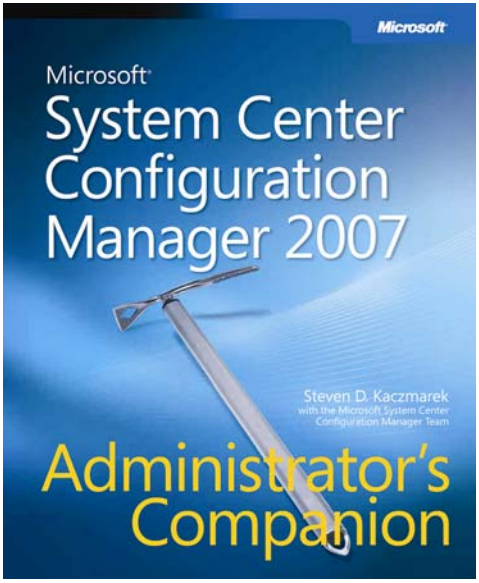

Microsoft® System Center Configuration Manager 2007 Administrator's Companion

Steven D. Kaczmarek with System Center Configuration Manager Team

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Distributing Software Packages

New apps transform you
As spring calls forth pink blossoms:
Software Distribution
~ Author Unknown

One of the primary features of System Center Configuration Manager 2007 is its ability to distribute packages to, and run programs on, Configuration Manager client computers. This process consists of three main elements:

- Creating and distributing the package
- Advertising a package program to a collection
- Receiving the advertisement and executing the program on a client

The package distribution process is the focus of this chapter. First, some terms are defined and just what Configuration Manager does throughout the distribution process is outlined. Then you'll explore the administrative tasks involved in the creation of packages and advertisements. Finally, you learn how to monitor status messages and log files for the appropriate Configuration Manager components involved and how to test the package and its programs to ensure that they execute properly on the target clients.

Defining Package Distribution

Somehow, Configuration Manager administrators and users often misunderstand or mislabel the package distribution process. It's important to remember that Configuration Manager is fundamentally a package delivery tool. Basically, Configuration Manager is designed to make a package that you create available to a specified target or targets. The key here is that you are responsible for creating the package. You're also responsible for ensuring that the package will execute as intended when it reaches its target. Configuration Manager will get it there for you, but Configuration Manager won't correct errors for you—nor should you expect it to.

Look at it this way: suppose you send a bicycle to your nephew. You box up the parts carefully, including instructions on how to assemble it, go to your nearest package delivery service office, fill out the appropriate forms, pay the appropriate fees, and hand over the box. The responsibility of the package delivery service now is to get the box containing the bicycle to your nephew's house within the time frame you specified and paid for. When the package arrives at your nephew's house, he opens the package, reads the instructions, and assembles the bicycle. The extent to which your nephew is successful depends on how accurate and easy to understand the instructions are.

Configuration Manager works in much the same way. You, the Configuration Manager administrator, are responsible for creating the package and ensuring that all the appropriate pieces are assembled: source files, scripts, executables, command switches, and so on. You identify where the package must go and who should receive it. Configuration Manager carries out your instructions and even "opens" the package when it arrives at the target. However, the package's ability to execute—or the user's ability to use the application, for that matter—isn't Configuration Manager's responsibility.

Understanding Package Distribution Terminology

This description of the basic package distribution process uses some terms with which you're probably familiar. Take a moment here to review these terms in more detail.

A Configuration Manager *package* generally represents a software application that needs to be installed on a Configuration Manager client computer. However, a package might also contain update programs or software patches, single files such as a virus update file, or no files at all—just a command to execute a program already resident on the client. You need to identify to Configuration Manager exactly what the package consists of.

Every package must contain at least one program. A Configuration Manager *program* identifies what should occur on the client when the package is received. Perhaps a setup

routine is executed, or a virus scan is performed, or a file is copied to a particular directory. Perhaps the user needs to supply information such as the program directory, or perhaps no user intervention is required at all. A package may have several programs associated with it, allowing the application to be run in a variety of ways on different clients. Consider a Microsoft Office installation. You can choose to perform one of several types of software installation, including Typical, Custom, or Laptop installation. If this software were a Configuration Manager package—and it could be—you would have to include a program for each of these installation methods if you intended to use them. Once again, you must define the program to Configuration Manager and include any and all appropriate references to script files or command switches. The program also defines the platform and environment within which the package can run. For example, can the package run on any platform or only on Microsoft Windows XP computers with Service Pack 2 installed? Can the program be executed by any user, or can it run only in an administrator context?

Some applications include predefined scripts called package definition files that can be used with Configuration Manager. Package definition files contain all the package and program information required for Configuration Manager to successfully distribute the package and, usually, to deploy it. Package definition files are often included with the application's source file, or they can be obtained from the developer. You can also create package definition files using various tools and utilities from Microsoft. Package definition files are covered later in this chapter in the section "Creating a Package from a Definition File."

An *advertisement* makes the program and package available to a specified collection. Recall from Chapter 9, "Defining Collections," that collections can contain not only Configuration Manager client computers but also Windows users and groups. This means that a program can be advertised to clients as well as to users and groups. So before you create the advertisement, you need to create the appropriate collections.

Advertisements are often used to schedule when a program runs and to specify whether the user can reschedule the program. Advertisements can also be configured to recur—that is, to make a program available on a recurring basis. For example, if you distribute an application update file on a monthly basis, you might create an application update package and program and then an advertisement that makes the application update file available on a monthly basis.

The Advertised Programs Client Agent is installed on the Configuration Manager client when you first install the client and assign it to a site. As with other client agents, this agent is optional, and the Configuration Manager administrator must configure and enable it. The Advertised Programs Client Agent's job is to monitor for available advertised programs that target the client or the user at the client. When an advertisement is

found and the program is ready to be run, the agent connects to an available distribution point—as defined in the package details—to execute the program. If the program runs an existing file on the client, the agent executes the program appropriately.

Two Configuration Manager site systems, management points and distribution points, in addition to the site server, are involved in the package distribution process. The management point is always the point of interchange between the site server and Configuration Manager clients. In this exchange, package detail information and advertisements are copied as a policy to the management point for propagation to the client. The actual source files that constitute the package are copied to distribution points. Before you can distribute any packages, you need to have an assigned management point and at least one distribution point. Remember that the site server becomes a distribution point by default when you install Configuration Manager. Remember, too, that you can have only one management point defined per site. (The role of site systems and how they're assigned is discussed in Chapter 3, "Configuring Site Server Properties and Deploying Site Systems.")

Preparing for Package Distribution

As you can see from the previous section, many components are involved in package distribution. Before continuing the discussion of package distribution, look at the following list of actions required for the distribution process:

- Define your distribution points for the package.
- Create appropriate collections.
- Gather all source files, setup routines, scripts, and so on, needed for the package.
- Create the Configuration Manager package.
- Define at least one program for the package.
- Distribute the package to the distribution points.
- Advertise the programs to one or more collections.
- Execute the advertised program on the client.

After reviewing these elements of the distribution process, you'll have a solid foundation on which to build. The following sections of this chapter cover how to configure various components for package distribution.

Creating Packages for Distribution

Now you can delve into the package distribution process in more detail, beginning with package creation itself. This section explores the package creation process, including identifying distribution points and creating programs.

Gathering Source Files

If your package involves the accessing of source files, such as performing a software installation, you must define a location for the source files. The location can be a shared folder on the site server or on a remote server, including a CD-ROM drive. The most important characteristic of the source file location is that it must be accessible to the Configuration Manager site server using the site server's computer account. If your program involves using a script file or files, be sure to include them as part of your source files as well or the program will fail.

Creating a Package from Scratch

As in all things Configuration Manager, you begin in the Configuration Manager console. You can create a package either from scratch—one for which you provide all the configuration details—or from a package definition file that already contains all the package details. This section looks at creating a package from scratch.

To create a package from the ground up, follow these steps:

1. Navigate to the Computer Management\Software Distribution\Packages folder, right-click it, choose New from the context menu, and then choose Package to run the New Package Wizard, as shown in Figure 11-1.

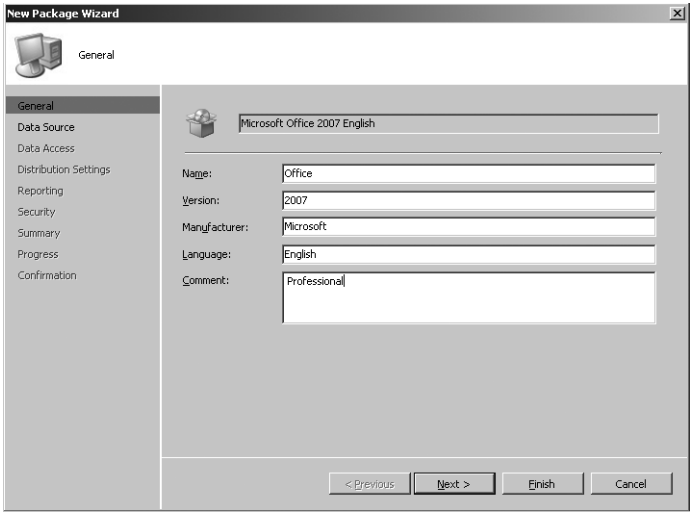

Figure 11-1 The New Package Wizard General page

2. On the General page, type the name of the package, its version, its publisher, its language, and a descriptive comment if desired. The only required value here is Name. Notice that the full package name is displayed in the text box at the top of the screen.

3. Click Next to display the Data Source page, as shown in Figure 11-2. This page lets you define details concerning the source files for the package. If the package contains source files—even a single file—select the This Package Contains Source Files check box to enable the options in the Source Directory frame.

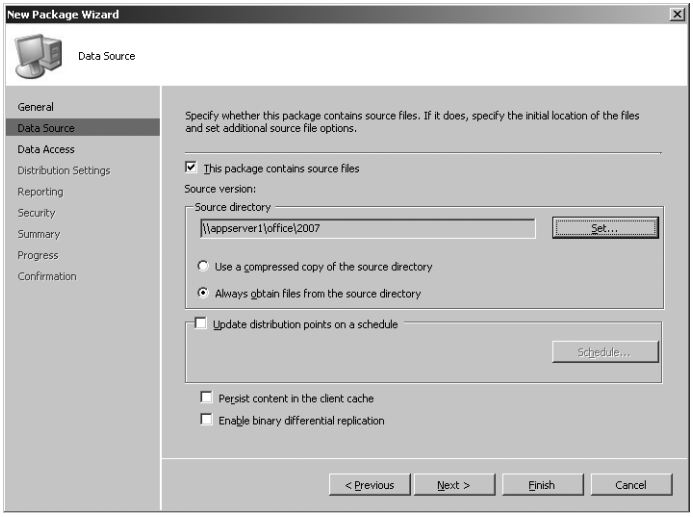

Figure 11-2 The Data Source page

4. Click Set to display the Set Source Directory dialog box, as shown in Figure 11-3. In this dialog box, you define the location of the source files. The location can be either a local drive path on the site server or a Universal Naming Convention (UNC) path to a remote share. Type the location or click Browse to look for the directory. Then click OK to return to the Data Source tab.

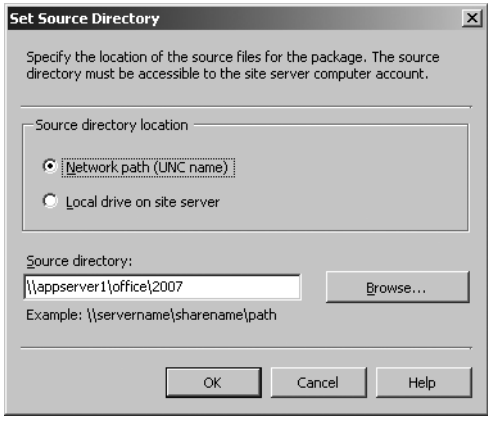

Figure 11-3 The Set Source Directory dialog box

If your source files aren't likely to change or are on a removable medium such as a CD-ROM, or if the source path is likely to change, select the Use A Compressed Copy Of The Source Directory option. This option causes Configuration Manager to create and store a compressed version of the source files on the site server. When the package needs to be sent to a new distribution point or updated on existing distribution points, Configuration Manager will access the compressed files, uncompress them, and send them to the distribution points.

If your source files are likely to change periodically—for example, if they include a monthly update file—select Always Obtain Files From The Source Directory. Selecting this option also allows you to select the Update Distribution Points On A Schedule check box. Setting an update schedule ensures that as the source files change, the distribution points will be updated regularly.

Select the option Persist Content In The Client Cache if you want the package content to remain cached on the target client computer indefinitely. By default, the client cache is adjusted as new programs become available for download. Older programs can be deleted to make room for new programs. Selecting this option might prevent programs from being downloaded to the client computer, especially if there is not enough available space left in the cache.

The Enable Binary Differential Replication option allows binary delta comparison for source files that have changed for this package. This means that if a source file changes, only the parts of the file that have changed are distributed rather than the entire file. This can result in performance and bandwidth savings.

5. Click Next to display the Data Access page, as shown in Figure 11-4. The Data Access page defines how Configuration Manager will store the package source files on distribution points. The default setting is Access The Distribution Folder Through Common ConfigMgr Package Share. With this setting, Configuration Manager will define a shared folder on the distribution points and place the source files in a folder in that share. If you create a new distribution point, the share will always be SMSPKGx$, where *x* represents the drive with the most free disk space. This share is a hidden share to keep prying eyes from browsing for it. When Configuration Manager runs out of disk space, it finds the next drive with the most free space and creates an additional SMSPKG*x*$ directory and share there.

   If you prefer to create your own folder organization and access shares, you may do so first and then reference the share by selecting the Share The Distribution Folder option and typing the UNC path to the share. This value can be a share or a share and a path, but whatever value you enter must be unique among all packages. Also, the share and

path must already exist on every distribution point that you target. If you type only a share name (in the form *server**appshare*), any file or subfolders created within the share will be deleted and re-created whenever the package is updated or refreshed. If you type a share that includes a path (*server**appshare**word*), only the down-level folder will be deleted and re-created.

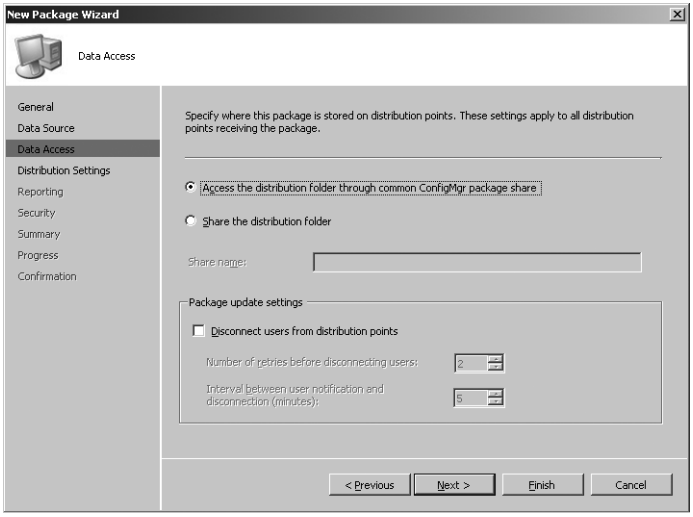

Figure 11-4 The Data Access page

Select Disconnect Users From Distribution Points to do just that. If you want to ensure that no users are connected to the package folder on the distribution points when files are being refreshed or updated, this option will cause Configuration Manager to inform users that they will be disconnected. Users will be disconnected after the time period you specify in the User Grace Period text box. The default value is 5 minutes, but you can specify from 0 to 59 minutes. The Number Of Retries Before Disconnecting Users option indicates how many times Configuration Manager will attempt to refresh the distribution points before disconnecting users. This value can range from 0 to 99.

6. Click Next to display the Distribution Settings page, as shown in Figure 11-5. On this page, you identify the sending priority and preferred sender to use when sending this package to distribution points in a child site. If you have no child sites, these settings will have no effect. (Refer to Chapter 4, "Implementing Multiple-Site Structures," for a discussion of parent-child relationships and the role of the sender in transferring information between sites in the hierarchy.)

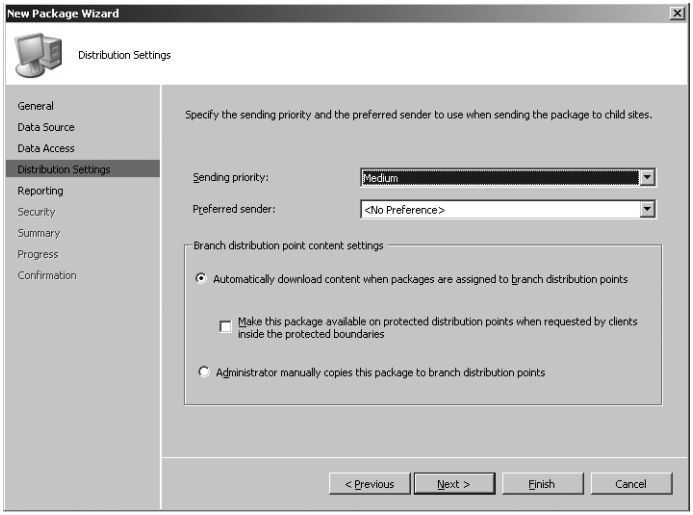

Figure 11-5 The Distribution Settings page

7. There are two main options available in the Branch Distribution Point Content Settings section. Branch distribution points are discussed in more detail later in this chapter. The Automatically Download Content When Packages Are Assigned To Branch Distribution Points option is selected by default and ensures that the package content (source files, and so on) are copied to any branch distribution points you specify. With this default option selected, you can also enable the Make This Package Available On Protected Distribution Points When Requested By Clients Inside The Protected Boundaries option. That's a long option name! What it means, essentially, is you can configure boundaries that a client must be in to use a protected distribution point. Clients outside the boundaries are unable to download or run packages from the protected distribution point. If a client is in the designated boundaries and can access a branch distribution point that has not already been designated as a distribution point for the package, selecting this option ensures that the package will be downloaded to the branch distribution point for that client to access.

