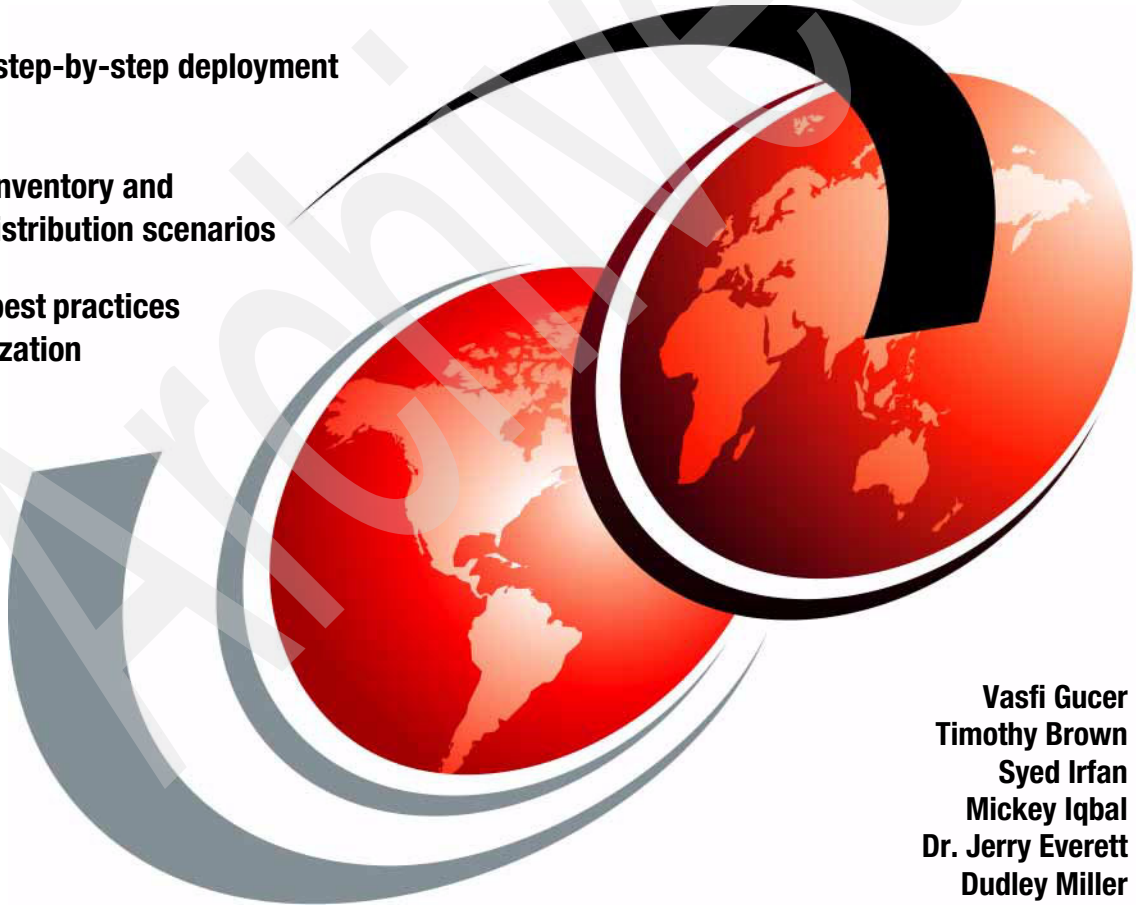
Tivoli software

IBM

Deployment Guide Series
IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution

- Provides a step-by-step deployment guide
- Describes Inventory and Software Distribution scenarios
- Discusses best practices for customization



Vasfi Gucer
Timothy Brown
Syed Irfan
Mickey Iqbal
Dr. Jerry Everett
Dudley Miller

International Technical Support Organization

Deployment Guide Series: IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution

May 2006

SG24-7236-00

Note: Before using this information and the product it supports, read the information in “Notices” on page ix.

First Edition (May 2006)

This edition applies to IBM Tivoli Provisioning Manager Express Version 4.1 for Software Distribution.

Contents

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:
IBM Director of Licensing, IBM Corporation, North Castle Drive, Armonk, NY 10504-1785 U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

Trademarks

The following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

AIX 5L™	DB2®	Redbooks™
AIX®	IBM®	RS/6000®
Cloudscape™	POWER5™	Tivoli®
DB2 Universal Database™	Redbooks (logo) ™	WebSphere®

The following terms are trademarks of other companies:

Java, JDBC, JSP, J2SE, Sun, Sun Java, and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, MS-DOS, Windows server, Windows NT, Windows, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Intel, Xeon, Intel logo, Intel Inside logo, and Intel Centrino logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States, other countries, or both.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Preface

IBM® Tivoli® Provisioning Manager Express Version 4.1 for Software Distribution is an easy-to-use, comprehensive solution for software distribution, patch, inventory, and asset management. This Web-based solution is designed for ease of use and implementation so that you can quickly begin to manage the PCs in your enterprise. IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution is implemented with both a client agent on the managed PCs and a centralized data repository. The product is specifically targeted for the small-to-medium business (SMB) market.

This IBM Redbook presents a deployment guide for IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution. We discuss the planning, installation, configuration, usage and troubleshooting of the operation. In addition, we provide a case study using a fictitious company, called XYZ Corporation.

The target audience for this book is IT specialists working on IBM Tivoli Provisioning Manager Express V4.1 Software Distribution installations and proof of concepts.

The team that wrote this redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization, Austin Center.

Vasfi Gucer is an IBM Certified Consultant IT Specialist working at the ITSO Austin Center. He worked with IBM Turkey for 10 years and has been with the ITSO since January 1999. He has more than 12 years of experience in systems management, networking hardware, and distributed platform software. He has worked on various Tivoli customer projects as a Systems Architect in Turkey and the United States. Vasfi is also a Certified Tivoli Consultant.

Timothy Brown is a Senior Systems Management Professional working for IBM Global Services in Austin, Texas. He is currently the Tivoli Provisioning Manager Express for Software Distribution Development Team Lead, responsible for making key architectural decisions, setting strategy, maintaining road maps, and managing the complete development cycle. He started in the IBM Systems Plant 16 years ago with an associate degree of applied science. After spending a year becoming familiar with the IBM RS/6000® hardware, he became focused on IBM AIX® 5L™ custom configuration and system administration. His knowledge of

distributed network installations allowed him to provide development, support, and stability to the AIX 5L Software Distribution product. The collection of his in-depth software distribution experience was applied over the last two years, first into IBM Software Delivery Center as the Test Team Lead, and then into Tivoli Provisioning Manager Express for Software Distribution as the Development Team Lead.

Syed Irfan is a Lead Architect for Integrated Technology Delivery, Server Operations. His areas of expertise include electronic software distribution service offering development, transition management, development of electronic software delivery solutions, and project management. He has more than 11 years of experience in the IT industry and is currently the team lead for Tivoli Provisioning Manager Express for Software Distribution. He is responsible for developing and managing multiple subprojects related to strategic electronic software distribution initiatives, including electronic software distribution tools development and support, electronic software distribution technology evaluation, and electronic software distribution services architecture, cost model, and standards development. He is also responsible for Electronic Software Distribution-related due diligence activity, scope determination, solution planning and costing, solution architecture development, technical and quality assurance reviews, and transition planning for new and existing global Electronic Software Distribution client engagements.

Mickey Iqbal is an IBM Senior Technical Staff Member. He is also an IBM certified IT Architect and an IBM certified Executive Project Manager. Mickey has led the IBM Global Services' strategy and architecture in the areas of electronic software distribution and OS provisioning. He has led numerous customer engagements in these fields, and also has extensive architecture development and project management experience in the e-business data management arena. Mickey has also led ERP, CRM, systems analysis, applications development, and data management projects across a number of different platforms and while using a variety of software tools. Mickey is an advanced database researcher, and his research work on “data integration and semantic reconciliation among heterogeneous information sources” has been published in internationally reviewed computer science journals and internationally reviewed information systems conference proceedings. Mickey has also filed several patents for IBM, which are related to his work on electronic software distribution and database research. He holds a master’s degree in business administration, a master of science degree in management information systems, and a bachelor of science in mechanical engineering.

Dr. Jerry Everett is an IBM Certified Instructor who has designed, developed, and currently delivers 20 internal training courses about software testing and software quality. Prior to his training assignments, Dr. Everett authored installation and process guides for IBM Business Partners products, such as the Dun & Bradstreet SmartStream enterprise financial system.

Dudley Miller is an Advisory IT Architect for IBM Integrated Technology Delivery. He received a bachelor of science degree in engineering science, specializing in electrical engineering and computer science, from the University of Texas at Austin. He has more than 15 years of experience in the IT industry and is currently the Lead Architect for Tivoli Provisioning Manager Express for Software Distribution. His areas of expertise include object-oriented design and development and enterprise-level integration of electronic software distribution tools and services. He is responsible for solution architecture, solution development, and solution deployment of electronic software distribution tools and services. He holds one patent in the electronic software distribution field.

Thanks to the following people for their contributions to this project:

Elizabeth Barnes, Arzu Gucer
International Technical Support Organization, Austin Center

David Gemuenden, Roger J. Hellman, Elizabeth Purzer
IBM U.S.

Gavin Cameron
IBM U.K.

Become a published author

Join us for a two- to six-week residency program! Help write an IBM Redbook dealing with specific products or solutions, while getting hands-on experience with leading-edge technologies. You'll team with IBM technical professionals, Business Partners and/or customers.

Your efforts will help increase product acceptance and customer satisfaction. As a bonus, you'll develop a network of contacts in IBM development labs, and increase your productivity and marketability.

Find out more about the residency program, browse the residency index, and apply online at:

ibm.com/redbooks/residencies.html

Comments welcome

Your comments are important to us!

We want our Redbooks™ to be as helpful as possible. Send us your comments about this or other Redbooks in one of the following ways:

- Use the online **Contact us** review redbook form found at:

  ibm.com/redbooks

- Send your comments in an e-mail to:

  redbook@us.ibm.com

- Mail your comments to:

  IBM Corporation, International Technical Support Organization
  Dept. JN9B Building 905
  11501 Burnet Road
  Austin, Texas 78758-3493

1

Introduction

This chapter provides an introduction to the IBM Tivoli Provisioning Manager Express Version 4.1 for Software Distribution (Tivoli Provisioning Manager Express for Software Distribution) product. We discuss the following topics:

- The business value of Tivoli Provisioning Manager Express for Software Distribution for SMB customers
- Software Distribution component: Benefits and features
- Inventory component: Benefits and features
- Software Distribution components
- Inventory components
- Tivoli Provisioning Manager Express client and server requirements
- Simplified administration with combined inventory and software distribution capabilities
- IBM teams to enable your unique business or technology requirements

1.1 The business value of Tivoli Provisioning Manager Express for Software Distribution for SMB customers

Understanding what hardware and software assets a business has and tracking and managing the quantity of each type of hardware and software asset, where they all reside, and how quickly and effectively can software changes and operating system patches be implemented are vital to the success of any business. This information can help a business:

- Optimize IT resources and assets to support the business needs
- Manage licenses and IT investments to minimize costs
- Rapidly resolve IT problems
- Drive the effectiveness of security and compliance initiatives
- Provide their end users the training they need to be even more productive
- And much more

Creating an accurate inventory of the hardware and software used throughout an organization, and distributing new applications and patches when needed, are crucial IT maintenance tasks. To maintain security, check compliance, give end users the tools they need to be productive, and properly track software licenses, every organization must efficiently manage inventory and software distribution.

The problem is that often the repetitive tasks of distributing software and operating system patches, and tracking and managing hardware and software inventory, are managed in ways that are too complex, time-consuming, and expensive. This is especially challenging when available IT skills and administrator staff time is limited, or when there is limited budget available to address the problem. In addition, PCs are often widely distributed—across branch offices or mobile field employees. Getting the right IT staff and the machines they need to inventory and update in the same place is not only costly, it also hurts the productivity of both IT employees and end users. For small and midsize businesses, as well as departments and workgroups within larger enterprises, it is crucial to automate and simplify inventory and software distribution management.

For the past several years, most businesses have migrated their IT systems to Web-based environments, and they want new IT products and services to integrate with these Web-based environments. With the proliferation of corporate TCP/IP and Web-based intranets, it is logical to use them to deliver software and to manage and track software and hardware assets on enterprise computers. Furthermore, Web-enabled applications have the following advantages:

- Single interface for all clients and platforms
- Consistent, easily learned interface
- On demand availability
- Low cost of implementation and ownership

Many of the software delivery products in the marketplace are not Web-based or Web-enabled. The few Web-based software delivery solutions that do exist provide minimal functionality with a high degree of cost and complexity. They generally do not incorporate all the necessary requirements, or they are too expensive to implement just for distributing software.

Small and medium business (SMB) customers desire easy-to-use software distribution, patch, inventory, and asset management solutions for their PC environments. To help small or midsize organizations efficiently and cost-effectively automate inventory and software distribution management, IBM has developed affordable, powerful IBM Tivoli Provisioning Manager Express software. Not only is this software easy to install, use, and manage, it also helps these businesses maximize employee efficiency and lower costs.

Tivoli Provisioning Manager Express for Software Distribution is an easy-to-use, comprehensive solution for software distribution, patch, inventory, and asset management. This Web-based solution is designed for ease of use and implementation so that you can quickly begin to manage the PCs in your enterprise. IBM Tivoli Provisioning Manager Express for Software Distribution is implemented with both a client agent on the managed PCs and a centralized data repository.

Tivoli Provisioning Manager Express for Inventory is an entry-level, information management solution that offers hardware and software inventory reporting capabilities for your PC assets. This easy-to-use solution consists of a client agent to collect software and hardware information, a centralized data repository, and a Web-based console that lets you quickly and easily manage and view the collected information.

Important: Tivoli Provisioning Manager Express for Inventory is a subset of Tivoli Provisioning Manager Express for Software Distribution. The software distribution and patch capabilities are not included. Tivoli Provisioning Manager Express for Software Distribution product, however, includes the Tivoli Provisioning Manager Express for Inventory product capabilities.

These two solutions are both new to the IBM Tivoli brand. They were previously marketed under the IBM Software Delivery Center and IBM System Information Center names, and have now been integrated by IBM under the IBM flagship Tivoli brand.

1.2 Software Distribution component: Benefits and features

Tivoli Provisioning Manager Express for Software Distribution (previously IBM Software Delivery Center) combines inventory management with a way to deploy software efficiently. IT staff can quickly create and distribute software packages from their own machines. End users can take advantage of an easy-to-use Web-based or Java™ applet–based interface to perform installation when it is convenient for them. Tivoli Provisioning Manager Express for Software Distribution offers flexible “push” and “pull” capabilities. When distributing new software is urgent or when users are away from their desks, IT staff can deliver application software and patches without end-user intervention. They simply select a predefined distribution list, select the scheduled time window, and choose a package for the scheduled distribution. Alternatively, IT staff can easily create a Web-based catalog, from which end users can select and install prepackaged software applications. When bandwidth must be tightly controlled, IT staff can use the same process to create installation CDs.

Tivoli Provisioning Manager Express for Software Distribution has many valuable features that work together to satisfy current client requirements and provide the following benefits:

- Ease of integration into the enterprise environment

  The server components (such as the Java runtime environment and IBM WebSphere® Application Server - Express) are reliable, industry-standard components that use cutting-edge Java and Web-based technologies.

- Ease of management

  Tivoli Provisioning Manager Express for Software Distribution is easy to implement, use, and manage. An administrator can use a Web browser to access the administrator’s console to push software packages and updates to one or multiple Software Distribution clients.

- Familiar interface

  The Tivoli Provisioning Manager Express for Software Distribution user interface is a standard Web browser. This familiar end-user interface helps enhance usability and shorten learning time.

- Low cost and immediate return on investment

  Tivoli Provisioning Manager Express for Software Distribution components provide a cost-effective solution. By contrast, planning, designing, devising naming conventions, and purchasing hardware and proprietary software for other software delivery solutions requires a big investment of time and money.

- Scalable solution

  Small, medium, and large enterprise environments can use Tivoli Provisioning Manager Express for Software Distribution.

Tivoli Provisioning Manager Express for Software Distribution includes the following features:

- Simple packaging requirements

  The Software Distribution process works with various industry-standard packaging tools and utilities, such as InstallShield, Wise InstallManager, WinZip Self-Extractor, and Microsoft® Software Installer (MSI). Software and data files also can be distributed in an unpackaged format.

- Incompatible installation prevention check

  You can restrict each software package to one or more operating system environments. As you build each software package, you specify which platforms are supported and restrict the software package from being installed on computers with incompatible operating systems. If a software package is designed only for installation on a Microsoft Windows® XP computer, a user with a Microsoft Windows 2000 computer is not permitted to install it.

- Free-space checking

  Before a software package is installed on a client computer, adequate free space must exist. Software Distribution checks the amount of free space to help ensure that enough storage is available before the software package is delivered to a user.

- Locked-down desktop support

  The Software Distribution Catalog provides software installation to an environment where the user does not have the necessary access rights or privileges to install software.

- Checkpoint restart

  The Software Distribution Catalog program supports a byte-level checkpoint restart. If the delivery of a software package is interrupted because the network disconnects, only the missing data is sent when the network connection resumes.

- Self-updating agent

  The Software Distribution Agent periodically checks the server for updates and automatically installs the required updates.

- Detailed logging

  Detailed information about each software package installation is available as individual event logs, as well as summary reports. If a problem occurs, the logs show which client had the error.

- Security and access control

  Managing access to software packages in the Software Distribution process is simple. Based on your requirements, you set up groups to see catalogs of different software packages. Access is based on the organization, job function, or any other criteria that is viable in your company.

1.3 Inventory component: Benefits and features

With Tivoli Provisioning Manager Express for Inventory, an organization can deploy robust inventory capabilities in a cost-effective manner. To implement an end-to-end asset tracking solution, Tivoli Provisioning Manager Express for Inventory can be used to manage the increasing complexity of an IT infrastructure and to maintain end-user productivity—with minimal impact on system performance. Inventory can be used to accurately identify, track, and report on hardware, software (including patches), and owners, even when devices are in many different physical locations.

By default, Tivoli Provisioning Manager Express for Inventory looks for a standard set of frequently requested information. But through the easy-to-use administrative interface, IT staff can also customize the data that needs to be collected. With the information that the electronic agent automatically gathers, and user-entered information such as a device's physical location and owner's department, the IT staff can identify and address common issues. Any of the reports that are developed can be saved and regularly generated on a set schedule and e-mailed to the designated parties.

Tivoli Provisioning Manager Express for Inventory has many valuable features that work together to satisfy client requirements and provide the following benefits:

- Rapidly identify which machines need a security patch and determine hardware and software prerequisites to help reduce failed distributions.
- Align software licenses and hardware exactly based on needs to avoid the cost of purchasing too many licenses and the potential penalties of having too few.
- Help speed license reconciliation by comparing executable files with a user-maintainable, Tivoli-provided list of licensable software.
- Simplify desk-side support and troubleshooting with easy-to-use tools for comparing current and historical configurations.

Tivoli Provisioning Manager Express for Inventory offers the following features:

- Easy browser accessibility

  The Tivoli Provisioning Manager Express for Inventory server is Web-based and can be accessed with Microsoft Internet Explorer Version 6.0 or later.

  Administrators have a single interface for direct access of asset information. Predefined reports can be run using the Web browser on the Tivoli Provisioning Manager Express for Inventory server. These reports can be exported as files or e-mailed.

- Minimal resource usage on client systems

  The Tivoli Provisioning Manager Express for Inventory program (client) is a small, non-resident, single file executable application. It is active only when needed. When an agent is running the Tivoli Provisioning Manager Express for Inventory program, it consumes very small (less than 5 MB) of RAM. The agent can store the results of the inventory scan on the client system if it is not connected to the network. The results can be delivered later to the Tivoli Provisioning Manager Express for Inventory server.

- Control software license usage

  Tivoli Provisioning Manager Express for Inventory can be used to identify software licenses that are not used. Administrators can then uninstall the software (manually or with a corresponding tool), thereby freeing up the expensive license. License control ensures compliance with quantity licensing agreements for individual applications.

- Central management

  With Tivoli Provisioning Manager Express for Inventory, mobile computers, desktops, servers, and non-PC assets such as monitors, printers, PDAs, and so on can be centrally managed through the administrator Web console (non-PC assets must be manually added to the Tivoli Provisioning Manager Express for Inventory).

- Single point solution

  Tivoli Provisioning Manager Express for Inventory is a single point solution for central inventory management. The Tivoli Provisioning Manager Express for Inventory server can have its database, Web server, and Inventory application on the same physical server.

- Secure access

  Tivoli Provisioning Manager Express for Inventory can be customized to connect to a company's Lightweight Directory Access Protocol (LDAP) service. If no LDAP service exists, Tivoli Provisioning Manager Express for Inventory Web services include user access control. There are three types of users:

  - Users
  - Super users
  - IBM Tivoli Provisioning Manager Express for Inventory administrators

- Database integration

  Tivoli Provisioning Manager Express for Inventory installs IBM Cloudscape™, a 100% Java SQL database. This database provides a quick installation and integration solution. Tivoli Provisioning Manager Express for Inventory can also use other SQL databases that support Java Database Connectivity (JDBC™) connections, if an enterprise database is required or an existing SQL database is already available. Tivoli Provisioning Manager Express for Inventory can use other SQL databases with minimal changes to the installation. When Cloudscape is used, an SMB can migrate to an enterprise SQL database such as IBM DB2® as required in the future. Tivoli Provisioning Manager Express for Inventory is designed to work with any standards-based SQL server that provides connectivity through JDBC. Other SQL databases that might meet the enterprise need are:

  - IBM DB2
  - Oracle
  - Microsoft SQL Server
  - PostgreSQL

1.4 Software Distribution components

Tivoli Provisioning Manager Express for Software Distribution consists of the administrative console to manage the server and the Software Distribution Catalog to deliver software to the client machines.

1.4.1 Server

The server is the control center that manages software packages, groups, users, logs, and schedules. The server has three main areas of functionality:

- Server management

  This area provides the group, user, packaging and bundling, and distribution management.

- Client communication

  The Software Distribution client/agent can access the server using the following methods:

  - Applet login check
  - Query for scheduled push packages
  - Transfer package resources
  - Log information sent back to the server

- Data persistence layer

  The data persistence layer isolates data to provide independent database access.

Server components

The Tivoli Provisioning Manager Express for Software Distribution server has the following components:

- Cloudscape

  Cloudscape is an embedded relational database-management system. This component enables Software Distribution to store and maintain the package metadata and log information.

- Administrator's console

  Administrators use this browser-based interface to manage the Software Distribution process. Administrators can manage multiple catalogs for different groups or business units. They can also add, delete, and modify software packages.

- Embedded version of IBM WebSphere Application Server – Express V6.02

- IBM Java 2 Platform, Standard Edition SDK Version 1.4.2

  This industry-standard, platform-independent programming language is part of the Tivoli Provisioning Manager Express for Software Distribution server.

1.4.2 Client

The Software Distribution client has the following two main features:

- The client agent
- The client application

The client agent runs as a service that checks the server periodically at specified intervals to find the next scheduled installation package. It is also a local installer for the Software Distribution Catalog if a software package needs secure installation.

Note: The Software Distribution Agent runs in the background. There is no administrator or user interface. Because the client agent runs as a service, it can be disabled through the Administrator's Tools function of the Windows Control Panel. By default, the client agent is set to start automatically. The client agent is listed as *IBM Tivoli Provisioning Manager for Software Distribution Agent Service* in the list of services.

The client applet runs either from the browser as a Java Web Start application or as a stand-alone Java application. It presents all software packages for which a particular user has access privileges. Users can select and install software packages from an online catalog. When the user selects a software package, the catalog shows detailed data about the software package.

If the software package the user selected meets the user's needs, the user clicks the Install button. The installation procedure starts automatically. If the user does not have the rights or privileges to install the software package on that computer, the client applet passes the software package to the client agent to be installed.

The components of the Tivoli Provisioning Manager Express for Software Distribution client are:

- The Software Distribution Catalog application

  This Java-based application presents a catalog of software packages to the user. From this catalog, the user can select a software package for installation. The software package is downloaded to the client and automatically installed.

- Software Distribution Agent

  The Software Distribution client agent controls the installation of software pull packages that require administrative rights to install and schedule pushes of software.

- IBM Java 2 Runtime Environment (JRE) Version 1.4.2

  This is an industry-standard, platform-independent programming language.

- TPMXSD_SETUP.EXE installation program

  This software package installs the Software Distribution Agent and the Software Distribution Catalog application on the client.

1.5 Inventory components

A complete IBM Tivoli Provisioning Manager Express for Inventory solution has the following components:

- Microsoft Windows 2000 Server or Windows Server 2003
- SQL database with JDBC support
- Java Web server
- Tivoli Provisioning Manager Express for Inventory
- Tivoli Provisioning Manager Express for Inventory program agent

The Tivoli Provisioning Manager Express for Inventory program agent supports IBM and non-IBM systems. The agent reads information from the Windows registry, Windows Management Instrumentation (WMI) and the SMBIOS of a client computer. After collecting the data from the computer, the Tivoli Provisioning Manager Express for Inventory program creates a file with all the information in it. This file can include:

- Processor type and speed
- Memory size
- PCI devices
- Logical disk information
- Operating system information
- Device drivers
- Installed software
- Regional settings

Tivoli Provisioning Manager Express for Inventory also accommodates portable computers. The collected inventory information can be stored locally. When network connectivity is restored, the inventory information will be sent to the server database.

1.6 Tivoli Provisioning Manager Express client and server requirements

Tivoli Provisioning Manager Express for Software Distribution and Tivoli Provisioning Manager Express for Inventory have the following client and server requirements.

The client requirements include:

- Microsoft Windows NT® 4.0 or Windows 9X; Windows 2000, 2000 Professional, 2000 Server, 2000 Advanced Server, or 2000 Data Center Server; Windows XP or XP Professional; Windows 2003 Enterprise or Standard; or Windows Server 2003 Standard, Enterprise, or Data Center Network connection (TCP/IP)
- Java (JRE 1.4 and later) (included in software)
- Tivoli Provisioning Manager Express for Software Distribution agent
- Tivoli Provisioning Manager Express for Inventory program agent
- Microsoft Internet Explorer 6.0 and later

The server requirements include:

- Windows 2000 Server, Advanced Server, or Data Center Server; Windows XP Professional with Service Pack 2 or later; Windows 2003 Enterprise or Standard Release 2; or Windows Server 2003 Standard, Enterprise, or Data Center
- Network connection (TCP/IP)
- Embedded version of IBM WebSphere Application Server – Express V6.02 (included in software)
- Java 2 Platform, Standard Edition (J2SE™) SDK/Runtime (included in Tivoli Provisioning Manager Express for Software Distribution)
- Internet Explorer 6.0 and later
- IBM Cloudscape V5.1 database (included in software) or later to export captured data to any SQL-compliant database
- Administrative console requirements: Any operating system that supports a Web browser (HTTP or HTTPS)

1.7 Simplified administration with combined inventory and software distribution capabilities

Because Tivoli Provisioning Manager Express for Software Distribution seamlessly integrates inventory data and software distribution, you can use the software to do things that are not possible without an integrated solution:

- Simplify distribution by using highly accurate system information. Rather than build distribution lists manually, your staff can use inventory data to build dynamic distribution lists. For example, an administrator can direct the software to deliver a Microsoft Office patch to all machines that have Microsoft Office, and avoid the burden of identifying each target machine manually. As a result, you can “push” software updates out only to the machines that need them, precisely when they need them.
- Automatically update inventory data. The product updates software scans each time software distribution occurs, so your organization can consistently access updated, accurate inventory information.
- Enable end users to maintain inventory data, if you choose. Through an easy-to-use interface, end users can track and manage their own assets, reducing the dedicated IT resources needed for this task.

Because security and audits are pressing concerns for nearly every business, Tivoli Provisioning Manager Express for Inventory helps you track compliance with your corporate security policies, and enforce them. For example, you can measure how end-user configurations align with corporate antivirus and firewall policies, or determine if Windows users adhere to corporate password length and age guidelines.

Additionally, Tivoli Provisioning Manager Express for Software Distribution extends these capabilities by deploying the latest updates to noncompliant end-user workstations. Update management is critical to maintaining available systems and protecting business data from computer viruses and other Internet-borne security problems. By decreasing the number of calls and service requests from owners of virus-infected systems, you help lower overall administration costs and resource needs.

1.8 IBM teams to enable your unique business or technology requirements

For customers requiring additional services desiring even faster results, IBM Software Services for Tivoli (Lab Services), IBM Global Services, and our extensive network of IBM Business Partners offer deep technical and business expertise. Augmented services include planning and architecture, customization, best practices, integration, skills transfer, service offerings, custom on-site training workshops, and premium support.

1.8.1 About Tivoli software from IBM

Tivoli software from IBM helps organizations efficiently and effectively manage information technology (IT) resources, tasks, and processes in order to meet ever-shifting business requirements and deliver flexible and responsive IT service management, while helping to reduce costs. The Tivoli portfolio spans software for security, compliance, storage, performance, availability, configuration, operations, and IT life-cycle management, and is backed by world-class IBM services, support, and research.

1.8.2 For more information

To learn more about Tivoli Provisioning Manager Express for Software Distribution, Tivoli Provisioning Manager Express for Inventory, and integrated solutions from IBM, contact your IBM representative or IBM Business Partner, or visit:

http://www.ibm.com/tivoli/smb

You can also learn more about IBM Software Services at:

http://www.ibm.com/software/sw-services

IBM Global Services at:

http://www.ibm.com/services

IBM Business Partners at:

http://www.ibm.com/software/solutions/isv

2

Product infrastructure, planning, and deployment

In this chapter, we discuss different implementation options for the infrastructure required for Inventory and Software Distribution using Tivoli Provisioning Manager Express for Software Distribution. We provide sample high-level architecture overview diagrams for small, medium, and large environments.

This chapter includes the following topics:

- Infrastructure deployment considerations
- Customization considerations
- Hardware specifications and recommendations

2.1 Infrastructure deployment considerations

You must consider several factors when designing and deploying a Tivoli Provisioning Manager Express for Software Distribution infrastructure. These factors include the following items:

- Number of packages that you manage
- Average package size
- Number of clients
- Number of distributions
- Frequency of inventory scans
- Hardware configurations
- Network topology
- Network bandwidth

As with any software distribution solution, pay careful attention to the network topology. Place the Software Distribution server or servers as close to the clients as possible. Connect the servers to the fastest backbone available, preferably 100 Mbps Ethernet or 1 Gbps Ethernet.

It is important for administrators to prepare for setting up the Tivoli Provisioning Manager Express for Software Distribution environment by collecting the following information about their network topology and general environment setup:

- Are target machines behind firewalls?
- Does this require a proxy server?
- Will target machines be accessing the server from low bandwidth network connections?
- Will the environment be using directory sharing?
- Are there existing file share servers that can be reused?
- Are the user IDs on the target machines created as restricted users?
- Is Microsoft Active Directory or LDAP being used for user authentication?
- How will the packages be grouped or categorized?
- How will the agent be rolled out?

Knowing the information about the topology of your machine infrastructure will be important to determine what software distribution features and methods should be used for the most effective implementation. Document all functional and non-functional requirements prior to the implementation planning phase.

Tivoli Provisioning Manager Express for Software Distribution can be integrated with Microsoft Active Directory for user authentication and group membership replication. This can greatly simplify the grouping of packages and distributions based on organizational unit. This integration also eliminates a key customer pain point: the requirement of users to remember another ID and password. Figure 2-1 presents an overview of the this type of implementation.

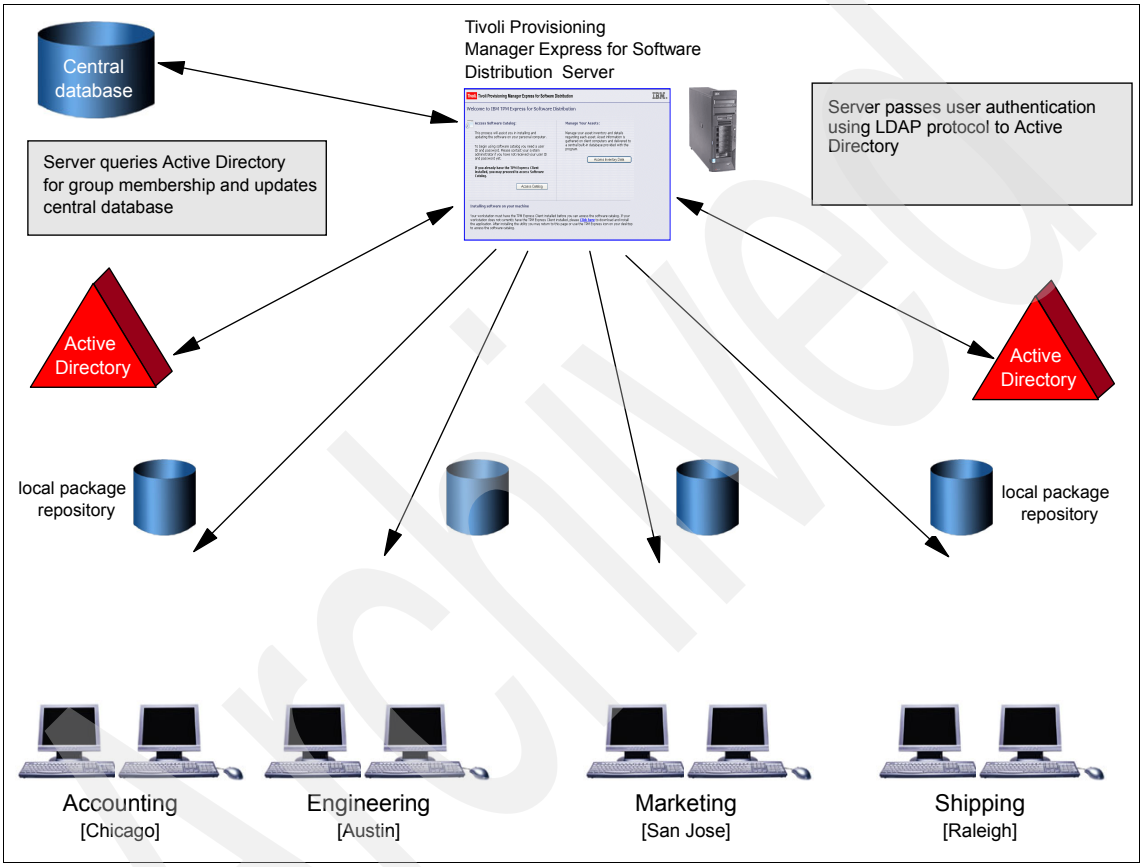


Figure 2-1 Sample Tivoli Provisioning Manager Express with Active Directory Integration

Note: We describe Active Directory integration in detail in Appendix B, “Active Directory integration” on page 241.

