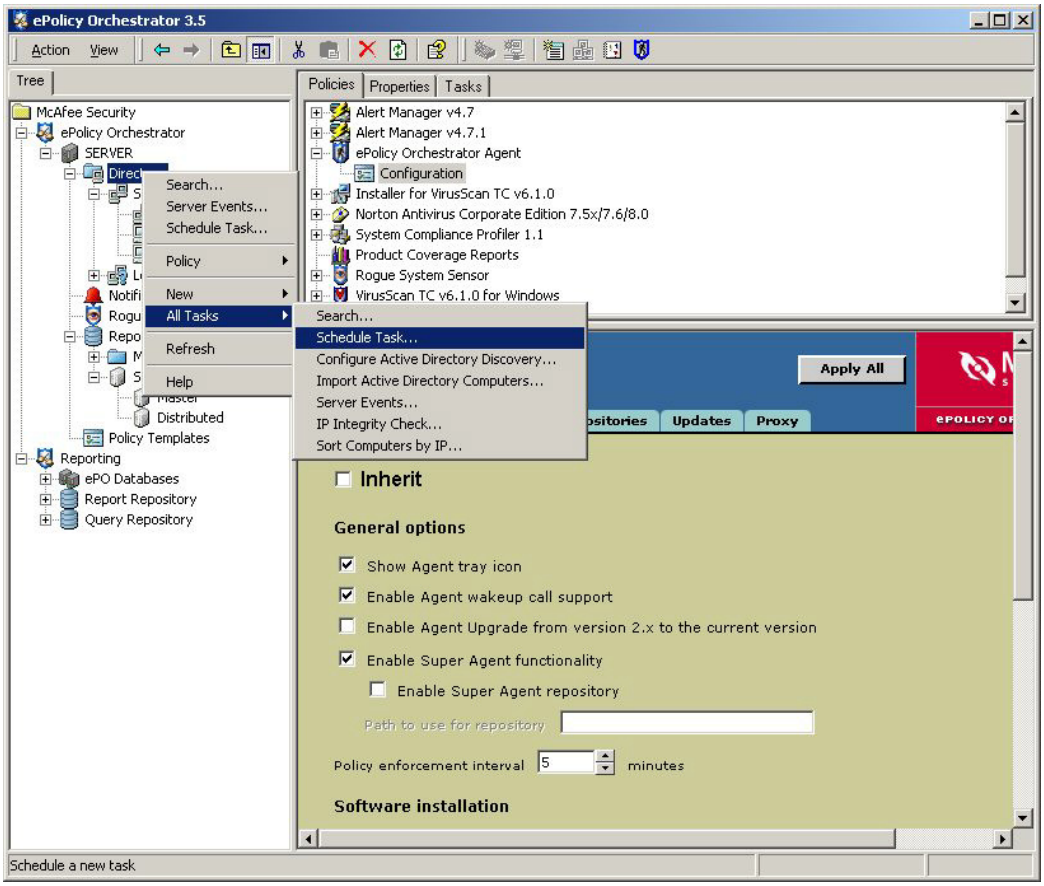


After the Wakeup call is performed, all workstations are updated with the latest virus definitions.

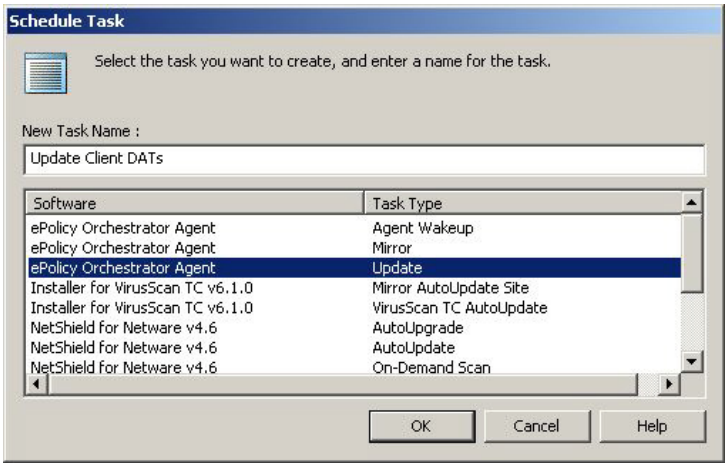
3) Scheduling the Virus Definitions (DAT file) Updates

To schedule the virus definition updates, complete the following steps:

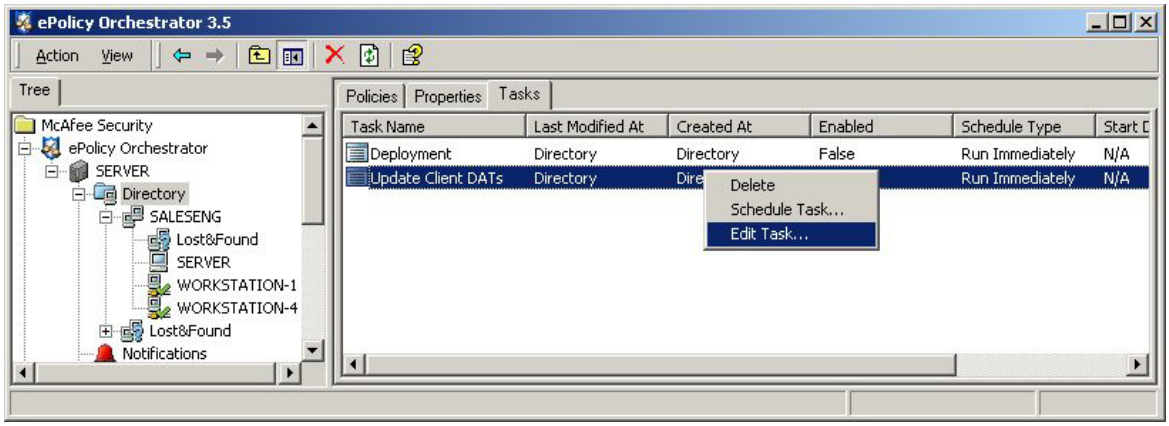
1. Using the Deep Freeze Enterprise Console, schedule a Maintenance Period as per instructions provided on p. 4.
2. Open the ePolicy Orchestrator Console on your antivirus server. In the left pane, right-click the Directory and select *All Tasks* > *Schedule Task*.