   Because a branch distribution point might be a desktop computer in a remote location, you might prefer to manually copy the source files to that computer; for example, after business hours. In this case, select the Administrator Manually Copies This Package To Branch Distribution Points option.

8. Click Next to display the Reporting page, as shown in Figure 11-6. This page lets you identify how Configuration Manager reports installation status Management

Information Format (MIF) files from the client when the package is run. Select Use Package Properties For Status MIF Matching to simply use the values you supplied on the General page to identify status MIF files generated during installation. Or select Use These Fields For Status MIF Matching and fill in the fields if you want to specify different values for reporting purposes.

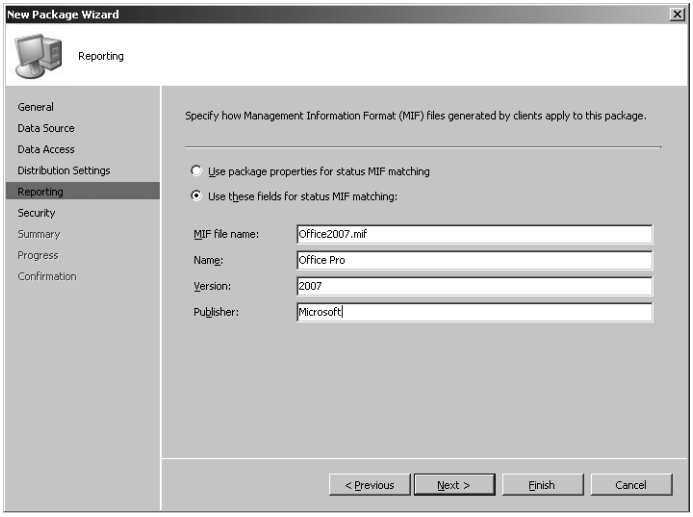

Figure 11-6 The Reporting page

9. Click Next to display the Security tab to set class and instance security rights for the package. This type of security is discussed in Chapter 20, "Configuration Manager 2007 Security."

10. Click Next to view and review details on the Summary page, and then click Next again to begin the package creation process. Click Close on the Confirmation page to close the wizard.

You haven't quite finished creating this package. If you expand the new package entry you just created in the Configuration Manager console, as in the example shown in Figure 11-7, you'll see that three areas of configuration remain. The first area, defining access accounts, allows you to further secure who has access to the distribution source files. The other two areas are absolutely essential to the successful distribution of the package: defining distribution points, without which the client has no access to the source files; and defining programs, which specifies how to install or run the source files. Configure the access account first.

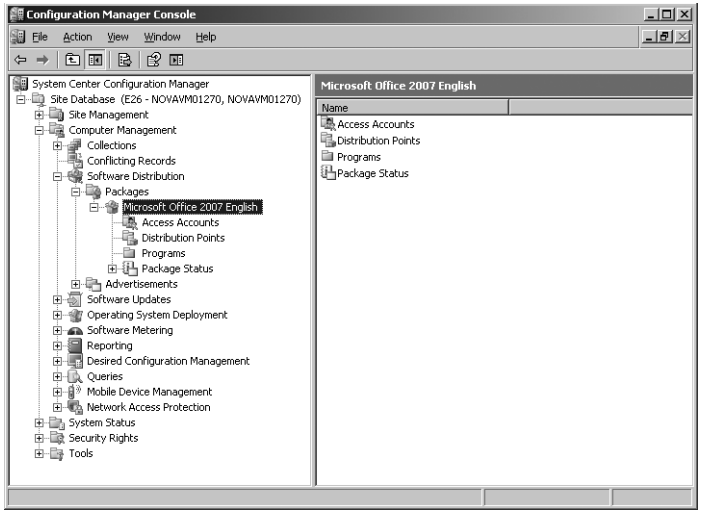

Figure 11-7 A sample expanded package entry

Defining Access Accounts

By default, when Configuration Manager creates the SMSPKGx$ share, it grants Read access to the local Users group and Full Control to the Administrators group. The default Users and Administrators entries map to the local Users and Administrators groups for Windows distribution points. These accounts are known as generic access accounts.

Because the default share is a hidden share, the only way a client should know that a package is available to it is through the package distribution process. In other words, the client agent will see an advertisement for that package that targets a collection of which the client is a member. Bear in mind that users will be users, and it's possible that they will find the hidden share, navigate to a package folder, and execute any programs they find there. This could also happen if you create your own shares.

There are a couple of ways to deal with this little breach of security. One is for you to evaluate the share (or NT file system [NTFS]) security for the Configuration Manager shares or for the package folders within the share. This is a time-consuming and potentially destructive process if you happen to lock out Configuration Manager from accessing the share. The other solution is to define access accounts for the package through the Configuration Manager console. When you define an access account, you also define the level of access or permission for the specified user or group. This is much like creating access control lists (ACLs) in Windows.

To define an access account, follow these steps:

1. Navigate to the Packages folder, find your package entry, and expand it.
2. Right-click Access Accounts, choose New from the context menu, and then choose the type of access account you want to create.
3. The two types of access accounts are listed here:
   - **Windows User Access Account** Defines a Windows user or group account and the level of permission allowed for that account.
   - **Generic Access Account** Defines additional or replacement user, guest, or administrator accounts and the level of permission to all for those accounts. This account type maps to an operating system-specific account.

   Select the appropriate option to display the New Generic Access Account Properties dialog box or Windows Access Account Properties dialog box. The New Windows User Access Account properties dialog box is shown in Figure 11-8.

Figure 11-8 The New Windows User Access Account properties dialog box

4. Click Set to specify the account information as follows:
   - For a Windows user account, the Windows User Account dialog box will appear, as shown in Figure 11-9. Type the user or group account in \Domain\user format and select User or Group.

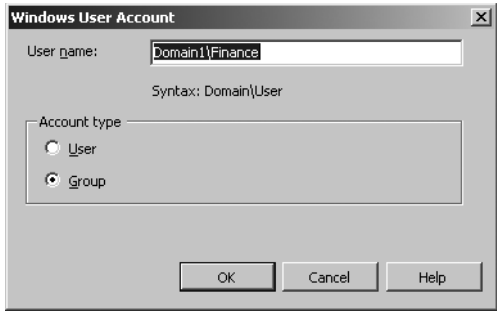

Figure 11-9 The Windows User Account dialog box

- For a Generic account, the Generic Account dialog box will appear, as shown in Figure 11-10. Select the account type.

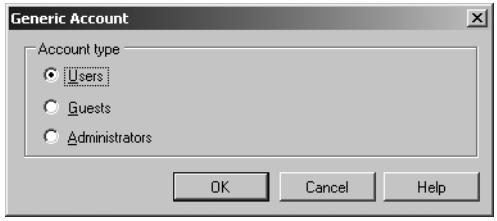

Figure 11-10 The Generic Account dialog box

5. Click OK to return to the Access Account Properties dialog box. Select the appropriate level of permissions from the Permissions drop-down list. For most applications, Read permission is sufficient. However, if the program requires any kind of writing back to the source directory, you need to assign at least Change permission.
6. Click OK to create the account.

Defining Distribution Points

An essential configuration detail for any package that contains source files is identifying the distribution points on which the package can be found. You should have already assigned the distribution point role to one or more site systems in your Configuration Manager site, as well as at any child sites. You now need to tell Configuration Manager which of those distribution points will host the package.

Note If you're distributing the package to a child site, even if the Configuration Manager administrator for that site will ultimately distribute the package to its clients, you still must identify at least one distribution point at that child site when you create the package.

To define distribution points, follow these steps:

1. Navigate to the Packages folder, find your package entry, and expand it.
2. Right-click Distribution Points, and choose New Distribution Points from the context menu to run the New Distribution Points Wizard, as shown in Figure 11-11.

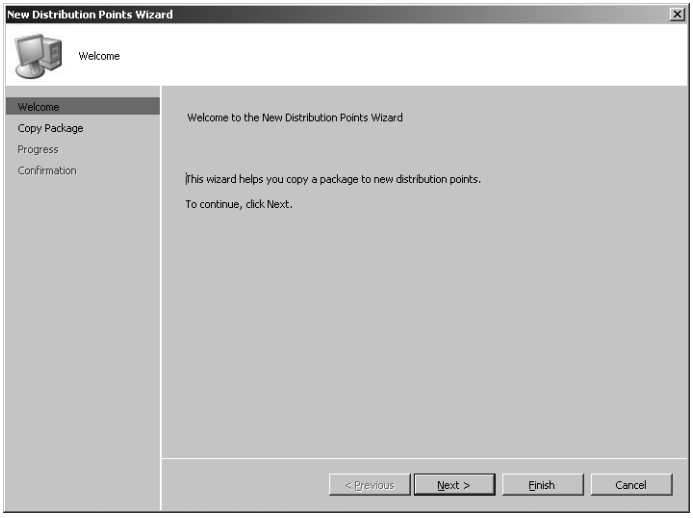

Figure 11-11 The New Distribution Points Wizard Welcome page

3. Click Next to display the Copy Package page, as shown in Figure 11-12. This page shows a list of available distribution points. Scroll through the list and select the distribution points you want.
4. Click Select Group to open the Browse Distribution Point Group dialog box, as shown in Figure 11-13. Here you can view a list of distribution point groups and their member site systems. If you select one of the distribution point groups and click OK, all the site systems that are members of that group will be selected in the Copy Package page.

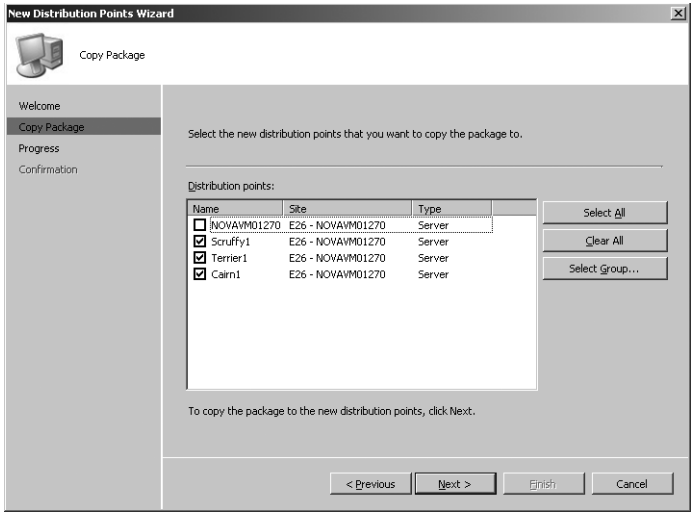

Figure 11-12 The Copy Package page

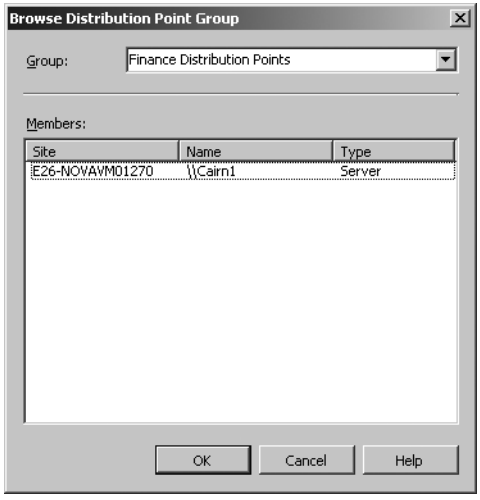

Figure 11-13 The Browse Distribution Point Group dialog box

5. Click Next to add the distribution points you selected to the package details, and then click Close to exit the wizard.

After you add a distribution point to the package, that distribution point no longer appears in the list of available distribution points if you run the New Distribution Points Wizard again. The wizard displays only distribution points that are available. If you need to remove a distribution point from the package, select it, right-click it, and choose Delete

from the context menu. When you delete a distribution point, you also delete the package source directory on that distribution point.

It's often desirable to group distribution points so that packages can be distributed to them as a block rather than having to name the distribution points individually. Distribution point groups are defined through the site settings of your site—in the same place that you assign the distribution point role.

To define a distribution point group, follow these steps:

1. In the Configuration Manager console, navigate to the Site Settings\Site Systems folder and expand it.
2. In the left pane, select the site system assigned with the distribution point role that you want to add to a distribution group.
3. In the Details pane, right-click the distribution point role and choose Properties from the context menu to display the ConfigMgr Distribution Point Properties dialog box, as shown in Figure 11-14.

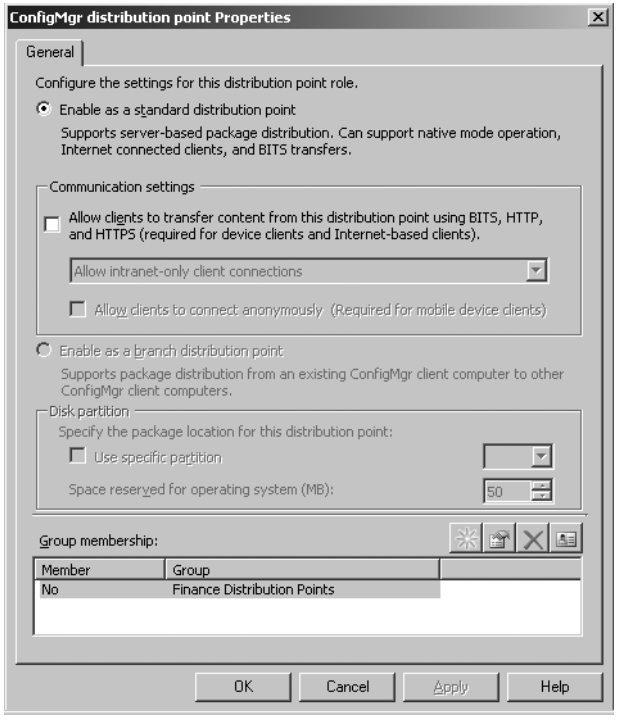

Figure 11-14 The ConfigMgr Distribution Point Properties dialog box

4. To add a new distribution point group, in the Group Membership section click the New button (the yellow star) to display the Distribution Point Group dialog box, as shown in Figure 11-15. Type the name of the group and indicate whether this site system is to be a member of the distribution point group. Then click OK to return to the ConfigMgr Distribution Point Properties dialog box.

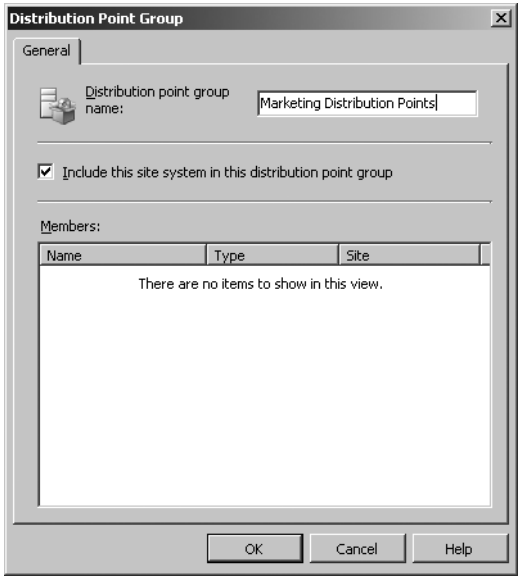

Figure 11-15 The Distribution Point Group dialog box

5. Repeat steps 2 through 4 to select the next site system you want to include in the distribution point group. Notice that any distribution point groups you have created are listed in the ConfigMgr Distribution Point Properties dialog box for each site system, as shown in Figure 11-16.

6. Select the distribution point group that this site system should be a member of and click the Properties button (the hand holding a piece of paper) to display the Distribution Point Group Properties dialog box, as shown in Figure 11-17. Select the Include This Site System In This Distribution Point Group check box and then click OK to return to the Distribution Point tab. The site system now shows that it's a member of the distribution point group, as shown in Figure 11-18. Click OK again.