The following sections describe typical architectures for sample small, medium, and large network environments.

2.1.1 Small and medium environments

The typical architecture for small and medium environments that, depending on size and frequency of distributions, can handle up to 5000 clients consists of a single server dedicated to Tivoli Provisioning Manager Express for Software Distribution. The server pushes out software packages to clients that have the Software Distribution client agent installed or allows clients to pull packages and install them through the Software Distribution Catalog.

Figure 2-2 shows a typical architecture for a small environment.

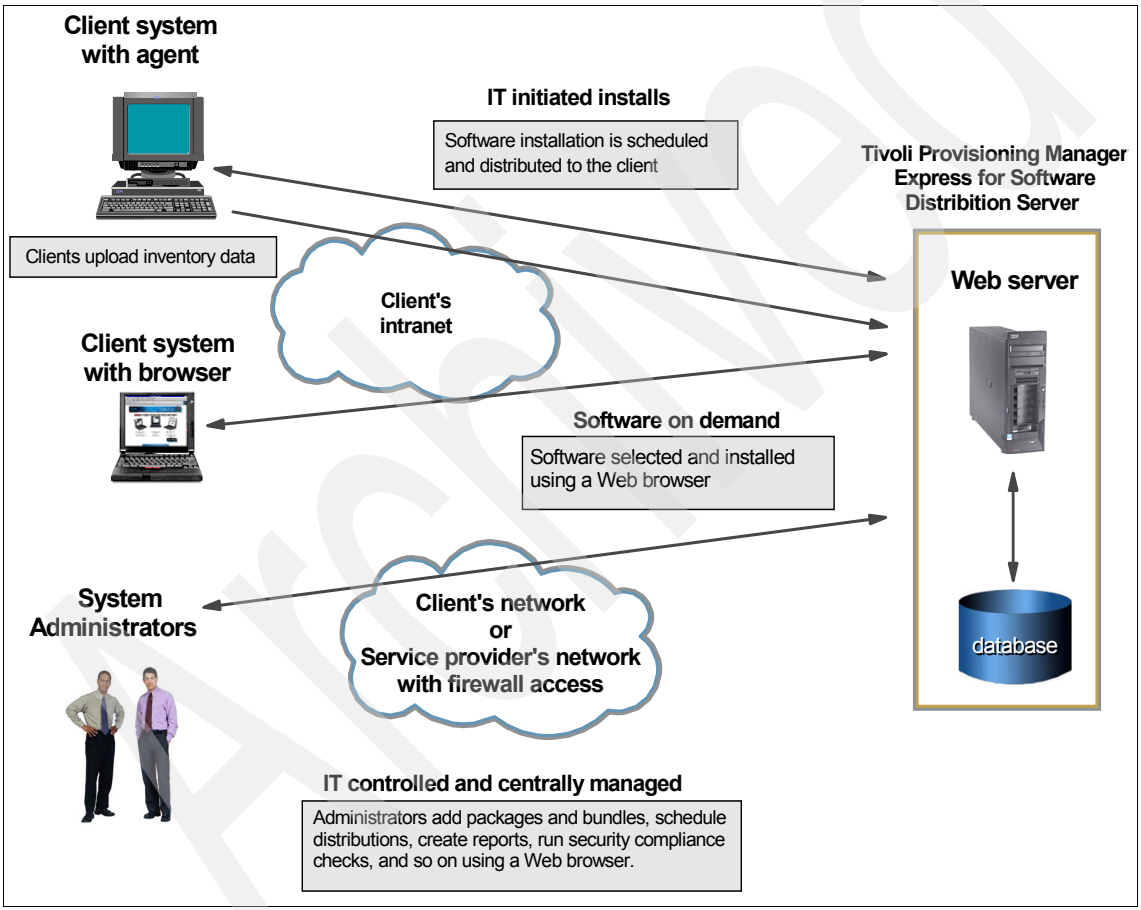


Figure 2-2 Sample architecture for a small environment

If network bandwidth over a wide area network (WAN) is an issue, Software Distribution provides the ability to store the software packages on remote files shares that are geographically close to the clients. Figure 2-3 shows a sample architecture overview diagram using this type of infrastructure.

Note: The remote file shares referenced in Figure 2-3 can be preexisting file servers or consist of an infrastructure that is already in place.

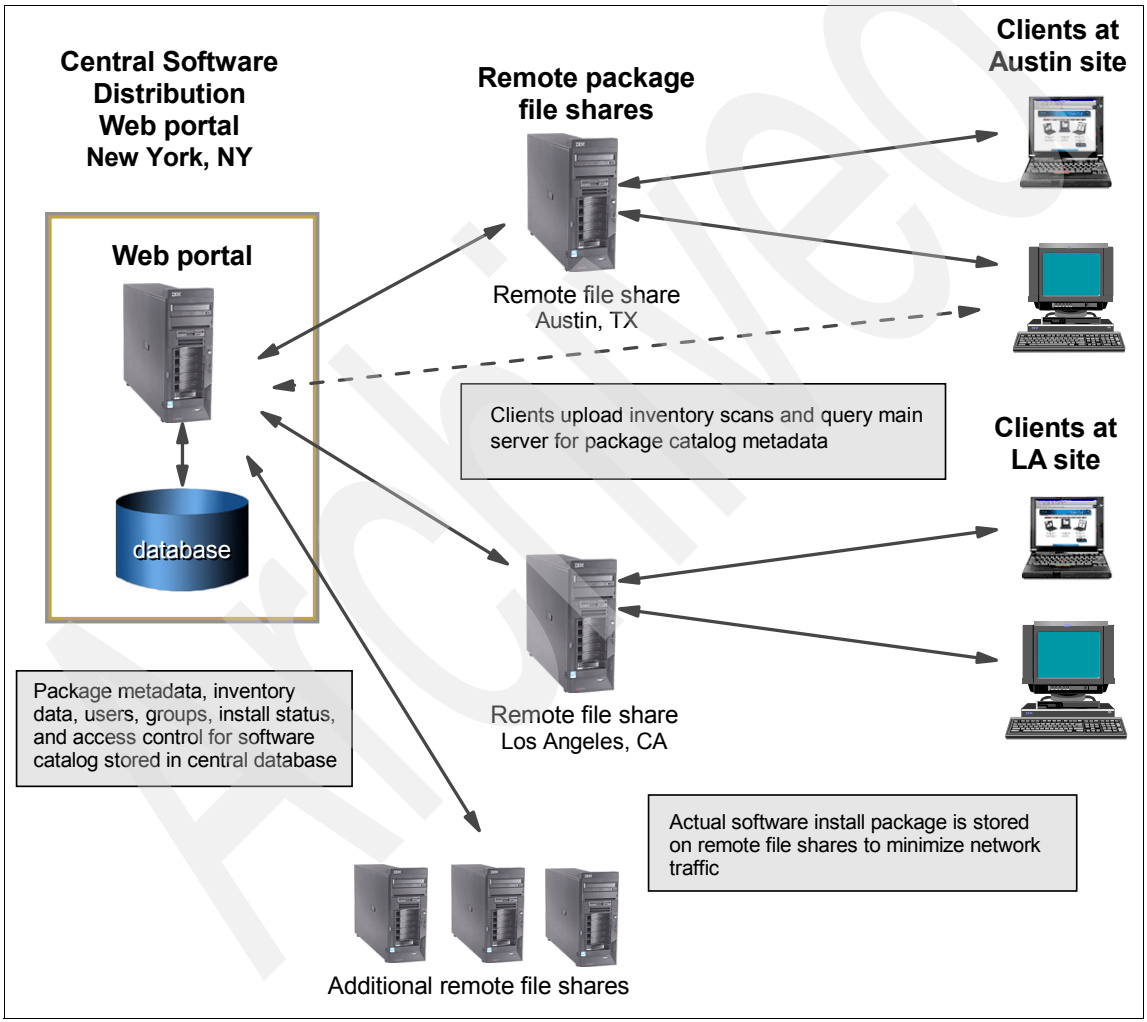


Figure 2-3 Sample architecture using remote file shares

2.1.2 Large environments

For larger environments, you can use multiple installations of Software Distribution servers. You can configure segmented groups of users to use the server that is physically closest. Software Distribution provides export and import features to simplify the replication of the metadata associated with software packages and bundles from one server to another.

Another option is to use multiple Tivoli Provisioning Manager Express for Software Distribution servers and a load balancing solution, as shown in Figure 2-4. For large enterprise environments, we recommend either IBM WebSphere Edge Server V2 or WebSphere Application Server V5 Edge Components (both include IBM Network Dispatcher) to provide load balancing among several Web servers.

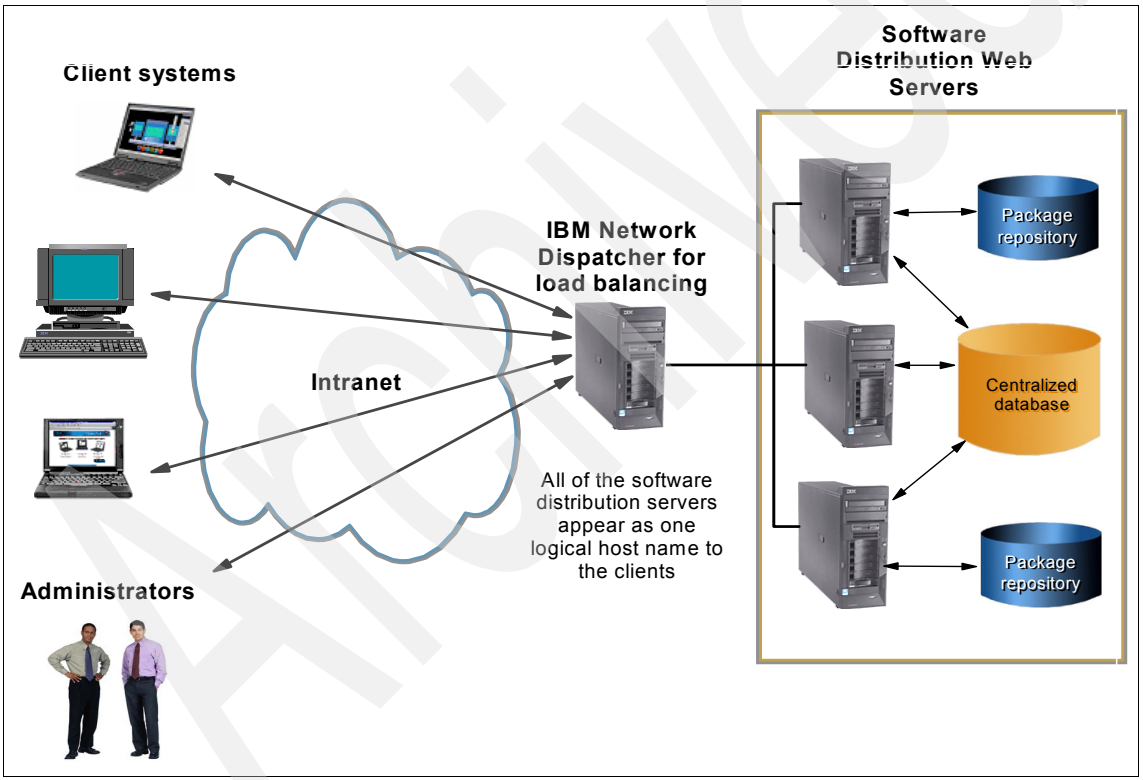


Figure 2-4 Sample architecture with load balancing

If the architecture shown in Figure 2-4 is used, customization is required on the server side so that only one instance of the Software Distribution database exists. In addition, another database other then the default Cloudscape database

that ships with the product will need to be used. The Cloudscape database that is installed by default only allows one connection at a time. IBM DB2 Universal Database™ (UDB) is recommended for large implementations.

2.2 Customization considerations

Although Tivoli Provisioning Manager Express for Software Distribution ships with a built-in version of the Cloudscape database and WebSphere Express, you can easily customize Software Distribution to integrate into an existing client's infrastructure. In general, all that is required to integrate Software Distribution into an existing infrastructure are:

- Java programming language Version 1.4.2 or later
- A relational database system supporting SQL and JDBC

Each of these prerequisites is available on a large number of platforms and from several different vendors. IBM Global Services offers the following services to help customers integrate Tivoli Provisioning Manager Express for Software Distribution into specific environments:

- Architecture design and implementation
- Installation and setup
- Customization of Web pages
- Custom LDAP integration for user authentication and group membership
- Custom database integration
- Custom software entitlement integration
- Alternate Java Virtual Machine support
- Agent integration and rollout
- Software packaging
- Software distribution management
- Non-Windows server support
- Non-Windows client support
- Premium support services

For more information about these service offerings, send an e-mail to:

mailto:asktpmx@us.ibm.com

2.3 Hardware specifications and recommendations

For the best performance, we recommend the following system requirements for the Tivoli Provisioning Manager Express for Software Distribution server computer:

- Dual Intel® Xeon® processors
- 2 GB of ECC RAM
- 15,000 RPM Ultra320 SCSI hard drives with RAID controller
- DVD-ROM drive
- 500 MB free hard disk space for server installation
- Additional space as required for package repository
- One of the following operating systems:
  - Microsoft Windows 2000 Server with Service Pack 4 or later
  - Microsoft Windows Server 2003
- Multiple network interface cards (NICs)

For the load balancer shown in Figure 2-4 on page 20, we recommend the following system requirements for best performance:

- Dual IBM POWER5™ technology-based processors, 1.9 GHz
- 1 GB of ECC RAM
- 15,000 RPM Ultra320 SCSI hard drive
- DVD ROM drive
- Multiple network interface cards
- IBM AIX 5L V5.1

3

Installation and configuration

This chapter provides the steps to install IBM Tivoli Provisioning Manager Express for Software Distribution on a server and the Software Distribution Agent on a client machine.

We discuss the following topics:

- Installing the server
- Server configuration properties files
- Installing the agent
- Agent configuration properties files

3.1 Installing the server

After you install the Microsoft Windows server™ operating system, obtained critical updates and service packs, and disable Microsoft Internet Information Services (IIS), you can install Tivoli Provisioning Manager Express for Software Distribution from the installation CD.

During this installation process, several events take place:

- WebSphere Application Server - Express V6.0.2 is installed.
- IBM JRE and Cloudscape V5.1 are included in the WebSphere installation.
- The Tivoli Provisioning Manager Express for Software Distribution Web application is installed as a WebSphere profile, and the Cloudscape database is created and populated.

Complete the following procedures to install the Tivoli Provisioning Manager Express for Software Distribution program.

3.1.1 Installation requirements

The computer on which you install IBM Tivoli Provisioning Manager Express for Inventory must have the following items or capability:

- At least a 550 MHz Intel or AMD processor
- A minimum of 512 MB of memory (recommended 1 GB)
- At least 3 GB of hard disk space for the operating system and required applications plus 2 MB per client
- A network card that supports TCP/IP
- A fixed IP address to assign to the Web application server (and if required, a fixed subnet mask address and default gateway address)

The Tivoli Provisioning Manager Express for Software Distribution server is supported on the following operating systems:

- Microsoft Windows 2000 Server
- Windows Server 2003 Data Center
- Windows 2000 Advanced Server
- Windows 2000 Data Center Server
- Windows XP Professional with SP2 or later
- Windows 2003 Enterprise/Standard R2
- Windows Server 2003 Standard
- Windows Server 2003 Enterprise

3.1.2 Installing the server from the installation program

Perform the following steps to launch the installation program:

1. To launch the installation program, insert the *Tivoli Provisioning Manager Express for Software Distribution Installation CD*. The Launchpad window opens (Figure 3-1). If the Launchpad does not start, take the following steps:
   a. From the Windows desktop, click **Start**.
   b. Click **Run**.
   c. Type `d:\launchpad.exe` (where *d* is the drive letter of the drive that contains the installation CD).
   d. Click **OK**.

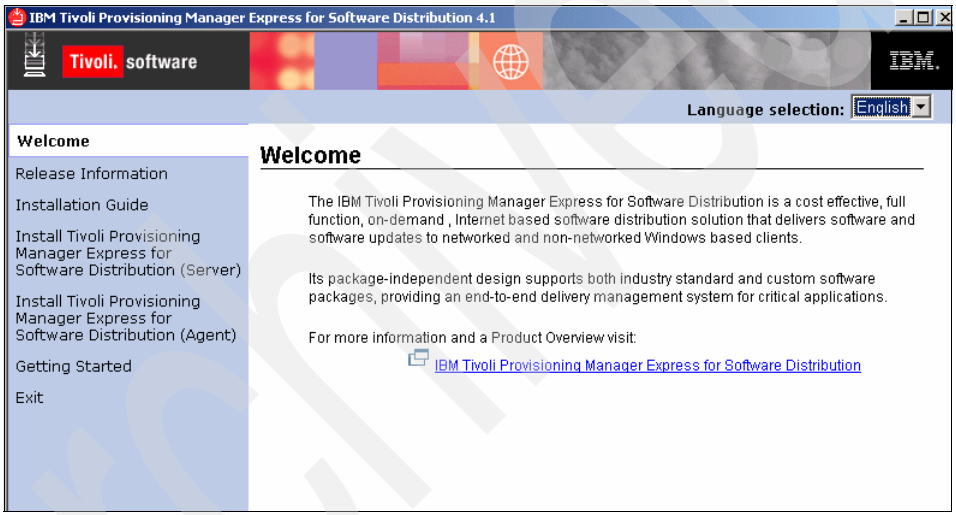


Figure 3-1 Launchpad Welcome window

Launchpad provides access to the product release information, *Installation Guide*, and both the server and agent installers.

2. To access the installation executable, from the menu on the left side, click **Install Tivoli Provisioning Manager Express for Software Distribution (Server)** (Figure 3-2).

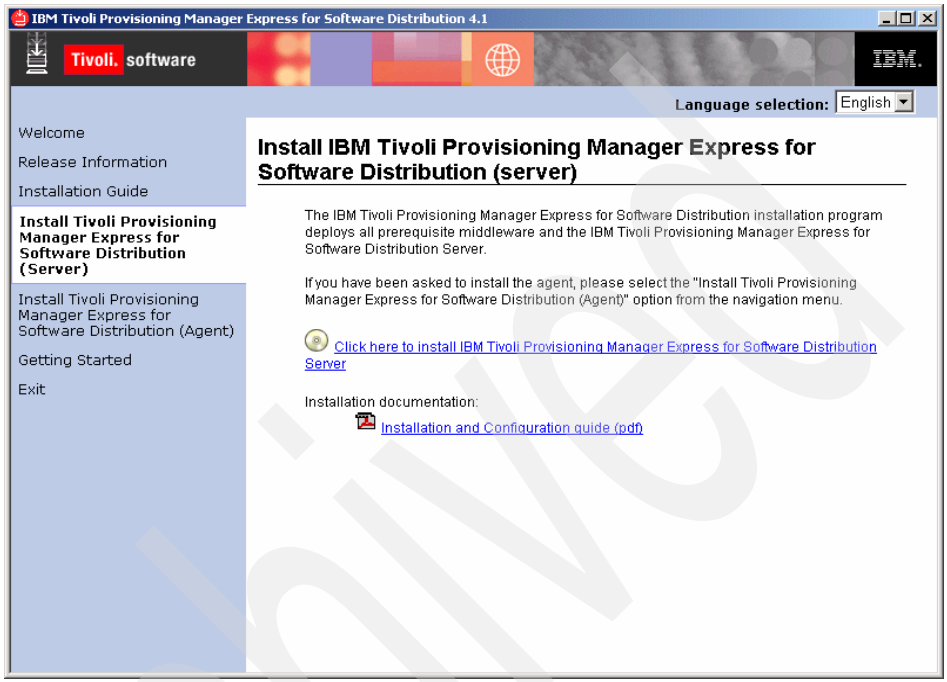


Figure 3-2 Setup installation

3. To initiate the installation, click the **Click here to install Tivoli Provisioning Manager Express for Software Distribution Server** link.
4. In the Welcome to the InstallShield Wizard window, click **Next** to continue.
5. Read the license agreement, and if you agree, select **I accept both the IBM and the non-IBM terms**, and click **Next**.

6. In the window shown in Figure 3-3, you can select a Quick installation using all default values, or a Custom installation where you can select and implement the configuration settings.

   Select **Quick**, and then click **Next**.

> **Note:** Selecting the Quick setup type will only ask one set of questions and will use default values for all other settings.

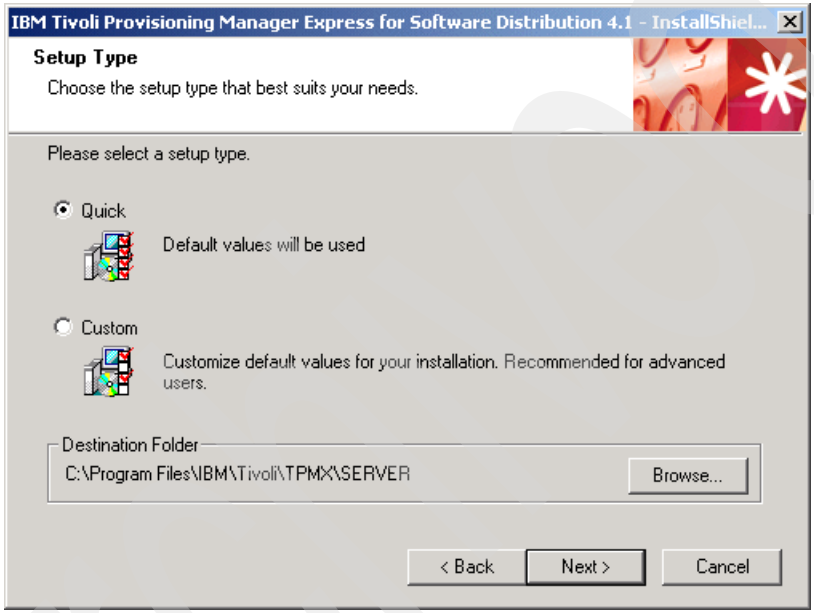


Figure 3-3 Setup Type

7. The installation program attempts to fill in the value for the Server name field automatically (Figure 3-4). You might want to fill in the name completely with the domain name or use the IP address.

   The Server Port defaults to 80. The Server (web) URL default is tpmx.

   Important: We recommend that the Server URL remain the default (tpmx) value. Although it can be modified, that requires additional manual configuration.

   The Full server URL is generated automatically from the server name.

   The Administrator's e-mail is shown as a link on the home page. This is also where e-mails generated by the system will be sent.

   Click **Next**.

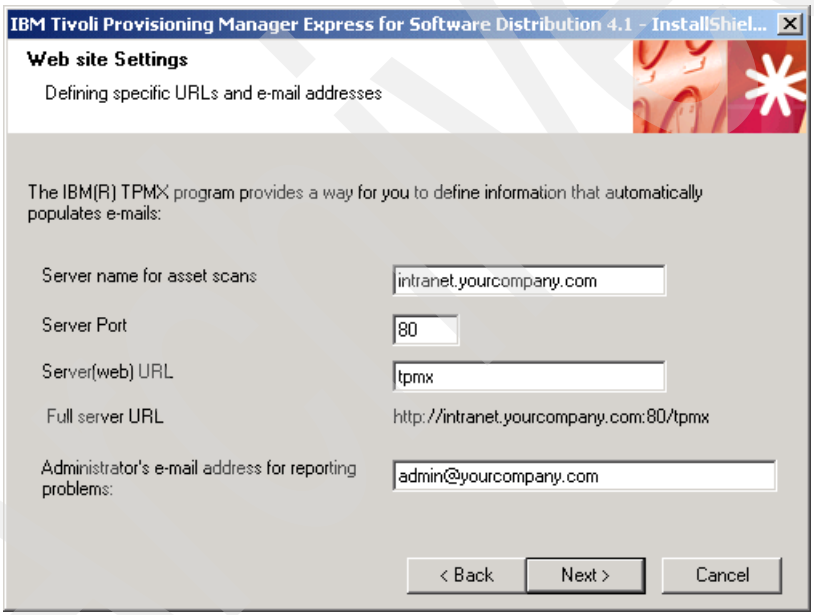


Figure 3-4 Web site Settings

8. Click **Next** on the Ready to Install window.

   The Setup Status window shows the progress of the installation.

9. When the installation completes, click **Finish**.

10. Launchpad will still be open. From the menu on the left, click **Exit** to close Launchpad.

3.1.3 Custom setup

The Custom installation option enables you to configure more of the settings that assume default values when using the Quick installation process discussed previously. The Custom setup type initiates a series of panels to collect detailed configuration information for the following categories:

- E-mail Settings
- Web site Settings
- Action Authority Settings
- Scheduling
- Password Settings
- Form Settings
- Security Settings

To perform a Custom installation, complete the following steps:

1. Select **Custom** (Figure 3-3 on page 27), and then click **Next**. The E-mail Settings window opens (Figure 3-5 on page 30).

2. The values supplied in the E-mail Settings window establish the e-mail services used by the Inventory functions. The default is to leave these disabled. (The Quick installation uses these parameters.) If you select the Enable e-mail functions option, the Next button is unavailable unless the information is filled out.

   The e-mail must be in e-mail format.

   If you enable the e-mail support, select the **Enable e-mail functions** option and enter the e-mail settings. Click **Next**.

   The fields shown in Example 3-1 from the isic.properties file are set for e-mailing through Simple Mail Transport Protocol (SMTP).

Example 3-1 E-mail configuration properties

```
email.enabled=no
smtp.server=
--configure the following parameters if smtp authentication is required
smtp.authentication=false
smtp.userid=
smtp.password=
```

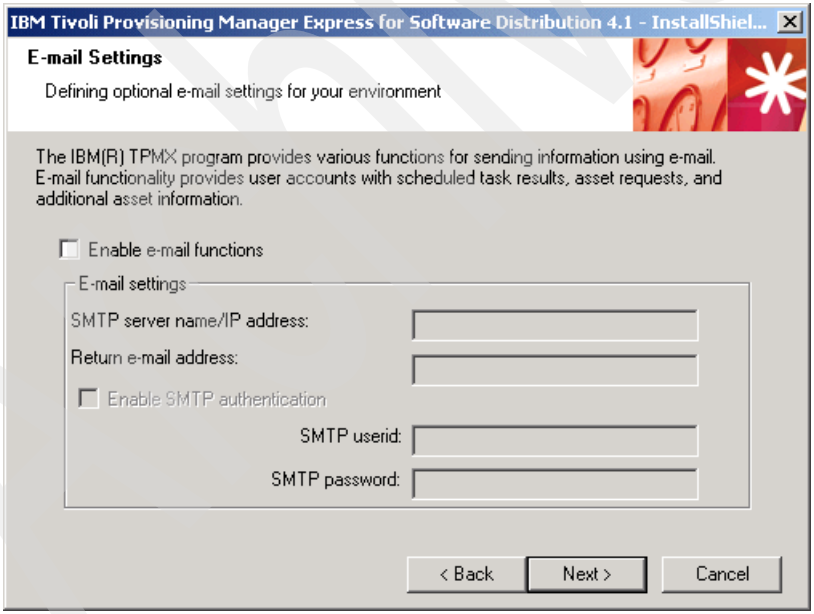


Figure 3-5 E-mail Settings

3. The values supplied in Web site Settings window (Figure 3-6) establish WebSphere Application Server.

   The installation program attempts to fill in the value for the Server name field automatically. You might want to fill in the name completely with the domain name or use the IP address. The Server Port defaults to 80. The Full server URL is generated automatically from the server name. The Administrator's e-mail is shown as a link on the home page. This is also where e-mails generated by the system are sent.

   Click **Next**.

   Note: The Server name for asset scans field is the fully qualified domain name of the server.

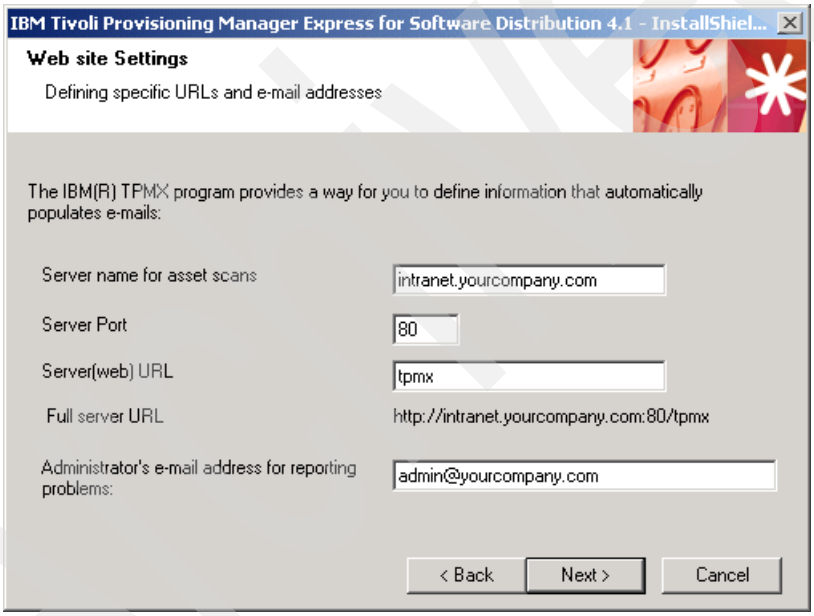


Figure 3-6 Web site Settings

4. Each user ID in Software Distribution will be a member of one of the following groups. Each group has permissions associated with it.
   - User
   - Superuser
   - Administrator

Note: The authority roles established here only affect the Inventory functions.

For additional information, refer to 4.4, “Managing users” on page 90.

The fields shown in Example 3-2 from the isic.properties file are set for authority settings.

Example 3-2 Authority configuration properties

```
Action authority settings
update.pallet.auth=S
update.password.auth=S
update.details.auth=S
change.asset.owner.auth=S
add.user.auth=S
group.auth=A
query.builder.auth=S
search.auth=S
task.auth=A
reprocess.auth=A
delete.user.auth=A
```

Select the desired user types that will be authorized to perform each action and then click **Next** (Figure 3-7).

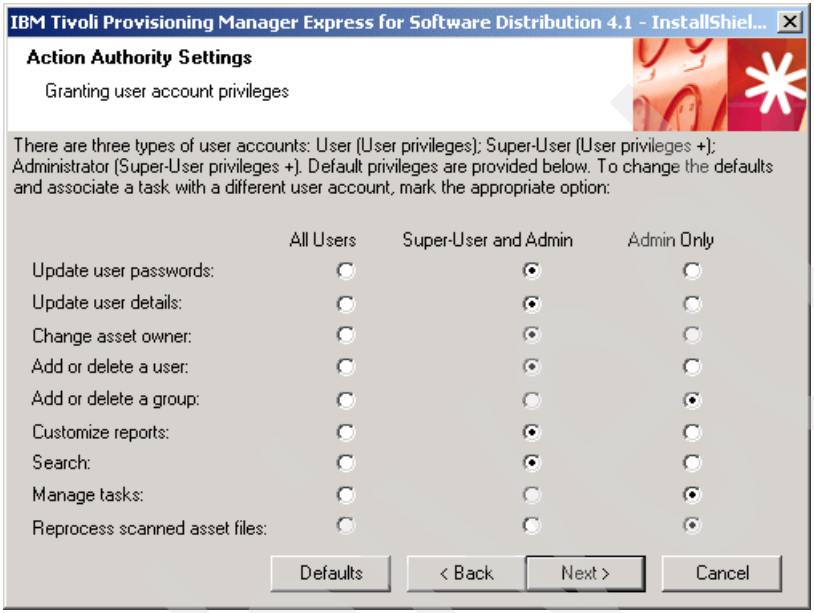


Figure 3-7 Action Authority Settings

5. The values supplied in the Scheduling window (Figure 3-8 on page 34) control the interval of communication between the Inventory agent and the server. These settings enable you to configure automatic client and server scheduling of tasks. The client agent can be configured to automatically upload revised asset information on a fixed schedule, and the server can be configured to automatically generate reports and send e-mails.

   The fields shown in Example 3-3 from the isic.properties file are set for the scheduled agent settings.