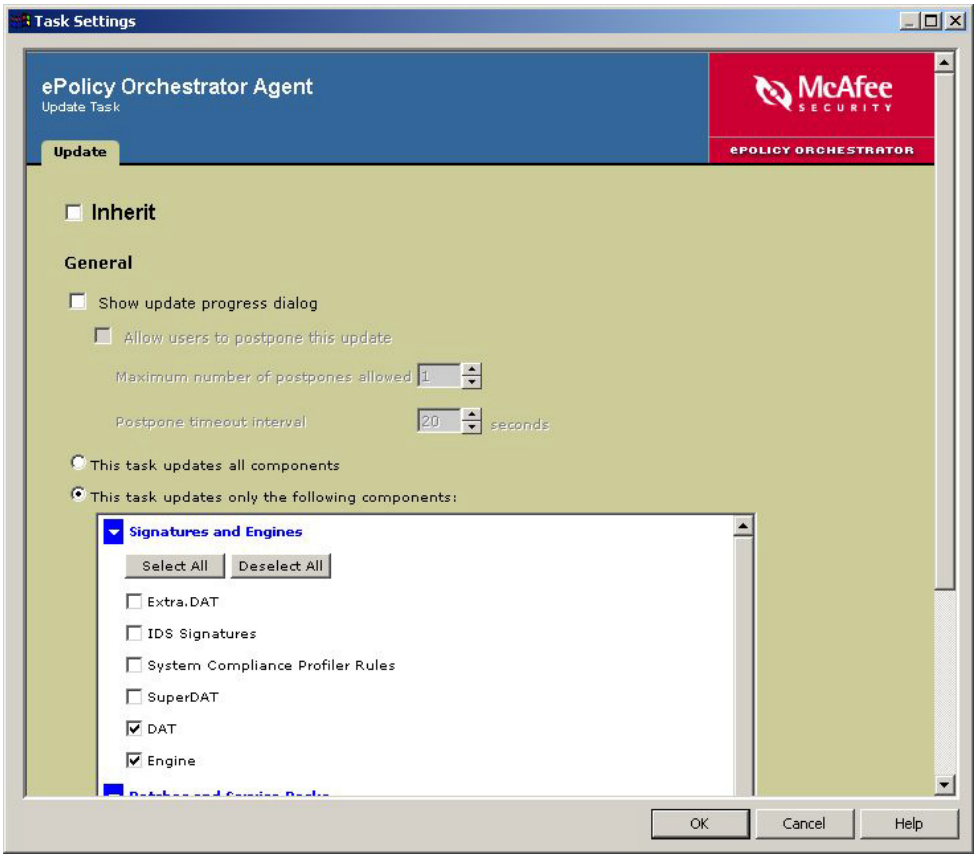
3. In the *Schedule Task* dialog box, type a name into the *New Task Name* field, such as Update Client DATs.



4. In the software list, select ePolicy Orchestrator Agent Update to create an update task for VirusScan Enterprise and click *OK*.
5. Press *F5* to refresh the console. The new task appears in the Task tab list. Right-click the new task in the task list and select *Edit Task*.



6. Deselect *Inherit* under the Schedule Settings section of the ePolicy Orchestrator Scheduler dialog box.
7. Select *Enable* (specified task runs at specified time). The task does not run unless first enabled here. Click *Settings* to configure task settings.
8. In the *Task Settings* dialog box for the agent update task, deselect *Inherit* to enable configuration options. Under Signatures and Engines, select *DAT* and *Engine*. Click *OK*.

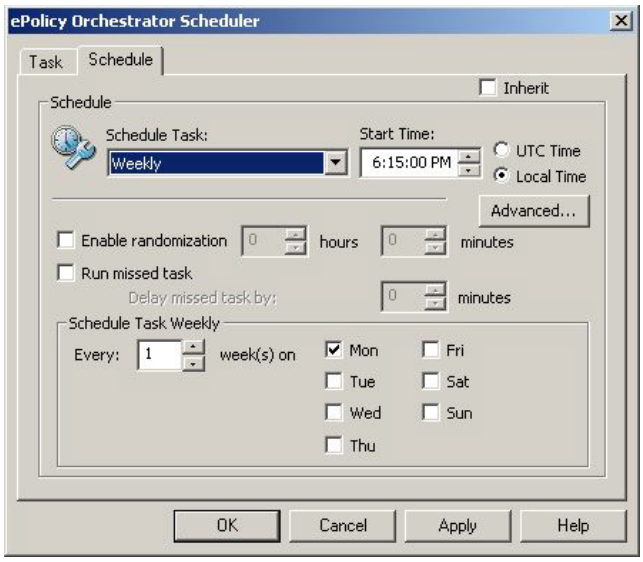


9. Click the *Schedule* tab and deselect *Inherit*. Set the Schedule Task option to *Weekly*.

   Select the day and Start Time.

10. Uncheck the Randomization options to force the server to push down the new definitions at the scheduled time. For large networks you can set up a wider maintenance window and randomize the updates.

11. In our example we set Deep Freeze Enterprise to have a maintenance window Monday through Friday from 6:00 pm to 8:00 pm. It is important to give the workstations enough time to reboot into the *Thawed* state. Fifteen minutes is sufficient.



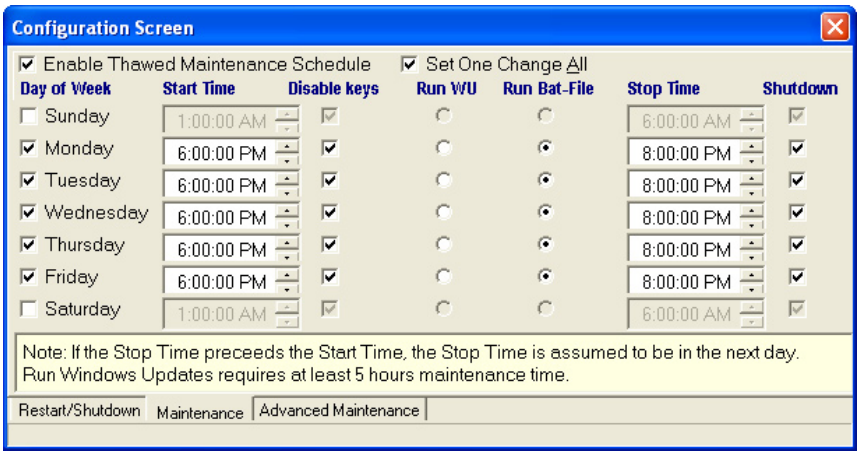
12. Click *OK* to close the ePolicy Orchestrator Scheduler. From now on, Deep Freeze Enterprise reboots the workstations into a Thawed state at 6:00 pm and the ePolicy Orchestrator updates the virus definitions at 6:15 pm.