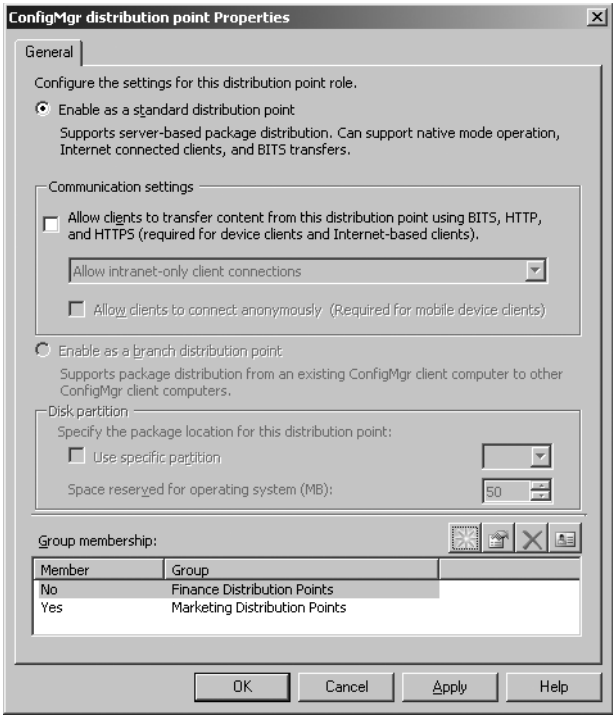

Figure 11-16 The updated Group Membership list in the ConfigMgr Distribution Point Properties dialog box

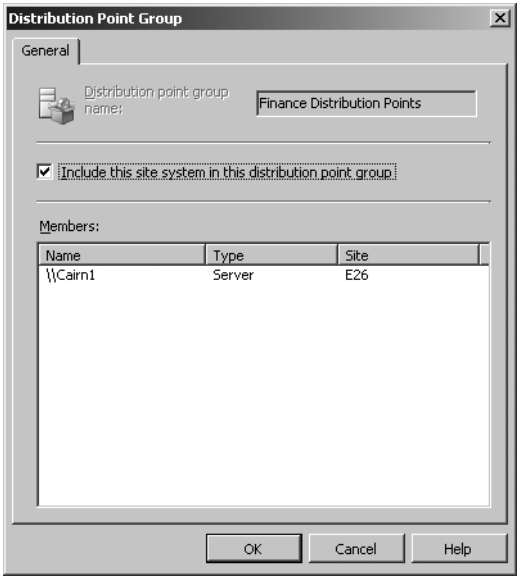

Figure 11-17 The updated Distribution Point Group dialog box

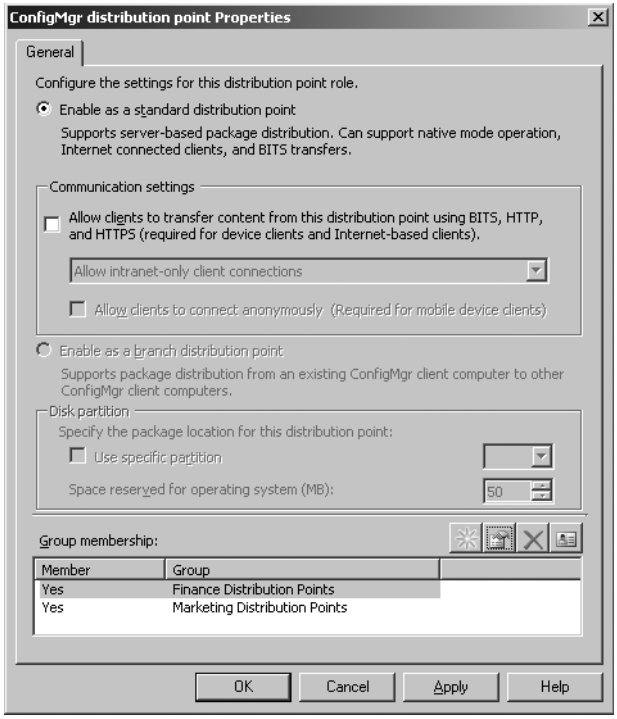

Figure 11-18 The updated ConfigMgr Distribution Point Properties dialog box

7. Repeat step 5 for every site system that needs to be a member of a distribution point group.

If you need to remove a site system from a distribution point group, simply repeat this procedure, but clear the Include This Site System In This Distribution Point Group check box. If you need to remove a distribution point group altogether, select any site system and open its ConfigMgr Distribution Point Properties, as described earlier. Select the distribution point group in the Group Membership list and click the Delete button (the red X).

Creating Programs

Finally, it's necessary to create at least one program for each package. This program specifies how the package is to be executed at the client. Many packages can have more than one program associated with them. For example, a package might have different installation methods such as Custom, Typical, Unattended, and Manual. This is where you really have to know your package. The command-line information you provide here will either make or break the package when it's run on the client. You can create programs for managed devices as well as managed computers.

To create a program, follow these steps:

1. Navigate to the Packages folder, find your package entry, and expand it.
2. Right-click Programs, choose New from the context menu, and then choose Program to display the General page of the New Program Wizard, as shown in Figure 11-19.

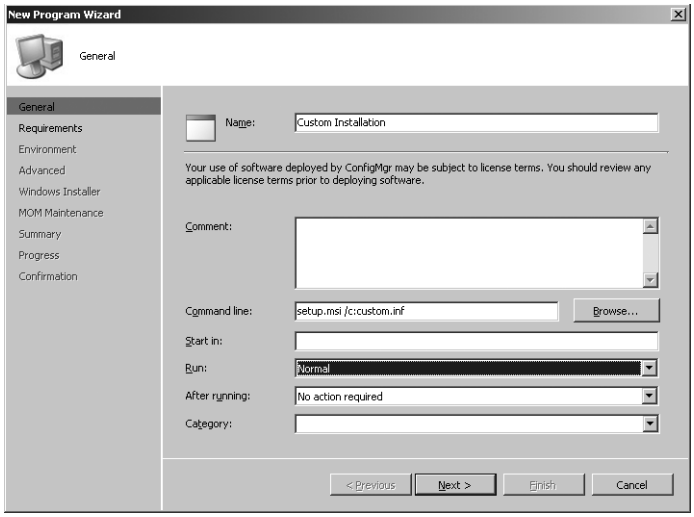

Figure 11-19 The General page of the New Program Wizard

3. On the General page, type a descriptive name for the program—for example, Custom Installation or Unattended Installation. Type additional descriptive information in the Comment text box.

   In the Command Line text box, type the command that should be executed at the client. For example, this could be a Setup.exe file, a batch file, or an .msi file; however, you must include any and all command-line arguments required for successful execution. For example, if you run the Setup program, which uses a script file called Custom.inf, and the Setup program invokes this script file through a "/c" command-line switch, you must type the full command as it references the script: `setup.msi /c:custom.inf`.

   In the Start In text box, type the name and path of the directory in which you want the program to start. This field is optional, and by default the distribution folder on the distribution point is used.

From the Run drop-down list, select an option—Normal, Minimized, Maximized, or Hidden—to specify how the program will be displayed to the user. Hidden means that nothing will be displayed; this option is best used with fully unattended, or silent, installations.

From the After Running drop-down list, select an option—No Action Required, ConfigMgr Restarts Computer, Program Restarts Computer, or ConfigMgr Logs User Off—to specify what action, if any, will be performed after the program completes.

4. Click Next to display the Requirements page, as shown in Figure 11-20. This page lets you specify descriptive elements regarding the program's estimated size and installation run time. More importantly, it allows you to identify on which operating system platforms the program can run. This enables you to filter out those clients on whose platform the program can't run.

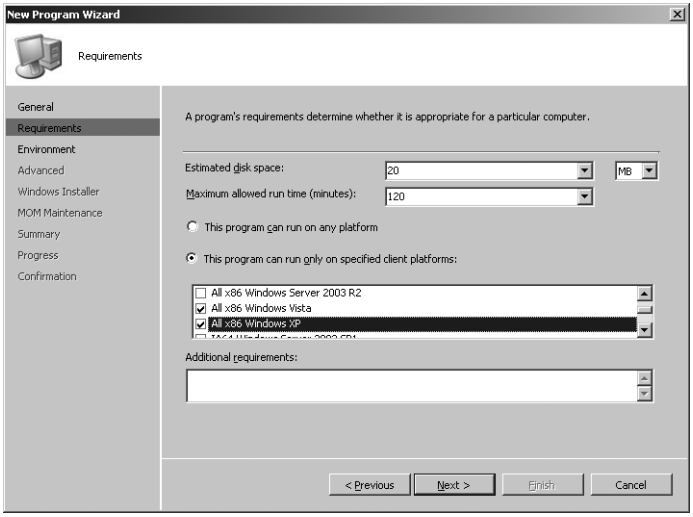

Figure 11-20 The Requirements page

5. Click Next to display the Environment page, as shown in Figure 11-21. In this tab, user interaction and drive mode requirements are defined. First, specify when the program can run. The drop-down list options are Only When A User Is Logged On, which might apply particularly when user interaction is required; Whether Or Not A User Is Logged On; and Only When No User Is Logged On. If either of these last two options is selected, the Run With User's Rights Under Run Mode option is automatically disabled because no user interaction is implied as required and there is no gurantee that a user will be logged on at the time when this program is run.

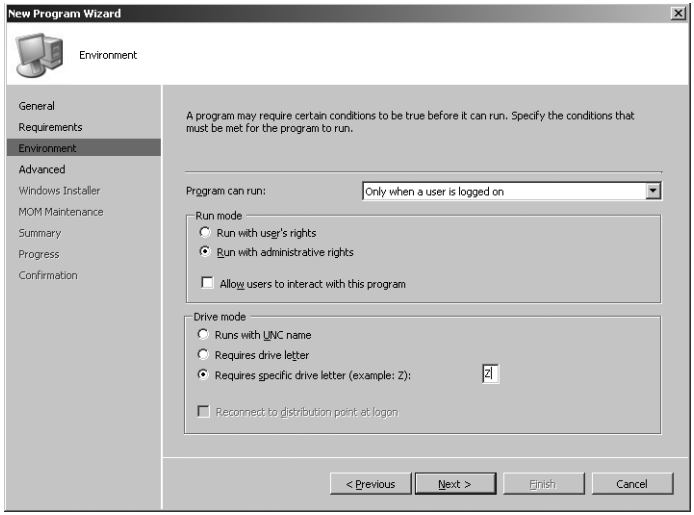

Figure 11-21 The Environment page

If the program requires the user to click even a single OK button, you must select Only When A User Is Logged On from the Program Can Run drop-down list. If the program must be run in the local administrative security context, select the Run With Administrative Rights option in the Run Mode frame. If you select this option, you can also select the Allow Users To Interact With This Program option if the user must enter information while the program runs. Clear this option only if the program is fully scripted (automated). You can also select Allow Users To Interact With This Program if you selected Whether Or Not A User Is Logged On, and user interaction is required, or allowed.

Important Selecting Allow Users To Interact With This Program with the Run With Administrative Rights option allows any connected user to interact with the program in an administrative security context. This could provide an opportunity for a security breach on that client. Select this option only if absolutely necessary for the successful execution of the program.

In the Drive Mode frame, select the option that best fits the program. As you have no doubt experienced, although most programs understand UNC paths, some do not and require a drive letter mapping. If you need to have the client reconnect to the distribution point each time the user logs on, select the Reconnect To Distribution Point At Logon check box. This option could be useful if the application needs to write information back to the distribution folder on the distribution point, retrieve startup files, and so on.

6. Click Next to display the Advanced page, as shown in Figure 11-22, which provides several additional options. If you need to run another program before this one—for example, to install a service pack or a patch, select the Run Another Program First check box and then select the appropriate package and program. This assumes, of course, that you have already created the other package and program. In this example, you won't need to advertise the other program separately.

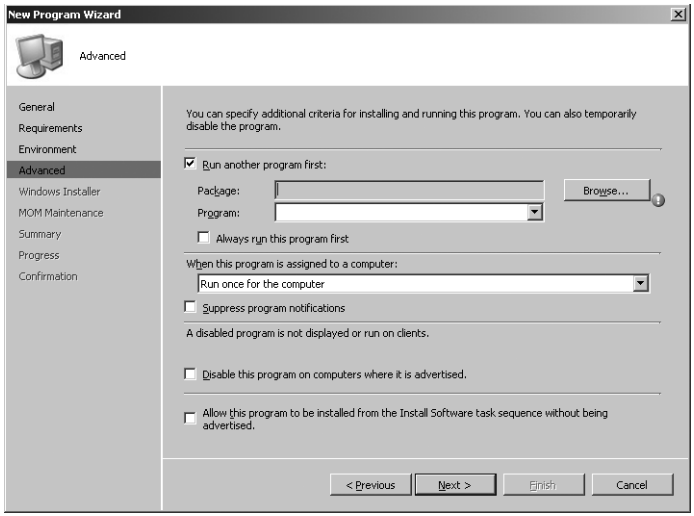

Figure 11-22 The Advanced page

If you've assigned a program to run on a computer, you can either execute it once for the computer or once for every user who logs on to the computer by choosing one of two run-time options in the When This Program Is Assigned To A Computer section. Select Run Once For The Computer, the default, to execute the program once for use by all users on the computer. Select Run Once For Every User Who Logs On to execute the program once for each user when the user logs on. Note that this option is only available if you select Only When A User Is Logged On on the Environment page. Use the Suppress Program Notifications check box to turn off notification and countdown icons and messages for this program.

To temporarily disable the program from being run—even if it has been assigned a specific time—select the Disable This Program On Clients Where It Is Advertised check box. This option can be handy if you need to update files, test an installation, and so on.

Finally, if you are using a task sequence to run this program—for example, as part of an operating system deployment—select Allow This Program To Be Installed From

The Install Software Task Sequence Without Being Advertised. The Install Software task sequence referenced in this option is a task sequence step that allows you to specify a package and program to run as part of a task sequence. Task sequences are discussed in more detail in Chapter 12, "Deploying Operating Systems."

7. Click Next to display the Windows Installer page, as shown in Figure 11-23, to specify Windows Installer product information to enable Configuration Manager to manage the location of source files for Windows Installer-based programs. This feature is useful for determining the location of source files when Windows Installer needs to initiate a repair. Click Import to locate and select the Windows Installer package associated with the program and populate the Windows Installer Product Code and Windows Installer File fields.

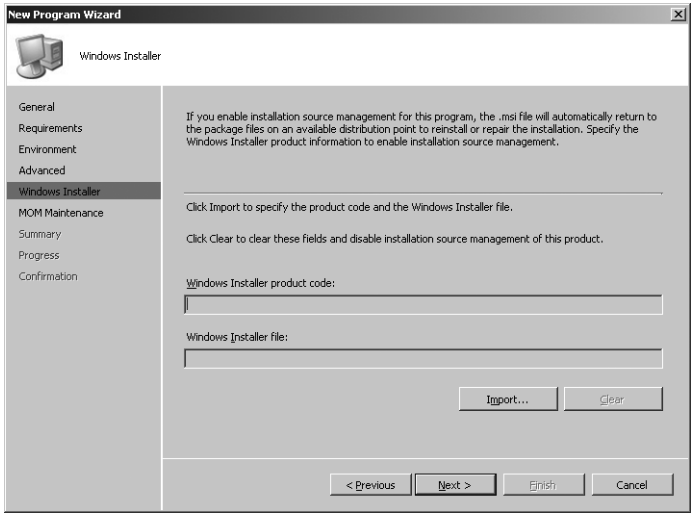

Figure 11-23 The Windows Installer page

8. Click Next to display the MOM Maintenance Mode page, as shown in Figure 11-24. If you are using System Center Operations Manager (or Microsoft Operations Manager) to monitor activity on your servers and clients, it is possible that when the program runs, it could trigger an Operations Manager rule. This might be intentional, but it could also be a false alarm for the Operations Manager administrator. For example, a system restart after a software installation might be misinterpreted as a problem for that computer. To minimize the effects of this scenario, select Disable Operations Manager Alerts While This Program Runs. Additionally, you can notify the Operations Manager administrator if the program fails by selecting Generate Operations Manager Alert If This Program Fails.

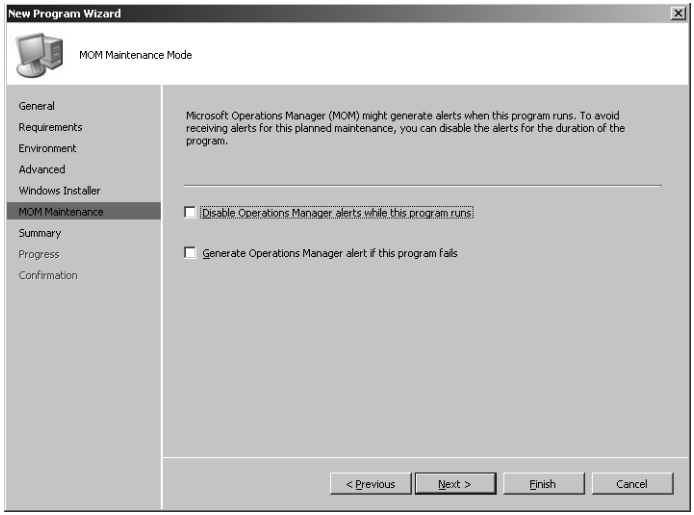

Figure 11-24 The MOM Maintenance Mode page

9. Click Next to review and confirm your settings, click Next again to create the program, and then click Close to exit the wizard.