Example 3-3 Scheduled agent properties

```
--Scheduled agent settings. (Interval is in days).
scheduled.upload=true
scheduled.upload.interval=90
The following setting will allow the asset to be recognized but not uploaded
now if the queue exceeds the value.
scheduled.upload.queue.threshold=500
The following setting will cause the asset to be not uploaded now if the queue
exceeds the value.
scheduled.upload.queue.lookup.threshold=800
Server scheduler settings (Interval is in mins / default is 1440)
```

```
The schedule setting below and the setting in the tasks table can be changed to
be mins,hours or days
scheduled interval period controls the scheduler setting, default below is 60
minutes
scheduled task period controls whether the task interval is in mins, days or
hours
scheduled.launch.on.startup=1
scheduled.interval=60
scheduled.interval.period=days
scheduled.task.period=minutes
```

After configuring these settings, click **Next**.

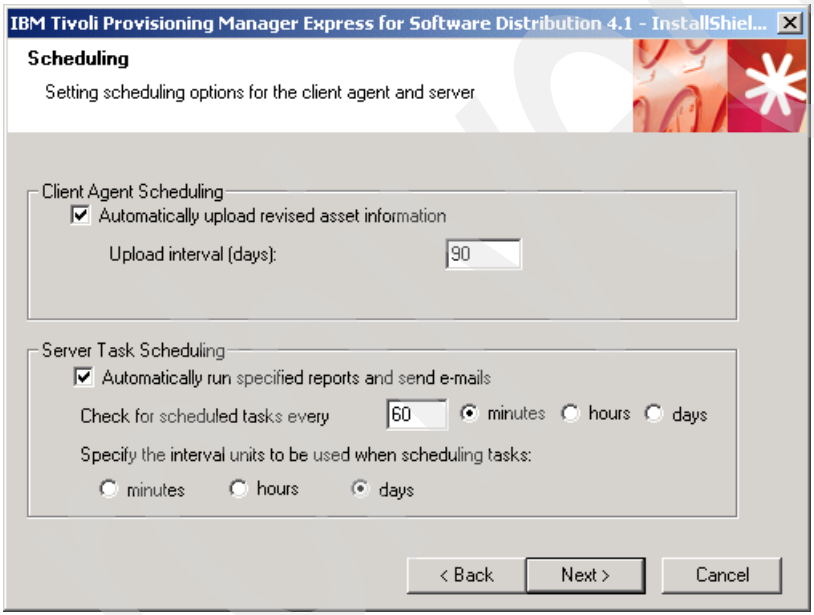


Figure 3-8 Scheduling

6. The values supplied in the Password Settings window control the password security requirements for all user IDs that access the application (Figure 3-9 on page 36).

   The fields shown in Example 3-4 from the isic.properties file are set to establish the password settings.

Example 3-4 Password configuration properties

```
--Password control parameters.
--Encrypt password in SHA-1
password.encrypt=yes
--Allow a user to reuse a previous stored password
password.reuse=no
--If a new password is automatically generated, is it to be reset as soon as
the user logs on?
expire.new.password=true
--Does the passwords actually timeout?
password.timeout=true
--Password timeout period in days
password.timeout.period=186
--Number of days that a password is kept for before it can be re-used in days.
password.period=
--Password rule. Set to false if not required, or remove the
attributes.password.check=true
password.must.have.non.numeric=true
password.must.have.numeric=true
password.must.have.non.alphanumeric=false
password.min.length=6
password.max.length=15
password.max.matching.sequential.chars=2
password.max.previous.chars=3
```

   After making all of the desired changes, click **Next**.

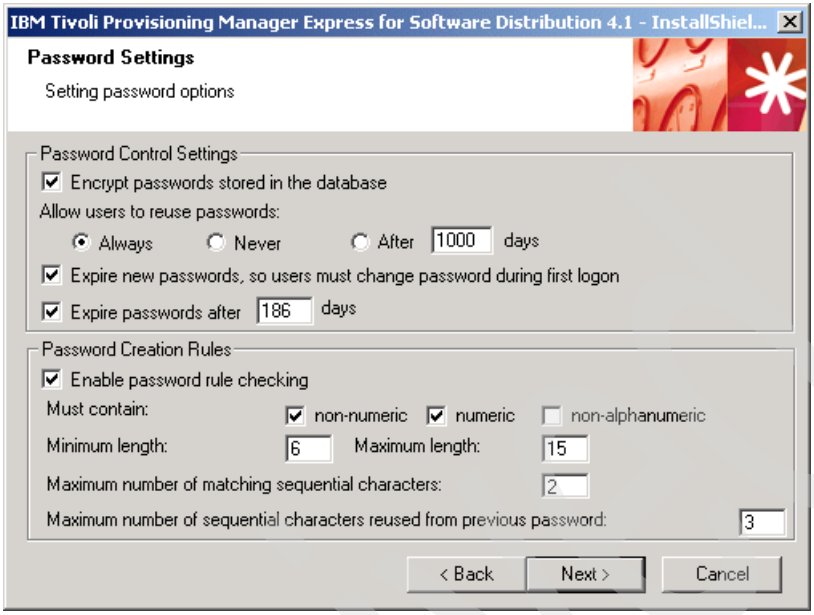


Figure 3-9 Password Settings

7. Use the Form Settings window to define the information values that are required to be supplied when a new asset or user is added to the database (Figure 3-10 on page 37).

   The fields shown in Example 3-5 from the isic.properties file are set to establish the field requirements during the asset registration.

Example 3-5 Asset registration configuration properties

```
asset.assettag.required=false
asset.description.required=false
asset.assettype.required= false
asset.owner.required=true
asset.department.required= false
asset.floor.required= false
asset.location.required=false
asset.status.required= false
asset.manufacturer.required= false
asset.model.required= false
asset.serial.required= false
user.title.required=false
user.name.required= false
user.country.required=false
user.userid.required=true
user.address.required=false
```

```
user.email.required=true
user.address.required=false
user.town.required=false
user.postcode.required=false
user.nickname.required=false
user.telno.required=falseuser.mobno.required=false
user.employeeid.required=true
user.department.required=false
user.location.required=true
user.password.required=true
```

Note: All of the fields listed in Figure 3-10 on page 37 will be available for the client to populate, but only the ones selected on this window will be required.

After making all of the desired changes, click **Next**.

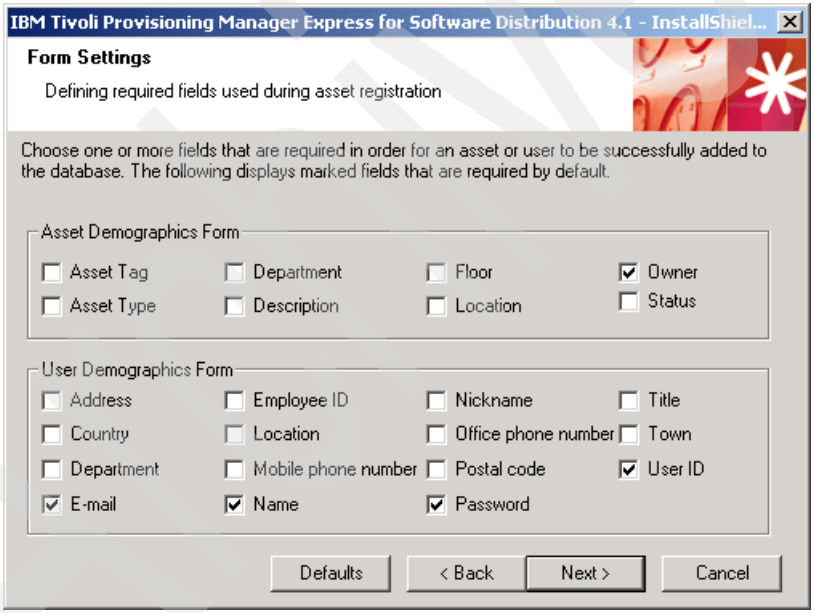


Figure 3-10 Form Settings

8. The values supplied in the Security Settings window establish the client workstation security parameters that can be detected and monitored by Inventory (Figure 3-11 on page 39). You can configure the server to verify client compliance with certain security settings that might be required by company security policies.

   The fields shown in Example 3-6 from the isic.properties file are set to establish the security verification requirements.

Example 3-6 Security compliance verification configuration properties

```
-- Security policy parameters
power.on.password.required=yes
hdd.password.required=yes
win.file.sharing=0
win.screensaver=0
--Timeout max in mins. -1 to disable.
win.screensaver.timeout=30
win.password=0
win.min.pw.length=
win.max.pw.age=
win.gina.version=0
win.gina.dll=UVMGINA.DLL
app.antivirus.name.1=Norton AntiVirus Corporate Edition
app.antivirus.ver.1=7.61.00
app.antivirus.name.2=Norton AntiVirus Corporate Edition
app.antivirus.ver.2=7.6.1
app.firewall.name.1=Integrity Client
app.firewall.ver.1 =3.5.175.087
app.firewall.name.2=Integrity Client
app.firewall.ver.2 =3.5.175.057
app.firewall.ver.2 =
```

Note: The window shown in Figure 3-11 on page 39 is used to configure this feature. This window displays the settings to be used to set up a query that will run on client systems. This query checks for security settings that have been selected on this window.

After making your changes, click **Next**.

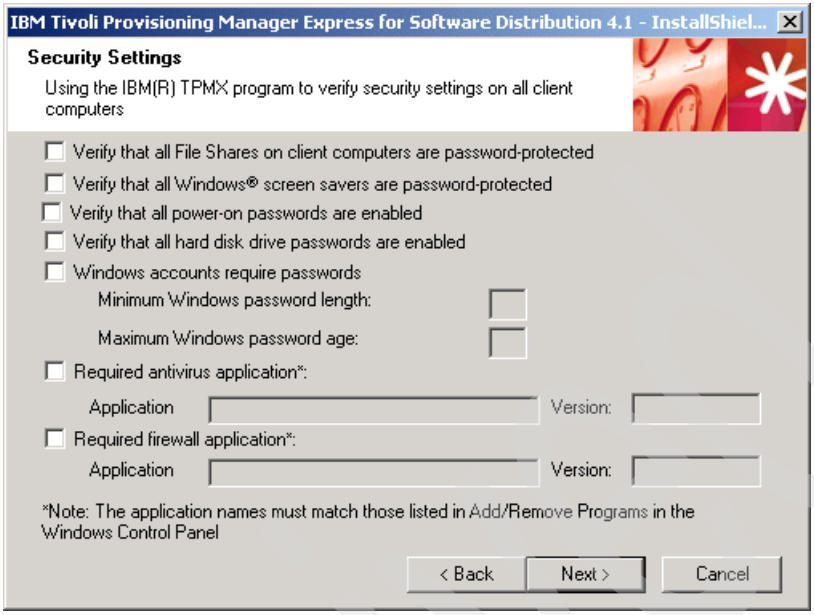


Figure 3-11 Security Settings

9. The Ready to Install window open. Click **Next**.

   The Setup Status window displays the progress of the setup.

   In the background, the following tasks are being performed:

   – Installing Profile (TPMXPROFILE).
   – Installing the WebSphere Enterprise Application Resource .war file (tpmx.war).
   – Creating configuration settings based on installation parameters. Application will wait on this window for a while (depending on system speed).
   – Creating database Connection.
   – Configuring the application to use the Cloudscape database.
   – Installing the WebSphere service.
   – Starting the WebSphere service.
   This might take some time (depending on the system) as the database is created and populated.

10. The Installation Completed window opens when the installation program completes. Click **Finish**.

11. Launchpad will still be open. From the menu on the left, click **Exit** to close Launchpad.

3.1.4 Testing the installation

Perform the following steps to verify that the Tivoli Provisioning Manager Express for Software Distribution application installed successfully.

Accessing the Software Distribution console

Open your browser and type:

`http://server_name/tpmx`

Where *server_name* is the value entered during the installation.

If the port was changed from 80, enter:

`http://server_name:port/tpmx`

If the context root was changed during the installation, enter the new context root value in place of `tpmx`.

The Welcome window shown in Figure 3-12 opens. This is the primary access point for the Software Distribution console.

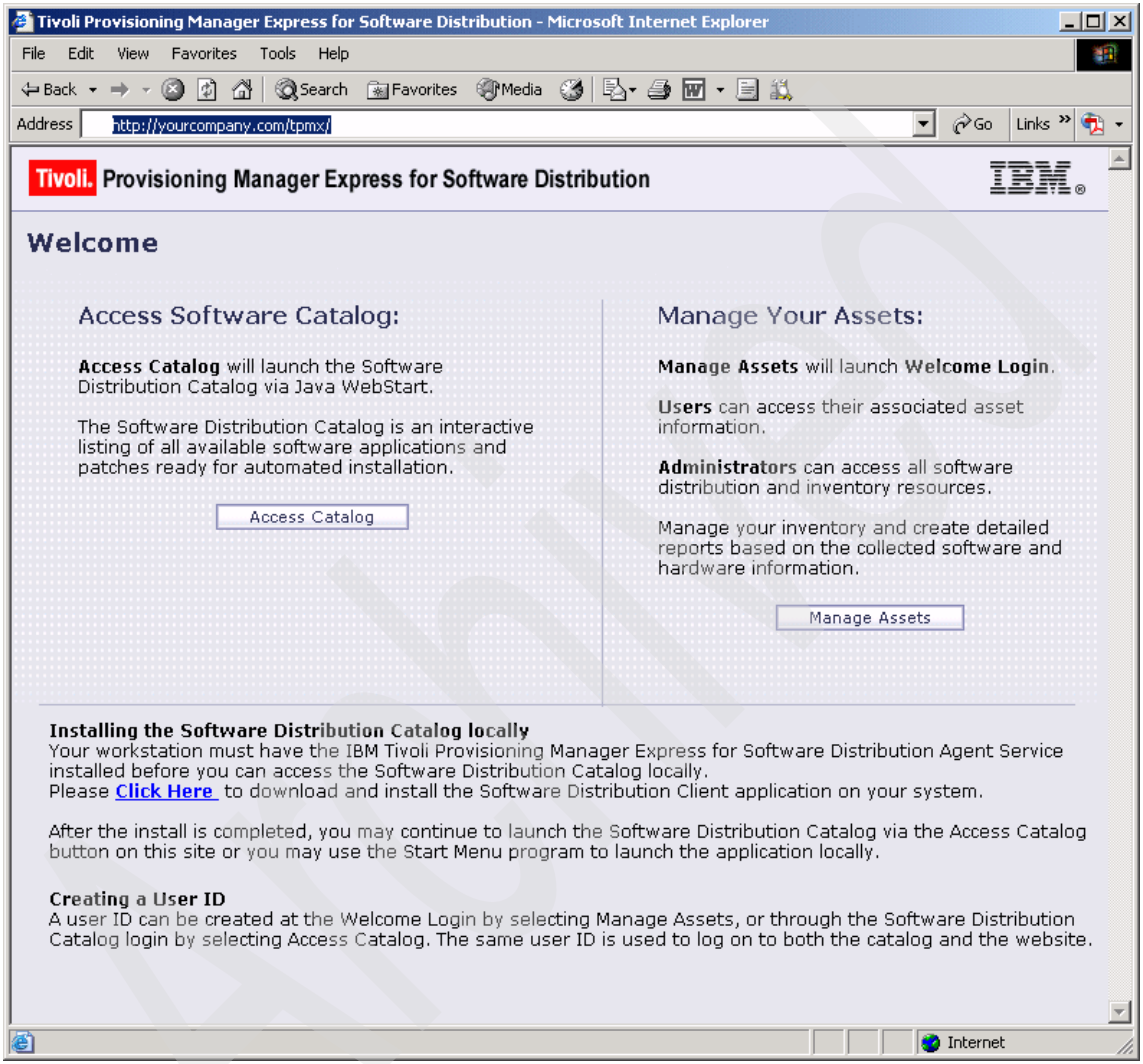


Figure 3-12 Welcome

End users can access the Software Distribution Agent installer, the Software Distribution Catalog through Java Web Start, or log on to the console to view Inventory data about their assets.

Administrators also have access to all the Software Distribution resources when logged on to the console.

Select **Manage Assets** to open the logon window to access the console (Figure 3-13).

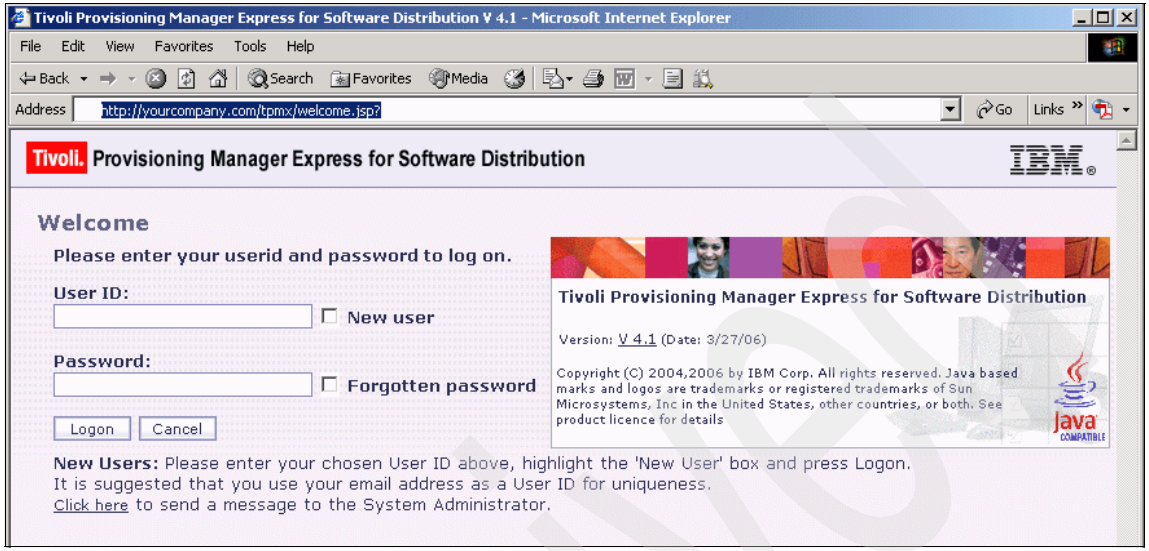


Figure 3-13 Administrator logon

Displaying the Welcome and logon windows confirms that WebSphere Application Server is successfully installed, configured, and started.

Log in as the default administrator, with User ID `admin` and Password `password`. The window shown in Figure 3-14 opens.

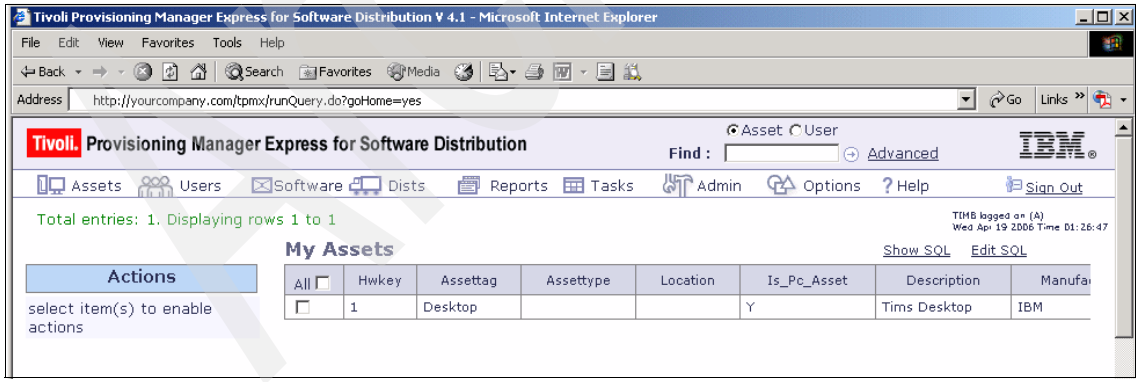


Figure 3-14 My Assets

A successful logon process with the admin user ID indicates that the Cloudscape database was successfully created and populated.

Verifying the WebSphere service

The WebSphere Application Server - Express service can also be verified by viewing the services under Computer Management.

Perform the following steps to verify the WebSphere service:

1. Open the Windows Services applet.
2. Select **Administrative Tools** → **Services** and locate the service (Figure 3-15).
3. Verify that the service IBM WebSphere Application Server V6 - Tivoli Provisioning Manager is running.

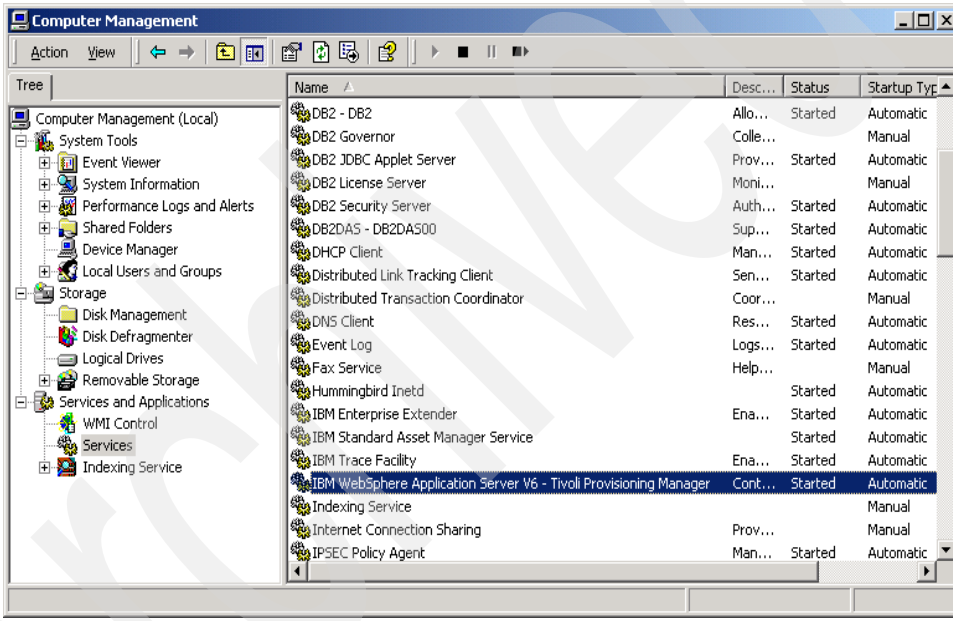


Figure 3-15 Services

4. Close the Services utility.

3.2 Server configuration properties files

This section provides details about the server configuration properties files, sdc.properties and SplashMessage.

sdc.properties

This section describes the sdc.properties file:

- Location

  C:\ProgramFiles\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war\WEB-INF\classes\sdc.properties

- Usage:
  - Uncomment line (remove #) and change parameter value.
  - Restart application server for changes to take effect.

General environment and database settings

This section primarily contains system settings that should not be modified (Example 3-7).

Example 3-7 sdc.properties: General environment and database settings

```
# Keep all attributes in lower case unless already in mixed case.
# Note that most settings that are either true or false; 1,true,yes as TRUE,
0,false,no as FALSE.
# The default context path for jndi (Tomcat). For WebSphere leave this blank as
it automatically adds it.
#jndi.context=java:comp/env
# Database properties. The context is what is referenced in the web.xml /
server.xml file for the app server
# The default value is jdbc/tpmxdb
#datasource.context=jdbc/tpmxdb
# Properties file used for messages in the isic pages.
application.resources=com.ibm.webd.server.properties.app-resources
schema=SDC
# Define menu system query
query.menu.static.items=107
all.groups.query=17
all.users.query=12
selected.user.query=2
#Next property is the number of processors in the system...this is used to
create the number of worker threads.
queue.processors=2
queue.max.length=1000
# Password control parameters. The default value is true
# Encrypt password in SHA-1
password.encrypt=true
```

Purchase order management

This section configures the automated import of purchase order data (Example 3-8 on page 45).

When purchase.autoupdate=true, the file specified in purchase.autoupdate.path will be read every four hours (value in hours specified by purchase.autoupdate.offset).

The information contained in the file specified is automatically loaded into the Purchase Order tables in the Tivoli Provisioning Manager for Software Distribution database.

The format of the file is:

```
Purchase Order Number<tab>Part Number<tab>Employee ID<tab>Description (each
line represents a new database entry).
```

The field separator is defined by the value assigned to purchase.autoupdate.seperator.

Example 3-8 sdc.properties: Purchase order management

```
# Automatic Purchase Order update parameters.
# purchase.autoupdate.offset's unit is hour.
# purchase.autoupdate=false.
# purchase.autoupdate.path=C:/Program Files/IBM/Tivoli/TPMX/
      Server/Purchase.txt
# purchase.autoupdate.offset=4.
# purchase.autoupdate.seperator=tab
```

Directory download

This section defines the size threshold under which a ZIP file will be created, as opposed to a file list (Example 3-9).

This is the threshold value in which Tivoli Provisioning Manager for Software Distribution will change the Directory Download package process from creating a compressed ZIP file (_IGS.SDC) to creating a file list file (_IGS_SDC_FileList) and transferring files individually.

Example 3-9 sdc.properties: Directory download

```
# Multi-file Transfer parameters.
# dirFTP.threshold, default value is 10485760 (10 binary MB).
# the sum of the space consumed by a directory is greater than the threshold.
# then the files will be transferred one at a time. If less than the threshold.
# then the files will be zipped and transferred.
# dirFTP.threshold=10485760
```

Enable LDAP

This section enables LDAP and defines the location of the configuration file (Example 3-10).

Example 3-10 sdc.properties: Enable LDAP

```
# Define SDC to use LDAP for user authentication
# if this is set false(default value), SDC uses its own authentication.
# use config file to define LDAP parameters.
authentication.LDAP=false
authentication.LDAP.config=ldap.properties
```

Machine identification key

This section defines how to determine machine uniqueness (Example 3-11). When established, this value should not be changed without deleting the existing machine definitions.

Example 3-11 sdc.properties: Machine identification

```
# Define machine identification key
# The value can be one of : HOSTNAME, UUID
# When set to HOSTNAME, machine uniqueness is determined by the
Hostname/Computer Name field.
# When set to UUID, machine uniqueness is determined by the UUID field.
#      When UUID is determined on the client, unknown or invalid UUID's will
#      default to the value of the primary network adapter MAC address.
# The default value is : UUID
machine.key=UUID
```

Default path values for package definitions

This section defines the context root and the common path to package resources (Example 3-12). The values supplied prepopulate the package definition fields when creating a new package.

Example 3-12 sdc.properties: Package path prepopulate values

```
#define DocRoot for TPMX server, the default is tpmx
docRoot.name=tpmx

# all the below paths will be prefix with '/{$docRoot}'
#
# Define ROOT Path for download package
# the path should look like /tpmx/packages
package.root.path=/packages

# Define ROOT path for detail file
detail.root.path=/packages
```

```
#Define ROOT path for icon file
icon.root.path=/packages

#Define ROOT path for target directory
targetDirectory.root.path=C:\\

#Define ROOT path for Prerequired Program
preReqProgram.root.path=/packages

#Define ROOT path for Preinstall program
preInstall.root.path=/packages

#Define ROOT path for Postinstall program
postInstall.root.path=/packages
```

Evaluation query update frequency

This section defines the amount of time before the evaluation will be rerun to include new machines (Example 3-13). The evaluation only updates the database table when the offset time has expired and a client machine is requesting the associated distribution list. When there is no client activity, the database does not update.

Example 3-13 sdc.properties: Evaluation query update

```
#Define Dynamic Evaluation Query last run offset, minute based
# default value is 30 minutes
envaluation.lastRun.offset=30
```

SplashMessage

This section describes SplashMessage:

- Description:

  Feature to display the HTML content of the /sdc/help/SplashMessage.html file in a pop-up message box for 10 seconds before the client catalog logon process.

- Location:

  C:\ProgramFiles\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war\sdc\help\SplashMessage.html

- Usage:

  The existence of the file enables the message pop-up window.

3.3 Installing the agent

Install the Software Distribution Agent on any machines on which you want to collect inventory data or to deliver software applications.

Note: Tivoli Provisioning Manager Express for Software Distribution includes an InstallShield installation executable that combines the installation of the Inventory and Software Distribution agents.

When using only Tivoli Provisioning Manager Express for Inventory, the InstallShield installation executable only installs the Inventory agent service.

The installation process is almost identical.

To access the Software Distribution Agent installer, use one of the following methods:

- Select **Install Tivoli Provisioning Manager Express for Software Distribution (Agent) from Launchpad** on the installation CD.
- Use the Welcome page after completing the server installation:

  `http://`*`servername`*`/tpmx`

  Note: The Welcome page method for accessing the installer applies only to Software Distribution.

- Select **Assets** → **Download Agent Installer** after logging on to the Software Distribution console.

All access methods execute the same installer.

Download and execute the installer from the server or initiate the installer from Launchpad on the CD to begin the Software Distribution Agent installation process.

Note: Before you begin, make sure that the installer is provided with the Tivoli Provisioning Manager Express for Software Distribution server name or IP address.

Perform the following steps to install the Software Distribution Agent using the Launchpad:

1. Insert the *Tivoli Provisioning Manager Express for Software Distribution Installation CD*. The Launchpad window opens. If the Launchpad does not start, take the following steps:

   a. From the Windows desktop, click **Start**.

   b. Click **Run**.

   c. Type `d:\launchpad.exe` (where *d* is the drive letter of the drive that contains the installation CD).

   d. Click **OK**.

   The window shown in Figure 3-16 opens.

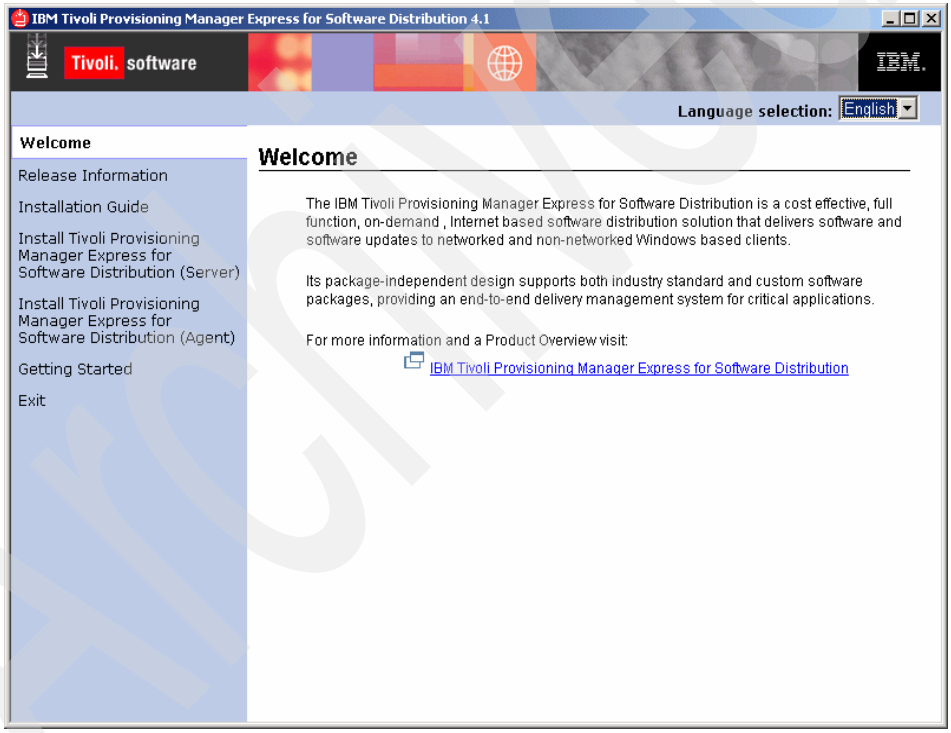


Figure 3-16 Launchpad Welcome

2. Launchpad provides access to the product release information, *Installation Guide*, and both the server and agent installers. To access the installation executable, from the menu on the left, select **Install Tivoli Provisioning Manager Express for Software Distribution (Agent)** (Figure 3-17).
3. To initiate the installation, click the **Click here to install Tivoli Provisioning Manager Express for Software Distribution agent** link.

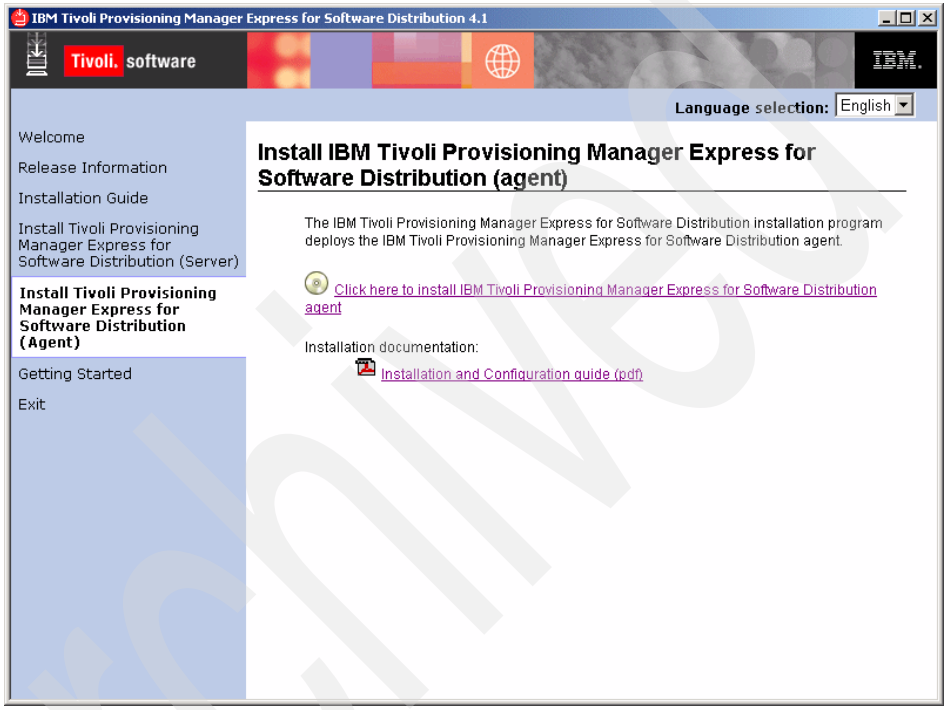


Figure 3-17 Agent installation

4. In the Welcome to the InstallShield Wizard window, click **Next** to continue.
5. Read the license agreement and if you agree, select **I accept both the IBM and the non-IBM terms** and click **Next**.