13. The workstations then restart and return to a Frozen state at 8:00 pm.

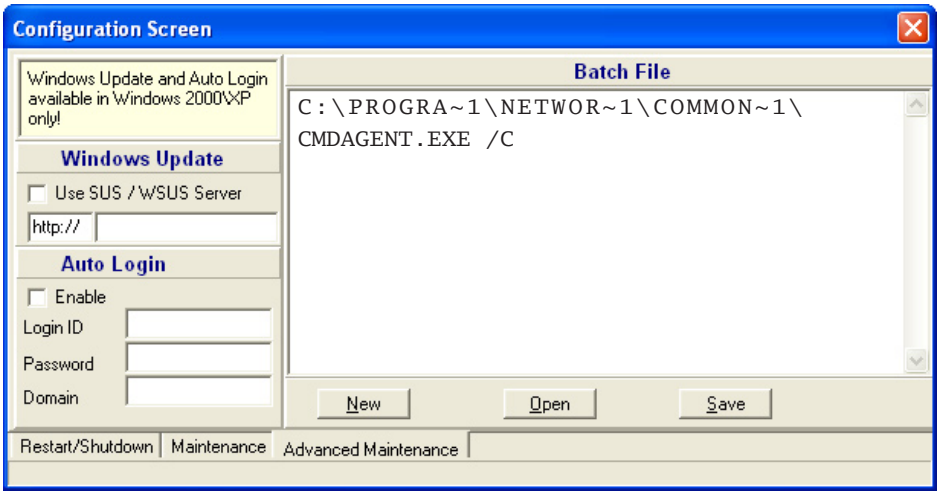
4) Configure Deep Freeze Enterprise to Run a Batch File That Updates the Virus Definitions

To configure Deep Freeze to run a batch file, complete the following steps:

1. Open the Deep Freeze Enterprise Console and follow the steps indicated on p. 4 to set up a Scheduled Maintenance Period.
2. Check on the *Run Bat* radio button to allow the workstations to run a batch file automatically during the Maintenance period.



3. Click on the *Advanced Maintenance* tab and enter the following line in the Batch File window;
   `C:\PROGRA~1\NETWOR~1\COMMON~1\CMDAGENT.EXE /C`

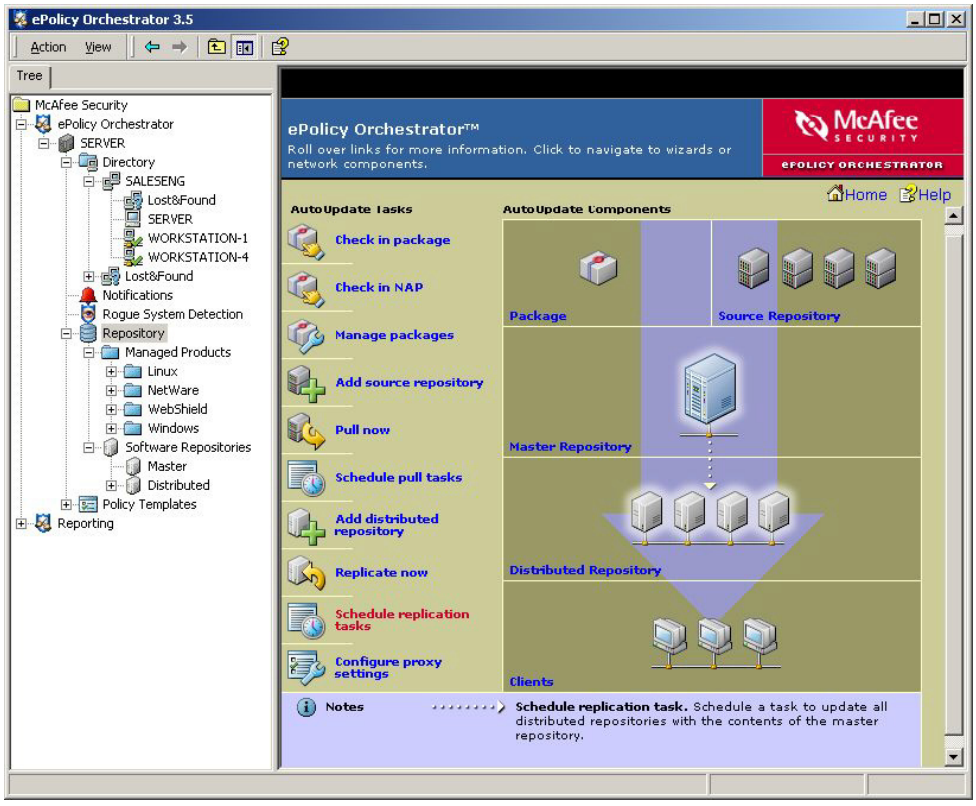


This command has the Agent contact the ePO server for new virus definitions, then installs them immediately upon receipt.