To create a program for a managed mobile device, follow these steps:

1. Navigate to the Packages folder, find your package entry, and expand it.
2. Right-click Programs, choose New from the context menu, and then choose Program For Device to display the General page of the New Program For Device Properties Wizard, as shown in Figure 11-25.

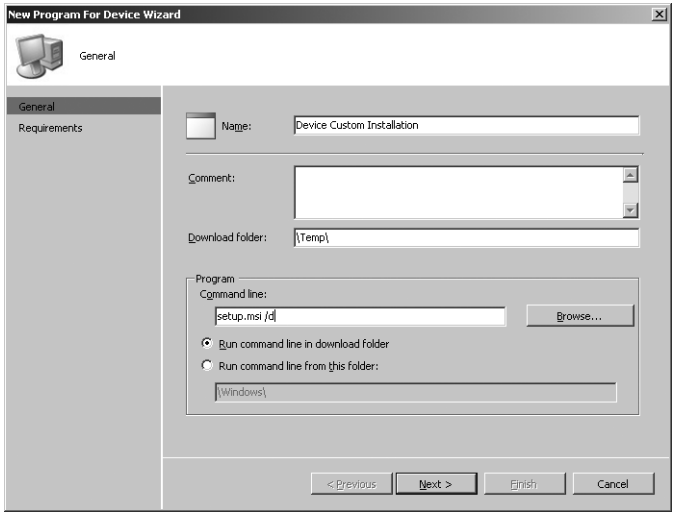

Figure 11-25 The General page of the New Program For Device Wizard

3. On the General page, type a descriptive name for the program. Type additional descriptive information in the Comment text box.

   Specify the download folder on the mobile device that the program should be downloaded to if other than the default \Temp\. In the Command Line text box, type or browse for the command that should be executed at the client. Select Run Command Line In Download Folder if the command should run in the folder you specified, or select Run Command Line From This Folder and enter the appropriate folder.

4. Click Next to display the Requirements page, as shown in Figure 11-26. This page lets you specify descriptive elements regarding the program's estimated size and any additional requirements. From the Download Program drop-down list, you can choose to download the program Any Time, Only Over A Fast Network, or Only When The Device Is Docked.

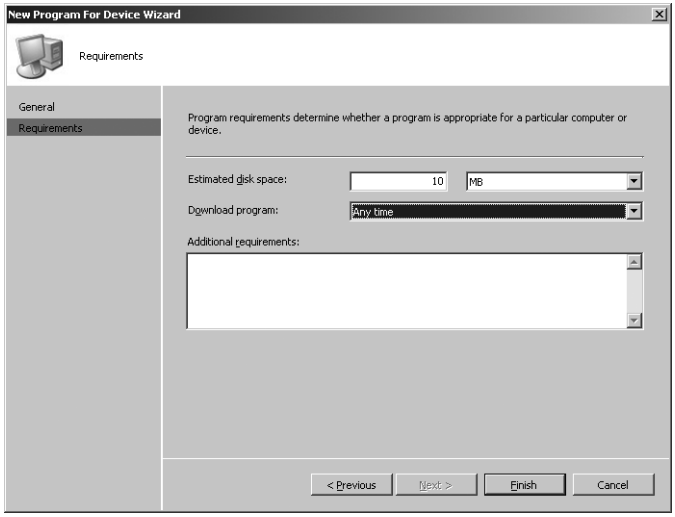

Figure 11-26 The Requirements page

5. Click Finish to create the program and exit the wizard.

If you later decide to delete a program, right-click the program in the Configuration Manager console and choose Delete from the context menu to activate the Delete Program Wizard. This wizard walks you through the process and helps you decide whether to delete the program. Deleting a program produces a ripple effect for other Configuration Manager components. Any advertisements of the program will also be deleted and will

no longer be made available to the client. The wizard displays all the affected advertisements and prompts you once more to confirm the deletion.

In Chapter 9, you examined the advantages of using collections whose membership rules are query-based when advertising programs. When a new member joins the collection, it automatically receives any advertisements made to that collection. In general, you should leave programs advertised until they're no longer needed or until they should be retired.

Creating a Package from a Definition File

You've seen what's involved in creating a package from the ground up. Now you can see how much simpler the process becomes when you're creating a package from a package definition file.

To create a package from a predefined definition file, follow these steps:

1. Navigate to the Packages folder, right-click it, choose New from the context menu, and then choose Package From Definition. This initiates the Create Package From Definition Wizard, as shown in Figure 11-27.

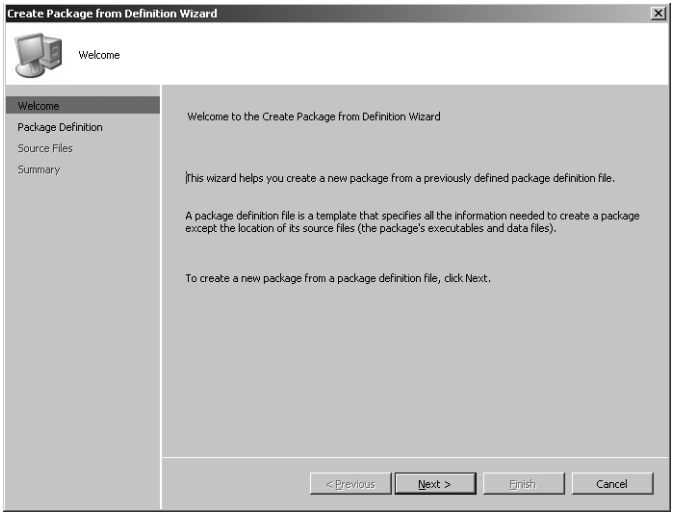

Figure 11-27 The Create Package From Definition Wizard Welcome page

2. Click Next to display the Package Definition page, as shown in Figure 11-28. Select one of the definitions included with Configuration Manager from the Package Definition list or click Browse to search for a Configuration Manager–compatible .sms or .pdf file or for a Windows Installer (.msi) package file.

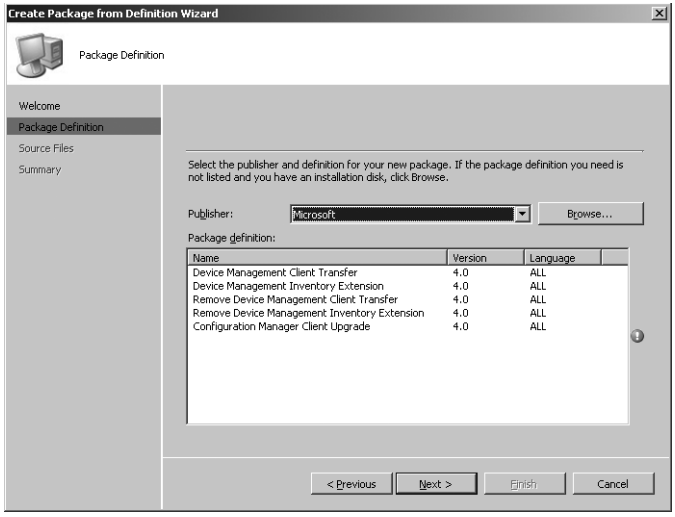

Figure 11-28 The Package Definition page

3. Click Next to display the Source Files page, as shown in Figure 11-29. Here you specify how Configuration Manager should manage source files.

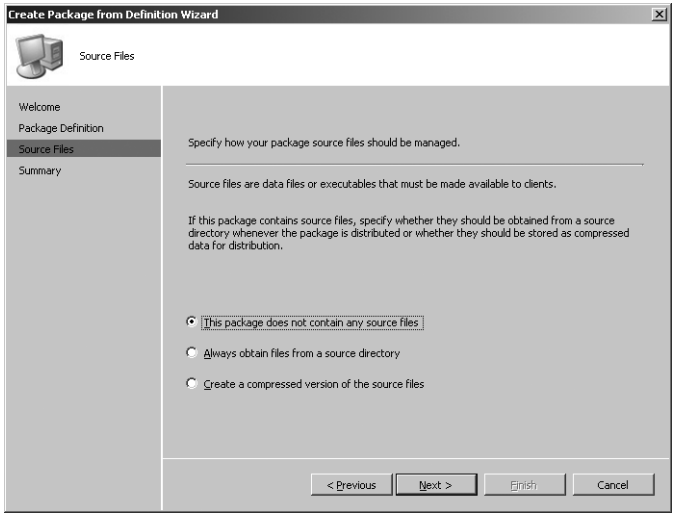

Figure 11-29 The Source Files page

4. If you select This Package Does Not Contain Any Source Files and click Next, you'll proceed directly to step 5. If you select one of the other options and click Next, the Source Directory page appears, as shown in Figure 11-30. On this page, identify either the network or local drive location of the source files and click Next.

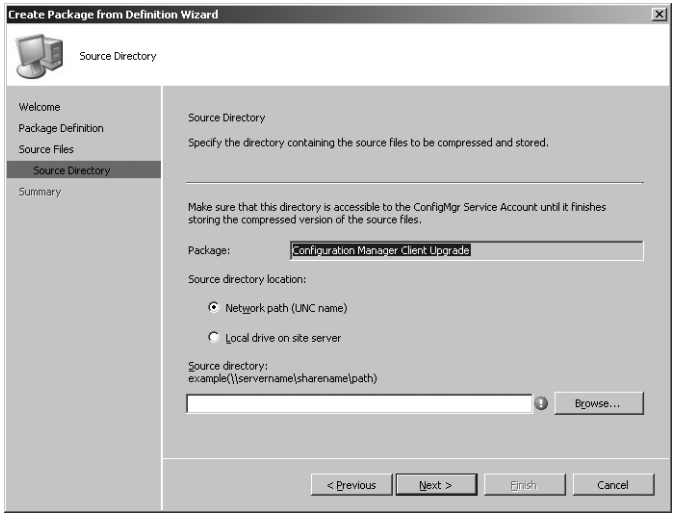

Figure 11-30 The Source Directory page

5. The Summary page is displayed. Review your choices and then click Finish.

Right-clicking the package you just created in the Configuration Manager console will display the package's Properties dialog box. The result will be the creation of a package with the essential package details filled in and the appropriate programs created with their essential details specified in the General, Data Source, and, sometimes, the Reporting tabs of the package's Properties dialog box. The Data Access and Distribution Settings tabs are left with the default values. Figures 11-31 through 11-36 will give you an idea of the type of information generated by the package definition file used in the example. Of course, although Configuration Manager or any other application developer provides the package definition file itself, you'll still need to obtain a copy of the source files for the application.

The General tab of the package's Properties dialog box, shown in Figure 11-31, contains the package detail information.

The settings in the Data Source tab, as shown in Figure 11-32, are based on the parameters you defined using the Create Package From Definition Wizard.

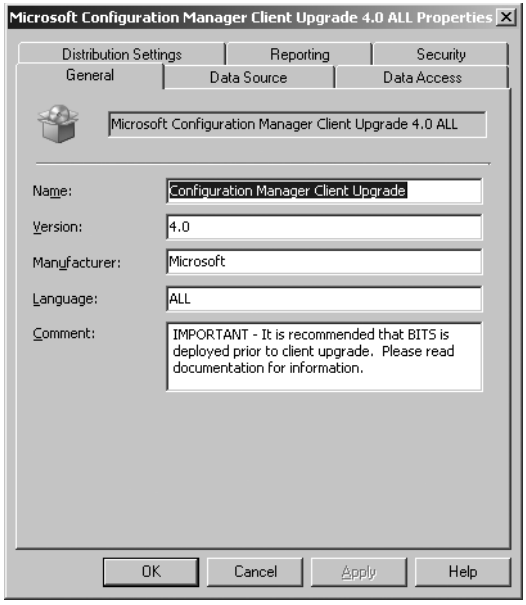

Figure 11-31 The General tab of the package's Properties dialog box

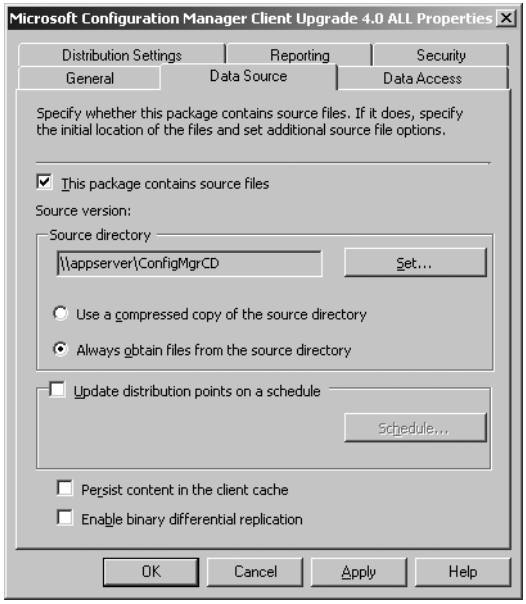

Figure 11-32 The Data Source tab of the package's Properties dialog box

The package definition file is designed to generate all appropriate programs for the application package. The package definition file used in this example created one program, Advanced Client Silent Upgrade, as shown in Figure 11-33.

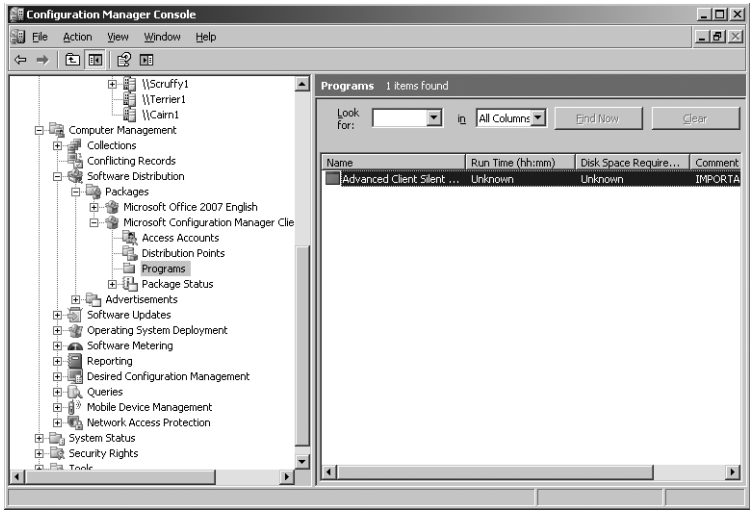

Figure 11-33 The Configuration Manager console showing the program generated by the package definition file

Right-clicking the Advanced Client Silent Upgrade program in the Details pane and selecting Properties displays the General tab of that program's Properties dialog box, as shown in Figure 11-34. Notice that the program definition file supplied the appropriate command-line executable file and switches.

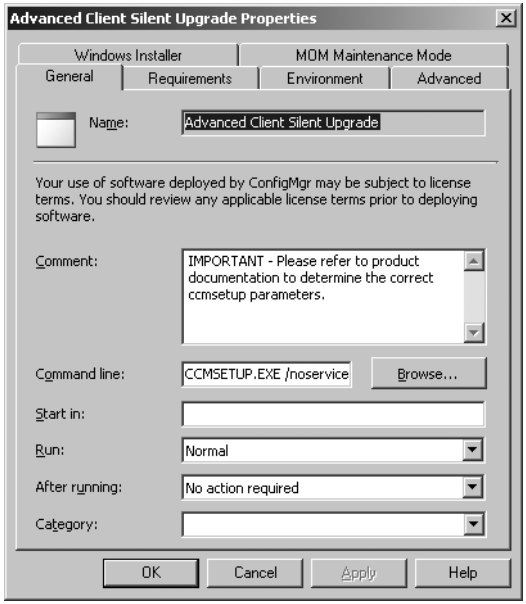

Figure 11-34 The General tab of the Advanced Client Silent Upgrade Properties dialog box

The Requirements tab, as shown in Figure 11-35, displays the platform specification as provided by the package definition file.

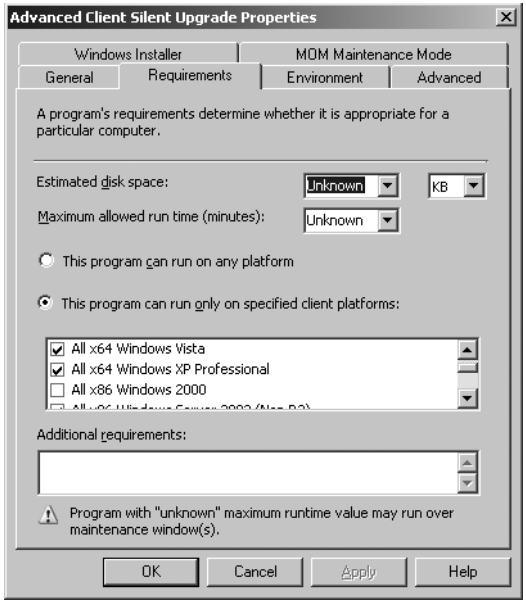

Figure 11-35 The Requirements tab of the Advanced Client Silent Upgrade Properties dialog box

Because this program requires administrative level access at the client, the package definition file configured that option in the Environment tab, as shown in Figure 11-36.