6. In the Setup Type window, choose between a Typical installation using all default values, or an Advanced installation where you can select and implement configuration settings (Figure 3-18).

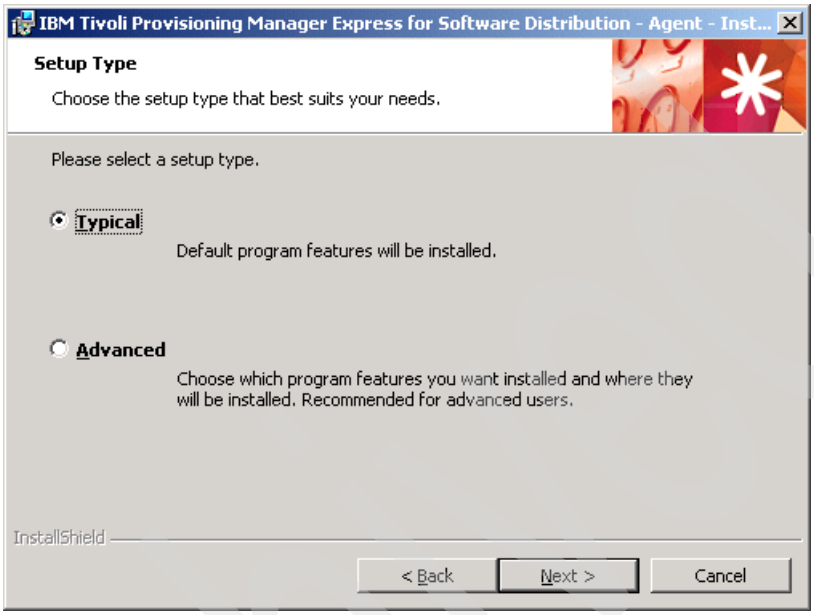


Figure 3-18 Setup Type

For details about a Typical installation, continue with the following steps. If using an Advanced installation, proceed to 3.3.2, “Advanced setup” on page 52.

3.3.1 Typical setup

Selecting the Typical setup type only asks one set of questions and uses default values for all other settings. For the Typical setup, perform the following steps:

1. Select **Typical** and then click **Next** (Figure 3-18).

2. In the Server Address window, type the fully qualified domain name of the Software Distribution server or the IP address used to connect to the server (Figure 3-19). Click **Next**.

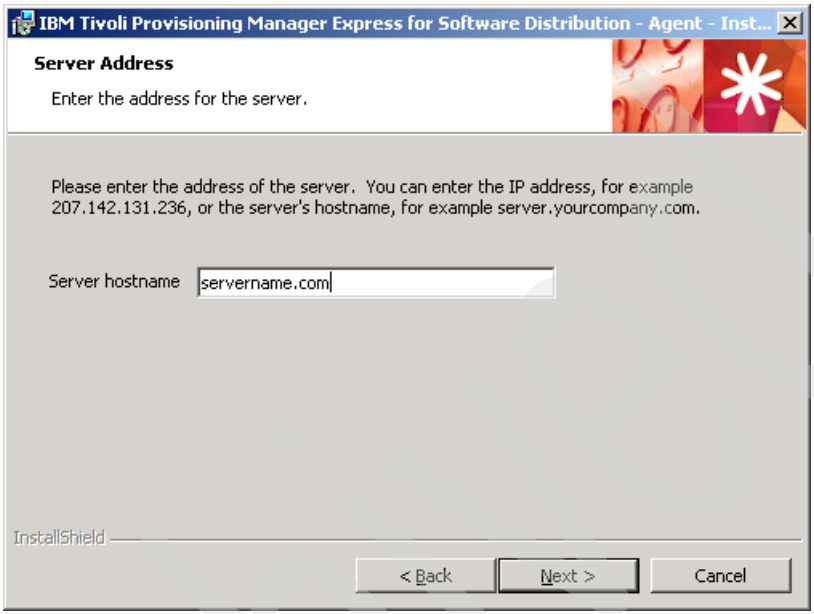


Figure 3-19 Server Address

3. Click **Install** to begin the installation.

   A progress window shows the installation progress.

4. In the InstallShield Wizard Completed window, click **Finish** to close the installation window.

   Launchpad is still open. From the menu on the left, click **Exit** to close Launchpad.

Note: The server port defaults to 80.

3.3.2 Advanced setup

Selecting the Advanced setup type initiates a series of panels to collect detailed configuration information:

- Destination Folder
- Server Address
- Proxy settings

- Scheduler settings

Perform the following steps:

1. Select **Advanced** and then click **Next** (Figure 3-18 on page 51).
2. The value specified in the Destination Folder window enables you to change the installation directory (Figure 3-20).

   Change the Destination folder, as necessary, and click **Next** to continue.

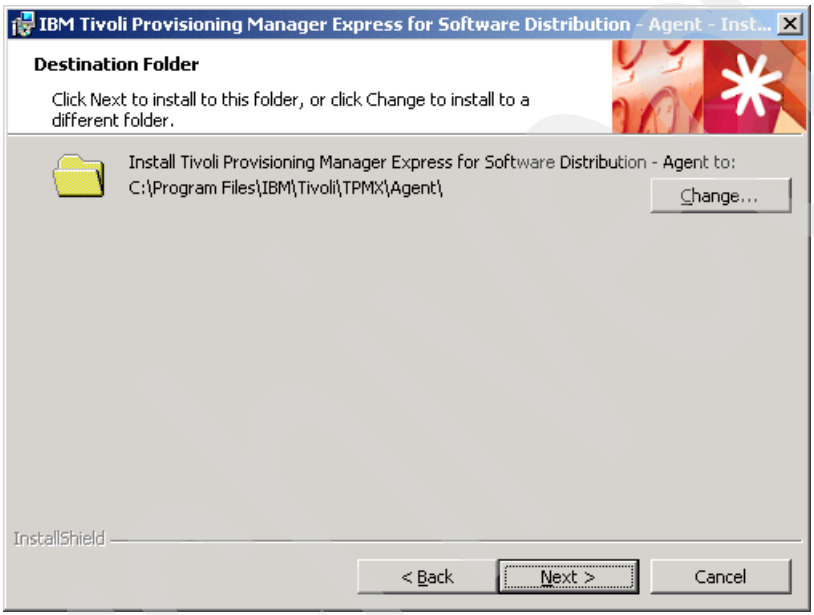


Figure 3-20 Destination Folder

3. The values specified in the Server Address window define the source server name, port, and server context (Figure 3-21).

   Enter the name of the Software Distribution server and change the port or server context to match the values specified during the server installation. Click **Next**.

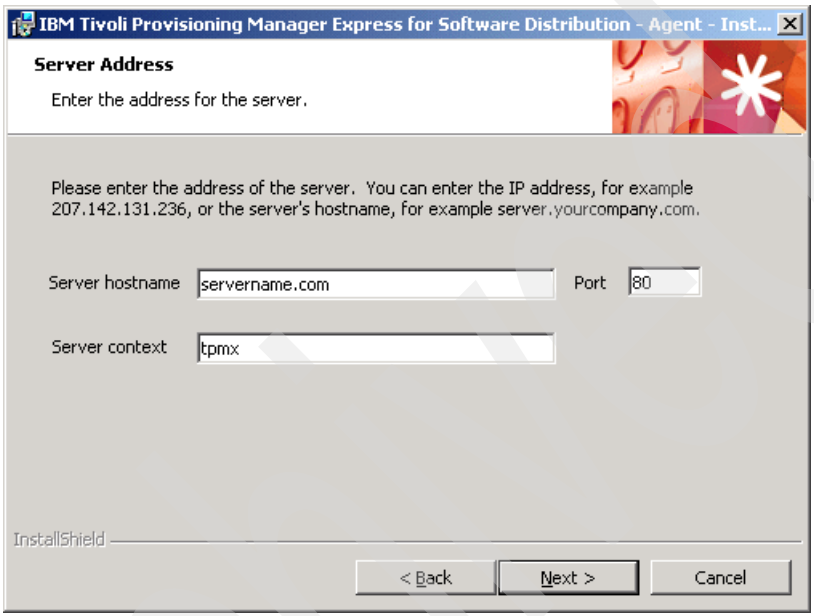


Figure 3-21 Server Address

4. The values specified in the Proxy settings window define any proxy setting, if necessary (Figure 3-22).

   Enter any proxy information, as required by your network configuration. Click **Next**.

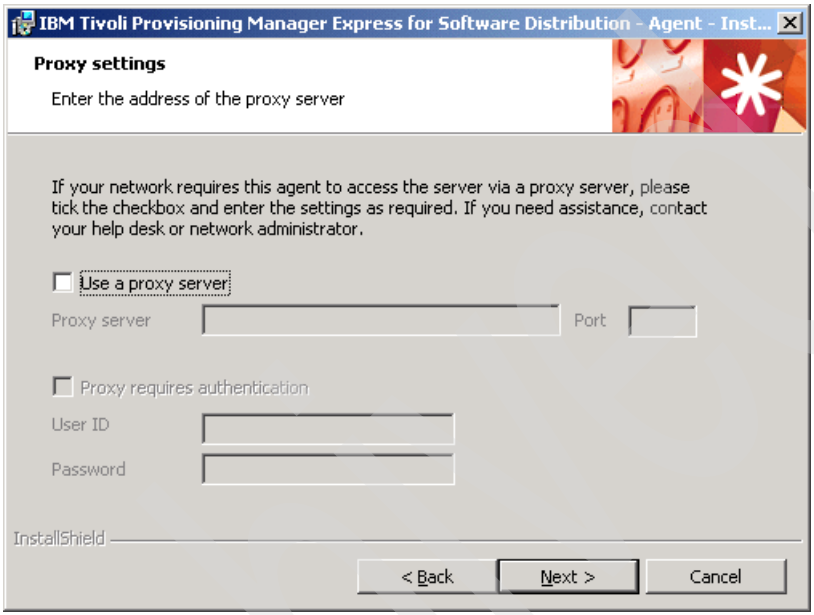


Figure 3-22 Proxy settings

5. Values specified in the Scheduler settings window define the time frame in which the Inventory agent will communicate with the server (Figure 3-23).

   Modify the time range, as required, and click **Next**.

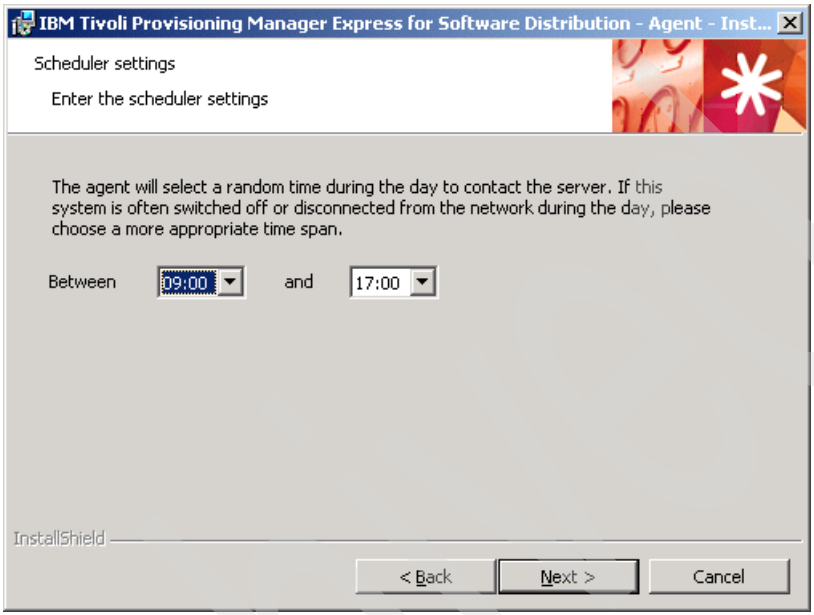


Figure 3-23 Scheduler settings

6. The Ready to Install window opens. Click **Install** to begin the installation.

   The progress window shows the installation status.

7. When the installation completes, click **Finish** to close the installation window.

   The Launchpad is still open. From the menu on the left, click **Exit** to close Launchpad.

3.3.3 Verifying the Software Distribution Agent installation

The Software Distribution Agent installation can be verified by an administrator on the Software Distribution console or by the end user on the client machine.

Verifying as an administrator

Perform the following steps:

1. Access the Software Distribution console by following the steps described in “Accessing the Software Distribution console” on page 40.

a. Log in as the default administrator user with User ID `admin` and Password `password`.

b. From the top menu, select **Dists** → **All Machines** (Figure 3-24).

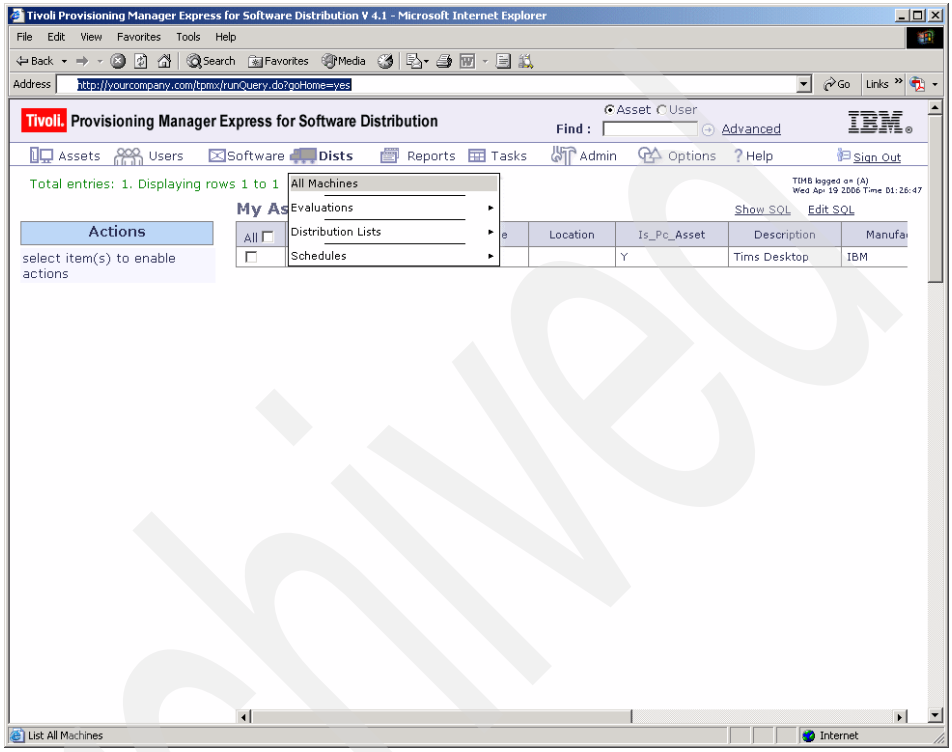


Figure 3-24 My Assets

2. Verify that the client machine has auto registered (Figure 3-25).

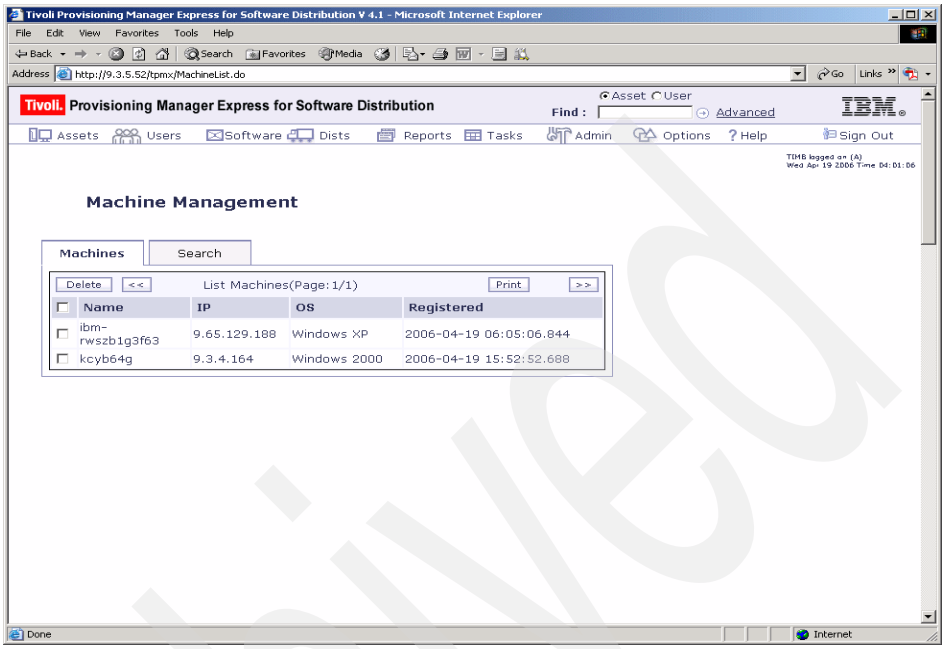


Figure 3-25 Machine Management

Verifying as a user

Verify the Software Distribution Agent and Inventory services by browsing the services under Computer Management. To verify the services, perform the following steps:

1. Open the Windows Services applet.
2. Select **Administrative Tools** → **Services**.

3. Verify that the following services shown in Figure 3-26 are running:
   - IBM Tivoli Provisioning Manager Express - Inventory Agent
   - IBM Tivoli Provisioning Manager Express - Software Distribution Agent

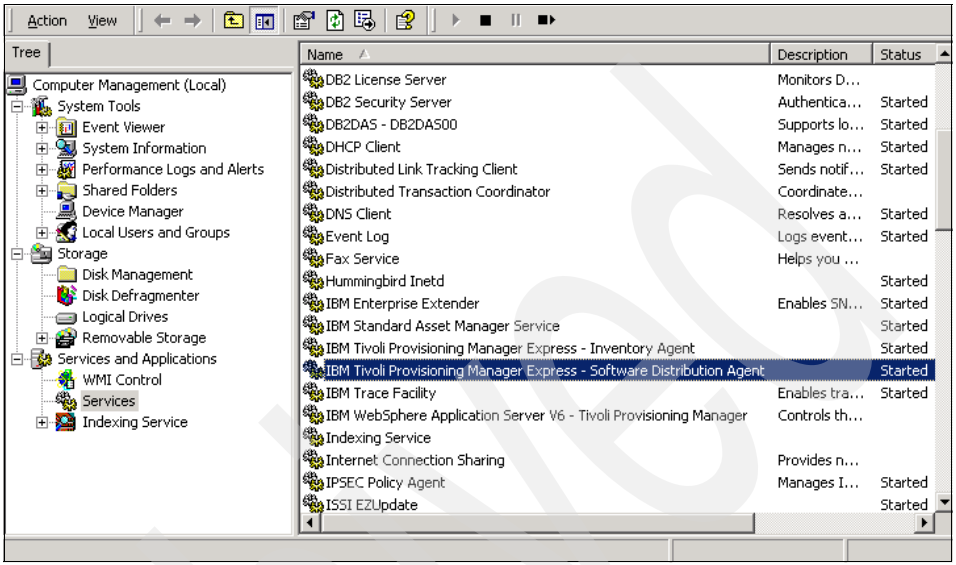


Figure 3-26 Agent Services

4. Close the Services utility.

The startup logging information of the Software Distribution Agent can also be in the following file on the client machine:

C:\Program Files\IBM\Tivoli\TPMX\Agent\logs\sdcagent.txt

Use the following procedures to access a Software Catalog:

1. Open a Web browser.
2. In the Address bar, type one of the following URLs:
   - `http://server_name/tpmx`
     (where *server_name* is the name of the Software Distribution server)
   - `http://server_IP_address/tpmx`
     (where *server_IP_address* is the IP address of the Software Distribution server)

Press Enter. The home page shown in Figure 3-27 opens.

Note: You can save the Software Distribution home page as one of your browser favorites for future use.

3. Click **Access Catalog** (Figure 3-27).

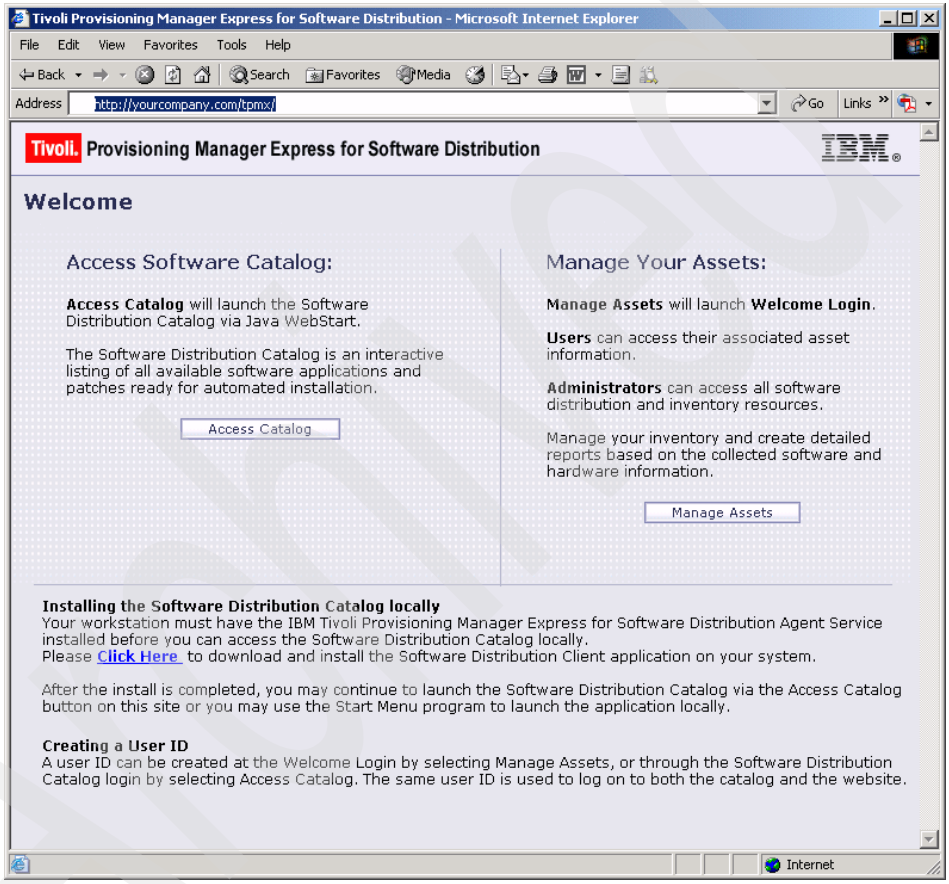


Figure 3-27 Software Distribution home page

4. The Security Warning window opens (Figure 3-28). Click **Start**.

> **Note:** Verify that the security warning window displays IBM and that the publisher authenticity is verified by VeriSign, Inc.

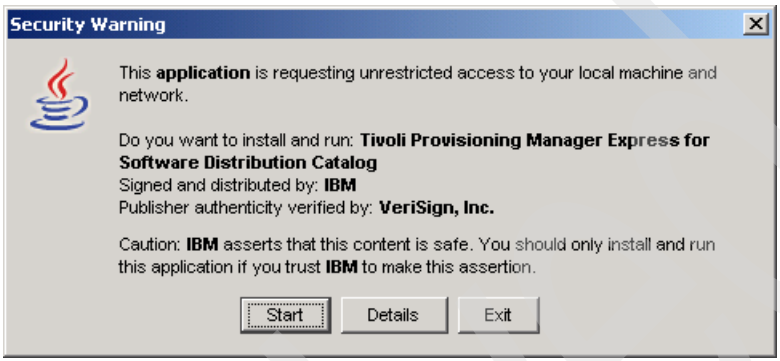


Figure 3-28 Security Warning

The Software Distribution Catalog Login window, shown in Figure 3-29, opens.

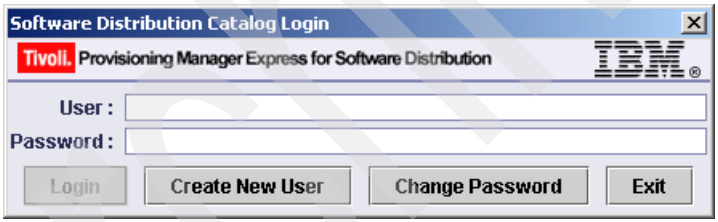


Figure 3-29 Software Distribution Catalog Login

5. However, you might see the Tivoli Provisioning Manager for Software Distribution Catalog - Desktop Integration window shown in Figure 3-30. Click **Yes** to place a Software Distribution Catalog icon on desktop for easier access. Click **No** if an icon is already present on your desktop. Click **Ask Later** to defer it to a later time.

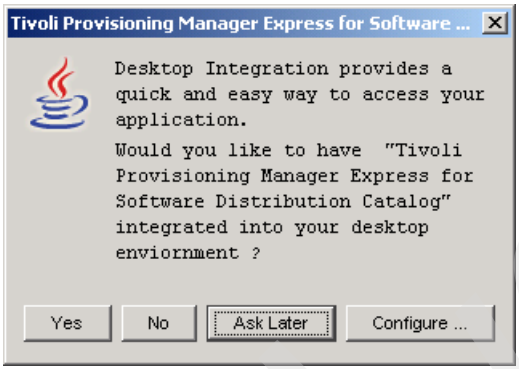


Figure 3-30 Desktop Integration

Note: Tivoli Provisioning Manager for Software Distribution uses Java Web Start technology to launch the Software Catalog. You can launch the catalog either from an icon on the desktop or from Software Delivery Center welcome page by clicking **Access Catalog**.

The Software Delivery Center client installation is complete when the logon window shown in Figure 3-29 on page 61 opens.

You can further test the client by performing one of the following steps:

- If the administrator provided you with a user name and password for a Software Distribution Catalog, type the user name and password in the fields provided, and click **Login**. The catalog shown in Figure 3-32 on page 63 opens.
- If the administrator instructed you to create your own user name and password, click **Create New User**, as shown in Figure 3-29 on page 61 and fill in the following values (Figure 3-31 on page 63):
  - Enter the user name you want to use.
  - In the Password field, enter the password you want to use.
  - In the Confirm field, type your password again. You must type the password exactly as you typed it in the Password field.

  Click **OK**.

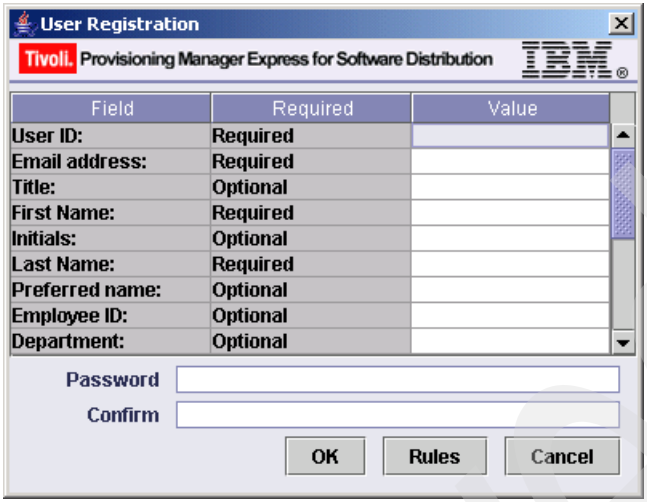


Figure 3-31 Create a new user

The catalog shown in Figure 3-32 opens.

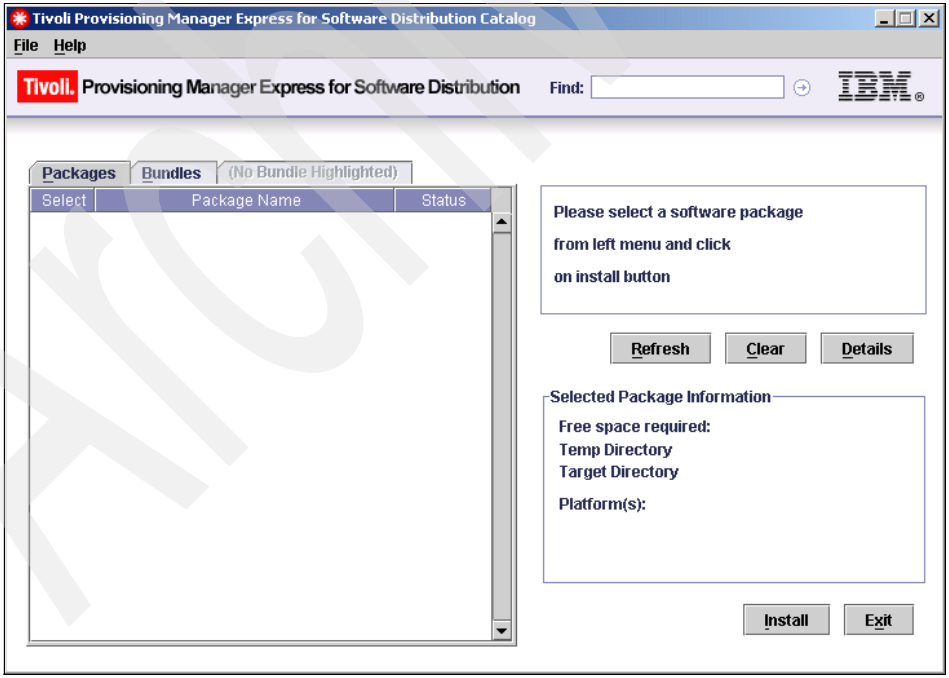


Figure 3-32 Tivoli Provisioning Manager for Software Distribution Catalog

Note: The catalog for new users might not have any software packages or bundles listed. In most cases, the administrator must assign a new user to a specific group before the user can install software from a catalog.

You have completed the testing of the Software Distribution client when the window shown in Figure 3-32 on page 63 opens.

3.3.4 Unattended command line agent installation

You can execute the parameters shown in Table 3-1 on the command line.

Table 3-1 Command line properties for agent installation

Property	Description	Default
SERVER_HOSTNAME	The host name or IP address of the server. This property is required.	<blank>
SERVER_CONTEXT	DocRoot value for the application server.	tpmx
SERVER_PORT	If the server runs on a nonstandard port, specify the port number here.	80
CALLHOME_WINDOW_START	Call Home selects a random time for its daily call to the server. By default, this time is between 9:00 and 17:00 local time. To override this time window, specify the hour only in 24 hour format. Valid values are 0 to 23, where 0 means midnight.	9
CALLHOME_WINDOW_END		17
CALLHOME_DEBUG	For debugging only. Set to 1 to tell Call Home to write debug information to callhome.txt.	0
PROXY_HOSTNAME	Host name or IP address for the proxy server, if required.	<blank>
PROXY_PORT	Port name for the proxy server.	<blank>
PROXY_USER_ID	The user ID, if the proxy requires authentication.	<blank>
PROXY_PASSWORD	The password, if the proxy requires authentication.	<blank>
PROXY_AUTH_B64	The user ID and password, format user:password, encoded in base64. This overrides the user_id and password properties. Use this if you do not want to make the password easily visible. Remember, base64 is not encryption. Somebody that knows the algorithm can decode it and learn the password.	<blank>

Property	Description	Default
SWD_REFRESH_INTERVAL	The time, in minutes, between checks for scheduled distributions.	60
SWD_USER_MGMT_ENABLED	Enable or disable functions in the user interface to create users and change passwords. Values are true or false.	true

The command for unattended command line agent installation uses the following syntax:

```
tpmxsd_setup.exe /s /v "/qn SERVER_HOSTNAME=sd.server.company.com"
SWD_USER_MGMT_ENABLED=true SWD_REFRESH_INTERVAL=180"
```

Where *servername* is the network name or IP address of the server on which Tivoli Provisioning Manager Express for Software Distribution is installed.

Example MSI silent installation:

```
msiexec /i tpmxsd.msi /qn SERVER_HOSTNAME=servername
```

The MSI silent installation options include:

- `/qn`: Silent install, no progress bar displayed
- `/qb`: Silent install, progress bar in small dialog box
- `/qr`: Silent install, progress bar in large dialog box

3.4 Agent configuration properties files

In this section, we provide information about the Software Distribution Agent configuration properties files.

3.4.1 Client configuration modifications

The client configuration is established in the sdc.conf file on the target system. The sdc.conf file is designed to contain global configuration settings.

The sdclocal.conf file is designed to contain only the configuration settings that are unique to the individual client machine.

sdc.conf

This section describes the sdc.conf file, located in C:/Program Files/IBM/Tivoli/TPMX/Agent. The sdc.conf file has the following parameters:

- Agent check-in cycle time
  - Parameter

    ```
    com.ibm.sdc.agent.offset=60
    ```

  - Description

    Amount of time in minutes (default 60) between agent communications with the server to check for scheduled distributions.

- Log file location
  - Parameter

    ```
    com.ibm.sdc.client.logfile=C:\Program
    Files\IBM\Tivoli\TPMX\Agent\logs\sdcclient.log
    com.ibm.sdc.client.logDir=C:\Program Files\IBM\Tivoli\TPMX\Agent\logs
    ```

  - Description

    Used to specify the log file or log directory that is created when the user is granted access. This must also be changed in sdcclient.jsp on the server for the Welcome page Access Catalog button to correspond.

- Enable user management
  - Parameter

    ```
    com.ibm.sdc.client.userMgmtEnabled=false (Default=true)
    ```

  - Description

    Feature to disable the create user and change password buttons in the client logon panel when defined in the sdc.conf file.

- Enable bundles
  - Parameter

    ```
    com.ibm.sdc.client.BundlesEnabled=false (Default=true)
    ```

  - Description

    Feature to remove Bundles tab from the client catalog.

Example 3-14 shows a sample sdc.conf file.