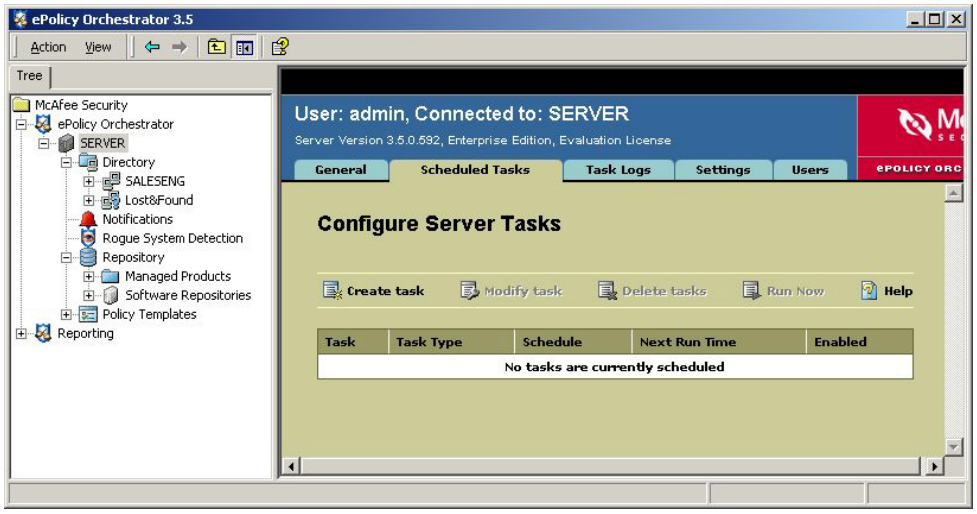
Scheduling a Regular Repository Pull Server Task

The procedure mentioned above updates the workstations with the latest DAT file available in the master repository. However, the next steps must be followed in order to keep the master repository updated.

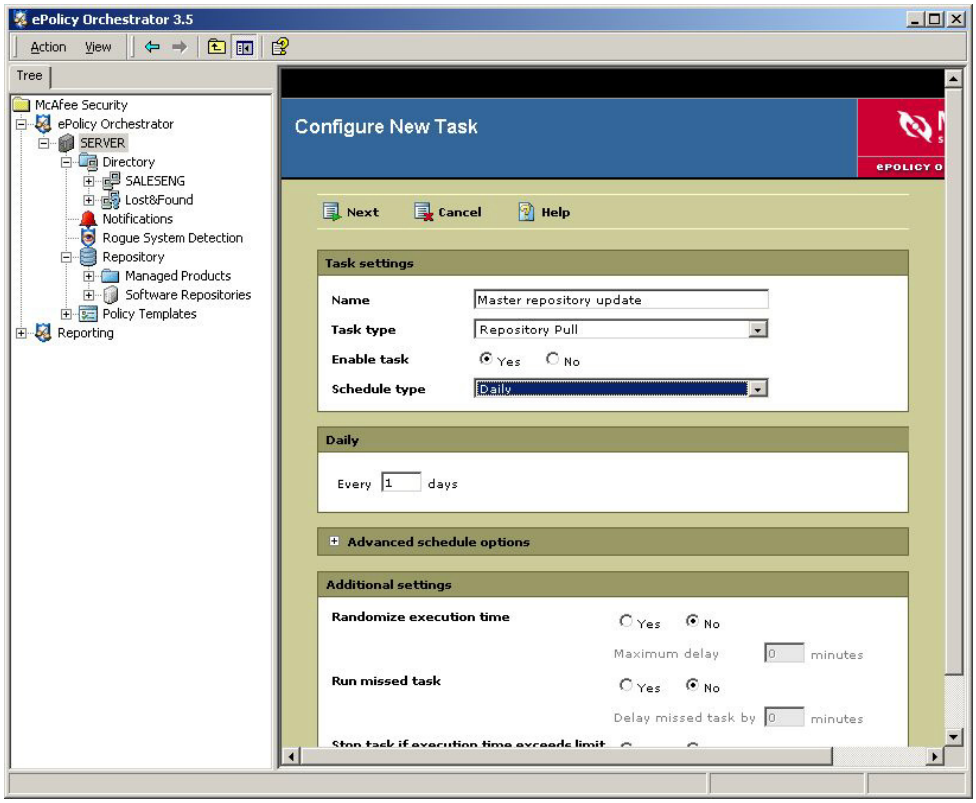
1. In the ePolicy Orchestrator console tree, select *Repository*.
2. In the Repository page, select *Schedule pull tasks* to open the Configure Server Tasks page.



3. Select *Create task.*

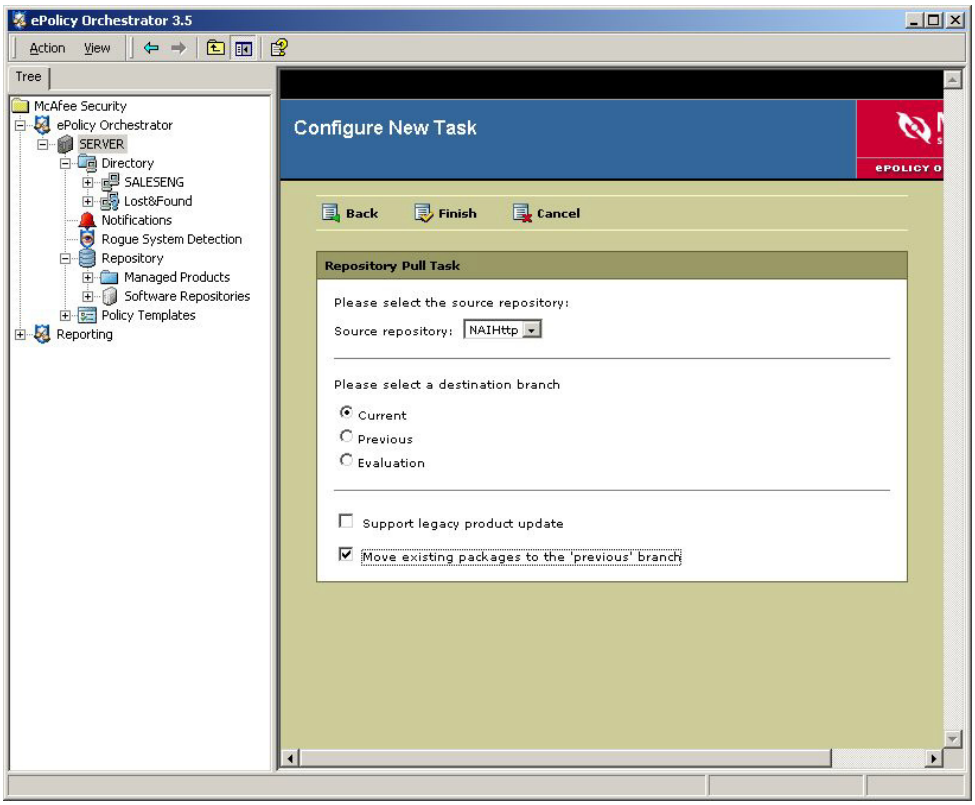


4. The *Configure New Task* wizard appears.



5. Under *Task Settings*, enter a description in the *Name* field, such as Master repository update.
6. Select *Repository Pull* from the Task type drop-down menu. Set *Enable task* to *Yes*.
7. The task will not run unless you enable it. Select the frequency from the Schedule Type drop-down list (in our example we set it to Daily).
8. Expand the *Advanced schedule options* and schedule the exact day and time for the task to run. Click *Next* at the top of the page.