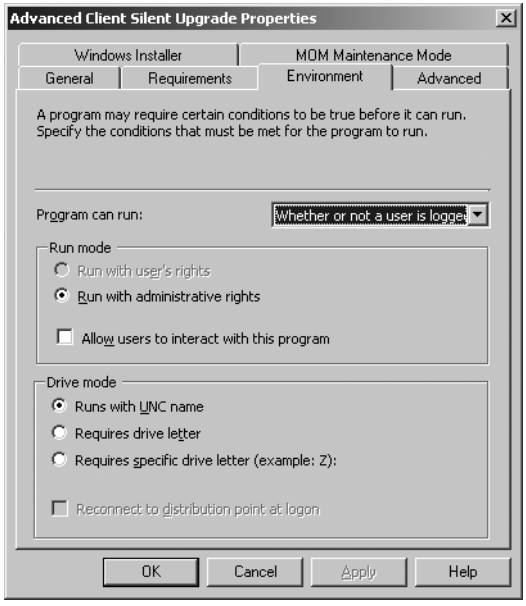

Figure 11-36 The Environment tab of the Advanced Client Silent Upgrade Properties dialog box

In general, the package definition file provides package details for the General and Data Source tabs of the package's Properties dialog box, which should make sense. Distribution settings, for example, define how a package is sent from one site to another, and only the Configuration Manager administrator for each site can modify those settings. On the other hand, the package definition file will usually provide most of the property settings in the programs' Properties dialog boxes. The exceptions are the options in the Advanced, MOM Maintenance Mode, and Windows Installer tabs. The package definition file typically doesn't provide any property settings for these tabs. Again, it's up to you to decide whether to run another program first, temporarily disable the advertisement, or whether it's necessary to provide Windows Installer path and file information.

Package Distribution Process Flow

The process behind the creation and distribution of a package is fairly straightforward. You begin, as always, with the Configuration Manager administrator defining the package, distribution points, and programs. The Configuration Manager Provider writes this information to the Configuration Manager database. This action triggers SQL Monitor to write a package notification wake-up file to Distribution Manager's inbox (\SMS\Inboxes\Distmgr.box). The wake-up file takes the form of a site code and package ID as the filename with a .pkn extension. For example, a package notification file for site A01 might be named A0100003.pkn.

The Distribution Manager component wakes up and processes the package based on the package details you provided. Distribution Manager performs the following general tasks:

- Compresses the source files, if necessary
- Copies the package source directory to the specified distribution points
- Creates various instruction files for clients that are copied to management points
- Creates replication files for sending the package to child sites

If you specified that a compressed version of the files should be used, Distribution Manager compresses the files and stores them either in the location specified when the Software Distribution component was configured (this process is discussed in the next section) or by default in the SMSPKG folder created on the drive on which Configuration Manager was installed on the site server, with the same filename and the extension .pkg.

Distribution Manager then copies the source file directory to the SMSPKG*x*$ folder created on each specified distribution point within the site. If the package files were compressed, Distribution Manager uncompresses them first.

Distribution Manager generates three files and writes them to the\SMS\Inboxes\Pkginfo .box folder on the site server. These files (with filenames as described earlier) are:

- **.PKG** Package program detail information
- **.NAL** Location of distribution points
- **.ICO** Icon file information

These files serve as instruction files for the client after it receives an advertisement. These files are part of the policy the client receives when it is targeted with an advertisement. At this point, the process stops unless the package needs to be sent to a child site.

If the package needs to be sent to a child site, Distribution Manager writes a package replication file (.rpt) to Replication Manager's inbox (\SMS\Inboxes\Replmgr.box\Outbound). If a compressed copy of the package source directory doesn't already exist, Distribution Manager also compresses the source directory into a temporary directory on the site server and then moves the file to the SMSPKG folder (on the Configuration Manager installation drive on the site server or the drive you specified when configuring the Software Distribution component).

Now Replication Manager takes over and begins the sending process. This process is discussed in detail in Chapter 4, so you'll look at only the highlights here. Replication Manager creates a minijob for the Scheduler and places it in the Scheduler's inbox (\SMS\Inboxes\Schedule.box). The Scheduler creates the package and instruction files needed for sending the data in question, as well as a send request file for the sender. The package and instruction files are placed in the \SMS\Inboxes\Schedule.box\Tosend directory. The send request file is written to the preferred sender's outbox (\SMS\Inboxes \Schedule.box\Outboxes\sender, where *sender* is the sender folder, such as LAN, RASAsynch, RASISDN, and so on). Recall that both the sending priority and the preferred sender are identified in the Package Properties dialog box.

When the send request file is written, the sender wakes up and reads the file. It also examines whether the address properties have placed any restrictions on when requests of this priority can be sent and whether there are any bandwidth limits. It then changes the extension of the send request file to .srs and writes status information to it.

The sender connects to the target site's Configuration Manager_SITE share—the \SMS\Inboxes\Despoolr.box\Receive directory—where the Despooler component on the target site completes processing of the information at the target site. When the data has been completely transferred, the send request file is updated to a status of "completed" and the file is deleted. Distribution Manager on the target site will carry out any necessary tasks. For example, if you identified distribution points at the target site, the

Despooler will decompress the package and pass it to Distribution Manager, which processes the package for those distribution points.

Configuring the Software Distribution Component

You can configure additional settings for the package distribution process if the Configuration Manager defaults aren't appropriate within your environment.

To access these settings, in the Configuration Manager console, navigate to the Component Configuration folder under Site Settings and select it. In the Details pane, right-click Software Distribution and select Properties to display the Software Distribution Properties dialog box, as shown in Figure 11-37.

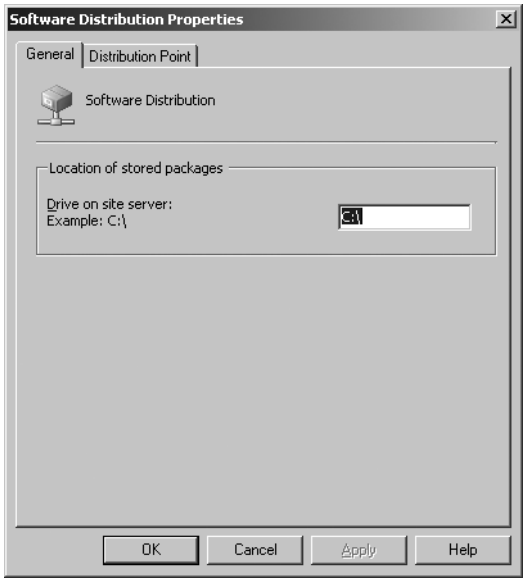

Figure 11-37 The General tab of the Software Distribution Properties dialog box

The only option you can configure on the General tab is the Location Of Stored Packages. This option lets you specify on which drive Configuration Manager should create the compressed package folder (SMSPKG).

Configuration Manager 2007 supports multithreaded communications to distribution points. This means that it can distribute package files concurrently to multiple distribution points. This is an enhancement from previous versions of Systems Management Server. Figure 11-38 displays the distribution setting options you can configure.

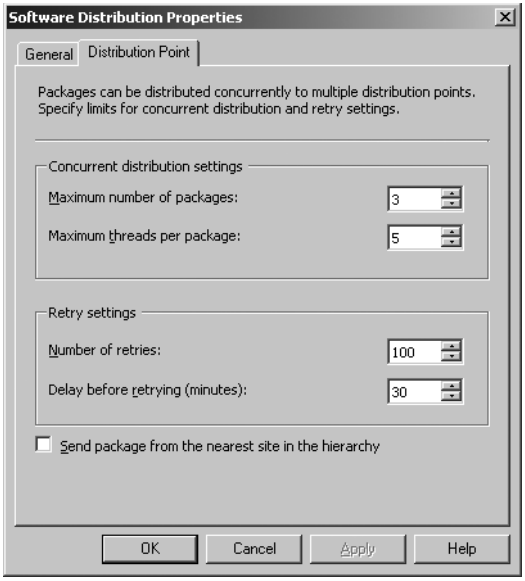

Figure 11-38 The Distribution Point tab of the Software Distribution Properties dialog box

On the Distribution Point tab, you can identify the Maximum Number Of Packages that you can send concurrently to distribution points, as well as the Maximum Threads Per Package to use when sending the packages. You can also configure Retry Settings, which are fairly self-explanatory.

Distributing Software from a Resource

In addition to the methods described earlier in this chapter for creating and distributing a package and an advertisement, Configuration Manager includes an alternative tool that lets you initiate software distribution from a collection, a resource in a collection, a package, a program, or an advertisement. This wizard walks you through each step in the process of creating or identifying a package and program, defining a distribution point, creating or identifying a collection or resource to a target, and creating an advertisement.

To run the wizard, follow these steps:

> **Note** These steps vary slightly depending on where you start the wizard.

1. Right-click any collection, resource, package, program, or advertisement in the Configuration Manager console Details pane, choose Distribute from the context menu, and then choose Software to launch the appropriate wizard. In Figure 11-39,

the wizard is launched by right-clicking a computer in a collection, so the wizard name is Distribute Software To Resource Wizard. The wizard steps vary slightly depending on where you launch it, but the following steps are representative of what you will find.

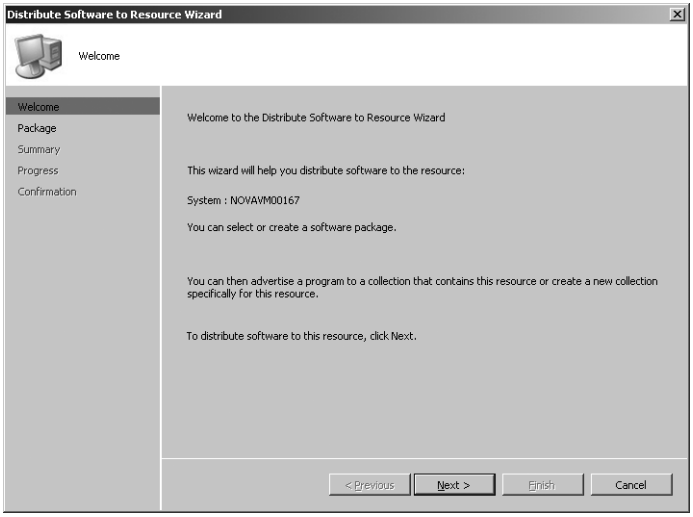

Figure 11-39 The Distribute Software To Resource Wizard Welcome page

2. Click Next to display the Package page, as shown in Figure 11-40. Here you can create a new package and program from scratch or from a definition file, or you can select an existing package by clicking Browse and selecting your package.

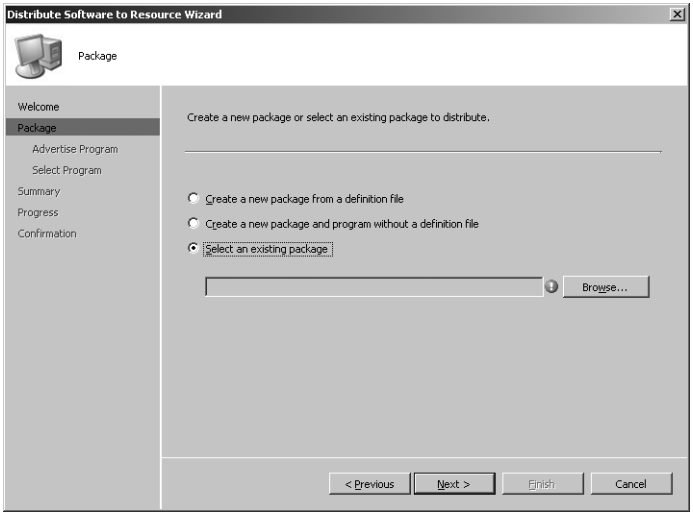

Figure 11-40 The Package page

3. Click Next. The next few Distribute Software To Resource Wizard pages will vary depending on whether you're creating a new program from scratch or from a package definition or by selecting an existing program. If you selected and specified an existing package, the Distribution Points page is displayed, as shown in Figure 11-41. Select the distribution point that should receive the package source files. Click Next to select the appropriate program to advertise and then click Next again to view existing advertisements or to create a new advertisement.

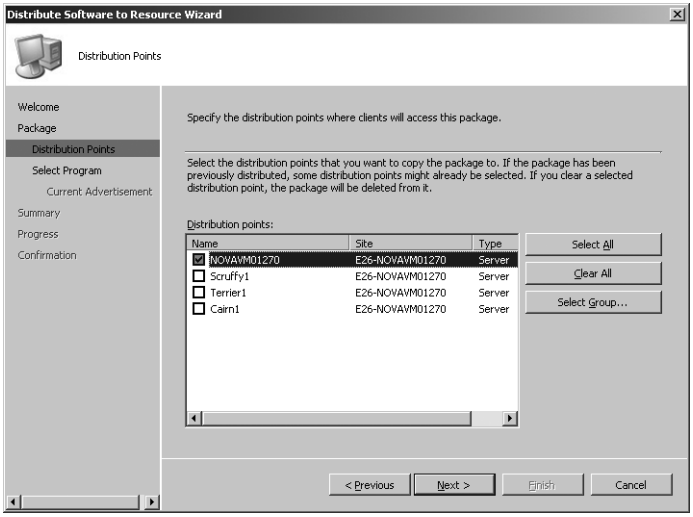

Figure 11-41 The Distribution Points page

If you selected Create A New Package From A Definition, you're presented with pages asking you to select the package definition file and define the source file directory and other configuration settings similar to those when you run the Create Package From Definition Wizard.

If you selected Create A New Package And Program, the wizard prompts you for a package name and identification, the location of source files (if there are any), the program name and command line, whether user input is required or administrative rights are needed, and other configuration settings similar to those when you run the New Package Wizard.

4. All three options give you the choice of creating an advertisement for the program, and the next few pages of the wizard prompt for advertisement properties. The next section describes advertisements in detail. If you choose to create

a new advertisement, the wizard displays the Advertisement Target page first, as shown in Figure 11-42. The program and resource you selected are already specified. You can either select an existing collection to advertise the program to, or create a new collection.

Note If you choose to create a new collection, you'll be presented with two additional wizard pages that let you specify the collection name and create a collection membership rule. Refer to Chapter 9 for more information about collections and collection membership.

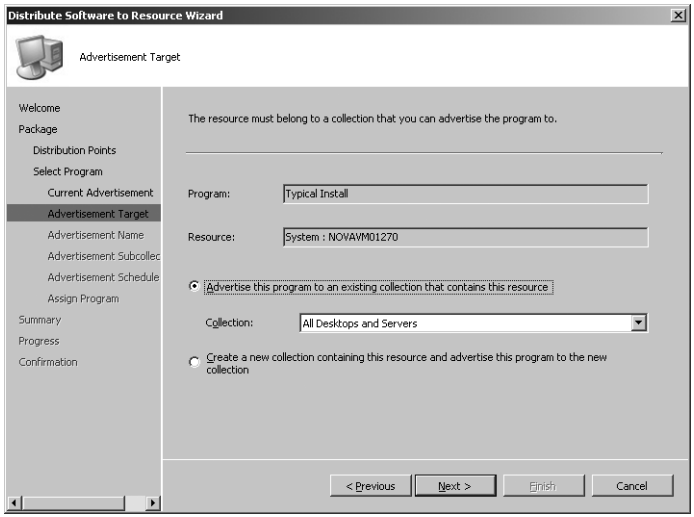

Figure 11-42 The Advertisement Target page

5. Click Next to display the Advertisement Name page shown in Figure 11-43. On the Advertisement Name page, type a descriptive name and comment for the advertisement. The wizard will devise a default name based on the package and program name.

6. Click Next to display the Advertisement Subcollection page, as shown in Figure 11-44. Here you can specify whether to advertise to the collection's subcollections if any exist.

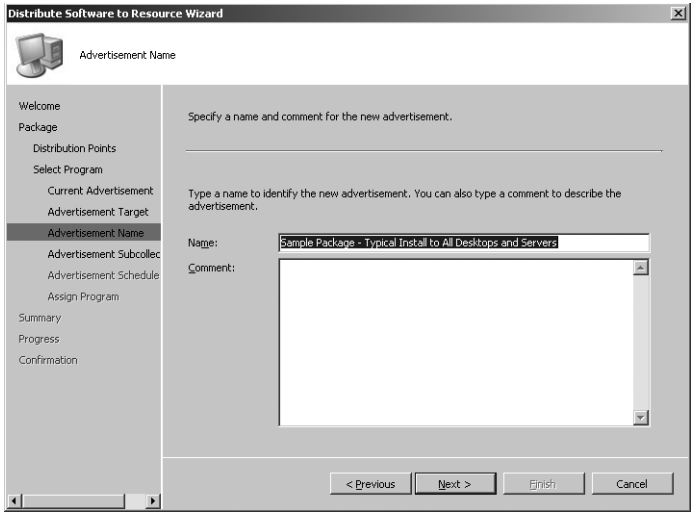

Figure 11-43 The Advertisement Name page

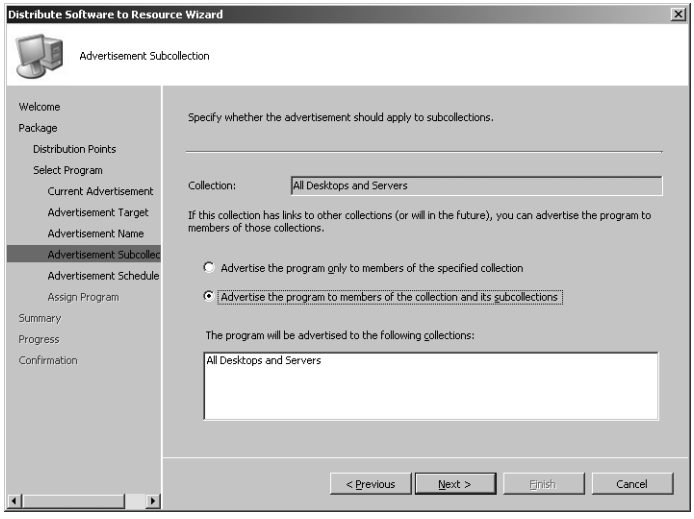

Figure 11-44 The Advertisement Subcollection page

7. Click Next to display the Advertisement Schedule page, as shown in Figure 11-45. This page lets you specify when the advertisement should be offered and whether it expires.