Example 3-14 Sample sdc.conf file

```
com.ibm.sdc.server.protocol=(SET DURING INSTALL)
com.ibm.sdc.server.host=(SET DURING INSTALL)
com.ibm.sdc.server.port=(SET DURING INSTALL)
com.ibm.sdc.agent.offset=60
com.ibm.sdc.logDir=C:\\Program Files\\IBM\\Tivoli\\TPMX\\agent\\logs
# Uncomment to enable debug mode
# com.ibm.sdc.agent.debug=true
# Uncomment to remove Create New User and Change Password buttons
# com.ibm.sdc.client.userMgmtEnabled=false
# Uncomment to disable the bundles tab
# com.ibm.sdc.client.bundlesEnabled=false
# Uncomment to remove the Exit button (for applet mode)
# com.ibm.sdc.client.hideExit=true
# Uncomment to remove the Menu Bar (for applet mode)
# com.ibm.sdc.client.hideMenu=true
```

sdclocal.conf

This section describes the sdclocal.conf file, located in C:/Program Files/IBM/Tivoli/TPMX/Agent. This file has the following parameters:

- Set User ID and password
  - Parameter

    ```
    com.ibm.sdc.client.login= <user ID>
    com.ibm.sdc.client.password= <password>
    ```

  - Description

    When set on the command line or in sdclocal.conf file, the automatically logs the user into the client catalog.
- Set User Credentials
  - Parameter

    ```
    com.ibm.sdc.client.login.__ShareServer_ShareName=<user ID>
    com.ibm.sdc.client.password.__ShareServer_ShareName=<password>
    ```

    Where __ (double underscore) is required before the file share server name and _ (single underscore) is required before the name of the file share.
  - Description

    When set on the command line or in the sdclocal.conf file, these values are used to establish the connection to Universal Naming Convention (UNC)-defined file share resources.

- Alternate download server
  - Parameter

    ```
    com.ibm.sdc.client.downloadURL= <fileservername:port>
    ```

  - Description

    The catalog is displayed from Tivoli Provisioning Manager for Software Distribution Server, and files are downloaded from the downloadURL server. This separates the catalog server from the file delivery server. When specified in the sdclocal.conf file, the client downloads PKG from server specified, while still retrieving the catalog from primary server.

  Example 3-15 shows a sample sdclocal.conf file.

Example 3-15 Sample sdclocal.conf file

```
com.ibm.sdc.agent.clientHost=(SET DURING INSTALL)
# Uncomment and specify an alternate http server to download files
# com.ibm.sdc.client.downloadURL=
# Uncomment and specify user login id
# com.ibm.sdc.client.login=
# Uncomment and specify user login password
# com.ibm.sdc.client.password=
```

3.4.2 Using auto-update to distribute a global sdc.conf file

Several of the sdc.conf variables control the global population of client machines. The auto-update process downloads and replaces the sdc.conf file on any client machine when the version in the apps directory on the Software Distribution server is different from what is on the client system.

If the sdc.conf file does not exist in the apps directory on the Software Distribution server, nothing is changed on the client machine.

You can modify and deploy the following global properties using this method.

Process for using auto-update for sdc.conf

This section provides the steps for using auto-update for the sdc.conf file on the client system and on the server.

Important: When using the auto-update process to distribute a global sdc.conf file, it is important to confirm that all fields are correct before implementation. Failure to test can result in disabling the Software Distribution Agent service.

Always perform a connection test with the updated sdc.conf file on the target machine before making it available to the auto-update process on the server.

On the client system

Make the following changes and perform the test:

1. On the client system, using a text editor (like Notepad) open:

   C:\Program Files\IBM\Tivoli\TPMX\Agent\sdc.conf

2. Add or modify the property entry.
3. Confirm that the sdc.conf file does not contain any client-specific configuration properties.
4. Restart the service IBM Tivoli Provisioning Manager Express - Software Distribution Agent.
5. Confirm that the agent connects to the server by verifying the machine registration time on the Software Distribution server console. Refer to 4.11, “Managing machines” on page 162 for details.
6. Confirm that the property performs the desired effect.

On the server

Make the updated sdc.conf file available to the auto-update process. Retrieve the modified and tested sdc.conf file from the client machine. On the Software Distribution server, place the sdc.conf file in:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war\apps

Changing the frequency of the agent check-in

The default interval for client queries is 60 minutes. If you want to change the interval length, perform the following steps:

1. On the client system, using a text editor (such as Notepad) open C:\Program Files\IBM\Tivoli\TPMX\Agent\sdc.conf.
2. Look for the entry `com.ibm.sdc.agent.offset=xx`. By default, the value for xx will be `60`.
3. Change the numeric value to any value in the range 1 to 999.
4. Restart the service IBM Tivoli Provisioning Manager Express - Software Distribution Agent.

Disabling user management for LDAP environment

When implementing Software Distribution in an LDAP environment, the “Create New User” and “Change Password” buttons on the Software Distribution Catalog should be disabled. You can modify the sdc.conf file on the server and automatically push it out to all clients during the auto-update process.

On the client system

Make the following changes and perform the test:

1. On the client system, using a text editor (such as Notepad) open:

   C:\Program Files\IBM\Tivoli\TPMX\Agent\sdc.conf

2. Add the entry `com.ibm.sdc.client.userMgmtEnabled=false`.
3. Confirm that the sdc.conf file does not contain any client-specific configuration properties.
4. Restart the service IBM Tivoli Provisioning Manager Express - Software Distribution Agent.
5. Confirm that the agent connects to the server by verifying the machine registration time on the Software Distribution server console. Refer to 4.11, “Managing machines” on page 162 for details.
6. Confirm that the Software Distribution Catalog login page no longer displays the “Create New User” and “Change Password” buttons.

On the server

Complete the following two actions to disable User Management:

1. Make the updated sdc.conf file available to the auto-update process:
   a. Retrieve the modified and tested sdc.conf from the client machine.
   b. On the Software Distribution server, place the sdc.conf file in:

      C:\Program Files\IBM\Tivoli\TPMX\SERVER\ TPMXAPP.ear\tpmx.war\apps

2. Update the JSP™ file that launches the Software Distribution Catalog through Java Web Start:
   a. On the Software Distribution server, use a text editor to modify the sdcclient.jsp file, located in:

      C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war\sdc

   b. Locate `<resources>` and `</resources>`.
   c. Add the following property declaration between these tags:

      ```
      <property name="com.ibm.sdc.client.userMgmtEnabled" value="false" />
      ```

4

Using the Software Distribution component

In this section, we discuss the following topics in detail:

- Software Distribution setup overview
- Accessing Tivoli Provisioning Manager Express for Software Distribution administration console
- Managing groups
- Managing users
- Building the Software Distribution library
- Managing software packages and bundles
- Purchase order management
- Managing evaluations
- Exporting and importing software packages and bundles
- Managing evaluations
- Managing distributions
- Managing machines
- Managing schedules
- Using Tivoli Provisioning Manager for Software Distribution logs
- Software Distribution Catalog
- Installing a package using the client catalog

4.1 Software Distribution setup overview

IBM Tivoli Provisioning Manager Express for Software Distribution combines inventory management capabilities with a way to deploy software efficiently. Administrators can quickly create package definitions and schedule distributions from their own machines. End users can take advantage of an easy-to-use Web-based or Java applet-based catalog interface to perform the installation when it is convenient for them.

Tivoli Provisioning Manager Express for Software Distribution offers flexible *push* and *pull* capabilities. When distributing new software is urgent or when users are away from their desks, administrators can deliver application software and patches without end-user intervention. Administrators simply create a scheduled window of availability, use a distribution list to target the machines, and choose a package to be distributed.

Alternatively, administrators can easily populate a Web-based catalog from which end users can select and install prepackaged software applications. When bandwidth must be tightly controlled, the same resources can be used to create a portable catalog to enable users to run from a CD or DVD.

4.1.1 Topology

It is important for administrators to prepare for setting up the Tivoli Provisioning Manager Express for Software Distribution environment by collecting the following information about their network topology and general environment setup:

- Are target machines behind firewalls?
- Does this require a proxy server?
- Will target machines be accessing the server from low bandwidth network connections?
- Will the environment be using directory sharing?
- Are there existing file share servers?
- Are the user IDs on the target machines created as restricted users?
- Is Microsoft Active Directory or LDAP being used for user authentication?

Knowing the information about the topology of your machine infrastructure will be important to determine what software distribution features and methods you need to use for the most effective implementation.

4.1.2 Supported package types

The Software Distribution server provides the ability to create package definitions to automate the delivery of any standard application installation executable. Refer to 4.5.2, “Creating a software package” on page 96 for more details.

Three delivery types are used for the package definitions to allow for flexibility in delivering the package resources:

- Download

  Delivers a single executable from the Software Distribution server to temporary space on the target machine, executes the installation command, and cleans the source file.

- Logical drive

  Uses a file share server to access the source files. A standard mapped drive should be available on the target machines, or UNC path names will be used in the package definitions. User credentials can be stored on the target machines to validate access. The installation file in the package definition will be relative to the target machine.

- Directory download

  Delivers a directory (and all of its content) from the Software Distribution server to the target directory specified in the package definition on to the target machine. An installation command can be executed, and the directory structure can be removed or left behind on the target machine.

  Refer to 4.6.8, “Software package definition information” on page 121 for more details.

4.1.3 Installing software for restricted users

The Software Distribution Catalog runs on the target machine using the end user’s operating system user ID authorization to perform the software installation. In an environment where end users run as restricted users and do not have authorization to perform the software installation, Software Distribution has the ability to perform the installation with the *system* account. The Software Distribution Agent must be installed on the target system for this to be supported.

To support restricted user installations, each of the three package types include a *Secure* designation. Package designated as “Secure” use the Software Distribution Agent to complete the installation initiated from the Software Distribution Catalog. Packages not designated as “Secure” are considered “Open” and attempt the installation with the local user’s authorization privileges. If the user does not have the appropriate authorization, the package will fail.

Refer to 4.6.8, “Software package definition information” on page 121 for more details.

4.1.4 Establishing the methods of delivery

Tivoli Provisioning Manager Express for Software Distribution provides two methods for the distribution of software:

- The *pull distribution method* uses the Software Distribution Catalog to enable a user to select one or more software packages or bundles from the online catalog and initiate the installation process.

  To review the requirements for establishing the pull software delivery method, refer to 4.1.5, “Setting up the pull distribution method” on page 74.

- The *push distribution method* enables an administrator to remotely schedule, deliver, and install one or more software packages or bundles. If the software packages are configured for an unattended installation, the push operation can be achieved without any user intervention.

  To review the requirements for establishing the push software delivery method, refer to 4.1.6, “Setting up the push distribution method” on page 77.

If you intend to support both methods of software delivery, follow the instructions in both of these topics.

4.1.5 Setting up the pull distribution method

Setting up the pull distribution method involves creating groups, assigning users to groups, and assigning packages and bundles for each group. When the user logs on to the Software Distribution Catalog, the packages that are displayed are determined by the group or groups to which the user is a member. All users are automatically members of the Default group. The catalog displays all packages in the Default group, along with all packages from any other group in which the user is a member.

For example, an administrator might establish separate groups based on department needs, such as a Finance group, Development group, Human Resources group, and Marketing group. Each of these groups will have its own set of packages and bundles.

When a user assigned to the Finance group opens the Software Distribution Catalog from a client computer, that user will be presented with a list of all packages and bundles that are members of the Finance and Default groups. If the software needs of all the users in a company are similar, the administrator can simply use the Default group or set up a single group and assign all the users to that group. The administrator can also set up different groups for management

and non-management personnel if access to certain applications is to be restricted to management only.

The number of groups you choose to implement and the granularity of groups is determined by the needs of your company.

To set up the pull distribution method, perform the following tasks:

1. Evaluate the software application requirements of your company to determine what level of access or restriction is required between the users in your environment.
2. Set up the appropriate groups to support the user demographics. Refer to 4.3.1, “Adding a new group” on page 83 for details.
3. Assign users to each group, as necessary. Refer to 4.4.1, “Adding a new user” on page 91 for details.
4. Build a Software Catalog for each group by including packages and bundles into the appropriate group membership. Refer to 4.6.1, “Adding a new software package to the library” on page 104, 4.6.2, “Adding a new software bundle to the library” on page 111, and 4.6.3, “Deleting a software package or bundle from the library” on page 114 for details.

The Software Distribution Catalog displays the custom package listings based on each user’s group membership.

High-level pull architecture

The Tivoli Provisioning Manager Express for Software Distribution Software Catalog is used by users to manually select a software package to install. When the user selects a package, the applet shows more detailed data for the package. If the package the user selected is what that user wants to install, the user can just click the Install button. The installation procedure automatically starts. The catalog presents all software packages to a particular user for which this user has access privilege. The client applet can run in a browser, as a Java application, or as Java Web Start application/applet.

Figure 4-1 illustrates the pull architecture.

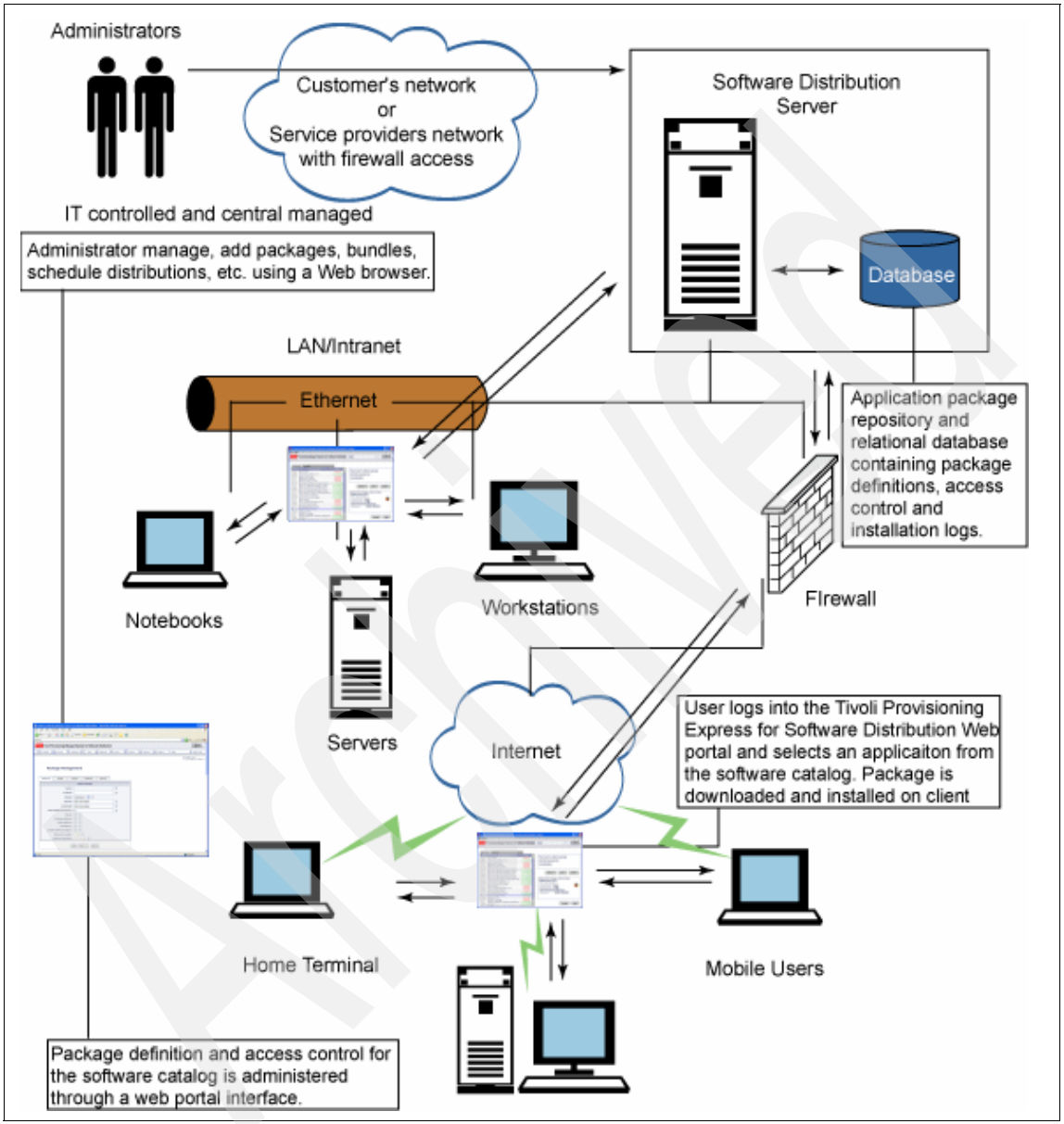


Figure 4-1 Pull architecture

4.1.6 Setting up the push distribution method

Setting up the push distribution method involves creating distribution lists to assign the list of computer names to be included in a distribution and setting up a schedule.

A distribution list is a list of the computers to which the push packages or bundles will be made available. Each computer is identified by the computer name and its associated host name and IP address. The Tivoli Provisioning Manager Express for Software Distribution program maintains a list of all registered Tivoli Provisioning Manager Express for Software Distribution clients installed. Client registration automatically takes place when the client agent is installed.

You can populate the distribution list manually by selecting from the registered clients list or by using the evaluation definitions. Evaluations are a set of logical conditions that will be run against the Software Distribution machine list or the Inventory database. Create the conditions manually from the evaluation panel, or automatically import an SQL query from an Inventory report using the Create Evaluation link.

For more information, refer to 4.9, “Managing evaluations” on page 147 and 4.10, “Managing distributions” on page 152.

Note: Distribution lists used by the push process are different from the groups used by the pull process. User and group names used by the pull process are not used by any functions of the push process. Instead, the push process uses computer names and identifies the target computers by host name and IP address. There is no relationship between user names and machine names or between groups and distribution lists.

The schedule defines which software packages or bundles are to be installed, as well as when and how long the software packages or bundles will be made available to the client computers defined in the distribution list.

Each client computer queries the server at scheduled time intervals to determine if push packages or bundles have been made available. If push packages or bundles are available, the client agent automatically begins the installation process if the packages are configured for unattended installation or if the user is logged on. If the packages require user intervention during the installation process and the user is not logged on, the client agent delays the installation until the user logs on. The intervals at which the client queries the server is controlled by the client agent and is set (the default is 60 minutes) when the client agent is installed. Therefore, the installation of the push package does not begin as soon as the push package is made available; it depends on when the client queries the server.

To set up a push distribution method, perform the following tasks:

1. Evaluate the software application requirements of your company.
2. Compile a list of computer names and their respective users. You will need this information later when you assign machines to the distribution lists.
3. Set up evaluations to automate the population of distribution lists. Refer to 4.9, “Managing evaluations” on page 147 for details.
4. Set up distribution lists. Refer to 4.10, “Managing distributions” on page 152 for details.
5. Set up a schedule. Refer to 4.12.2, “Adding a schedule” on page 166 for details.

High-level push architecture

The administrator can schedule the package or bundle for distribution to the client by selecting a distribution list. You schedule the time a specific software package is available to automatically be installed and define the set of machines to receive the distribution. The agent periodically communicates with the server to check for valid defined schedules. In addition, the agent works as a local installer for the client applet if a package requires administrator privileges to install.

Figure 4-2 illustrates the push architecture.

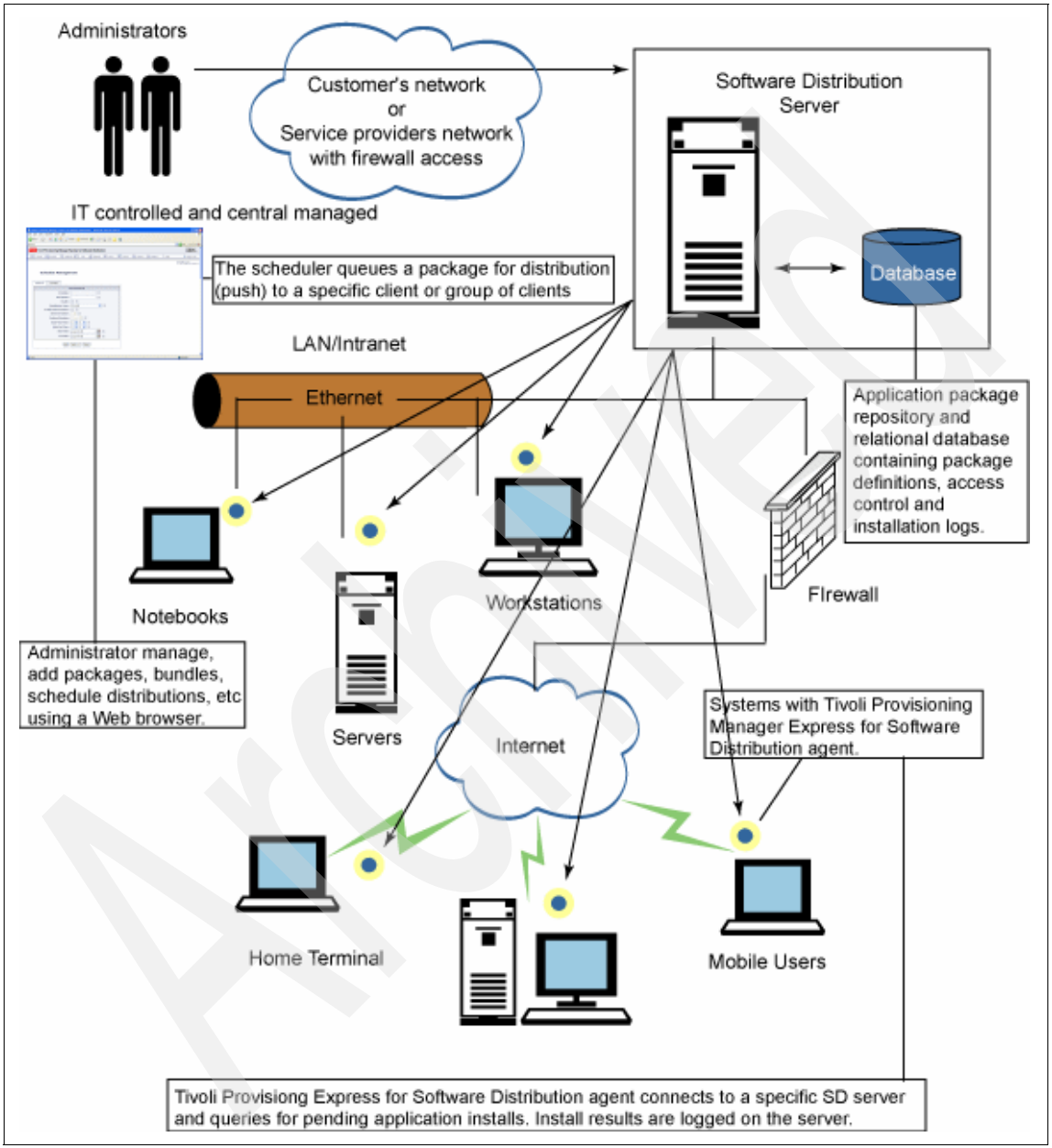


Figure 4-2 Push architecture

4.2 Accessing Tivoli Provisioning Manager Express for Software Distribution administration console

You can manage the Tivoli Provisioning Manager Express for Software Distribution process using a Web browser to access the administration console. Only users who are designated with the authority of administrator can access the Software Distribution functions of the administrator's console. Only an existing administrator can designate the administrator authority to a new or existing user name. Refer to 4.4.1, "Adding a new user" on page 91 for details.

To access the logon page:

1. Type `http://`*`server_name`*`/tpmx` (where *`server_name`* is the name of the Tivoli Provisioning Manager Express for Software Distribution server). The Welcome page shown in Figure 4-3 on page 81 opens.

2. Click **Manage Assets**.

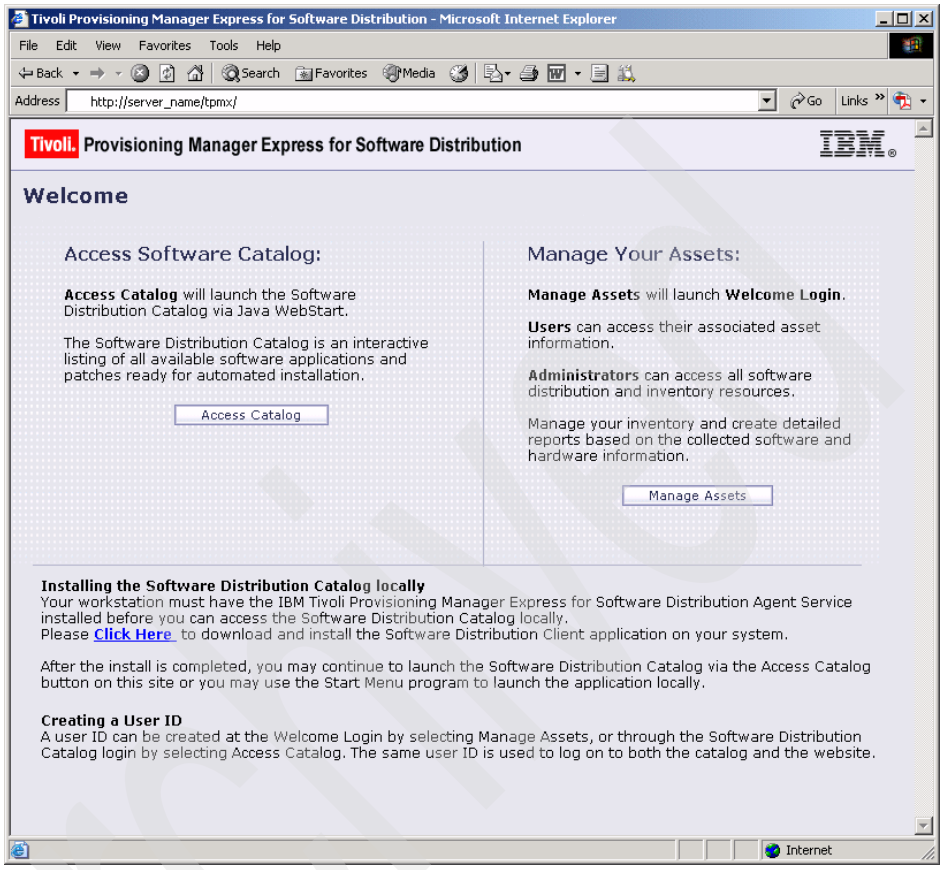


Figure 4-3 Welcome page

3. Enter your user name and password (Figure 4-4). Click **Logon**. You will be prompted to change the admin password when you login.

> **Note:** The default administrator user name is `admin` and the default password is `password`.

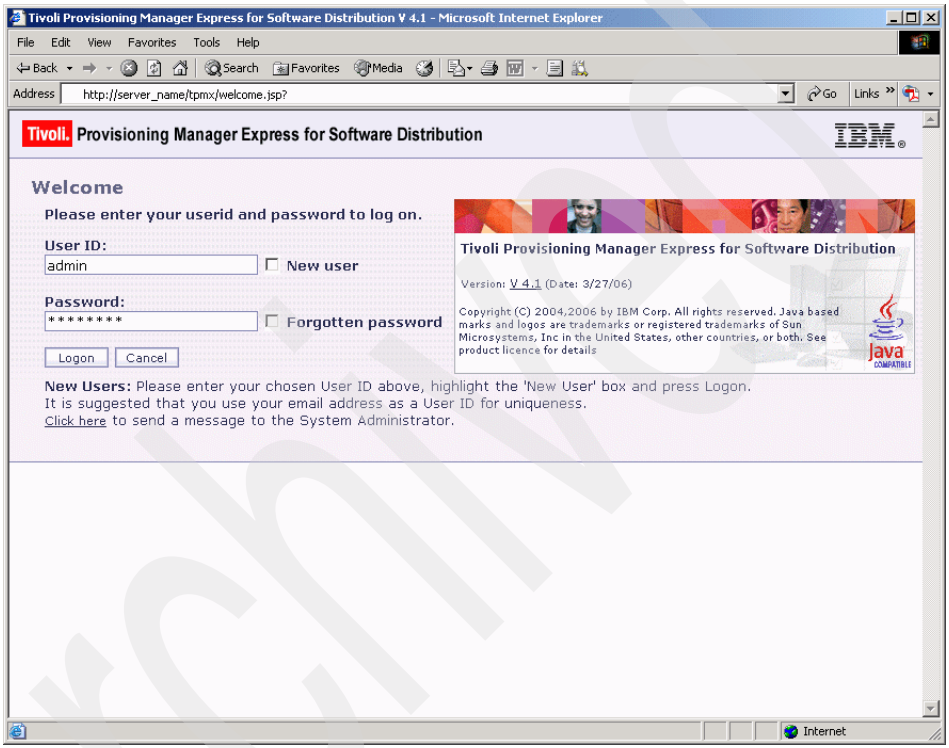


Figure 4-4 Administrator and client logon page

Both users and the administrator can log on to Software Distribution. Access to functions and menu items will be determined by the users' authority level. Only administrators can access Software Distribution functions. Users with other authorities will be provided access to the appropriate inventory functions.

Logging out of the Tivoli Provisioning Manager Express administration console

To log out, click **Sign Out** from the Tivoli Provisioning Manager Express for Software Distribution menu bar. The administration logon window shown in Figure 4-4 opens.

4.3 Managing groups

Groups are used to categorize users and provide access to a set of packaged applications. A group definition consists of the group name and description, the designated users who are members of the group, and the designated software packages and bundles that will be made available to the selected users.

The Software Distribution Catalog uses the user's group membership to determine the appropriate packages and bundles to be displayed for installation. The Group Management window shows a list of group names and their associated descriptions (List Groups table).

For the Software Catalog Group versus the Inventory Group, the same groups are used for both the Software Distribution Catalog and Inventory. The only difference is that for Software Distribution purposes, groups also include membership for packages and bundles, along with users. Inventory groups only display user membership information. The Software Catalog Groups menu selection enables the administrator to modify the package, bundle, and user membership in one location.

4.3.1 Adding a new group

To add a new group:

1. Log on to administration console by following the steps described in 4.2, "Accessing Tivoli Provisioning Manager Express for Software Distribution administration console" on page 80. The My Assets page shown in Figure 4-5 on page 84 opens.

2. On the My Assets page, select **Users** → **Software Catalog Groups** → **New Group** to display the Add Group form.

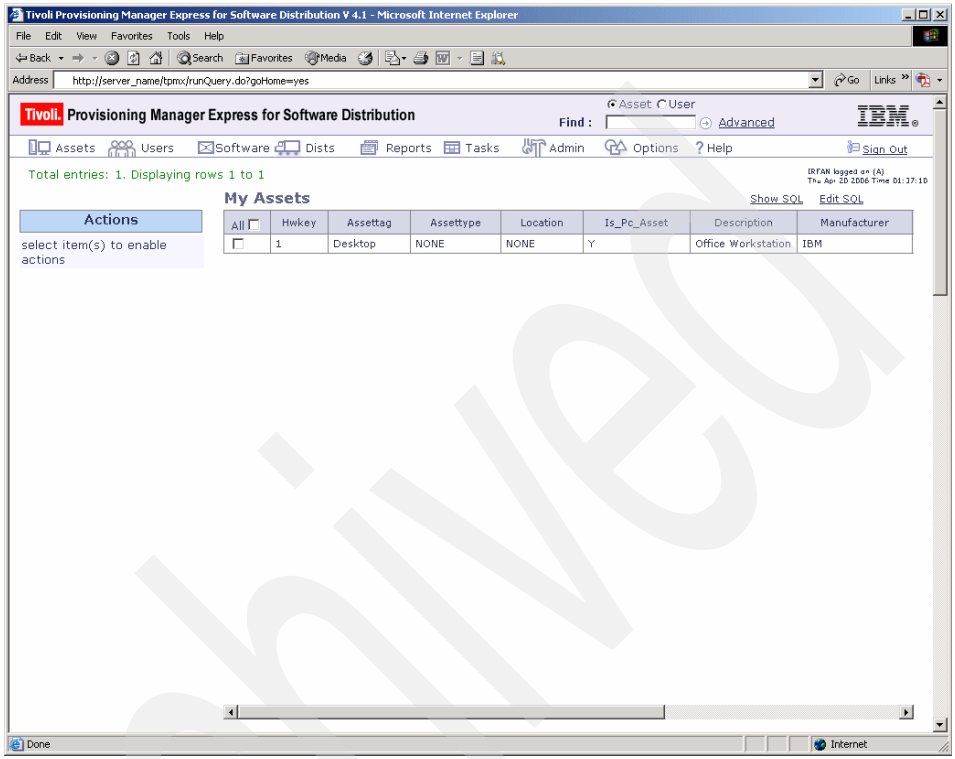


Figure 4-5 My Assets

3. On the Add Group page, enter the name in the Name field and the description in the Description field for the group (Figure 4-6). Click **Add**.

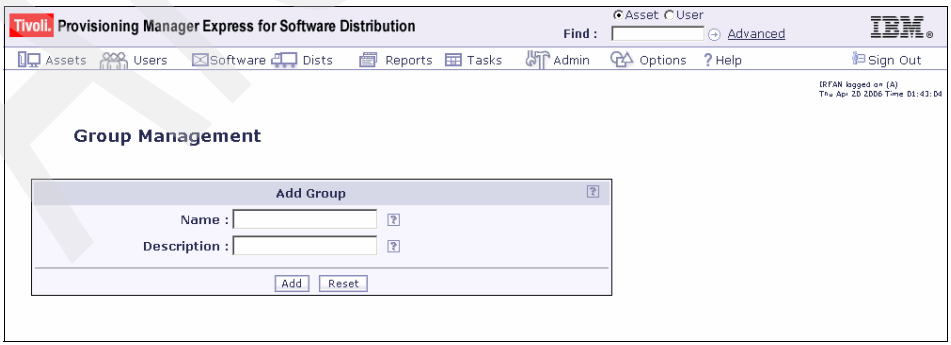


Figure 4-6 Add Group

The Add Group page, with a message that says "*Group_name* has been added successfully," opens (Figure 4-7).