9. Select the source repository from the Source repository drop-down list, which shows all source repositories you have created.
10. If you have not created any custom source repositories, the list shows the NAIHttp default source repository and also the NAIFtp default fallback repository. Select the repository branch.



11. Click *Finish*. Now, the master repository is updated on a daily basis.

5) Updating Virus Definitions via a Batch File in a Third-Party Desktop Management Solution

Virus definitions can be also updated running a batch file from a Desktop Management software such as Novell ZenWorks, Altiris, Microsoft SMS, BigFix, etc.

Add a task that runs the following batch file.

```
@ECHO OFF
\\SERVER\SHARE\FOLDER\DFC.EXE get /isfrozen
IF ERRORLEVEL 1 GOTO FROZEN
IF ERRORLEVEL 0 GOTO THAWED
ECHO Errors where encountered running the command line control on this
workstation.
:FROZEN
\\SERVER\SHARE\FOLDER\DFC.EXE password /bootthawed
GOTO END
:THAWED
REM ************************************************************************
C:\PROGRA~1\NETWOR~1\COMMON~1\CMDAGENT.EXE /C
REM ************************************************************************
\\SERVER\SHARE\FOLDER\DFC.EXE password /freezenextboot
REM Send commands to reboot the system.
REM For Windows 95/98/ME
RUNDLL32 SHELL32.DLL,SHExitWindowsEx 2
REM For Windows 2000 (may need to be called 2x)
RUNDLL32 USER32.DLL,ExitWindowsEx 2
RUNDLL32 USER32.DLL,ExitWindowsEx 2
REM For Windows XP
SHUTDOWN -s -t 01
GOTO END
:END
```

6) Mounted Hard Disks

This method does not involve setting the workstations into a Thawed state before pushing down the updates but rather mounting *Thawed* partitions so the virus definition updates can take place while the workstations are in the *Frozen* state.

Windows 2000 introduced the ability to mount a hard disk drive or partition to an empty folder on an existing hard disk drive instead of assigning a drive letter to that partition. This allows a drive to be accessed using a standard Windows path as opposed to the traditional drive letter. This allows users to expand the storage available in a specific directory simply by adding another hard disk and without having to change the directory structure of the hard disk or the location of saved data.

For example, if a user's workstation contains a large number of documents in the user profiles and the hard disk drive is filled, an administrator can add a second hard disk and move the user's data to that drive. The drive can be mounted with the user's data in the same location after the data has been moved, making the process transparent to the user.

Steps to Ensure a Successful Deployment

Ensure that the Windows 2000/XP system drive is using the NTFS file system. The ability to mount partitions as paths is not available with the FAT32 file system.

Ensure that adequate free space is available on the workstation's hard disk drive to accommodate the newly created partitions. The complete workstation image should be evaluated to determine what folders need to be recreated as drives on the workstation to allow the applications to function as required. Any application that is mounted as a drive can be damaged, uninstalled, or changed because the files located on the secondary partition are not protected by Deep Freeze.

Only directories that require being *Thawed* should be opened and only enough space for the applications to run properly should be freed. Leaving a large amount of free data space open could allow users to load files into the workstation or install applications that are unauthorized or unwanted. Steps can be taken to ensure that only administrators or authorized personnel can have access to modify the files contained in these partitions.

A combination of proper application of the Windows security policy and the use of NTFS file access rights can effectively protect the Thawed directory. For more information on Windows 2000/XP system and security policies, refer to the link below:

How to maintain Windows security: http://www.microsoft.com/windows/security/

Refer to your imaging solution documentation for information regarding imaging with mounted drives. Workstations should be imaged either in RAW format or in a sector by sector mode. (For example: using the -ID switch in Symantec Ghost).

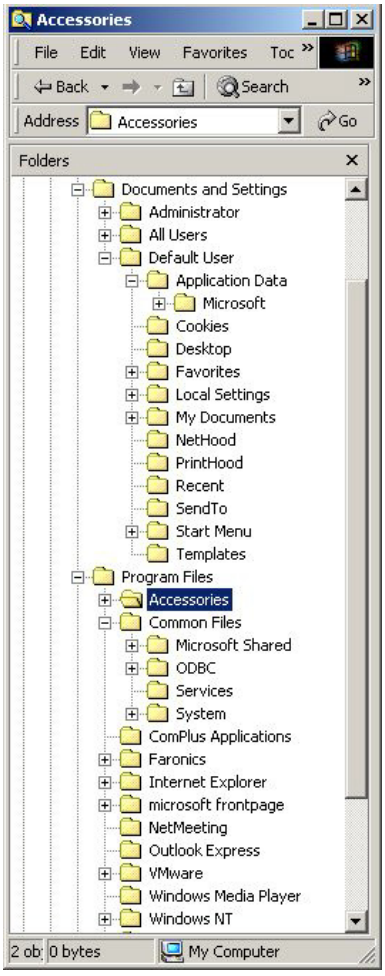
After all concerns have been addressed, the folders that need replacement are documented, and the size requirements of the partitions have been determined, a new master image can be created or an existing image can be modified.