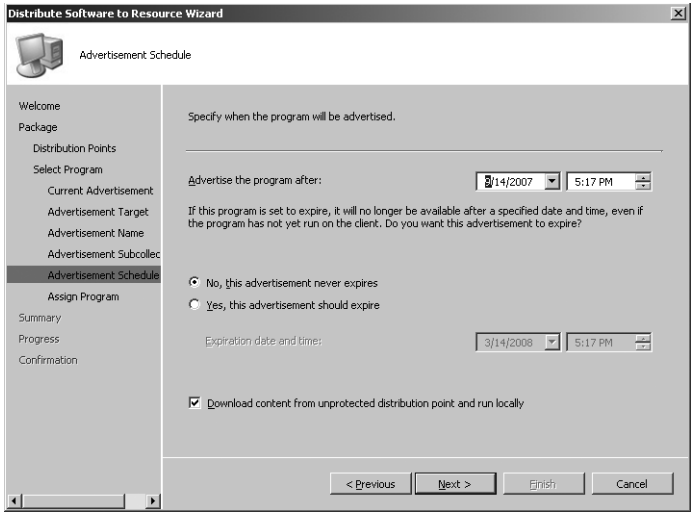

Figure 11-45 The Advertisement Schedule page

8. Click Next to display the Assign Program page, as shown in Figure 11-46. Here you can specify an assigned time if necessary.

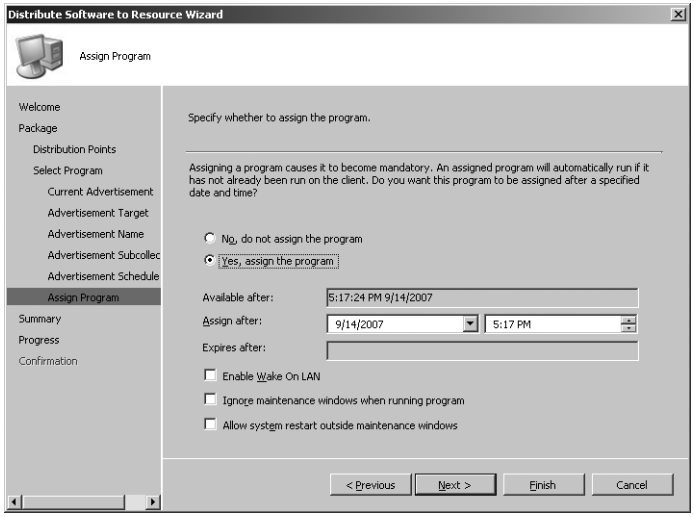

Figure 11-46 The Assign Program page

9. Click Next to display the Summary page, where you can review the settings you specified through the wizard. If you are satisfied with your settings, click Next to begin the package distribution and advertisement processes and then click Close to exit the wizard.

The Distribute Software Wizard doesn't present you with all possible options available for packages, programs, and advertisements. For example, you can't create a recurring advertisement using this wizard. However, the wizard does provide a fine method for generating packages, programs, collections, and advertisements with all the typical settings needed.

Note In case you were wondering, you can now press Ctrl+click to select more than one client at a time in a collection. This is a convenient way to target a group of two or three computers that are part of a larger membership without creating a separate collection for them. The wizard creates the collection for you.

Creating an Advertisement

After you create your packages and programs, the next step is to create an advertisement. Remember, before you configure an advertisement, you must have identified and created the collections to which you'll advertise the programs. Programs are always advertised to collections—even if it's a collection of one.

To create an advertisement, follow these steps:

1. In the Configuration Manager console, navigate to the Software Distribution\Advertisements folder, right-click it, choose New from the context menu, and then choose Advertisement to display the New Advertisement Wizard, as shown in Figure 11-47. You can also choose to create an Advertisement For Device.
2. On the General page, type a descriptive name for the advertisement. Type a descriptive comment to add more detail. Select the package and program to advertise from their respective list boxes. Type the collection name or browse for it by clicking Browse. If the collection has subcollections and you want to include them in the advertisement, select the Include Members Of Subcollections option.

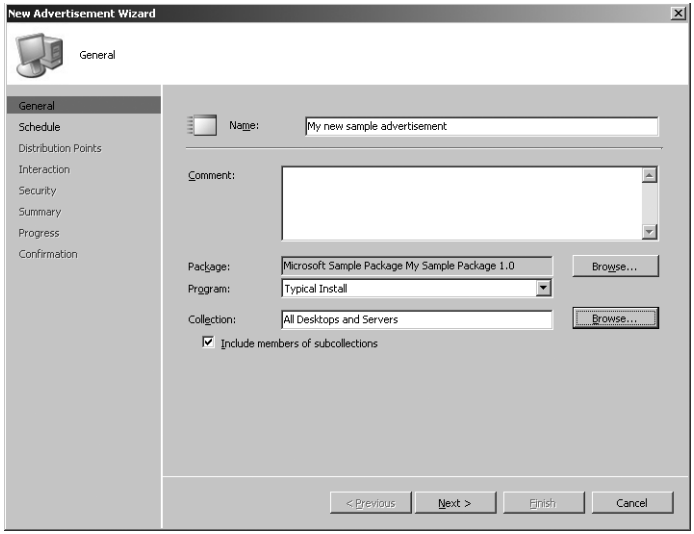

Figure 11-47 The New Advertisement Wizard General page

3. Click Next to display the Schedule page, as shown in Figure 11-48. Begin by selecting the start time and date for the advertisement. This setting represents the time at which the program is advertised and made available for the client to run. By default, the advertisement will be made available at a specific hour in each time zone—for example, at 3:00 in New York, Chicago, and London.. If you want the advertisement to be made available in all time zones at the same time, meaning that if the advertisement start time is 3:00 in New York, it's made available in New York at 3:00, in Chicago at 2:00, in London at 8:00, and so on, select the UTC option. UTC stands for Coordinated Universal Time.

   If the advertisement will be available for only a specific period of time, select the Advertisement Expires option, select an expiration date, and select UTC if desired.

   You can also configure the advertisement to run at a specific time. This is known as a mandatory assignment. To configure this option, click New (the yellow star button) in the Mandatory Assignments section of the Schedule page to display the Assignment Schedule dialog box, as shown in Figure 11-49. Here you can assign a mandatory time and date for the advertised program to run. If the program is not run by this time and date, the Advertised Programs Client Agent on the client will execute it.

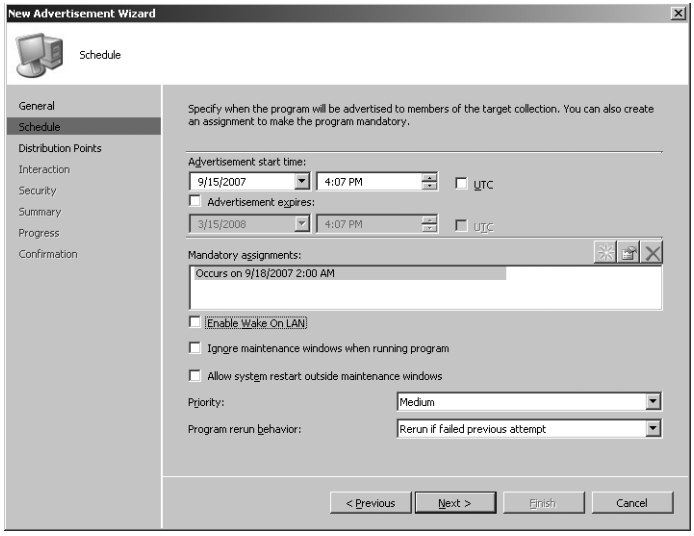

Figure 11-48 The Schedule page

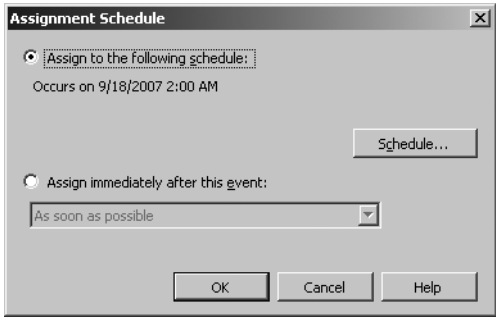

Figure 11-49 The Assignment Schedule dialog box

If you select Assign To The Following Schedule and click Schedule, the Custom Schedule dialog box appears, as shown in Figure 11-50. In this dialog box, you can specify exactly when you want to run the advertised program. You can also set a recurrence interval for advertisements such as monthly file updates.

If you select the Assign Immediately After This Event option in the Assignment Schedule dialog box, you can choose to have the advertised program execute As Soon As Possible—meaning as soon as the program reaches the client and all program requirements (correct platform, user logged on, administrator access, and so on) are met; at Logoff—the next time a user logs off the client; or at Logon—the next time a user logs on to the client.

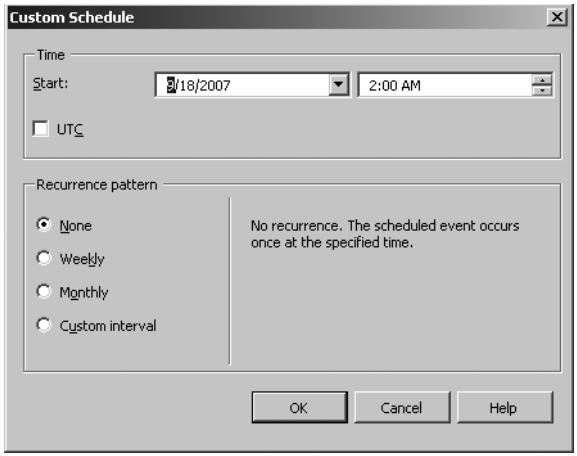

Figure 11-50 The Custom Schedule dialog box

Click OK to return to the Schedule tab. If you configure a mandatory assignment, three additional options become available. Select Enable Wake On LAN to have the advertised program wake up the client computer at the assigned time to run the program. The computer must be configured with a network card that supports Wake On LAN functionality. Select Ignore Maintenance Windows When Running Program to have the advertised program ignore any maintenance windows that might be configured for the collection to which you are targeting the advertisement. You might choose this option if the program must be installed immediately. Select Allow System Restart Outside Maintenance Windows to let the program initiate a computer restart to complete (if the program is configured to do so) outside a configured maintenance window.

Finally, specify a priority for Configuration Manager to use when sending this advertisement to a child site and select a Program Rerun Behavior. Program Rerun Behavior defines how and whether the advertisement should be rerun if you scheduled a recurring mandatory assignment. There are four selections in the Program Rerun Behavior drop-down list. Select Rerun If Failed Previous Attempt to have the advertisement run the program again at the assigned time only if the previous attempt failed. Select Rerun If Succeeded On Previous Attempt to have the advertisement run the program again at the assigned time only if the previous attempt was successful. Select Never Rerun Advertised Program to stop the program from running again at the next assigned time. Select Always Rerun Program to ensure that the program runs again at the next assigned time regardless of whether the previous attempt was successful or not.

4. Click Next to display the Distribution Points page, as shown in Figure 11-51. These options determine how a program should run when a client attempts to access a distribution point within a Configuration Manager boundary that is considered "fast"

or “slow\unreliable.” These options generally map to how a client accesses a network when connected locally or remotely, or when roaming within the hierarchy.

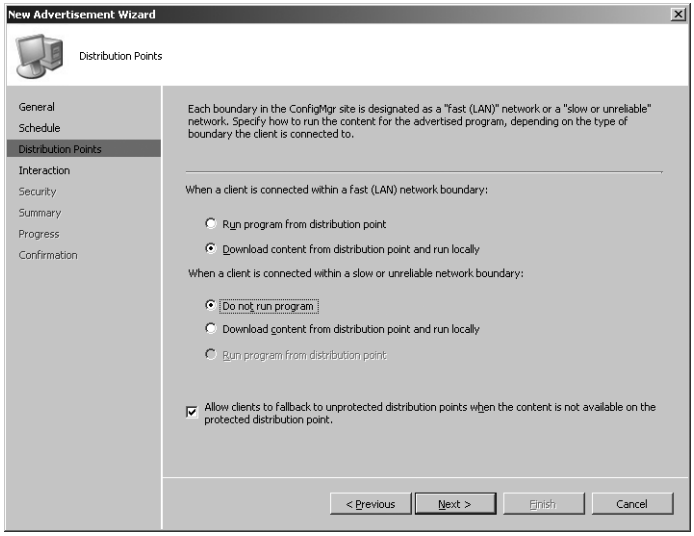

Figure 11-51 The Distribution Points page

In the When A Client Is Connected Within A Fast (LAN) Network Boundary section, the default option is Download Content From Distribution Point And Run Locally. This option ensures that the entire package is downloaded to the client before the program is executed. If the distribution point supports Background Intelligent Transfer Service (BITS) and the computer becomes disconnected from the distribution point before the files are downloaded, the download picks up where it left off when the computer reestablishes a connection. You can also choose Run Program From Distribution Point. This means that the program is run from the distribution point. However, if the computer loses its connection to the distribution point while the program is running, and the distribution point does not support BITS, the program will fail.

In the When A Client Is Connected Within A Slow Or Unreliable Network Boundary section, the default option is Do Not Run Program. By default, packages aren’t run if the distribution point is not local. Because Configuration Manager clients can roam to the boundaries of other Configuration Manager sites in the hierarchy, there might not be a local distribution point available that has the package. If the package is located on a distribution point in the client’s assigned site, the distribution point is considered remote. Choose the Download Content From Distribution Point And Run Locally option if this package needs to be run on the client and the package is large or the network link to the remote site is slow. The Run Program From Distribution Point option is unavailable when the client is connected to a slow or unreliable network (but it’s there anyhow).

Finally, select the Allow Clients To Fallback To Unprotected Distribution Points option to allow the Advertised Programs Client Agent to contact a distribution point that might be outside the protected boundaries of the client to locate the program if the program does not exist on a protected distribution point.

5. Click Next to display the Interaction page, as shown in Figure 11-52. The options on this page define how the user can interact with the program and how the user is notified, and are fairly self-explanatory. If you have configured the program to run at an assigned time, the Allow Users To Run The Program Independently Of Assignments option lets the user override the assignment. This is useful if you want to give a user the ability to reschedule when a program runs, or run it earlier than assigned. If you select this option, you can also select Display Reminders According To The Client Agent Reminder Intervals to let the user know that the program has not yet been run. Select Use Custom Countdown Notification Length (Minutes) to configure a countdown interval for an assigned program. This is useful for giving users notice that a program is about to run, so they can save their work or give you a nervous phone call.

Important Regardless of the countdown time you set, the program will run at the mandatory time you configure. For example, if you configure the mandatory time as 8:00 P.M., with a countdown of 60 minutes, and the client receives the advertisement at 7:45 P.M., the program will run at 8:00 and not wait for the 60-minute countdown to finish.

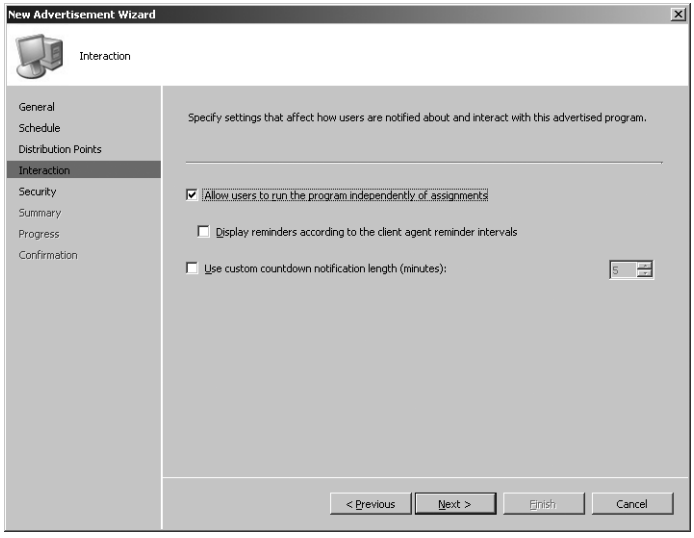

Figure 11-52 The Interaction page

6. Click Next to display the standard Security page, where you can configure and assign permissions for this advertisement.
7. Click Next to review the details of the advertisement, and then click Next to create it. Click Close to exit the wizard.