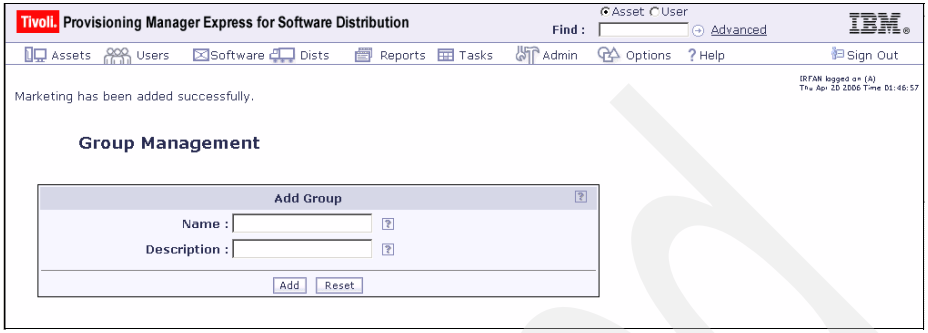


Figure 4-7 Add Group: Success message

Note: You cannot create multiple groups with the same name. The Name field has a limitation of 32 characters, uniquely defined to distinguish group definitions. In addition, the field does not accept apostrophes or quotation marks. The Description field is an alphanumeric field that has a limitation of 128 characters and describes a group definition.

4.3.2 Deleting a group

To delete a group:

1. Select **Users** → **Software Catalog Groups** → **All Groups**.
2. From the List Groups table, select the check box next to the group name you want to delete (Figure 4-8). Click **Delete**.

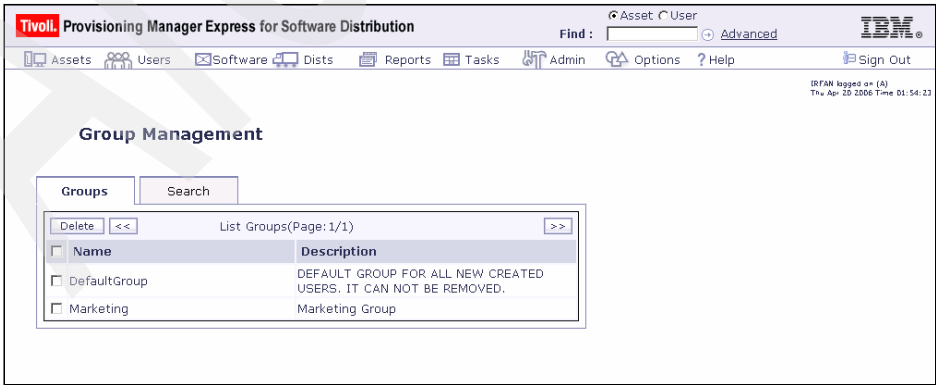


Figure 4-8 List Groups

3. In the conformation dialog box, click **OK** to delete the group, or click **Cancel** to return without making any changes to the database (Figure 4-9).

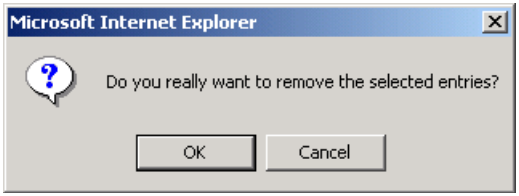


Figure 4-9 Delete group confirmation

4.3.3 Searching for a group

To search for a specific group name:

1. Select **Users** → **Software Catalog Groups** → **All Groups**. The List Groups table opens (Figure 4-8 on page 85).
2. From the List Groups table, select the **Search** tab. The Search window shown in Figure 4-10 opens.
3. In the Search tab, enter the group name in the Name field. In the Page Size field, enter the maximum number of entries per page to display.

> **Note:** The group name value is case-sensitive. Type the name exactly as the name is listed in the group list you are searching. If you are not sure of the spelling, use the percent symbol (%) as a wild card in place of one or more characters (for example, A% or a%).

Click **Search**.

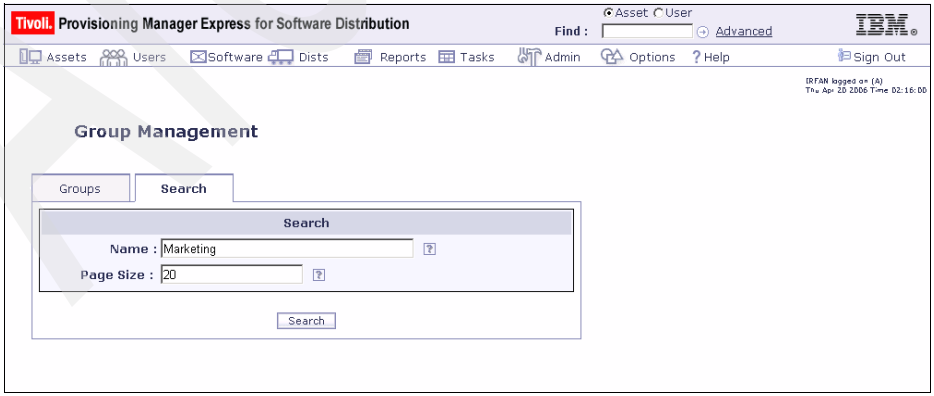


Figure 4-10 Group Management: Search

The List Groups table displays the selected group name and description (Figure 4-11).

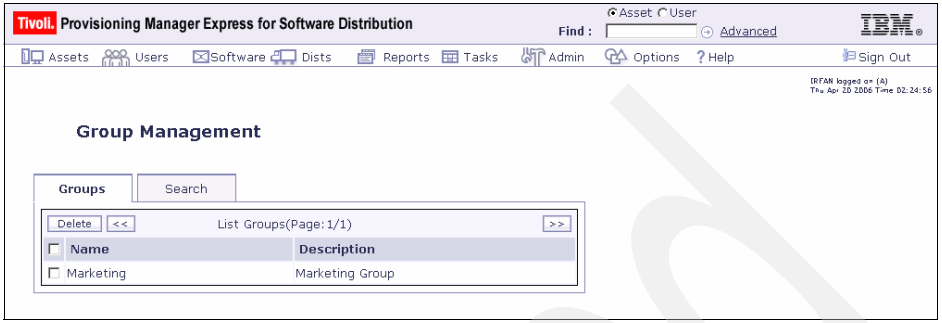


Figure 4-11 Group Management: Search results

4.3.4 Changing a group description

To change a group description:

1. Select **Users** → **Software Catalog Groups** → **All Groups**. The List Groups table opens.
2. In the List Groups table, click the group name.
3. In the Update Group area, enter the necessary change to the description in the Description field (Figure 4-12).

   Click **Next** at any time to continue to the next tab. Optionally, you can click **Apply** to make permanent changes to the database before selecting Next. Clicking **Update** submits all changes to the database, closes the record, and returns you to the List Groups table.

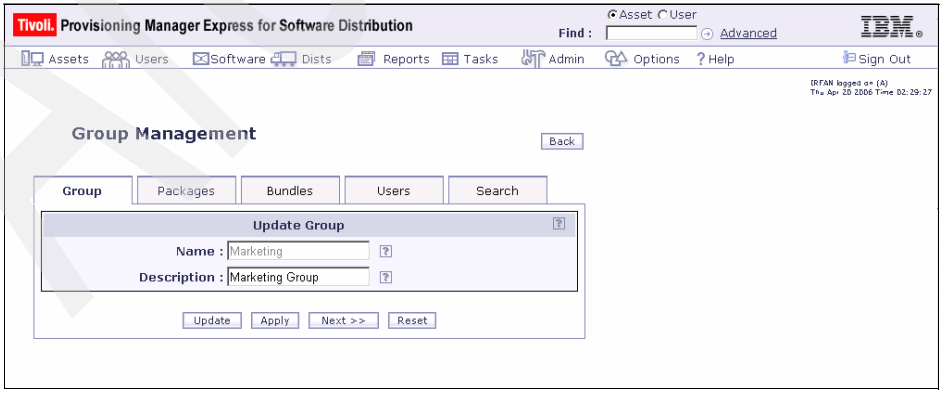


Figure 4-12 Group Management: Description update

4. Click the **Packages** tab to select or clear the packages to be included in the group.
5. Click the **Bundles** tab to select or clear the bundles to be included in the group.
6. Click the **Users** tab to select or clear the users to be included in the group. You can also update the user information by selecting the user name. For more details about updating the user information, refer to 4.4.5, “Updating user information” on page 94.
7. Click **Update**. The List Groups table shown in Figure 4-8 on page 85 opens.

4.3.5 Adding or deleting (modifying) a software package or bundle for a specific group

To add or delete a software package or bundle for a specific group:

1. Select **Users** → **Software Catalog Groups** → **All Groups**.
2. From the List Groups table, select the group name (Figure 4-8 on page 85).
3. From the Update Group area, click the **Packages** or **Bundles** tab, depending on which one you want to add or delete. The Package Access List (Figure 4-13) or the Bundle Access List for a specific group name opens.

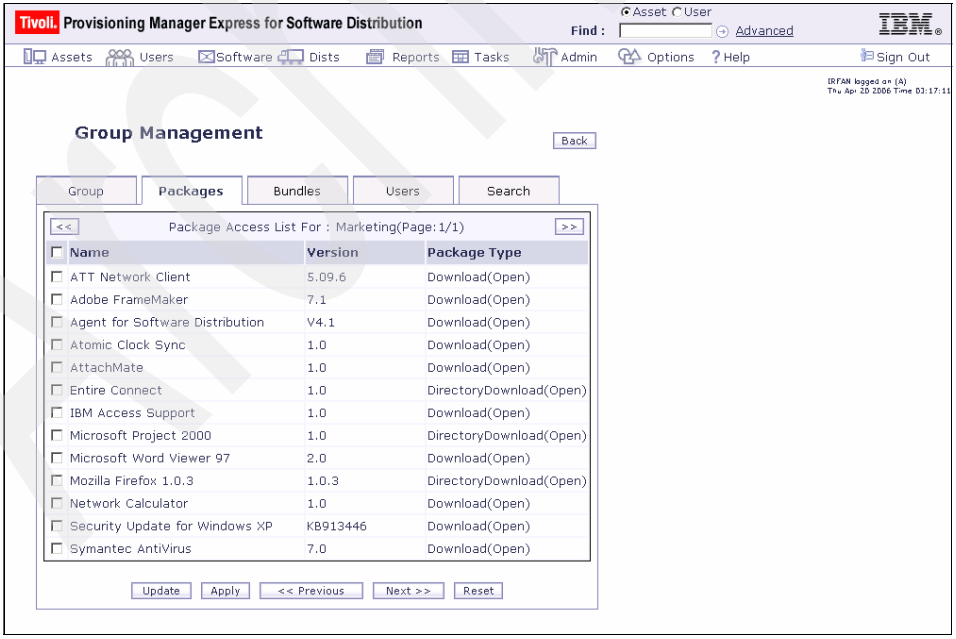


Figure 4-13 Group Management: Package Access List

4. Select or clear the check box for the software package or bundle that you want to add to or delete from the group.

> **Note:** When adding packages or bundles from multiple pages, you must click **Apply** to save your changes before selecting the **<<** arrow or **>>** arrow to navigate between the multiple pages.

5. Click **Update**. The List Groups table shown in Figure 4-8 on page 85 opens.

4.3.6 Updating user information in a specific group

To update the user information for a specific group:

1. Select **Users** → **Software Catalog Groups** → **All Groups**.
2. From the List Groups table, select the group name (Figure 4-8 on page 85).
3. From the Update Group area, select the **Users** tab (Figure 4-12 on page 87).
4. Click the user name from the User List for a specific group (Figure 4-14).

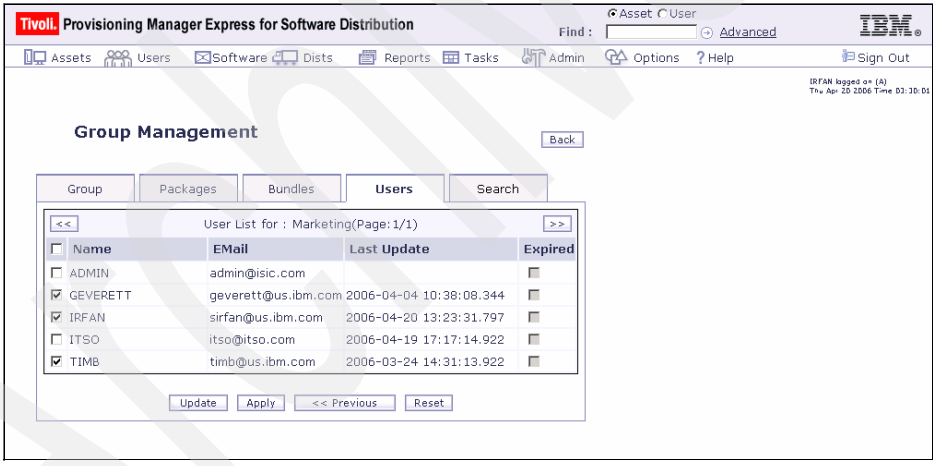


Figure 4-14 Group Management: User List

5. Make the changes to the user information in the Update User area (Figure 4-15). Refer to 4.4.6, “User information” on page 94 for details. Click **Update**. The List Groups table shown in Figure 4-8 on page 85 opens.

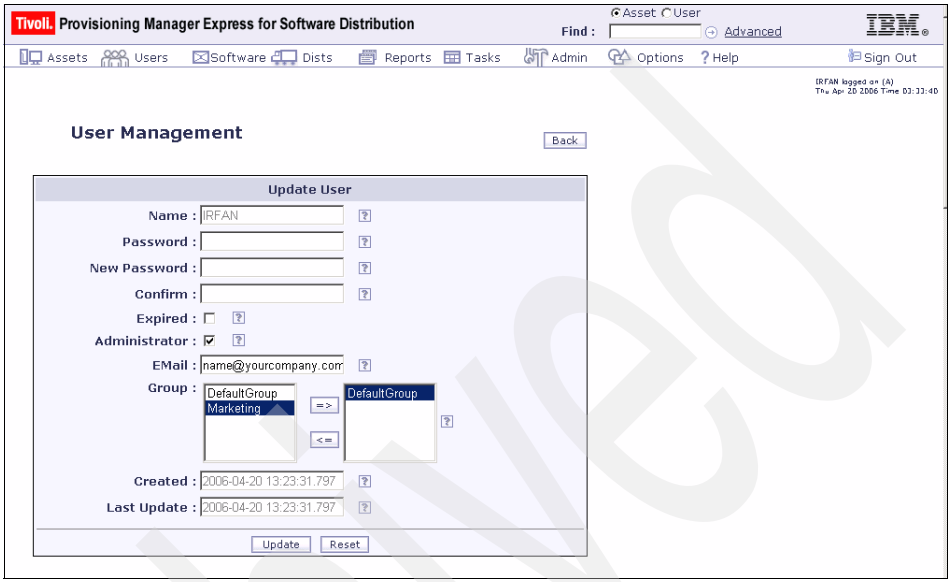


Figure 4-15 User Management: Update User

4.4 Managing users

Each user is required to obtain a user name and password in order to access the Software Distribution Catalog or to view Inventory data from the console.

The User Management window shows a list of user names, user information, and group assignments. The following section describes the administrative tasks available for managing users.

There are three user authority roles available for Tivoli Provisioning Manager Express for Software Distribution and Inventory:

- User
- SuperUser
- Administrator

Software Distribution only uses User and Administrator. The Software Distribution menu functions are only be available to Administrator authority users. IDs designated as User or SuperUser only have access to Inventory

functions from the console, but they are authorized to log on to the Software Distribution Catalog.

4.4.1 Adding a new user

To add a new user:

1. Select **Users** → **Users** → **New** to display the Add User form shown in Figure 4-16.

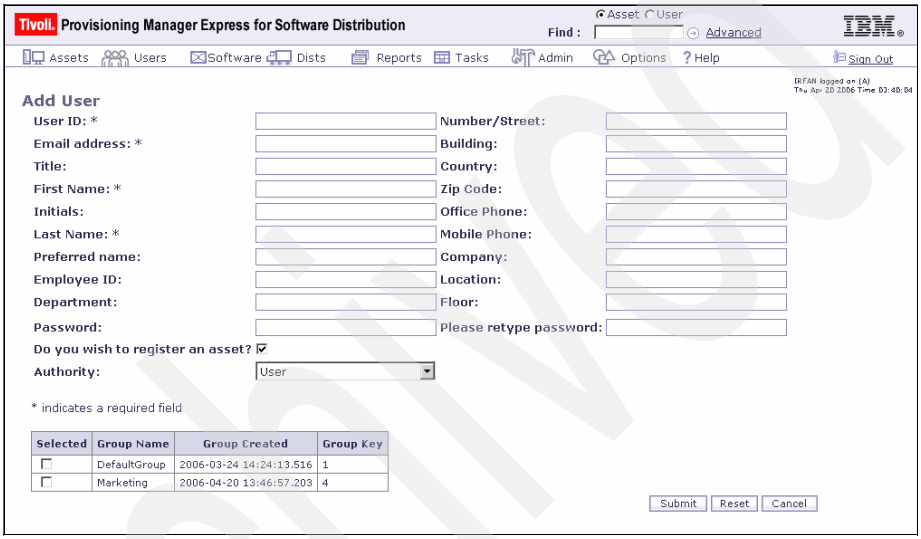


Figure 4-16 Add User

2. In the Add User form:
   - Enter the User ID, Email address, and all the other mandatory fields marked with an asterisk (*). Enter the password and confirm it.
   - Select the **Do you wish to register an asset?** option if Inventory is being used and an asset needs to be recorded for the new user.
   - Select the role for the user from the drop-down menu.
   - Select the group or groups of which the user will be member.

   Click **Submit.** The User name appears in All Users list shown in Figure 4-17 on page 92.

Note: When a new user is created by an administrator logged into the console, user authority and group membership can be established. When a new user is created by the user, from the Login panel, the authority cannot be modified and the user will only be a member of the default group.

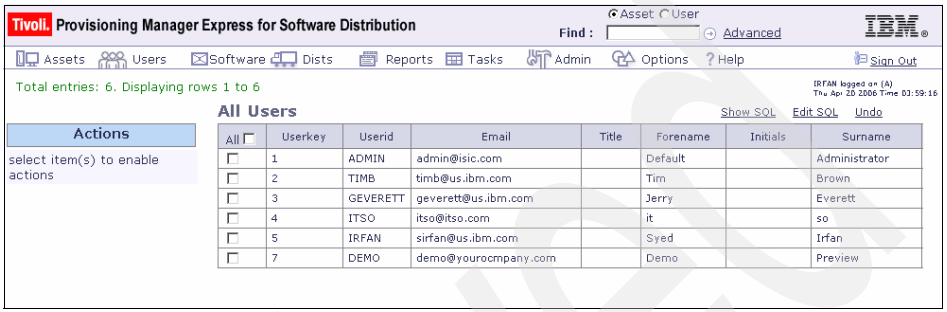


Figure 4-17 All Users list

4.4.2 Deleting a user

To delete a user:

1. Select **Users** → **Users** → **All Users**. The All Users list shown in Figure 4-17 opens.
2. Select the check boxes next to the user names you want to delete (Figure 4-18). Click **Delete** from the Actions box or select **Users** → **Users** → **Delete**.

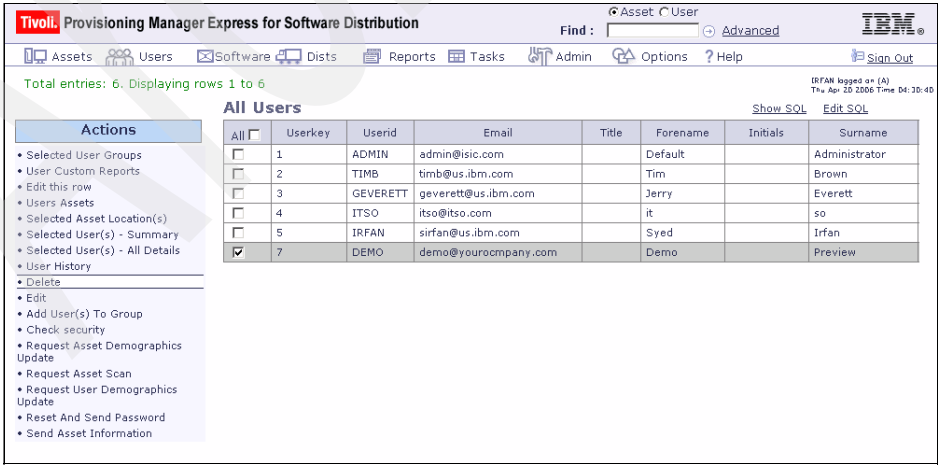


Figure 4-18 Delete users

3. The users to be deleted are listed and you are prompted for a reason and asked for verification before proceeding (Figure 4-19).

   Enter the reason and select **Yes** from the drop-down menu. Click **Submit** to delete the user name.

   The All Users list shown in Figure 4-17 on page 92 opens. You can also click **Cancel** for no action or **Reset** to clear all selections.

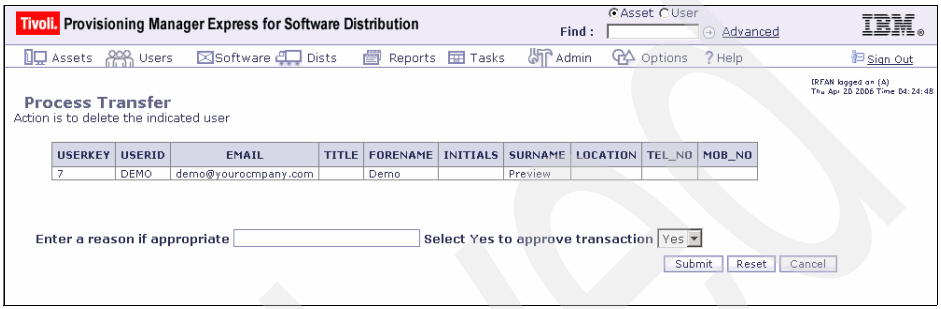


Figure 4-19 User delete confirmation

4.4.3 Searching for a user

To search for a specific user name:

1. From the title bar, select **Users** and enter the user name in the Find field.
2. Press Enter or click the right arrow to start the search.

   Alternatively, click **Advanced Search** for additional fields.

4.4.4 Modifying a user's group membership

To modify a user's group membership:

1. Select **Users** → **Users** → **All Users**. The List Users table shown in Figure 4-17 on page 92 opens.
2. Select the check box next to the user names you want to update (Figure 4-18 on page 92).
3. Click **Edit** from the Actions area or select **Users** → **Users** → **Edit**.

4. Update the group in the group's table as necessary (Figure 4-20). For more details about updating the user information, refer to 4.4.6, "User information" on page 94. Click **Submit**.

   The List User table shown in Figure 4-17 on page 92 opens.

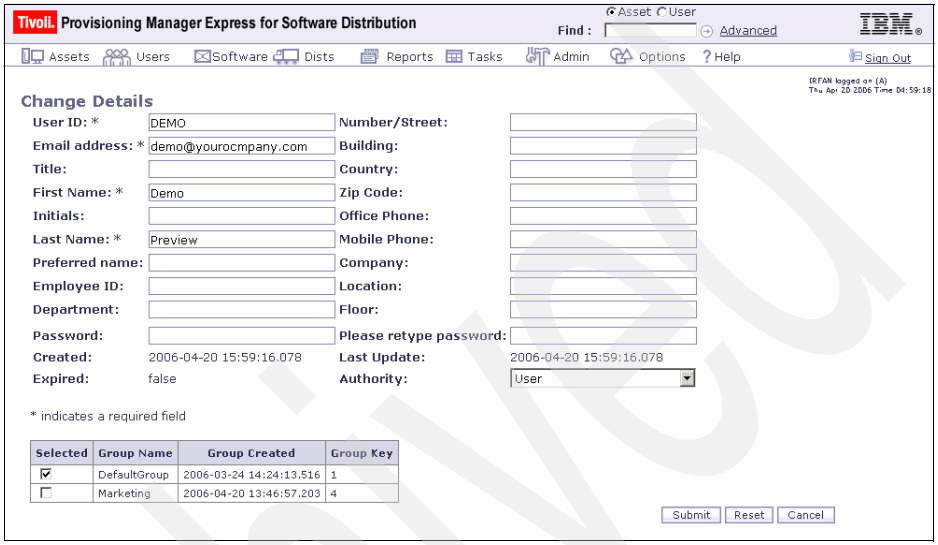


Figure 4-20 Edit user information

4.4.5 Updating user information

To update user information:

1. Select **Users** → **Users** → **All Users**. The List Users table shown in Figure 4-17 on page 92 opens.
2. Select the check box next to the user names you want to update (Figure 4-18 on page 92).
3. Click **Edit** from the Actions area or select **Users** → **Users** → **Edit**.
4. Make the changes to the user information (Figure 4-20). Refer to 4.4.6, "User information" on page 94 for details. Click **Submit**.

   The List User table shown in Figure 4-17 on page 92 opens.

4.4.6 User information

The following fields and descriptions update the user information:

- User ID: User name (mandatory)
- Email address: User's e-mail address (mandatory)

- Title: (optional)
- First Name: User's forename (mandatory)
- Last Name: User's surname (mandatory)
- Preferred name: (optional)
- Employee ID: Corporate-assigned identification number (mandatory)
- Department: (optional)
- Password: User's initial password if creating ID or updated password (mandatory)
- Number/Street: (optional)
- Building: (optional)
- Country: (optional)
- Zip code: (optional)
- Office Phone: (optional)
- Mobile Phone: (optional)
- Company: (optional)
- Location: (optional)
- Floor: (optional)
- Please retype password: Confirmation of previously entered password
- Authority: User's authority level

Note: All the fields labeled as optional can be customized at server installation time by the Tivoli Provisioning Manager administrator.

4.5 Building the Software Distribution library

This section provides an overview of the tasks required to create a software package or bundle and check it into your Tivoli Provisioning Manager Express for Software Distribution library.

The Software Distribution library is the main repository for software packages and bundles. Software packages and bundles referenced in the library are not made available to users until the administrator creates catalogs for the pull software delivery method or schedules a push software delivery.

4.5.1 Creating a folder structure for the software library

Any package, folder, and file intended for distribution that is stored on the Software Distribution server must be stored under the document root. The default document root is:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war

Your document root might be different depending on the options you selected during installation.

In most cases, it is beneficial to use the \PACKAGES folder under the document root to help you organize the files associated with your packages. Under the \PACKAGES folder, you can organize your packages by operating system, type of application, or any other characteristic that meets the needs of your organization. It is a good idea to plan for your long-term organizational needs before designing your folder structure. Appendix A, “Sample folder structure” on page 237 provides several samples to help you create your folder structure.

4.5.2 Creating a software package

Creating a software package involves the following tasks:

1. Creating the source files. Refer to “Creating the source files” on page 96 for details.
2. Determining where you will store the source files for distribution. Refer to “Determining where to store the source files” on page 98 for details.
3. Adding the software packages to the Software Distribution library through the administrator’s console. Refer to “Adding the software package to Software Distribution library” on page 99 for details.

Creating the source files

The first step to create a software package is creating the source files. Each package is associated with the following source files:

- The source software package file
- The icon file
- The details file

The source software package file (mandatory)

This file typically is created using a third-party packaging tool. Tivoli Provisioning Manager Express for Software Distribution supports any software package created by the following packaging tools:

- InstallShield
- Wise InstallManager
- WinZip Self-Extractor
- Microsoft Software Installer (MSI)

For best results, develop the source package so that it installs silently (without user intervention). For information about using these tools, refer to the documentation provided by the packaging tools.

Optionally, the source software package can be in an unpacked format consisting of a folder structure containing all the files required for installation or data files for

distribution. This method often uses .cmd or .bat script files to automate the installation requirements.

Call all command references used in the batch files with absolute paths (Target Directory Field/Installation Directory Field). The working directory should not be assumed. You can also include the following line in the batch file to establish the working directory from the called batch:

```
cd %~p0
```

Microsoft Software Installer (MSI) support

Download package type supports the installation of a single .msi executable. The .msi exec gets called with the following command syntax:

```
msiexec ALLUSERS=2 /i XXXX.msi <Parameters>
```

Any additional flags specified in the Parameters field are appended to the base command.

Note: ALLUSERS=2 allows the installation to be completed to all users, instead of just system.

Logical Drive package type can be used to support the installation of a .msi executables with Transform or Patch files. A .cmd or .bat file should be created. All command parameters in the .cmd or .bat file should reference the drive path variable.

For example, the following lines would be in the .bat file (DPDIR is set to the defined drive path and the DPDIR variable is used to provide the path to the executables):

```
set DPDIR=%~dp0 msiexec ALLUSERS=2 /i "%DPDIR%Entire Connection 3.1.1^1.0.msi"
TRANSFORMS="%DPDIR%Entire Connection 3.1.1^1.0.mst"
```

The Installation File field should call the .cmd or .bat file, using UNC or a mapped drive path, for example, \\FILESHARE\entire_connect\install.bat.

Note: ALLUSERS=2 allows the installation to be completed to all users, instead of just system.

DirectoryDownload package type must be used to support the download of Transform or Patch files.

A .cmd or .bat file should be created. All command parameters should be included in the .cmd or .bat file and should contain fully qualified paths, for example, the following line would be in the .cmd or .bat file:

```
msiexec ALLUSERS=2 /i "c:\entire_connect\Entire Connection 3.1.1^1.0.msi"
TRANSFORMS="c:\entire_connect\Entire Connection 3.1.1^1.0.mst"
```

The Installation Command field should call the .cmd or .bat file, relative to the target directory, for example, c:\targetdir\install.bat.

Note: `ALLUSERS=2` allows the installation to be completed for all users, instead of just the system.

The icon file (optional)

When a user selects a package from a catalog, the Tivoli Provisioning Manager Express for Software Distribution program displays basic information about the program, such as the file size and amount of disk space required. If an icon file is provided, the icon is displayed next to the basic information. The icon image can be either a .gif or .jpg file. Icons are displayed as 32 pixels by 32 pixels.

The details file (optional)

When a user selects a package from the catalog and wants more information than the basic information that is typically displayed, the user can click a Details button in the catalog to view the information in the details file. The details file must be in .txt format and can contain any information deemed useful by the administrator. For example, if a readme.txt file is provided by the software vendor, the administrator might choose to use the readme.txt file as the details file.

Determining where to store the source files

After you create your source files, you need to determine where you will store them for distribution. You can store the source files in either of the following places:

- On the Tivoli Provisioning Manager Express for Software Distribution server under the document root

  The default document root is:

  C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war

Your document root might be different depending on the options you selected during installation. Packages stored on the Software Distribution server always are downloaded to the client before being installed. When you add these packages to the library through the administration console, you have to assign one of the following package types:

- Download(Open): A package created by a third-party packaging tool that is not identified by a digital signature.
- Download(Secure): A package created by a third-party packaging tool that is identified by a digital signature.
- DirectoryDownload: An unpackaged set of files and folders. When this type of package is added to the library, the Software Distribution program automatically creates a compressed file containing these files and folders. It is important to note that unpackaged files and folders intended for distribution must reside on the Tivoli Provisioning Manager Express for Software Distribution server.

- On a shared network drive outside of the Tivoli Provisioning Manager Express for Software Distribution server

  Throughout the remainder of this document, the term *logical drive* is used to describe this storage location. Packages stored on a logical drive are not downloaded to the client; they are installed directly from the designated file share through UNC naming or an existing mapped drive. When you add these packages to the library through the administration console, you have to assign one of the following package types:

  - LogicalDrive(Open): A package created by a third-party packaging tool that is not identified by a digital signature
  - LogicalDrive(Secure): A package created by a third-party packaging tool that is identified by a digital signature.

For more information about adding packages to the library, refer to 4.6.1, “Adding a new software package to the library” on page 104.

Adding the software package to Software Distribution library

After creating the source package, it must be added to the Software Distribution library through the administration console. This process adds information in a database, including a pointer to the source files and the text that appears in a catalog.

You can use the Upload tab in the package definition to transfer the source files from the local system to their respective locations on the server. If the source files are deleted or moved from their original location after the entries have been added to the database, the administrator must modify the software package information in the library to update the database.

For details about adding a package to the library, refer to 4.6.1, “Adding a new software package to the library” on page 104.

4.5.3 Providing security for LogicalDrive(Secure) packages on the file share server

In order for LogicalDrive(Secure) packages to work, the following registry key changes are needed on the file share server where the logical drive share is located.

Note: The file share server is the server where your software packages reside.

Perform the following steps:

1. Select **Start** → **Run**.
2. Type `regedt32` and click **OK**.
3. In the Registry Editor window, navigate to \HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lanmanserver\parameters and perform the following steps:
   a. Click **HKEY_LOCAL_MACHINE**.
   b. Double-click **SYSTEM**.
   c. Double-click **CurrentControlSet**.
   d. Double-click **Services**.
   e. Scroll down and double-click **lanmanserver**.
   f. Double-click **parameters**.
   g. Move your cursor to the right side of the window.
   h. Double-click **NullSessionShares: REG_MULTI_SZ:COMFG DFS$**.
   i. In the edit multi-string window:
      i. Click the empty row under DFS$.
      ii. Type the name of the share where the LogicalDrive(Secure) packages reside, for example, `win32`.