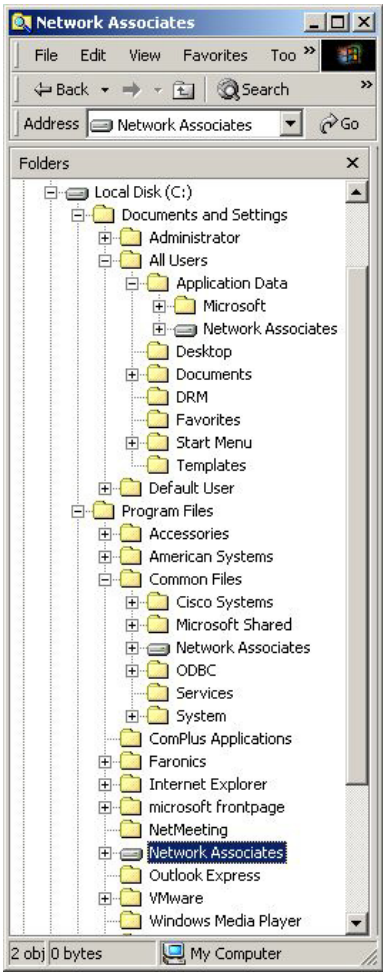
Preparing the Windows 2000 / XP Workstations for ePolicy Orchestrator Installation on Mounted Partitions

Some McAfee's ePO Antivirus scan engine updates may make modifications to the Windows Registry and, since this is protected by Deep Freeze, we strongly recommend that the following method be used just for virus definitions updates.

The following steps detail the procedure for installing common antivirus software on the workstations in a manner that allows automatic updates to proceed correctly.

Below are before and after screen shots of the installation of McAfee ePolicy Orchestrator using the default options:





The installation of ePolicy Orchestrator creates three new directories on the workstation:

C:\Documents and Settings\All Users\Application Data\Network Associates

C:\Program Files\Network Associates

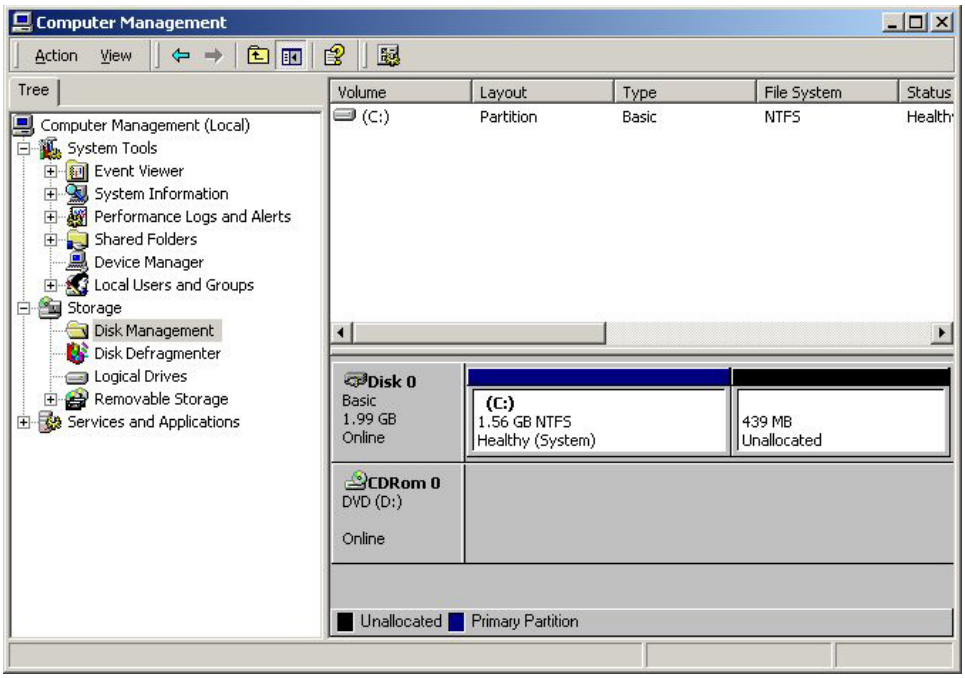
C:\Program Files\Common Files\Network Associates

To ensure that the application has the ability to apply full updates to the virus definitions and the scanning engine, these folders must be recreated as partitions, shown as follows:

Partition #	Name of Folder the Partition Replaces	Drive Size
1	C:\Documents and Settings\All Users\Application Data\Network Associates	50MB
2	C:\Program Files\Network Associates	50MB
3	C:\Program Files\Common Files\Network Associates	50MB

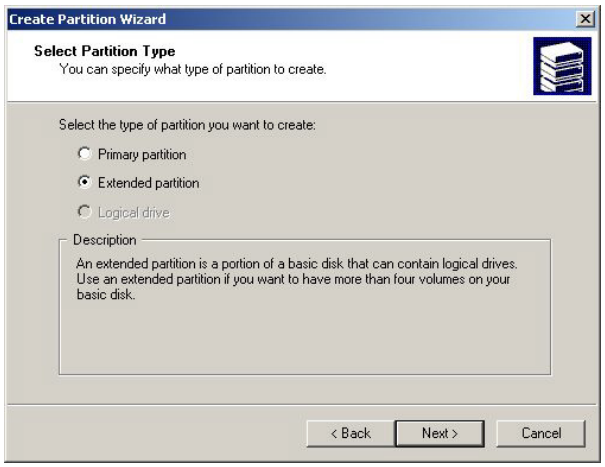
The size of the partitions has been selected to allow ePO enough room to be able to update the files that it uses. Because these are going to be moved to new drives, the size limit of 50MB per drive is enforced regardless of how much free space remains on the C:\ drive.

The first step in creating the additional partitions required is to create an extended partition that stores the additional partitions using the Disk Management feature of the Computer Management console. When the console is opened, the following image appears.



To create an extended partition Right-click on the unallocated space shown in the bottom of the screen and select *Create Partition*.

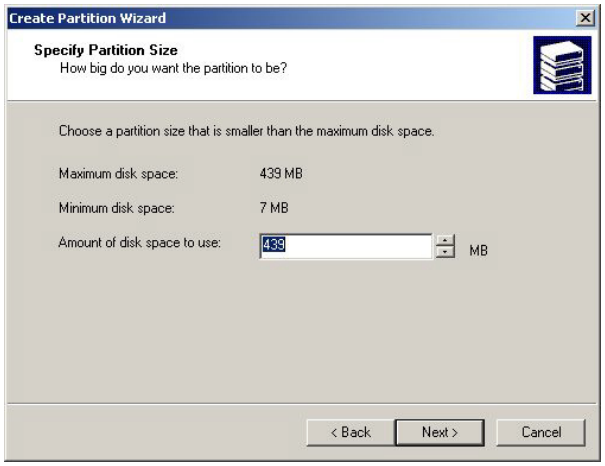
The following Wizard appears to assist in creating the partition.