Note If you haven't yet identified a distribution point for the package, you'll be notified of that fact when you click OK. Also, if you haven't yet enabled the Advertised Programs Client Agent for the clients, you'll be given the option to do so.

Real World Recurring Assignments

As we've seen, you can specify a recurring schedule for your advertisement. This setting can be useful for programs that need to be executed on a regular basis. Let's return to our application update file example. Suppose you've created a package that distributes an update file for a proprietary application once a month. On the 14th of every month, you obtain a new update file and replace the old file in the package source file directory with the new file. You also configure the package to refresh its distribution points once a month, say on the 15th.

When you create the advertisement, give it an assigned recurring schedule. Set it to run on the 16th, maybe at 11:00 P.M. Now all you have to do is remember to update the source file directory once a month. The package and advertisement process will take care of the rest.

If there is a local script that must be run to add the new update file, you could also create a package that executes that script on the client. Again, you could assign a recurring advertisement to run the script at regular intervals. Here's another twist on this scenario: let's say that you want the script to run immediately after the new update file is installed. You've seen that when you create a program, you have an advanced option to run another program first. You would then create a program that executes the script but first copies the update file. Then create a recurring advertisement that runs that program once a month at the appropriate time.

You can use recurring advertisements to handle a variety of events. For example, use them to perform disk maintenance tasks such as monthly defragmentation or optimization routines. With a little creativity and imagination, you can automate many such tasks and make your job as a system administrator more productive.

Configuring the Client Agent

Of course, life would not be complete if you didn't have a client component to configure, and you do. In order for the client to receive any advertisements you're targeting to it, you must configure the Advertised Programs Client Agent and have it enabled on each client. As with other client agents, you can find this agent in the Client Agents folder under Site Settings in the Configuration Manager console.

Recall that all client agents are installed with the Configuration Manager client software, so the agent components already exist on the client. After you enable and configure the agent, the Advertised Programs Client Agent will be enabled on the client at the client's next policy refresh (once every hour or at the next computer startup).

To configure the Advertised Programs Client Agent, follow these steps:

1. Navigate to the Client Agents folder, select Advertised Programs Client Agent in the Details pane, right-click it, and choose Properties from the context menu to display the Advertised Programs Client Agent Properties dialog box, as shown in Figure 11-53.

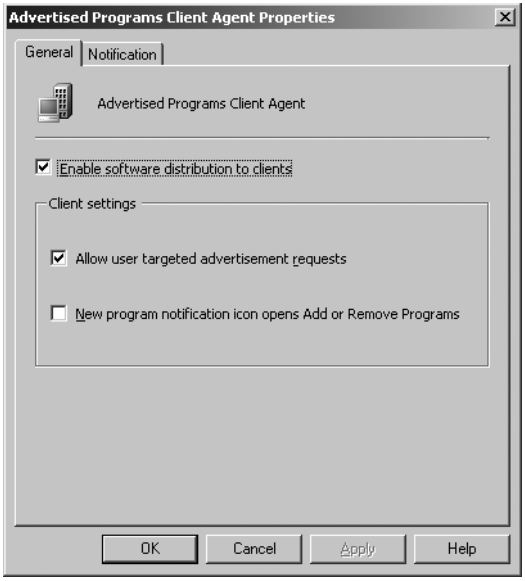

Figure 11-53 The Advertised Programs Client Agent Properties dialog box

2. On the General tab, select the Enable Software Distribution To Clients check box. Select the Allow User Targeted Advertisement Requests option to ensure that the agent will find and run programs that you target to users as well as computers.

Advertised programs are listed on Configuration Manager clients in Add Or Remove Programs in Control Panel (Programs and Features in Windows Vista) as well as in the Run Advertised Programs application on Configuration Manager clients. When a new advertisement is available, the new program notification icon is displayed on the task bar by default.

In the Client Setting section, select the New Program Notification Icon Opens Add Or Remove Programs option to have the notification icon open Add Or Remove Programs (Programs and Features in Windows Vista) to display new advertisements. If you leave this option cleared, the notification icon will open Run Advertised Programs.

3. Click the Notification tab, as shown in Figure 11-54. This tab provides several options for defining how the client is notified of an advertisement.

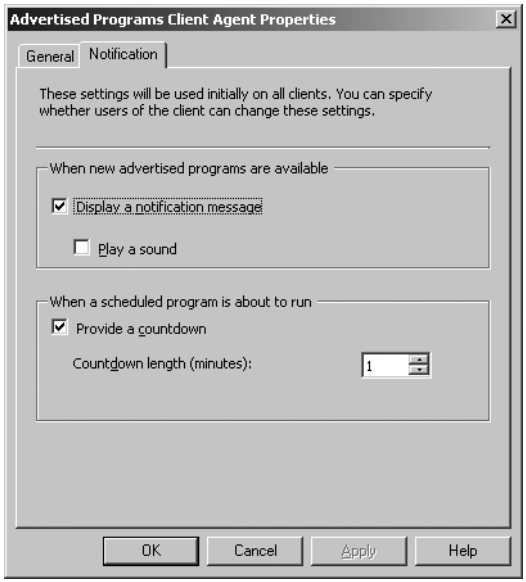

Figure 11-54 The Notification tab

4. The options in the Notification tab are fairly self-explanatory. Select the options that fit your needs and then click OK to save the configuration and begin the site update process.

If you don't select any options in this tab, the client agent will check for an advertisement but will never notify the user that an advertisement has been received. The user would have to periodically run the Run Advertised Programs application from Control Panel to find and run advertisements. If the advertised program had a

mandatory assignment, it would simply run, again without notification to the user. In general, it's not a good idea to not notify the user when an advertisement has been received. Notifying the user can prevent unfortunate occurrences such as the user logging off or shutting down before the program finishes running.

When the client agent is enabled at the client, two new icons will be added to the Control Panel on each client—Run Advertised Programs and Program Download Monitor.

Running Advertised Programs on Clients

Once an hour, by default, the client agent checks the management point for new advertisements targeting that client. Advertised programs always appear in both Add Or Remove Programs (Programs and Features in Windows Vista), as shown in Figure 11-55, and in the Run Advertised Programs application.

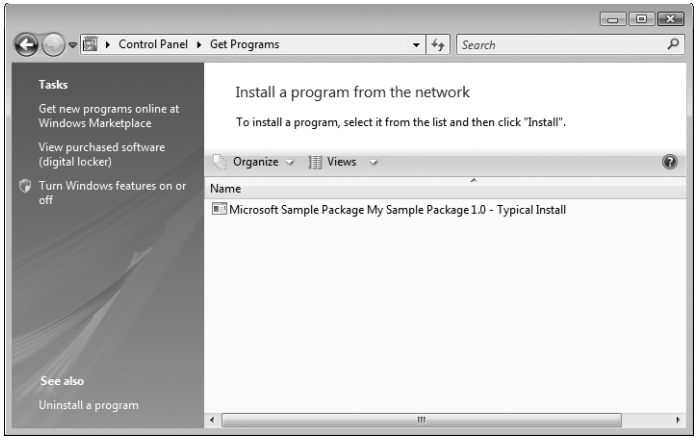

Figure 11-55 The Programs and Features application from Windows Vista showing the advertised program in the Install A Program From The Network window

Take a look at the software distribution-related Control Panel programs installed on the Configuration Manager client.

Run Advertised Programs

The Run Advertised Programs application is installed on Configuration Manager clients and is used to display available advertisements, select advertisements to run, and view the properties of advertisements. However, if an advertisement is assigned a mandatory run time, it is not displayed, and users will not have the option to run it independently of its assigned schedule. When accessed through the Control Panel, Run Advertised Programs causes the Advertised Programs Client Agent to check the management point for new advertisements. When an advertised program is available for the client, the New

Advertised Programs Are Available icon appears on the taskbar (if you enabled this type of notification). You can also launch Run Advertised Programs through the New Advertised Programs Are Available icon (unless you configured this option to always launch Add Or Remove Programs through the agent properties as discussed earlier).

To launch Run Advertised Programs, follow these steps:

1. Click the Run Advertised Programs icon in the Control Panel, double-click the New Advertised Programs Are Available icon on the taskbar (if that option was enabled), or right-click the New Advertised Programs Are Available icon and choose Run Advertised Programs Wizard from the context menu. The Run Advertised Programs dialog box appears, as shown in Figure 11-56.

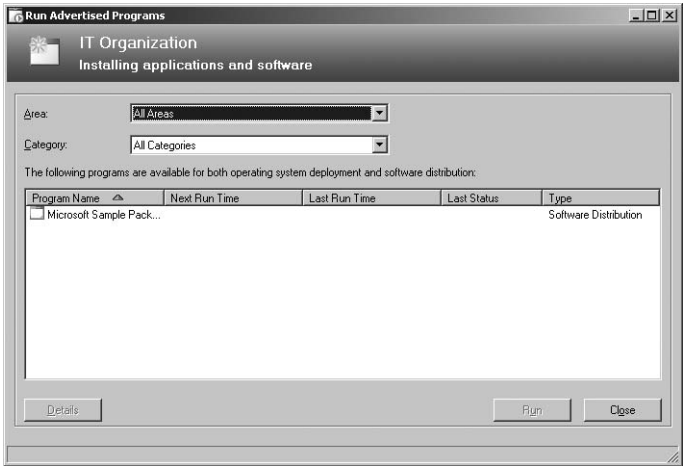

Figure 11-56 The Run Advertised Programs dialog box

2. Select a program from the Program Name list and click Details to display that program's properties. Properties include any special categories the administrator assigned the program to, general comments in the General tab, and Advanced tab options.

3. Select a program from the Program Name list and click Run to execute the program. If the program requires the package to be downloaded first, the Program Download Required message box is displayed, as shown in Figure 11-57. Here you can view the package's properties and choose to have the program run automatically when the download finishes. Click Download to begin the download or click Cancel to stop.

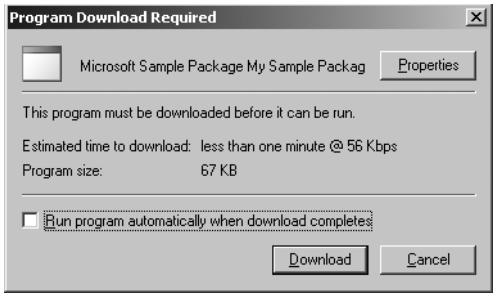

Figure 11-57 The Program Download Required message box

4. If you click Download in step 3, the Program Download Status dialog box appears, as shown in Figure 11-58. Again, you can view the program's properties, choose to have the program run automatically when the download finishes, cancel the download, or hide the dialog box.

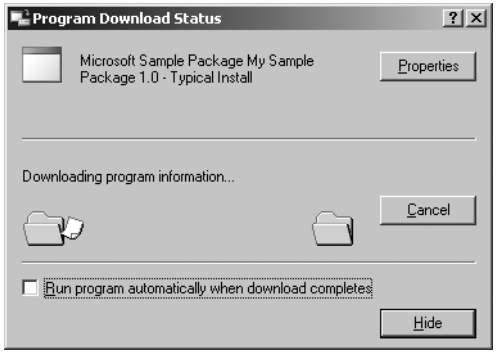

Figure 11-58 The Program Download Status dialog box

Program Download Monitor

The Program Download Monitor is installed on Configuration Manager clients and provides information about programs that are pending to run on the client. When you launch the Program Download Monitor from the Control Panel (or from the taskbar), it displays advertised programs that need to be downloaded or are downloading, as shown in Figure 11-59. You can use Program Download Monitor to show status of a download, to cancel downloads, and to specify that a program start automatically after the download completes by highlighting the program in the Program list and selecting the appropriate option from the Download menu.

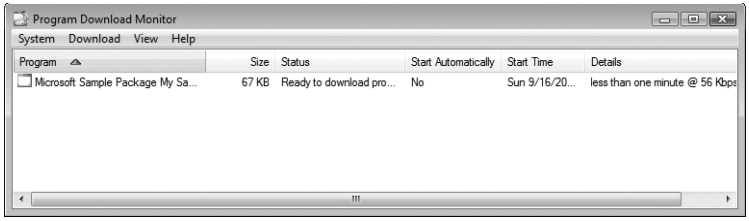

Figure 11-59 The Program Download Monitor

Managing the Configuration Manager Client Download Cache

When you configure the advertisement properties, you can specify whether the package should be downloaded to the Configuration Manager client before it runs (see Figure 11-51). If so, it's stored in the Configuration Manager client download cache. The cache can become too full to accommodate the download of any additional packages. When a package is downloaded and placed into cache, the client agent locks it. The package is unlocked after 24 hours have passed since the program was run, or 30 days have passed and the program hasn't run. After the package is unlocked, it can't be locked again unless it's removed from cache and downloaded again.

When a package needs to be downloaded and the cache is too full, Configuration Manager checks the other cached packages to see whether it can delete any or all of the oldest packages to free up enough space to accommodate the new package. If it can, it does so and downloads the package. If it can't, as might be the case if a package is locked, the package isn't downloaded.

Users with administrative credentials on the client can manage this download cache. They can change the size of the cache and its location, as well as delete the contents of the cache. As the Configuration Manager administrator, you can manage the client download cache by following these steps:

1. Open the Configuration Manager application in Control Panel and click the Advanced tab, as shown in Figure 11-60. You manage the client download cache settings in the Temporary Program Download Folder frame.
2. Click Configure Settings to enable the setting options. Enter the Amount Of Disk Space To Use value or use the slide bar to set the amount.
3. Click Change Location to modify the disk location for the download cache folder.
4. Click Delete Files to delete the entire contents of the download cache.
5. Click OK to save your settings.

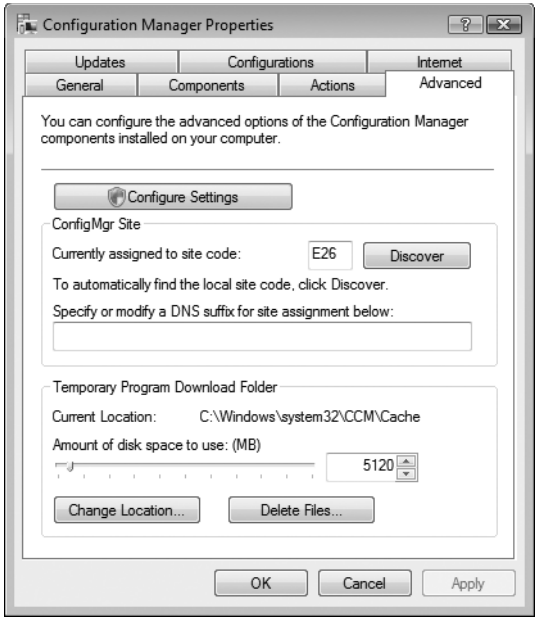

Figure 11-60 The Configuration Manager application Advanced tab

Note If you installed the Configuration Manager client using the command-line option DISABLECACHEOPT=True, you are unable to modify the local cache settings through the Configuration Manager program in Control Panel. You will need to use a script to modify the settings.

Advertised Programs Process Flow

The advertisement and its associated files are generated in a process even more straightforward than the package distribution process. Just as with the package distribution process, when the advertisement is created and written to the Configuration Manager database, an SQL trigger causes the Configuration Manager SQL Monitor service to write a wake-up file (.ofn) to Offer Manager's inbox (\SMS\Inboxes\Offermgr.box).

The Offer Manager component generates instruction files for the Advertised Programs Client Agent and writes these to the \SMS\Inboxes\Offerinf.box directory on the site server. These instruction files consist of an offer file (with a name similar to that of the package but with an .ofr extension), which is the actual advertisement; an installation file (.ins) that references the advertisement ID and the collection ID it's targeting; and up to three lookup files (.lkp), depending on the collection membership. These lookup files act as filters to determine whether the client (*sitecode*systm.lkp), the user (*sitecode*usr.lkp), or

the user group (*sitecode*usrgrp.lkp) should receive the advertisement. At this time, Offer Manager also evaluates the collection membership to determine which lookup files to create. The Configuration Manager Policy Provider copies the advertisement information to the management point as a client machine policy.

On the Configuration Manager client, the Configuration Manager Agent Host (CCMexec.exe) is responsible for retrieving client policy updates from the management point and providing the Advertised Programs Client Agent with advertised program and package information. It's also responsible for forwarding status information back to the management point.

Monitoring Status

Both the package distribution process and the advertised programs process generate status messages. You can monitor status in the same place you have monitored other Configuration Manager functions—the System Status folder in the Configuration Manager console. You can also expand the Component Status folder and view the messages for Distribution Manager and Offer Manager.

You've probably noticed two other folders in the Configuration Manager console: Package Status and Advertisement Status, located under System Status. A Package Status folder also exists under each package entry you created. These folders pertain specifically to packages and advertisements and are more useful for monitoring their status. As with Component Status, both Package Status and Advertisement Status have status summarizers, which consolidate status messages generated by the Configuration Manager components involved in the package and advertisement processes.