Note: The following example shows the absolute path for the share resource directory when the Software Delivery Center server and the file share server exist on the same machine, with win32 used as the entry for the registry key: C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war\sdc\packages\win32

j. Click **OK** to save the changes.

4. In the Registry Editor window, navigate to \HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa and perform the following steps:
   a. Click **HKEY_LOCAL_MACHINE**.
   b. Double-click **SYSTEM**.
   c. Double-click **CurrentControlSet**.
   d. Double-click **Control**.
   e. Scroll down and double-click **Lsa**.
   f. Ensure that `restrictanonymous: REG_DWORD : 0` is defined.

      For Windows Server 2003: If this entry is missing, perform the following steps to add the `restrictanonymous` entry:

      i. From the menu bar, click **Edit**.
      ii. Click **New**.
      iii. Click **DWORD Value**.
      iv. In the Value Name field, type `restrictanonymous` (Value Data=0).
      v. Press Enter.

      For Windows 2000: If this entry is missing, perform the following steps to add the `restrictanonymous` entry:

      i. From the menu bar, click **Edit**.
      ii. Click **Add Value**.
      iii. In the value name field, type `restrictanonymous` and select **REG_DWORD** for the Data Type.
      iv. Click **OK**.
      v. In the Data field, type `0` and click **OK**.
      vi. Press Enter.
   g. Ensure that `everyoneincludesanonymous: REG_DWORD : 1` is defined.

For Windows Server 2003, edit `everyoneincludesanonymous` as follows:

```
REG_DWORD : 1
```

For Windows 2000: Add the `everyoneincludesanonymous` value to the registry key:

i. From the menu bar, click **Edit**.

ii. Click **Add Value**.

iii. In the Value Name field, type `everyoneincludesanonymous` and select **REG_DWORD** for the Data Type.

iv. Click **OK**.

v. In the Data field, type `1` and click **OK**.

vi. Press Enter.

vii. Close the Registry Editor window.

5. Set the file share permissions for the resource directory:
   - For Windows 2003 server: On the Share tab:
     - Set Share Permissions to include Read Permissions for Everyone.
     - Add Groups or User name ANONYMOUS LOGON.
     - Set Share Permissions to only include Read Permissions for ANONYMOUS LOGON.

     On the Security tab:
     - Add Groups or User name ANONYMOUS LOGON.
     - Set Share Permissions to include Read & Execute, List Folder Contents, and Read for ANONYMOUS LOGON.

     For Windows 2000: Set Share Permissions to only include Read permissions for Everyone.
6. Close all the windows.
7. Reboot the server.

4.5.4 Creating a software bundle

A software bundle is a collection of software packages that is either made available for users to pull through a single catalog entry or pushed to users. After creating the individual software packages, use the Software Distribution administration console to create a software bundle. Software bundles are optional.

For details about creating a software bundle, refer to 4.6.2, “Adding a new software bundle to the library” on page 111.

4.5.5 Creating a portable catalog

To create a portable catalog:

1. Create an export list. For more details, refer to 4.8.1, “Adding an export list” on page 136.
2. Select software packages or bundles to include in the catalog. For more details, refer to 4.8.3, “Creating an XML output file for an export list” on page 139.
3. Invoke the CD Catalog Exporter. For more details, refer to 4.9, “Managing evaluations” on page 147.

Note: Software Distribution provides the capability to create a portable catalog that can be run from a network drive, CD, or other portable media. This feature is useful for computers that are not connected to the network and computers that do not have access to the Software Distribution server.

4.5.6 Using a portable catalog

The portable catalog is an application. Therefore, the operating system must be running before you can start the portable catalog.

If the portable catalog is on CD, in most cases, it starts automatically when the CD is inserted into the drive. If the portable catalog does not start automatically or if the portable catalog is on a different type of media such as network drive and USB memory key, use the following procedure:

1. Open Windows Explorer or My Computer and navigate to the folder where the portable catalog resides.
2. Double-click the **SETUP.bat** file.

Note: If a message is displayed asking if you want to install the Build CD and Verify program, click **Start**. You will see this message the first time you start a portable catalog on a computer. If you receive a message asking if you want to create a desktop icon, click **No**. This message is typically displayed the second time you start a portable catalog. When the portable catalog opens, make your selections from the Packages and Bundles tabs, and then click **Install**.

4.5.7 Importing files from another server

Importing files from another Tivoli Provisioning Manager Express for Software Distribution server is a three-phase process:

1. The first phase involves creating an export list, defining the packages and bundles to be exported, and exporting an XML output file from the source server. Refer to 4.8.3, “Creating an XML output file for an export list” on page 139.
2. The second phase involves copying the software packages from the source server to the target server. Software packages residing on logical drives (shared network drives outside of the source server) do not have to be copied. Refer to step 3 in 4.8.4, “Importing Software Distribution files from another server” on page 140.
3. The third phase adds the package entries to the target Software Distribution library database by importing the XML output file that was exported by the source server. Refer to step 2 in 4.8.4, “Importing Software Distribution files from another server” on page 140.

4.6 Managing software packages and bundles

A software package identifies all the resources used to install a specific software application. A software bundle is a group of software packages, with a defined installation sequence, to be delivered in one session.

The Package Management window and the Bundle Management window show lists of software packages and bundles and their associated descriptions.

4.6.1 Adding a new software package to the library

If a software package file is stored on the Software Distribution server, it must be placed in a folder under the document root, for example:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXApp.ear\tpmx.war\packages

Where C:\Program Files\IBM\Tivoli\TPMX\SERVER\TPMXApp.ear\tpmx.war is the document root.

If you have not already set up a folder structure for your library, refer to 4.5.1, “Creating a folder structure for the software library” on page 95.

For information about the source files such as the package file, details file, and icon file referenced in this procedure, refer to 4.5.2, “Creating a software package” on page 96.

Adding software package

To add a software package:

1. Open the administrator's console and select **Software** → **Packages** → **New Package**.
2. On the General tab on the Package Management page (Figure 4-21 on page 106):
   a. Enter the name and version in their respective fields.
   b. Select the Family from the pull-down menu to specify what type of package is being created.
   c. Enter the document root path to the details file in the Details field.
   d. Enter the document root path to the icon .gif file in the Icon Path field.
   e. Enter the maximum installation time in minutes for the software package to install to the client machine.
   f. Select **Silent** for the software package so that it installs unattended (optional).
   g. Select **Package Reboot** so that the software package initiates the reboot of the machine (optional).
   h. Select **Client Reboot** so that the Tivoli Provisioning Manager Agent initiates the reboot of the machine (optional).
   i. Select **Mandatory** so that the software package is essential and installs immediately upon startup of the Software Distribution Catalog (optional).
   j. Select **Enable Deferral option** so that the end user can choose to defer the mandatory package installation (optional).
   k. Select the Deferral Number to indicate the number of times the end user can choose to defer the mandatory package installation (optional).
   l. Select the Deferral Duration to indicate the interval until the next mandatory package installation attempt (optional).

   For more details about package definitions, refer to 4.6.8, "Software package definition information" on page 121.

   Click **Next**.

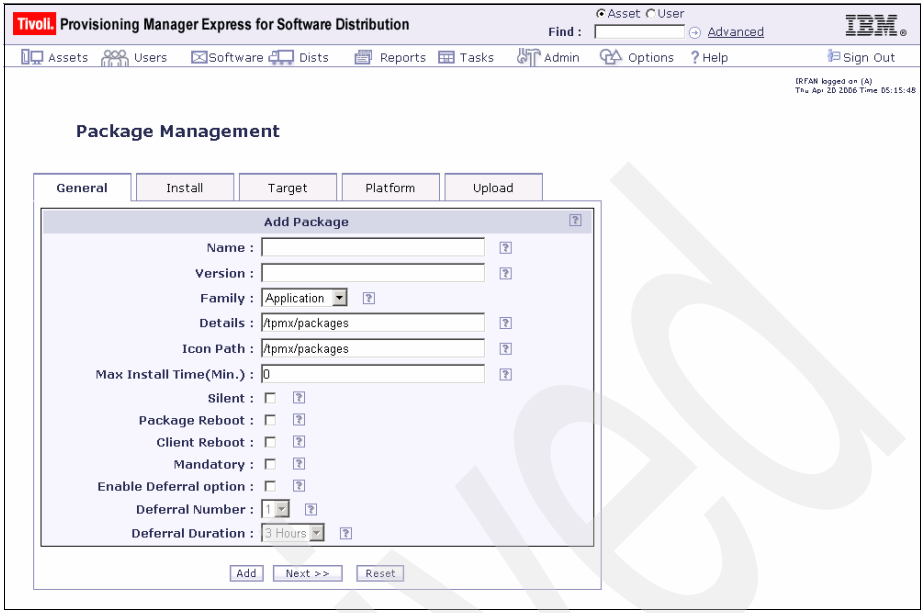


Figure 4-21 Add Package

3. On the Install tab (Figure 4-22 on page 108):
   a. Select the Package Type of the software package: Download, Logical Drive, or Directory Download.
   b. Select **Secure** if the package requires administrator rights to install.

> **Note:** The digital signature required for this option will be automatically created when the software package is added to the catalog.

   c. Based on the package type selected, the next fields are defined as follows:
      - Download
        - Installation File: Type the document root path to the installation file.
        - Installation Parameters: Type the installation parameters to be passed to the executable (optional).
      - Logical Drive
        - Installation File: Type the drive designation and path relative to the shared drive to be mapped to the client.
        - Installation Parameters: Type the installation parameters to be passed to the executable (optional).

- Directory Download

  - Installation Directory: Type the document root path to the installation directory.

  - Installation Command: Type the installation command to be run after the delivery of the source directory (optional).

  - To remove the source directory from the client machine after executing the install command, select **Remove Directory After Install** (optional).

  Note: The executable file or source directory must be present when the package is created or updated. Download and Directory Download packages will fail without the source file/directory on the server. Logical Drive secure packages will display a warning message if Tivoli Provisioning Manger Express cannot access the designated mapped drive to create the digital certificate signature file.

d. Select **Include MST / ISS File** to activate the text field. Type the document root path to the MST file or ISS response file.

e. Click **Show Command** to display a pop-up window containing the installation command syntax that will be executed on the client machine.

f. Select **Enable Process Tracking** to track subprocesses of a software package (optional).

g. Type in the Windows registry key or stamp file in their respective fields.

h. Select the stamp file mode.

i. Type the stamp file date if using the Dated option from the Stamp Mode field.

j. If using Purchase Orders to enable software package installation, select this option to enable require purchase orders and then type the part number (optional).

   For more details about package definitions, refer to 4.6.8, “Software package definition information” on page 121.

Click **Next**.

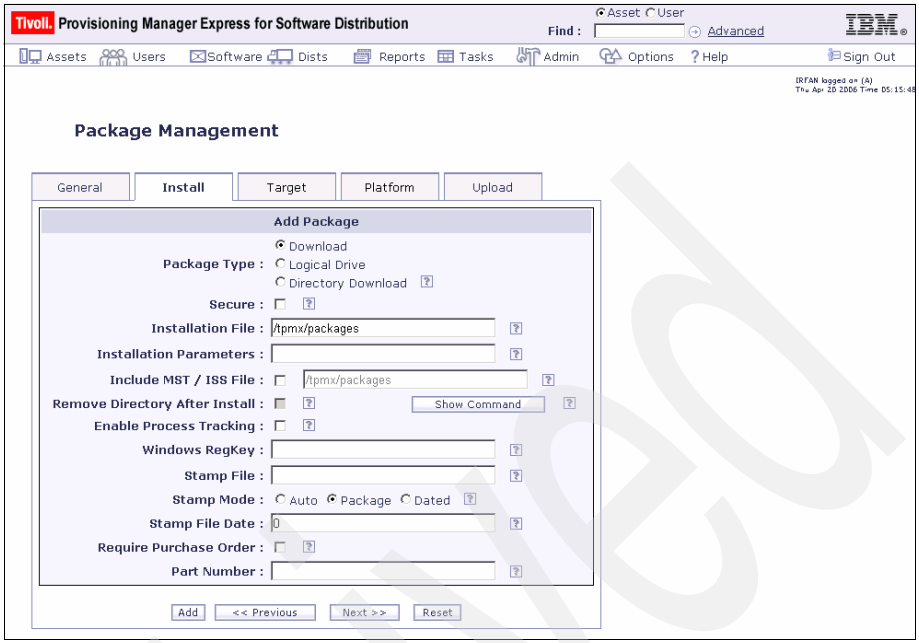


Figure 4-22 Install tab

4. On the Target tab (Figure 4-23 on page 109):
   a. Type the temporary space required in MB.
   b. Type the target space required in MB.
   c. Type the target directory.
   d. Type the document root path to the prerequired program.
   e. Type the document root path to the preinstall program.
   f. Type the document root path to the post-install program.
   g. Select **Enable Network Speed Detection** to require a minimum network speed for the package installation (optional).
   h. Select the Network Speed Allowed to specify the minimum network speed requirement for the package installation (optional).

   For more details about package definitions, refer to 4.6.8, “Software package definition information” on page 121.

   Click **Next**.

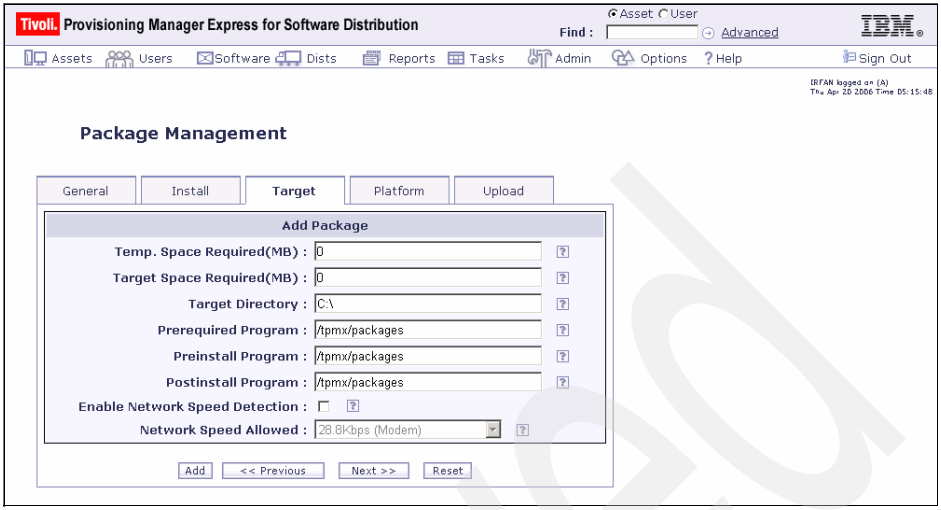


Figure 4-23 Target tab

5. On the Platform tab, choose the target platforms (Figure 4-24). Click **Next**.

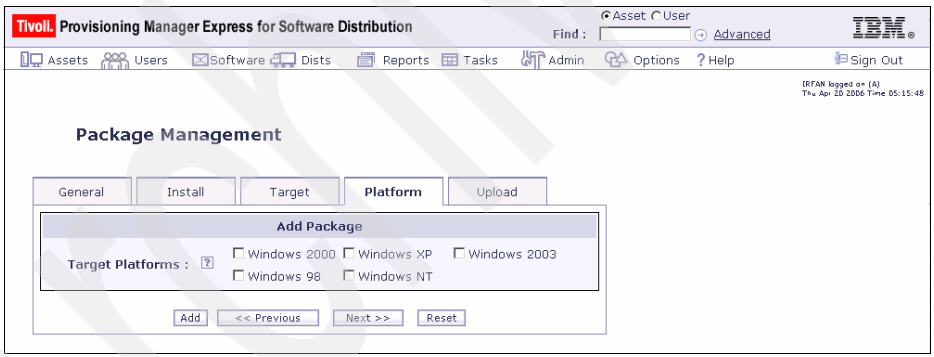


Figure 4-24 Platform tab

6. On the Upload tab (Figure 4-25 on page 110):
   a. Click **Browse** or type the local path to the download package installation file or ZIP file of the directory download source tree to be uploaded to the server and placed in the installation file location.
   b. Click **Browse** or type the local path to the package details file to be uploaded to the server and placed in the details file location.
   c. Click **Browse** or type local path to the package icon .gif file to be uploaded to the server and placed in the details file location.

d. Click **Browse** or type local path to the package MST/ISS file to be uploaded to the server and placed in the MST/ISS file location.

Select **Add**.

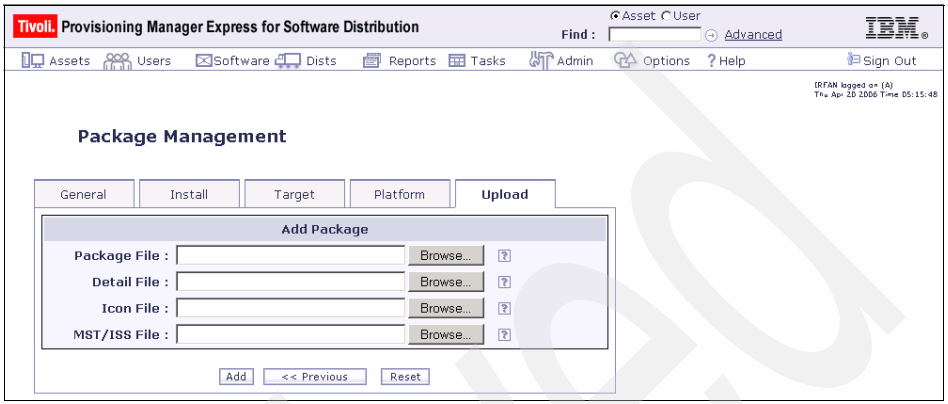


Figure 4-25 Upload tab

7. The Add Package area opens with a message that says "*Package_name* has been added successfully" (Figure 4-26).

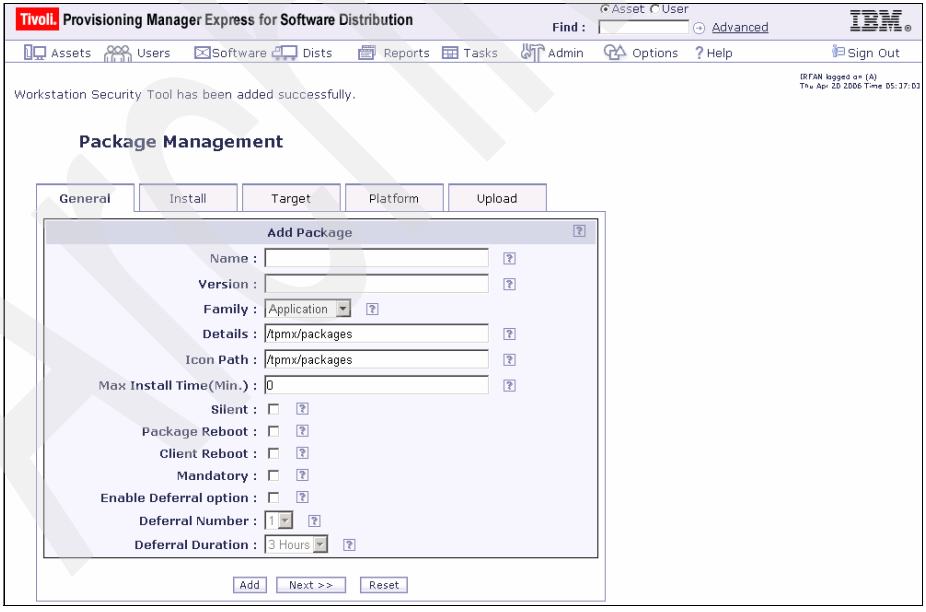


Figure 4-26 Successful package addition message

4.6.2 Adding a new software bundle to the library

To add a new software bundle to the library:

1. Select **Software** → **Bundles** → **New Bundle**.
2. In the Add Bundle table (Figure 4-27):
   – Enter the name, description, and stamp file values.

   Important: The path to the stamp file must exist on the target machine.

   – Select the **Selectable** option to define the bundle as optional and allow individual packages to be removed by the end-user or fail an installation without affecting the remaining packages in the bundle, and select the supported operating system for the bundle.

   Click **Add**.

   For more details about bundle definitions, refer to 4.6.9, “Software bundle definition information” on page 130.

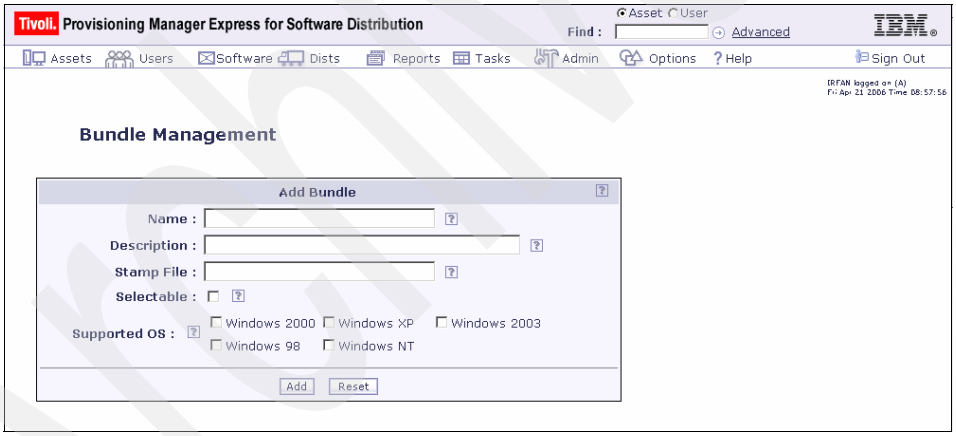


Figure 4-27 Add Bundle

3. On the Update Bundle panel, click **Next** (Figure 4-28).

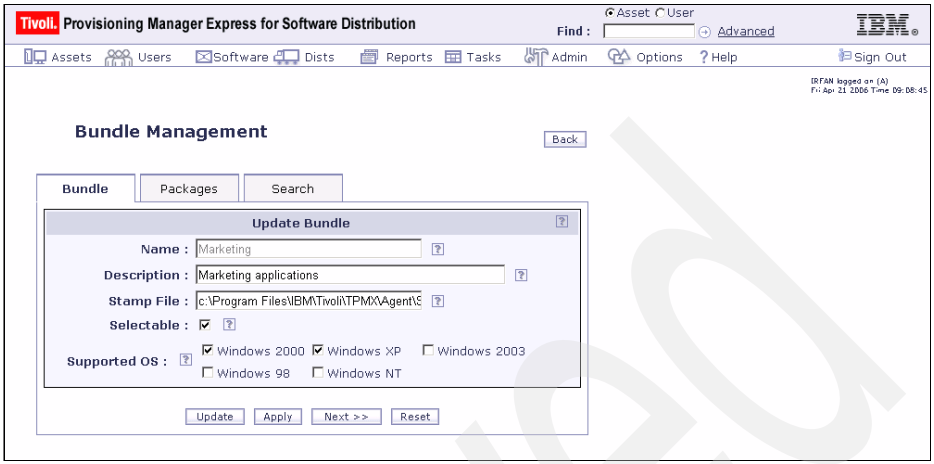


Figure 4-28 Update Bundle

4. On the Packages tab, select the packages to add to the bundle definition (Figure 4-29).

Note: Select **Apply** to make changes permanent to the database for each page of packages/bundles.

Select **Update**.

Note: Only packages that match the Supported OS selection are displayed.

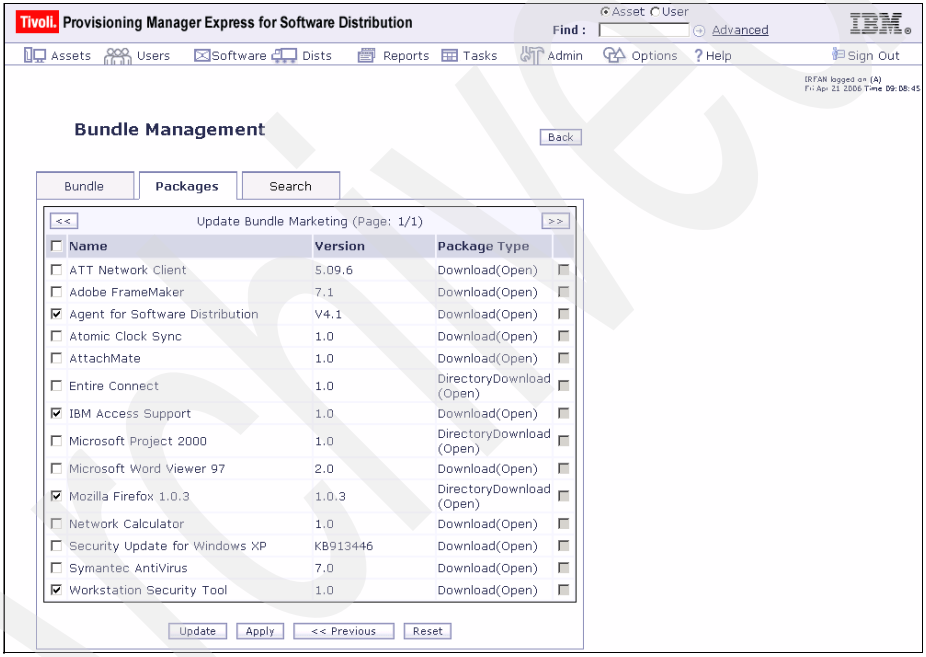


Figure 4-29 Packages list for bundle

5. From the Adjust Package Order area, adjust the package installation sequence in the bundle definition (Figure 4-30). Click **OK**.

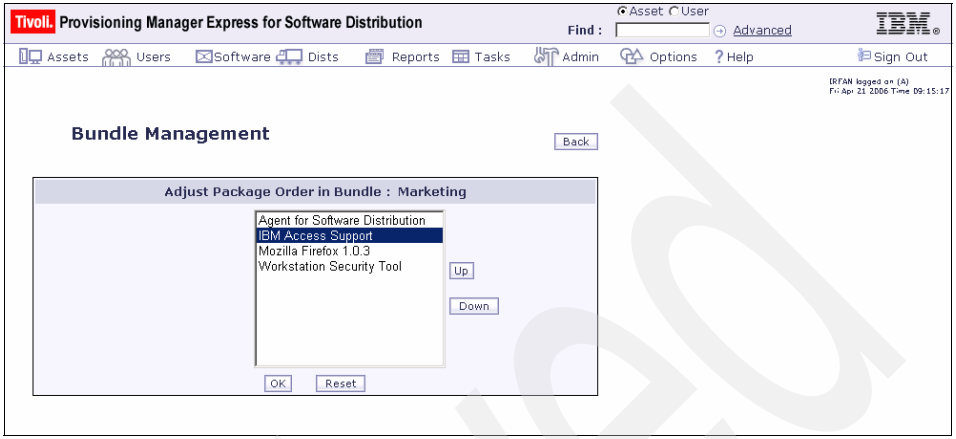


Figure 4-30 Adjust Package Order

6. The Add Bundle area, with a message that says "*Bundle_name* has been added successfully" (Figure 4-31), opens.

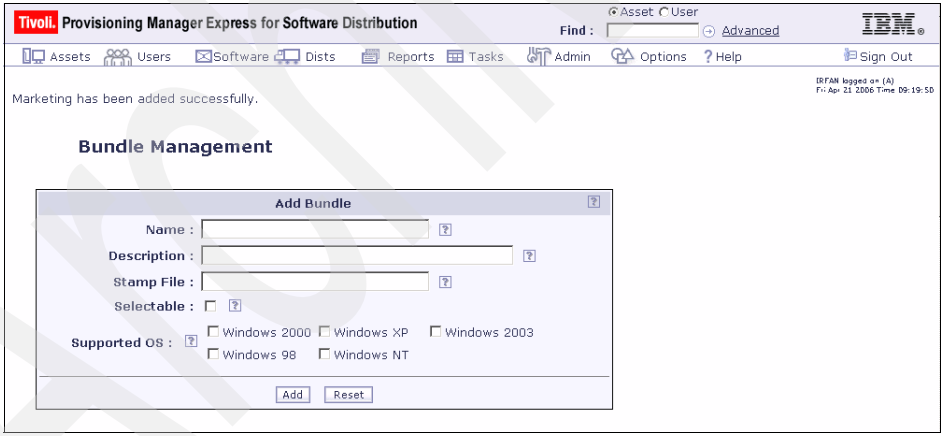


Figure 4-31 Successful bundle addition message

4.6.3 Deleting a software package or bundle from the library

To delete a software package or bundle:

1. Select **Software** → **Packages** or **Bundles** → **All Packages** or **All Bundles** depending on which you want to delete.

2. Select the check box next to the software package or bundle name you want to delete (Figure 4-32). Click **Delete**.

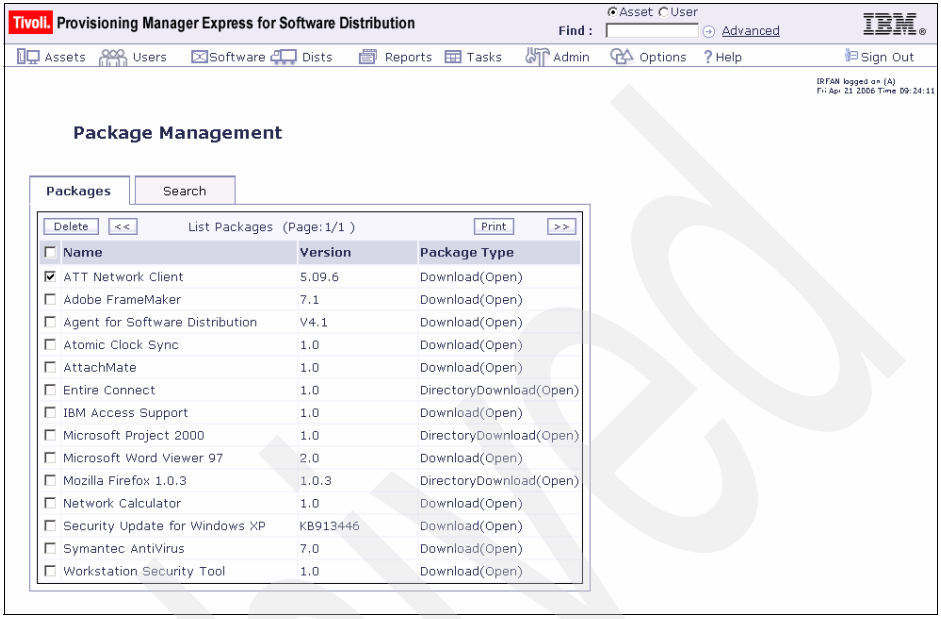


Figure 4-32 List Packages

3. A dialog box displays the following message:
   - For Bundles (Figure 4-33): Do you really want to remove the selected entries?

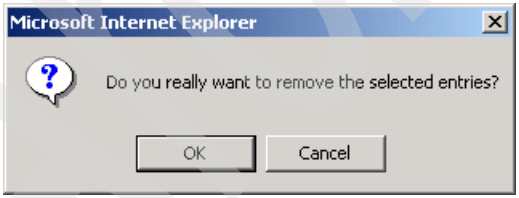


Figure 4-33 Bundle delete confirmation

   - For Packages (Figure 4-34 on page 116): You have selected to delete packages.

     Select the delete method:

     - Package Definition Only
     - Package Definition and Contents

The delete method selection enables you to preserve package resources, or to delete them while deleting the package definition.

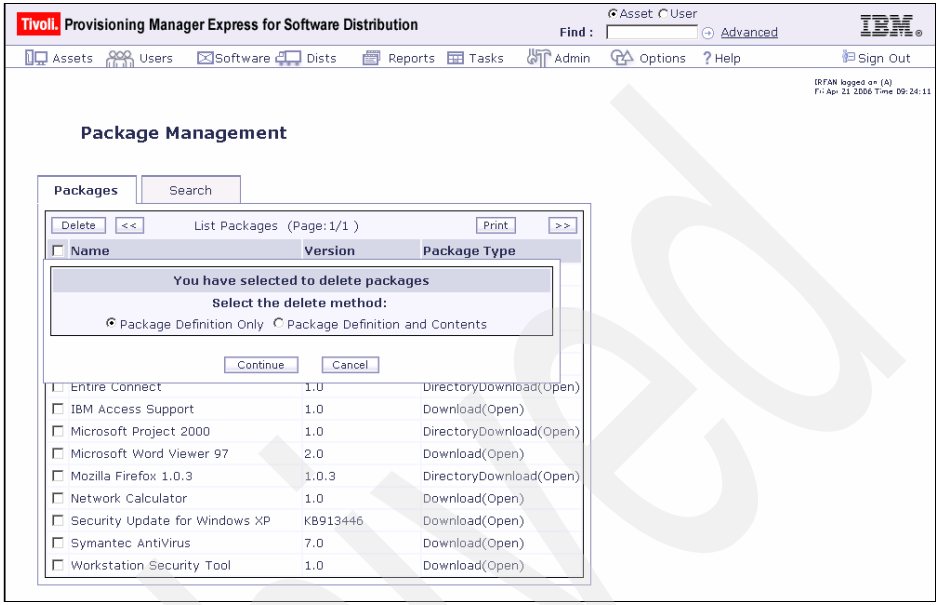


Figure 4-34 Package delete confirmation

4. Click **Continue** to delete a software package or click **OK** to delete bundle name. The List Packages table shown in Figure 4-32 on page 115 opens.

   Click **Cancel** for no action.

Note: A software package can be deleted even if there are groups currently authorized to access the software package. However, it cannot be deleted if it is allocated to a scheduled distribution.

4.6.4 Searching the library for a software package or bundle

To search for a specific software package or bundle name:

1. Select **Software** → **Packages** or **Bundles** → **All Packages** or **All Bundles** The List Packages table shown in Figure 4-32 on page 115 or List Bundles table shown in Figure 4-35 on page 117 opens.