The first screen of the wizard prompts for the type of partition required.

Extended partition should be checked because we are creating multiple small partitions and do not want to limit the number of partitions that can be created.

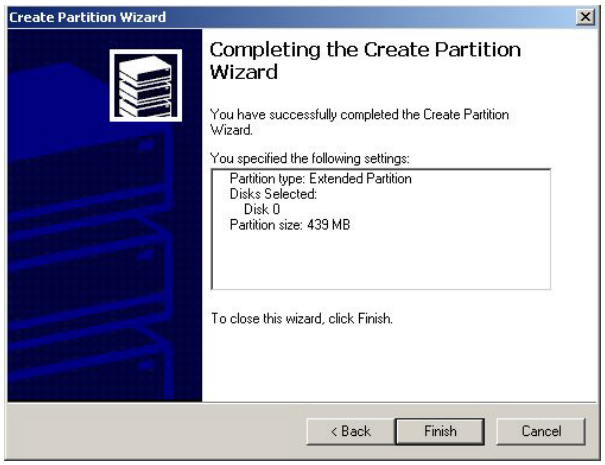
Click *Next*.



The next screen prompts for the size of partition to be created.

It is recommended that you configure all the disk space remaining on the drive at this time.

Click *Next*.

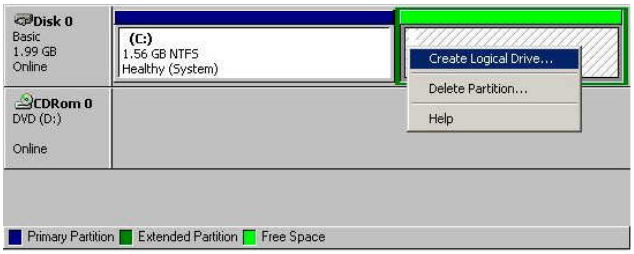


The last screen shows confirmation of the partition size and type once the partition has been successfully created.

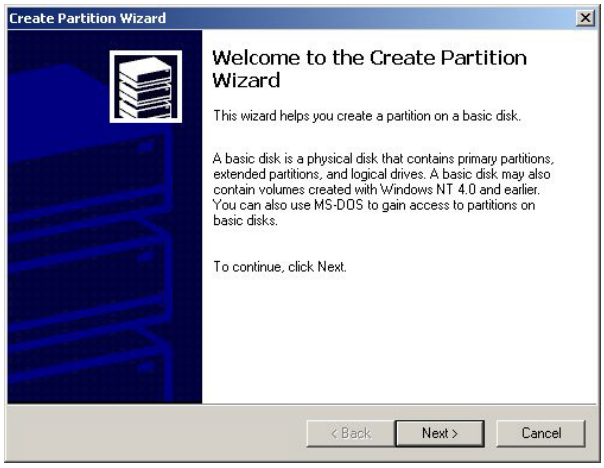
Click *Finish*.

Once the extended partition is created, the logical drives can be created and mounted on the empty folders that need to be created.

This can be done by right-clicking on the free space now present on the drive (as shown below) and selecting *Create Logical Drive*.

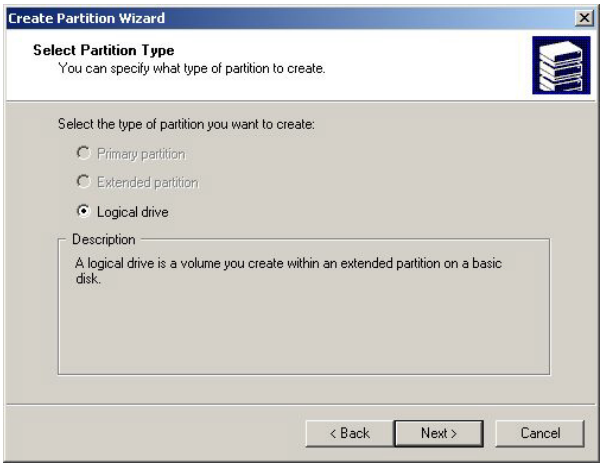


This opens the following wizard that sets the size and folder name of the new partition.



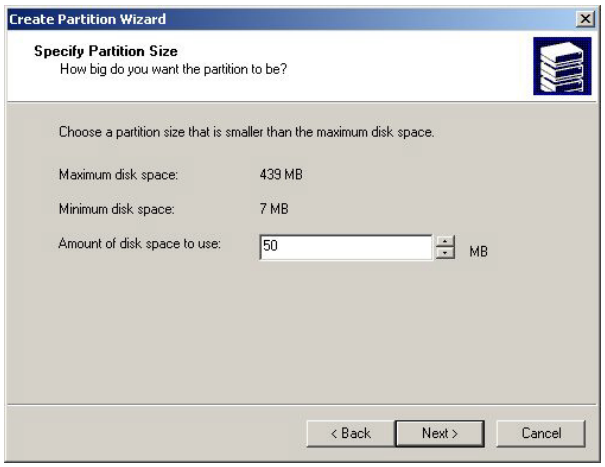
This is the first introduction screen.

Click *Next*.



The second screen should have the option to create a *Logical drive* selected.

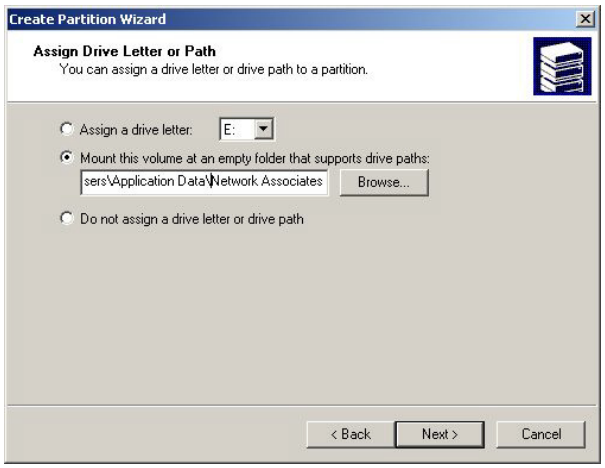
Click *Next*.