In Figure 11-61, the Advertisement Status and Package Status folders have been expanded to demonstrate the information they summarize. Package status detail is summarized at two levels—by site and by distribution point. Advertisement status detail is summarized by site. At each level, you can view the detailed messages that were generated for that particular package or advertisement by right-clicking an entry in the Details pane, choosing Show Messages from the context menu, and then choosing All. After you specify a view data and time range, the Status Message Viewer displays the messages related to the package or advertisement.

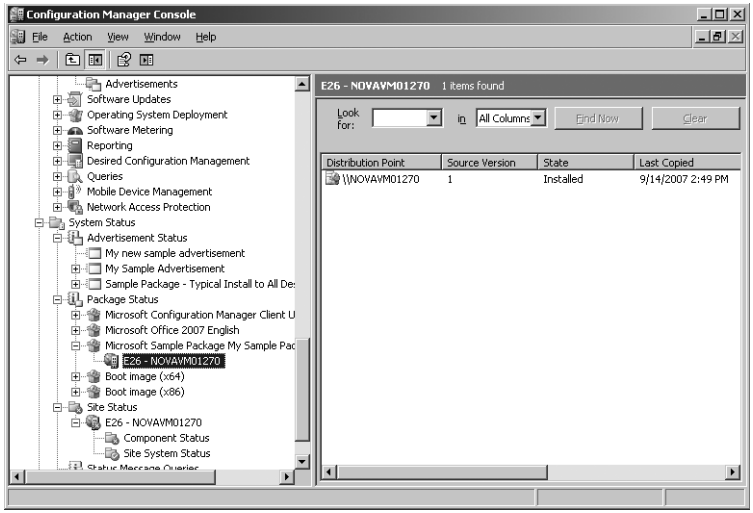

Figure 11-61 The expanded Advertisement Status and Package Status folders

The summary information displayed when a site entry is selected, as in Figure 11-61, shows when the package was copied to the distribution point and last refreshed. The summary information displayed when a specific package is selected, as in Figure 11-62, shows at a glance how many clients installed the package, how many failed, and how many are retrying.

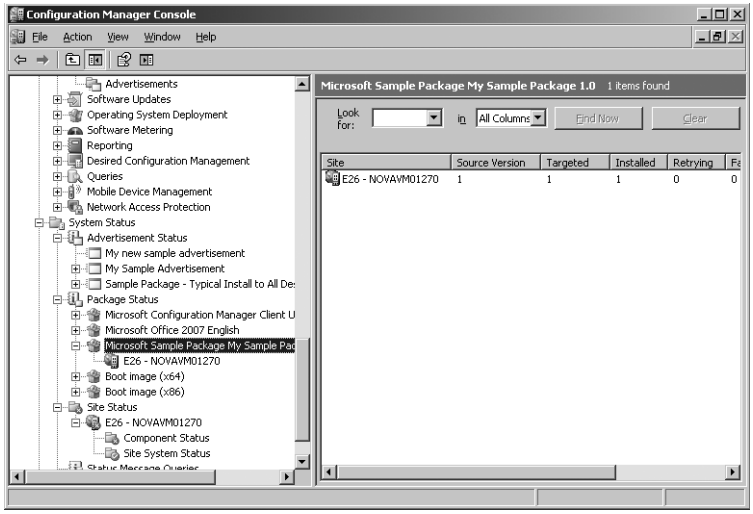

Figure 11-62 Sample summary information displayed when a package is selected in the Configuration Manager console

Figure 11-63 shows the status messages generated at the site level for a package.

Figure 11-64 shows the detailed messages for a specific distribution point in the site.

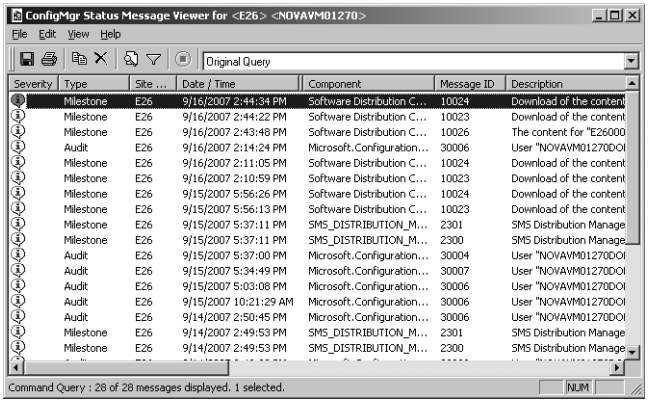

Figure 11-63 Status messages for a package generated at the site level

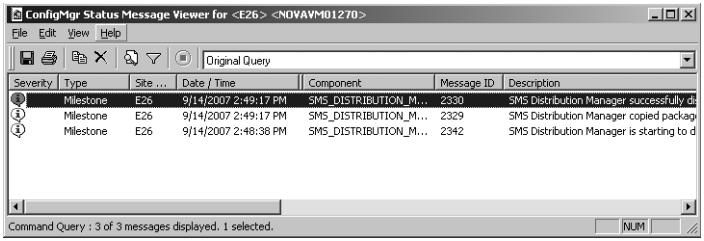

Figure 11-64 Status messages for a specific distribution point in a site

Notice the difference in messages summarized for each. Messages for the distribution point are specific to that distribution point. Messages in the 23xx range refer to Distribution Manager tasks.

Figure 11-65 shows the summary information displayed in the Configuration Manager console when you select an advertisement. This summary information includes success and failure status generated by the program as it runs on the targeted clients.

Figure 11-66 shows some of the detailed messages generated for an advertisement associated with one of the package's programs. Messages generated by the Offer Manager component fall within the 39xx range. The messages generated by the Software Distribution agent that you see in Figure 11-66 came from the client. The complete message text (under Description) tells you when the advertisement was received, when the program started, and when the program completed.

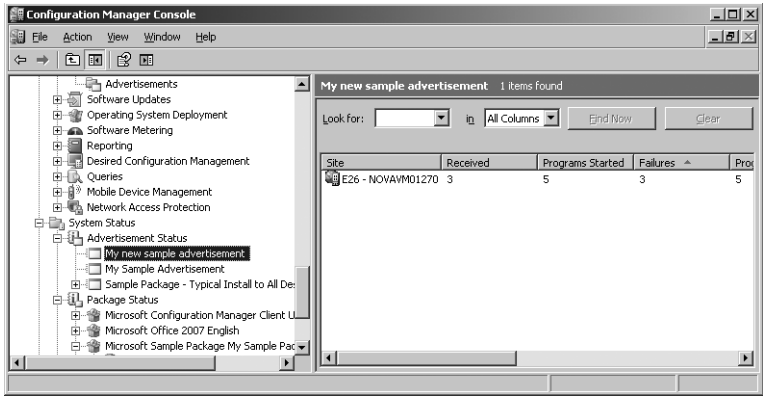

Figure 11-65 Advertisement summary showing program run statistics on the targeted clients

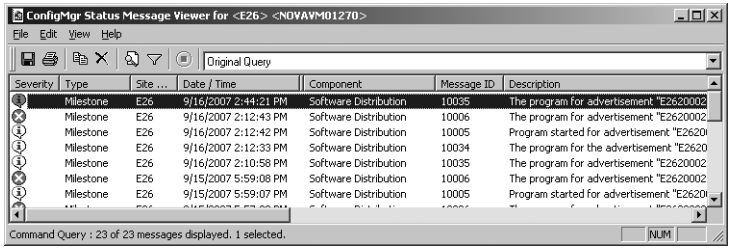

Figure 11-66 Detailed messages generated for an advertisement associated with one of the package's programs

When a program executes at the client and a status MIF is generated, you can determine whether the program completed, how the program ran, and, if it failed, what caused the problem. It should be no surprise, therefore, that you can determine not only whether a program ran, but also how it ran, whether it was successful, and, if it was unsuccessful, why it failed, as shown in Figure 11-66. The degree to which a program can generate this information depends on whether the program generates a status MIF for Configuration Manager reporting and the exit codes that are generated. Configuration Manager interprets any nonzero exit code as an error or a failure. For example, a Setup.bat file might simply execute an XCOPY of a file to a directory on the client. Even though the XCOPY command is successful, the exit code that it generates is interpreted as an error. Nevertheless, the detailed message is still far more useful and informative.

As always, you can also view the log files associated with the Distribution Manager and Offer Manager—Distmgr.log and Offermgr.log. These logs will provide thread activity details, but they're more useful for determining why a source file couldn't be copied to a distribution point or why a program couldn't be advertised—in other words, to troubleshoot

the package distribution and advertised program processes. For monitoring the package distribution and program execution process, the Status Viewer will be more than sufficient and probably more efficient.

Working with Branch Distribution Points

A new feature of Configuration Manager is the branch distribution point. This site system role is meant to facilitate software distribution to smaller or remote offices. With previous versions of Systems Management Server, the best way to manage bandwidth and connectivity issues related to software distribution to smaller or remote offices where WAN connectivity might have been an issue was to install a secondary site server in that location. You could then take advantage of the bandwidth controls available when communicating between sites to also manage software distribution.

The branch distribution point is a fine alternative to installing a secondary site server if the primary reason you need the secondary site server is to distribute software. For all practical purposes, the branch distribution point functions like a standard distribution point. However, it depends on the availability of a BITS-enabled standard distribution point from which it receives its content—otherwise, it will not function.

Like the standard distribution point, a branch distribution point can use BITS to manage network bandwidth usage and to provide a local checkpoint restart if the package download is interrupted. Branch distribution points also provide an option that downloads a package from the standard distribution point to the branch distribution point only when requested by a client. This can help manage not only network bandwidth but local storage on the branch distribution point.

The branch distribution point can be a high-end desktop-class computer, or a server-class computer. The same considerations regarding performance, storage, and network usage apply here as to the standard distribution point. However, local usage is another consideration. If the branch distribution point is a high-end desktop-class computer, then you are subject to the shared connectivity limitations associated with a desktop computer—mainly that you are limited to 10 concurrent shared connections. Also, if that computer doubles as a user's workstation, that user's desktop performance will likely be affected by client requests for packages.

Creating a Branch Distribution Point

You assign the branch distribution point role in much the same way as you assign a standard distribution point role, which is described in Chapter 3. To assign the branch distribution point role, follow these steps:

1. In the Configuration Manager console, navigate to the Site Settings folder and expand it.
2. Add a new site system by right-clicking the Site Systems folder and choosing New from the context menu. Choose either Server or Server Share from the site system options that appear.
3. Choosing Server launches the New Site System Server Wizard, which is described in detail in Chapter 3. On the General page, type the name of the Configuration Manager client that you want to make a site system. Be sure to type a fully qualified domain name (FQDN) for the client, as shown in Figure 11-67.

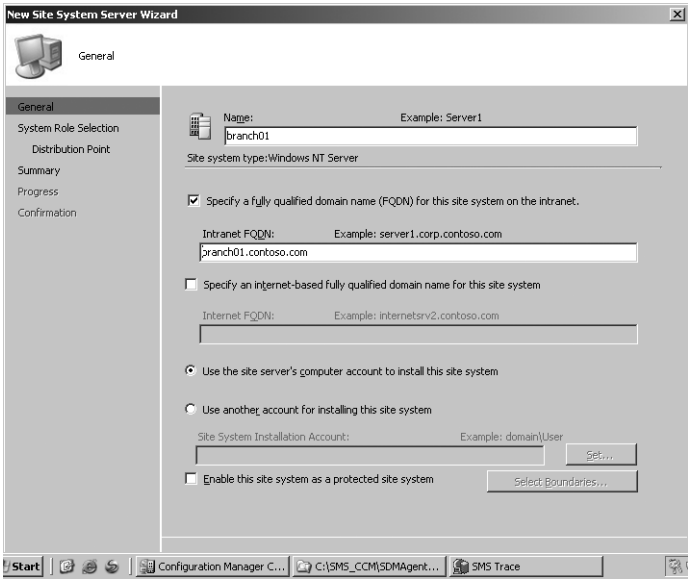

Figure 11-67 The New Site System Server Wizard General page for a new site system server

4. Click Next to display the System Site Role page. Select Distribution Point from the Available Roles list.
5. Click Next to display the Distribution Point page. Select the Enable As A Branch Distribution Point option, as shown in Figure 11-68. Optionally, you can choose to specify a local partition to use for storing package content as well as the amount of disk space to reserve for use by the local operating system.

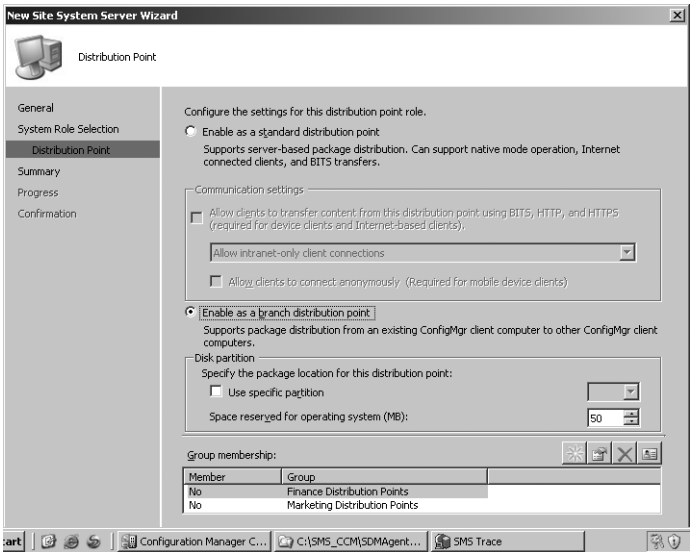

Figure 11-68 The New Site System Server Wizard Distribution Point page for a new branch distribution point

6. Click Next to review your choices, click Next again to create the role, and then click Close to exit the wizard.

Managing Branch Distribution Points

After you have deployed a branch distribution point, distributing packages is pretty much the same as described in this chapter. One thing you can do differently on a branch distribution point is prestaging a package. It might happen that you have a large package that you do not want to distribute to the branch distribution point over the network because of usage and performance concerns. In this case, you have the option of prestaging the package on the branch distribution point.

Recall that a branch distribution point depends on the availability of a standard distribution point to receive its content. You'll need to have already distributed the package you want to prestage to a standard distribution point and assigned the branch distribution point role before proceeding.

To prestage a package on a branch distribution point, follow these steps:

1. If the SMSPKGx$ folder and share (where *x* represents the drive letter) do not already exist on the branch distribution point, create them.
2. On the standard distribution point, locate the package folder and its contents and copy them to the SMSPKGx$ folder you created on the branch distribution point.

3. On the branch distribution point, run the Configuration Manager application in Control Panel.
4. On the Actions tab, select the Branch Distribution Point Maintenance Task option, and then click Initiate Action. This causes the branch distribution point to synchronize with the standard distribution point as having received the package.

Checkpoints

As you've seen, the process flows for package distribution and advertised programs are quite straightforward. Outside of normal network traffic issues that might interfere with the copying of source files to a distribution point or the copying of policy updates to a management point, not much can go wrong. The amount of network traffic generated by updating management points with package and advertisement information is relatively small, as the files involved are generally no more than 1 KB to 2 KB in size.

The real traffic comes with the copying or refreshing of source files to the distribution points. Remember that distribution points receive their files in an uncompressed format. That 200-MB application is generating 200 MB worth of network traffic when the source files are copied to the distribution point, and this traffic increases proportionally to the number of distribution points you're targeting, and whether you are targeting multiple distribution points concurrently. Although you can schedule when the distribution points are refreshed, the initial copy takes place at the time you create the package and identify the distribution points.

Also, keep in mind that when a client accesses a distribution point to run a program, the installation might also generate a significant amount of traffic between the distribution point and the client. The more clients accessing the distribution point at the same time, the more traffic generated and the greater the performance hit taken by the distribution point. This can be particularly significant if the distribution is a branch distribution point that is running on a high-end desktop in a remote location. In general, if you're targeting large numbers of clients, you should consider distributing the package load across several distribution points, perhaps local to the clients in question. This is where a branch distribution point can come in handy.

If a program fails, start your troubleshooting with the status message system or the log files. Often, simply retracing your steps will be sufficient to spot the problem. Check the package and program parameters. Test the package yourself. Check the clients' system time to be sure that they're receiving the advertisements when you think they should. Check the Advertised Programs Client Agent polling cycle to be sure that the client agent is checking for new advertisements in a timely fashion. Check that the client has a

management point available. Remember, too, to monitor the client download cache and modify it appropriately as well.

Summary

This chapter covered one of the most significant functions of Configuration Manager—distributing and advertising packages and programs to clients. This function facilitates remote installation, updating, and maintenance of Configuration Manager client computers. However, think of Configuration Manager as more than a delivery system. As you've seen, it's still your responsibility as the Configuration Manager administrator to create (and script, if necessary) the packages you distribute. Other features of Configuration Manager use the software distribution infrastructure to carry out their tasks. One of the most significant of these is Operating System Deployment, which is discussed in Chapter 12. This feature lets you script the installation of an operating system to facilitate the upgrade of existing computers and installation of new computers. It also includes a feature called task sequences that lets you script other functions as well. On to Chapter 12.