The next screen prompts for the size of partition to be created.

Specify enough size to allow for updates to the application to be applied, but not enough for the space to be used to install additional applications. In this example, a 50MB partition size is selected.

Click *Next*.

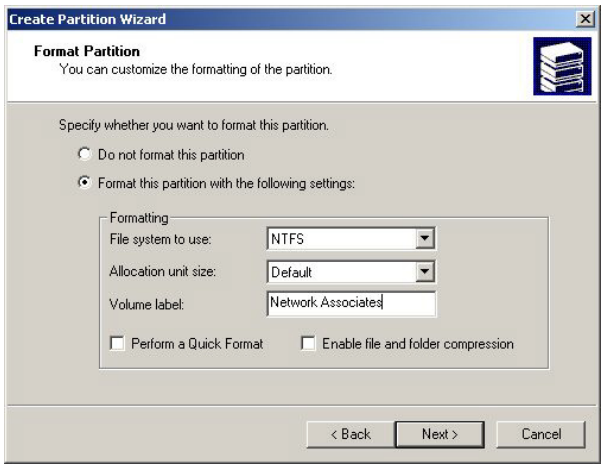


The next screen prompts for the drive letter or path of the new partition.

The option *Mount this volume at an empty folder that supports drive paths* should be selected.

The path the drive will be mounted to should be entered in the text field. In this case, the path is *C:\Program Files\Common Files\Network Associates*

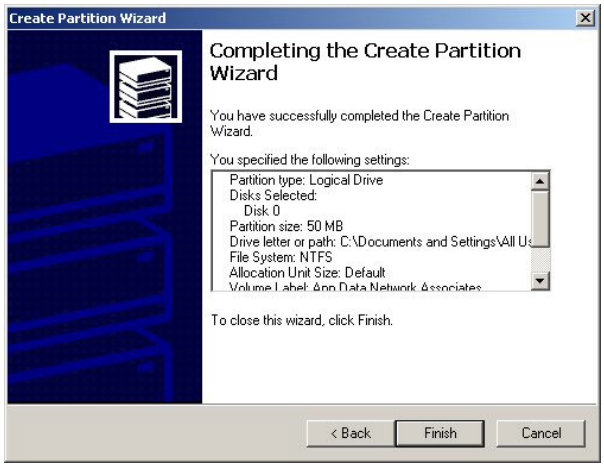
Click *Next*.



The next screen is used to specify the formatting options for the partition.

It is recommended to format the partition using the NTFS file system and to include a descriptive volume label to distinguish the partition from others that may exist.

Click *Next*.

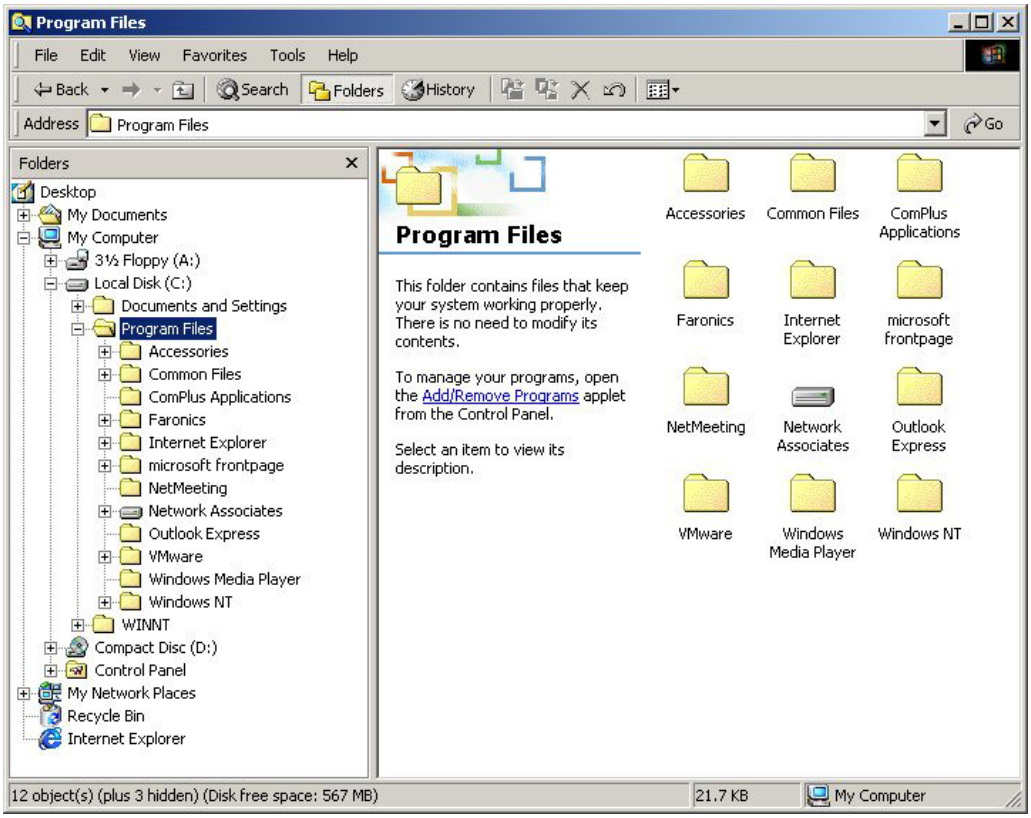


The last screen shows confirmation of the selected options once the partition has been successfully created.

Click *Finish* to exit the wizard and begin formatting the new drive.

The previous steps should be repeated for each directory that the application requires to be Thawed, substituting the appropriate names and volume sizes for each drive. After the drive has been successfully mounted as a path, a new icon appears representing the folder as a hard disk drive.

In the example below, the Network Associates folder is displayed as a small hard disk drive.



After all the appropriate drives have been created, ePolicy Orchestrator or other software should be installed normally using the manufacturer's installation program.

Refer to your imaging solution documentation for information regarding imaging with mounted drives. Workstations should be imaged either in RAW format or in a sector by sector mode. (For example: using the -ID switch in Symantec Ghost).