2. Click the **Search** tab (Figure 4-35).

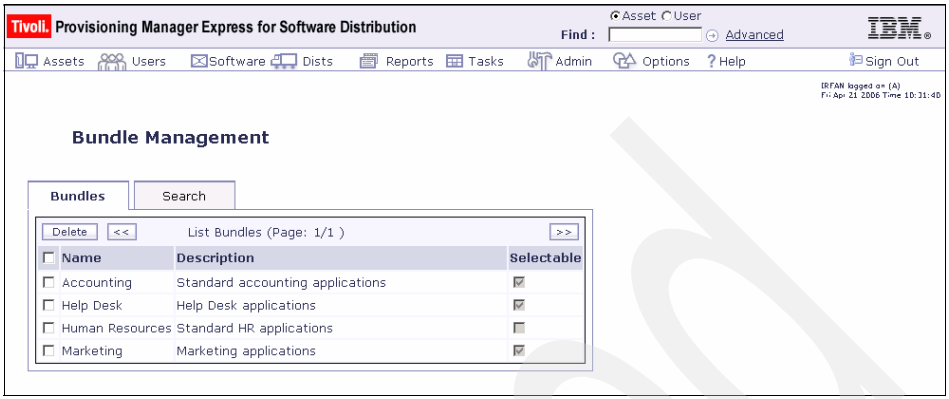


Figure 4-35 List Bundles

3. You can search by name, type, or operating system (Figure 4-36 on page 118). Do one or any combination of the following actions:
   - In the Name field, type the software package or bundle name. The software package or bundle name is case-sensitive. Type the name exactly as the name is listed in the package or bundle list you are searching. If you are not sure of the spelling, use the percent symbol (%) as a wild card in place of one or more characters.
   - In the Supported OS field, select the operating system.
   - For the Selectable option, select whether the packages to be searched will be selectable or not.

   In the Page Size field, type the maximum number of entries per page to display.

   Click **Search**.

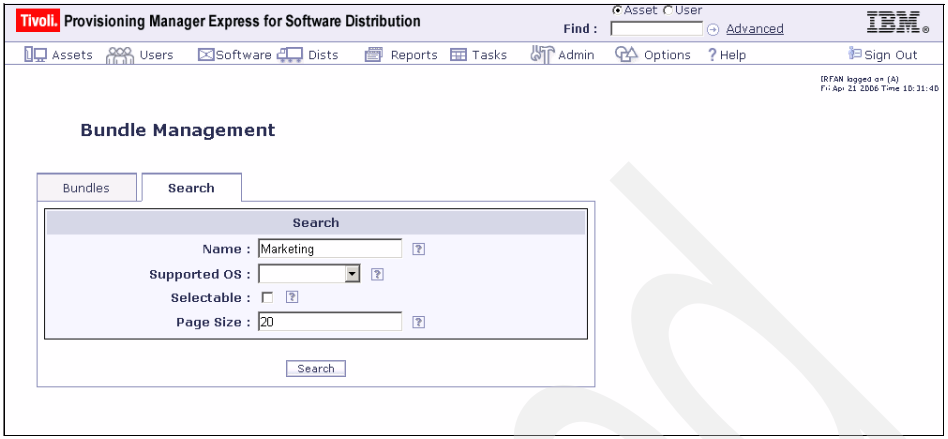


Figure 4-36 Bundle Search

The selected software package or bundle name appears in the List Packages or List Bundles table (Figure 4-37).

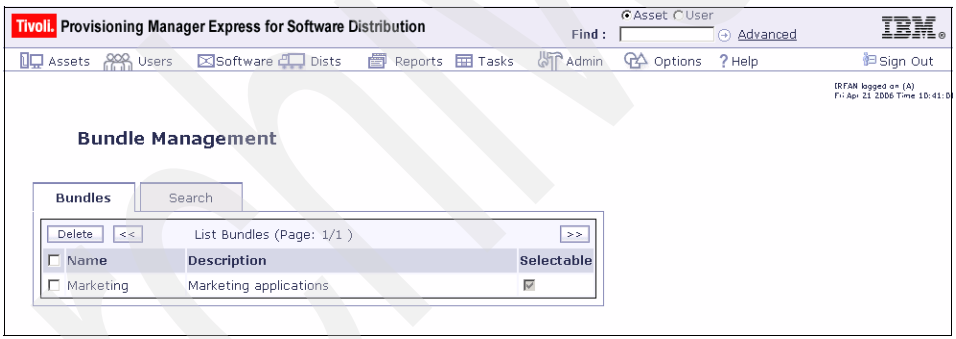


Figure 4-37 Bundle Search results

4.6.5 Updating software package information in the library

To update a software package:

1. Select **Software** → **Packages** → **All Packages**.
2. From the List Packages table, click the software package name (Figure 4-32 on page 115).

3. In the Update Package area, make the changes to the software package definition information (Figure 4-38). See 4.6.8, “Software package definition information” on page 121 for more information.

   Click **Update**.

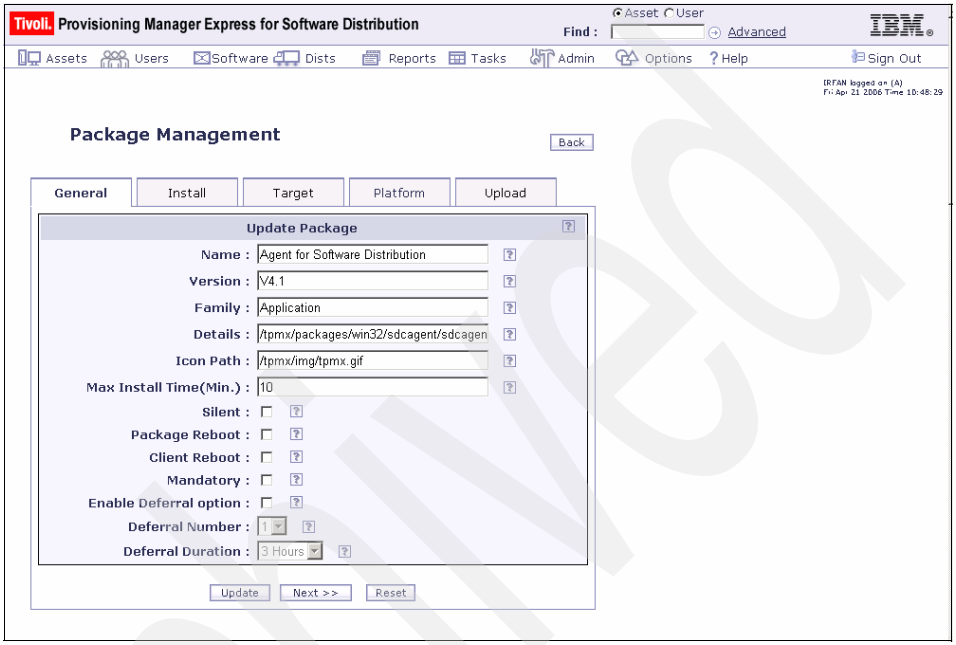


Figure 4-38 Update Package information

The List Packages table opens (Figure 4-32 on page 115).

4.6.6 Updating software bundle information in the library

To update a software bundle:

1. Select **Software** → **Bundles** → **All Bundles**. The List Bundles table shown in Figure 4-35 on page 117 opens.
2. Click the software bundle name. The Update Bundle window opens.
3. Make the changes to the software bundle definition information. See 4.6.9, “Software bundle definition information” on page 130.
4. Click **Next** or **Packages** to display the list of available packages shown in Figure 4-29 on page 113.
5. Select the check box next to the software package name you want to add to the bundle.

Note: When adding packages from multiple pages, you must select **Apply** to save your changes before selecting the **<<** arrow or **>>** arrow.

After selecting all the packages to add to the bundle, click **Update**. You will be prompted to select the order of installation for the packages in the bundle shown in Figure 4-30 on page 114.

6. Select a software package name, and click **Up** or **Down** to move the packages into the desired order. Click **OK** to update the bundle.

The List Bundles table shown in Figure 4-35 on page 117 opens.

4.6.7 Creating a digital certificate file for a secure package

Digital certificate signature files are generated automatically when a secure package is created or updated.

Download packages will fail to create or update if the defined installation file is not available on the server.

Logical Drive packages will be created or updated, but will display a warning message indicating that the system could not locate the defined installation file if the designated mapped drive is not available.

Note: When creating or updating Logical Drive (secure) packages, map the shared drive to the server as designated in the package definition.

You can manually create a digital certificate for software packages of type Logical Drive (secure) by performing the following steps:

1. Open a command prompt window.
2. Change to the \signatures folder located under the document root of the server.
3. Run the following command:

   ```
   java -jar ..\..\apps\sdcsigner.jar executable
   ```

   Here, *executable* is the relative path name to the software package executable, for example:

   ```
   java -jar ..\..\apps\sdcsigner.jar
   ..\..\packages\win32\winzip90\WinZip90M.exe
   ```

4.6.8 Software package definition information

Use the following fields and descriptions create and edit software packages:

- General tab
  - Name: Unique name of the software package.
  - Version: Version number of the application.
  - Family: Critical patch management information.
  - Details: The path to the details file that opens when the user clicks the Details button in the Tivoli Provisioning Manager Express for Software Distribution catalog.

    Place all warnings and relevant information about the software package in this file.

    Note: The path name to the details file must be relative to the document root of the server. The default document root is /TPMx/packages. Your document root might be different depending on the options you chose during installation.

  - Icon Path: The path to the software package icon that displays in the Software Distribution Catalog. The icon must be a .gif or .jpg file. The use of an icon is optional.

    Note: The path name to the file must be relative to the document root of the server. The default document root is /TPMx/packages. Your document root might be different depending on the options you chose during installation.

  - Max Install Time (Min.): The maximum amount of time in minutes the software package should take to install. The software package installation will terminate if the installation does not complete within the specified time.

    Note: Specify a large enough value to account for network congestion, slow processors, or both. Specify zero for an unlimited installation time.

  - Silent: Indication by the packager or administrator that the software package will install unattended. Select this option if the installation package is configured to install silently with no user intervention.
    - If the software package is of the silent type, the Software Distribution Agent program will be able to install the software package, even if the user is not logged on to the client.

- If the software package is of the non-silent type (requires user interaction) and the user is not logged on to the client, any scheduled push of a non-silent installation package will be delivered, but installation will be delayed until the user logs on to the client.

– Package Reboot: The software package initiates a restart of the operating system at the end of the installation.

– Client Reboot: The Software Distribution Agent initiates a restart of the operating system at the end of the installation.

– Mandatory: The software package installs automatically upon startup of the Software Distribution Catalog.

– Enable Deferral option: The Deferral option gives the end user the ability to defer the mandatory package installation (optional).

– Deferral Number: The Deferral Number is the number of times the end user can defer the mandatory package installation (optional).

– Deferral Duration: The Deferral Duration is the interval until the next mandatory package installation attempt (optional).

► Install tab

– Type

- Download: This type of package consists of a single executable file that resides on the Software Distribution server. A package of this type is downloaded to the client machine before the installation begins and requires no administrator rights to run or install the software.

Note: When a software pull of this package type is initiated, the Software Distribution Agent is not involved with the installation of the software. The packages will install even if the client agent is disabled.

- Logical Drive: This type of package consists of installing the executables that reside on a logical drive (a shared network drive outside the Software Distribution server). A package of this type is installed from a logical drive without downloading the software package and it requires no administrator rights to run or install the software.

Note: The Tivoli Provisioning Manager Express for Software Distribution process does not do the actual mapping of the drive. The client must be mapped to the logical drive that contains the software package before the installation process is initiated.

When a pull process is used for a Logical Drive package type, the Software Distribution Agent is not involved in the installation process. The software packages will install even if the client agent is disabled.

- Directory Download: This type of package consists of an unpackaged application or a set of data files. The directory source must reside on the Software Distribution server under the document root. When the package is created or updated, depending on the total size of the source directory content, the Tivoli Provisioning Manager Express for Software Distribution program creates a file list (>10 MB) or a compressed ZIP file (<10 MB). During a push or pull operation, the compressed ZIP file is downloaded to the client machine where the client application decompresses the package and restores the files to their original condition, or the files are transferred individually per the file list.

  If an installation command is defined, an installation process takes place after the directory content is delivered.

  If **Remove Directory After Install** is selected, all files and directories delivered in the package are removed from the client.

  Note: If you make changes to the content of the Directory Download package, you must open and update the package definition to automatically update either the compressed ZIP file (_IGS.SDC) or file list file (_IGS_SDC_FileList) located in the source directory as specified in the Installation Directory field.

  – Secure: When selected, the software package will have administrative rights for installation. The Software Distribution Agent performs the installation for either a push or pull distribution. Software Distribution automatically creates a digital signature upon creation of the Secure Download and Secure Logical Drive software packages.

Note: Secure Logical Drive packages automatically create a digital signature file if the mapped drive is present on the server per the package definition at the time the package is created or updated. To create the digital signature manually, see 4.6.7, “Creating a digital certificate file for a secure package” on page 120.

– Installation File: This is used to define the path to the package executable. The executable file must be present when the package is created or updated.

Note: The Installation File field supports both back slashes and forward slashes.

For Logical Drive package types, the Installation File field supports environment variables to allow for multiple file shares.

Supported extensions for the installation files are:

- .cmd
- .exe
- .msi
- .rpm
- .tar
- .vbs
- Null (no extension)

When used in conjunction with a package type Download: This path must be relative to the document root of the Tivoli Provisioning Manager Express for Software Distribution server and contain the executable the client will download and install from. For example, if the full path is c:\IBMTPMx\TPMxServer\TPMx\packages\XP\My_Package\SETUP.EXE, the relative path is /TPMx/packages/XP/My_Package/SETUP.EXE.

Note: Path names are case-sensitive. Make sure the path name you use matches exactly the path name on your Tivoli Provisioning Manager Express for Software Distribution server.

When used in conjunction with a package type of Logical Drive: This path is the drive designation and share path to the mapped executable from which the client will install. For example, if the shared directory in the following path is packages

c:\IBMTPMx\TPMxServer\TPMx\packages\XP\My_Package\SETUP.EXE, the mapped drive path is y:\XP\My_Package\SETUP.EXE.

Note: The drive designation must match on server and client.

– Installation Parameters: Additional flags and parameters that are passed to the software package executable. Examples of parameters include:
  - /s for a silent installation of InstallShield and Wise InstallSystem
  - /qn for a silent installation of Microsoft Software Installer packages (.msi file extension)

  The parameters depend on the tool that was used to create the package. Refer to the documentation provided with the packaging tool for more information.
– Installation Directory: Used with a package type of Directory Download, this is the relative path to the root folder of the application or data files stored on the Tivoli Provisioning Manager Express for Software Distribution server. Relative paths are relative to the document root. For example, if the full path to the root folder of a set of data files located on the Software Delivery Center server is c:\IBMTPMx\TPMxServer\TPMx\packages\FILES\TEMPLATES, the relative path is /TPMx/packages/FILES/TEMPLATES.

  It is also important to understand that the last folder in the relative path is the starting point of the directory structure that will be extracted to the client. For example, if you specify \TPMx\packages\FILES\TEMPLATES, the TEMPLATES folder, all files in the TEMPLATES folder, and all subfolders under the TEMPLATES folder will be extracted to the client target directory.
– Installation Command: The command is used to start the installation of the software package from a Directory Download package. The command is based on the client system and is either a full path or relative to the Target Directory specified in the package definition.
– Remove Directory After Install: Select this option to allow Software Distribution to clean up the source directory structure of the Directory Download package on the client machine after installation. All files and directories delivered in the package are removed from the client.

Note: This field is only available for Directory Download.

– Enable Process Tracking: Select this option to allow Tivoli Provisioning Manager Express for Software Distribution to track spawned subprocesses of a software package installation and remain active until all spawned child processes have completed.

– Show Command: Clicking this button opens a pop-up window containing the installation command syntax that will be executed on the client machine. This is useful when constructing complex MSI packages.

– Windows RegKey: The appropriate string that matches the program name displayed in the Add/Remove Programs window. For example, to view the string in Windows 2000, select **Start** → **Settings** → **Control Panel** → **Add/Remove Programs**. You must use the program name exactly as shown in the Add/Remove Programs window.

  This field is used by the Tivoli Provisioning Manager Express for Software Distribution program to determine if a particular software package is already installed on the client. The Tivoli Provisioning Manager Express for Software Distribution program queries the Windows registry to determine what programs have been installed and also listed in the Add/Remove Programs window. In some cases, when you look in the Add/Remove Programs window, it might not be obvious if there is an extra space at the end of the string or between words.

  The following method ensures that the value you place in the Windows RegKey field matches the value in the Add/Remove Programs window:

  i. Install the application on a test computer or go to a computer where the application is already installed.

  ii. From the Windows desktop, select **Start** → **Run**. The Run window opens.

  iii. In the Open field, type `regedit`, and click **OK**. The Registry Editor window opens.

  iv. In the Registry Editor window, navigate to the HKEY_LOCAL_MACHINE/SOFTWARE/Microsoft/Windows/CurrentVersion/Uninstall folder.

  v. In the left pane, click the appropriate application name.

  vi. In the right pane, double-click **DisplayName**. The Edit String window opens.

  vii. The string highlighted in the Value data field is the exact string you need to use in the Windows RegKey field. Copy and paste the string into a TXT file.

  viii. Return to the Edit String window and click **Cancel**. Then, close the Registry Editor window.

ix. Open the Tivoli Provisioning Manager Express for Software Distribution administration console. Copy the complete string from the TXT file and paste it into the Windows RegKey field.

Note: The administrator can specify either the Stamp File field or Windows RegKey field. Use the Windows RegKey field unless the software package does not register itself in the Add/Remove Programs window.

– Stamp File: The stamp file indicates that the software package installed successfully on the client.

The Tivoli Provisioning Manager Express for Software Distribution process checks for the existence of the stamp file after the completion of the software package installation. The stamp file is used as a means of getting a return code from the software package. The software package itself must create the stamp file after the software package has successfully installed. The software package must not create the stamp file if the application does not successfully install. The software package is responsible for writing the stamp file because there is no agreed upon standard among software vendors that indicates a particular installation was successful. Often, the installation program will return with a return code of zero for a successful installation, but this is not always the case. Therefore, each individual package must determine if the software installed successfully, and if so, create the software package stamp file. For this field, specify the full path for the stamp file for which to check.

Note: The administrator can specify either the Stamp File field or Windows RegKey field. Use the Windows RegKey field unless the software package does not register in the Add/Remove Programs window.

– Stamp Mode or Stamp File Mode: The Stamp File Mode must be set to one of the following types:

- Auto: The Software Distribution client or agent automatically creates the stamp file after the installation program completes. Auto stamp file mode is provided for development and testing of software packages.
- Package: The software package itself creates the stamp file after the software package has successfully installed.
- Dated: Dated time stamp mode is used to instruct the Tivoli Provisioning Manager Express for Software Distribution process to check the time stamp of the stamp file in addition to the existence of the file.

– Stamp File Date (the time stamp, that is, date and time of the target stamp file): When you select a Stamp Mode of **Dated**, the software package passes the stamp file check only if the last modified date of the stamp file matches the date specified. The date is specified in Java-epoch milliseconds, the number of milliseconds since the Java epoch, defined as midnight, January 1, 1970 GMT. These are the number of milliseconds that have elapsed since January 1, 1970 00:00.

  To generate the stamp file time stamp, run the following command from a Windows command prompt, where *filename* is the stamp file name:

  ```
  java -jar printstamp.jar filename
  ```

  Note: The printstamp.jar file is provided as part of the Software Distribution server software in the c:\ibmTPMx\TPMxserver\TPMx\apps\printstamp.jar folder (where c:\ibmTPMx\TPMxserver\TPMx is the default document root). Your document root might be different depending on the options you choose during installation.

– Require Purchase Order: Select to associate a Part Number to a software package. This will require the end user to enter a valid Purchase Order/Employee Number combination for the package to begin installation.

– Part Number: A unique number used to define the product.

- Target tab

  – Temp. Space Required (MB): The amount of temporary disk space in megabytes required to install the software package. This is usually the temporary space required to unpack a software package prior to installation. The drive that is checked is the same drive that the Java runtime environment on the client uses for temporary space and is usually specified by the environment variable *tmp* or *temp*.

  Note: If the drive letter used by the Java runtime environment for temporary space is the same drive letter specified in the Target Directory field, the values in the Temp. Space Required (MB) field and Target Space Required (MB) field are added together before the free space check is performed. Otherwise, two separate free space checks are performed.

  – Target Space Required (MB): The amount of disk space in megabytes required to install the software package. The drive letter or logical volume on which to perform the free space check is specified by the entry in the Target Directory field.

- Target Directory: The definition of this field depends on the type of package you are defining. When used with a package type of Directory Download, this is the path to the folder under which the source directory (as defined in the package) and its contents will be delivered, for example, c:\Documents and Settings\All Users.

  When used with package types of Download or Logical Drive, this is the drive letter on which the software package will be installed, for example, c:\.

  This folder will be checked for the required amount of free disk space prior to the installation of the software package.
- Prerequired Program: The path name of the prerequisite program that is run prior to installing the software package. If this program returns with a return code of zero, the Software Distribution program assumes that all of the prerequisites for this software package have been met. A non-zero return code indicates to the Software Distribution program that the prerequisites have not been met and the software package will not install.
- Preinstall Program: A program or script that runs before the installation of the software package.
- Postinstall Program: A program or script that runs after the installation of the software package. If the software package is run from a software bundle or a multipackage installation, a non-zero return code causes subsequent software packages in the sequence not to run.
- Enable Network Speed Detection (optional): Requires a minimum network speed in order for the package installation to continue. If the minimum speed is not detected, the end user will be notified and prompted to abort or continue the installation.
- Network Speed Allowed (optional): Establishes the minimum network speed required for the package installation to continue.

► Platform tab

- Target Platforms: The operating system platforms on which this software package can be installed. The Tivoli Provisioning Manager Express for Software Distribution program checks for the presence of the specified operating systems to determine if the software package should be displayed in the catalog. One or more operating systems can be specified by selecting the appropriate check box.

► Upload tab

- Package File: Defines the path to the package Installation File, or ZIP file of the directory download source tree, on the local machine. The file will be uploaded and delivered to the location on the server as specified in the Installation File field.

- Detail File: Defines the path to the package Detail file on the local machine. The file will be uploaded and delivered to the location on the server as specified in the Details field.
- Icon File: Defines the path to the package Icon file on the local machine. The file will be uploaded and delivered to the location on the server as specified in the Icon Path field.
- MST/ISS File: Defines the path to the package MST/ISS response file on the local machine. The file will be uploaded and delivered to the location on the server as specified in the MST/ISS File field.

4.6.9 Software bundle definition information

Use the following fields and descriptions to create and edit software bundles:

- Name: Unique name of the software bundle.
- Description: The description of the software bundle.
- Stamp File: The stamp file indicates that the software bundle installed successfully on the target. The Software Distribution Agent checks for the existence of the stamp file to determine if the software bundle has previously been installed. The stamp file is used as a means of indicating that the software bundle installation sequence has completed. The software bundle itself must create the stamp file after all of the software packages in the bundle have successfully installed. For this field, specify the full path of the stamp file for which to create or verify.

  Note: The Software Distribution Agent installation includes a default location to create the bundle stamp files:

  C:\Program Files\IBM\Tivoli\TPMX\Agent\StampFiles

- Selectable: Indication that the packages in the software bundle can be selected and cleared individually by the end user for installation. Packages in a bundle marked selectable can be deselected by the end user, or fail an installation, without affecting the remaining packages in the bundle. By default (Selectable not selected), all packages in a bundle are required to be installed successfully in order for the bundle installation to be considered successful.
  - From the client catalog

    Selectable bundles enables end users to deselect individual packages from the installation. All selected packages will attempt installation, regardless of any package failure.

If Selectable is not checked, all packages in a bundle are required and cannot be deselected by the end user. A package failure aborts the remaining packages in the bundle.

– From an agent distribution

The Selectable option allows all packages in a bundle to be installed, regardless of a failure. The bundle stamp file will be created after all defined packages have been executed, regardless of success or failure.

If selectable is not checked, all packages are required and any package failure will abort the bundle installation. The bundle stamp file will only be created after the successful installation of all packages in the bundle definition.

Supported OS packages will only be available to be included in the bundle definition based on the selected Supported OS options.

4.7 Purchase order management

Use purchase orders to assign a Part Number to software package applications and require end users to input a valid Purchase Order and Employee ID combination to initiate a pull distribution.

4.7.1 Adding a purchase order

To add a purchase order:

1. Select **Software** → **Purchase** → **New Purchase Order** to display the Add Purchase Order Form shown in Figure 4-39.

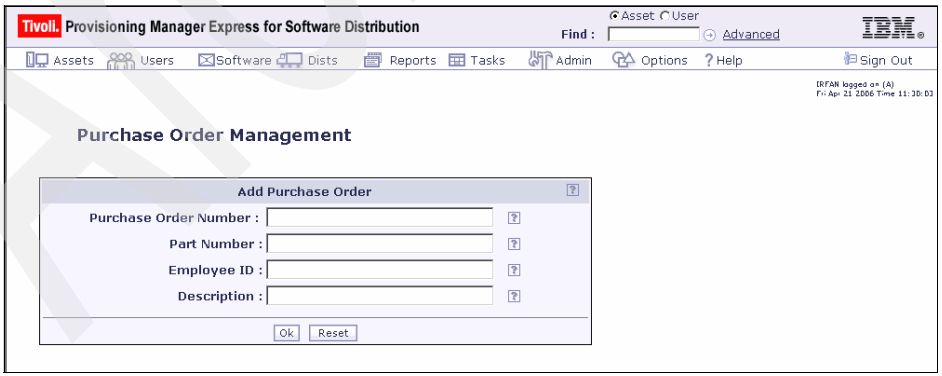


Figure 4-39 Add Purchase Order

2. Enter the Purchase Order Number, the Part Number for the associated package, the Employee ID of the end user, and any associated Description (Figure 4-40). Click **OK**.

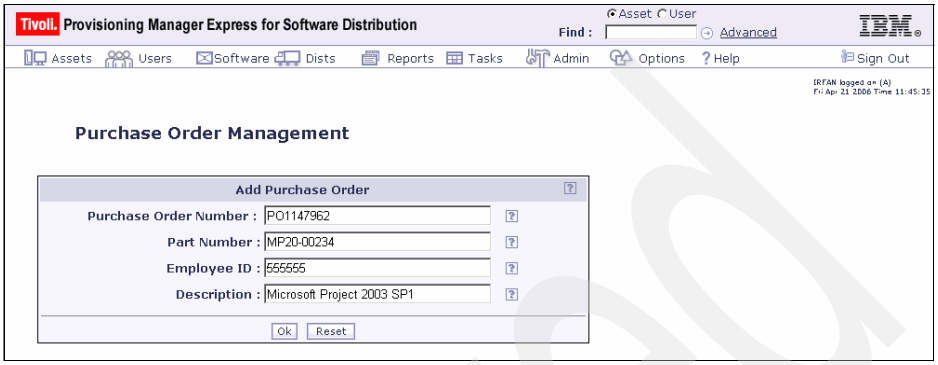


Figure 4-40 Purchase Order information

3. The Add Purchase Order page, with a message that says "*Purchase_order_number* has been added successfully" (Figure 4-41), opens.

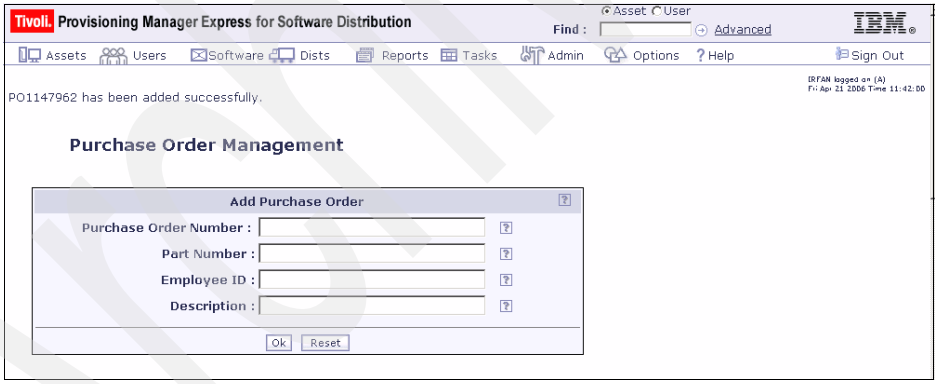


Figure 4-41 Successful purchase order addition message

The Purchase Order entry can also be completed automatically for multiple entries by enabling the purchase auto update parameter in the sdc.properties file.

4.7.2 Searching for a specific purchase order

To search for a specific purchase order:

1. Select **Software** → **Purchase** → **All Purchase Orders**. The List Purchase Orders table shown in Figure 4-42 opens.
2. Click the **Search** tab.

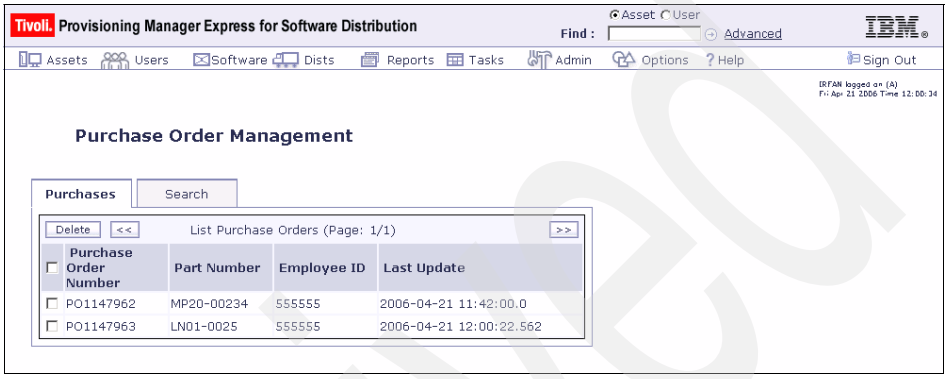


Figure 4-42 List Purchase Orders

3. You can search by Purchase Order Number, Part Number, or Employee ID (Figure 4-43 on page 134). Do one or of any combination of the following actions:
   - In the Purchase Order Number field, type the purchase order number.

     Note: The purchase order number is case-sensitive. Type the purchase order number exactly as you are searching. If you are not sure of the spelling, use the percent symbol (%) as a wild card in place of one or more characters.

   - In the Part Number field, type the part number of the software application with which the purchase is associated.
   - In the Employee ID field, type the ID of the employee for whom you are searching.

   In the Page Size field, type the maximum number of entries per page to display.

   Click **Search**.

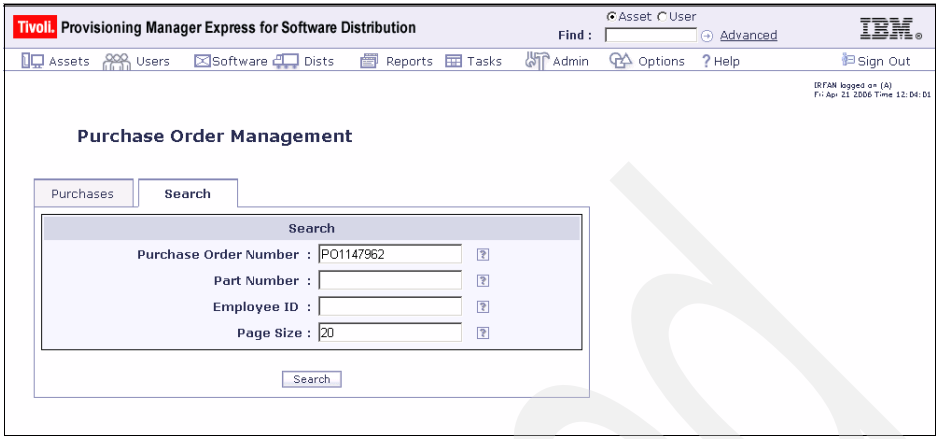


Figure 4-43 Purchase Order Search

The selected purchase order and associated information appears in the List Purchase Orders table (Figure 4-44).

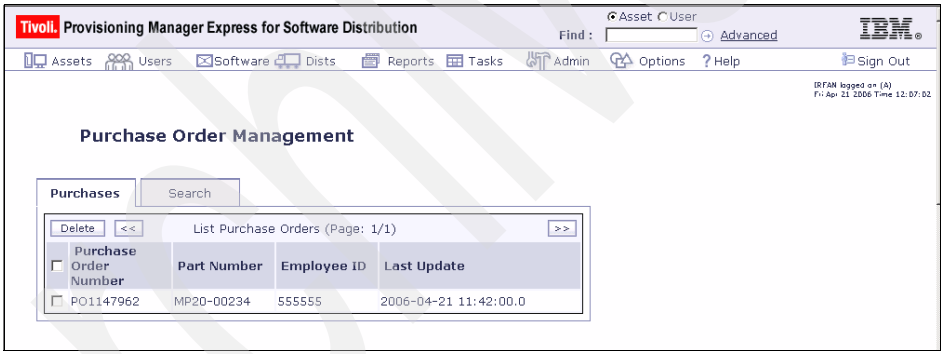


Figure 4-44 Purchase Order Search results

4.7.3 Updating a purchase order

To update purchase order information:

1. Select **Software** → **Purchase** → **All Purchase Orders**. The List Purchase Orders table shown in Figure 4-42 on page 133 opens.
2. From the List Purchase Orders table, click the purchase order number.

3. Make changes to the purchase order information (Figure 4-45). Click **OK**.

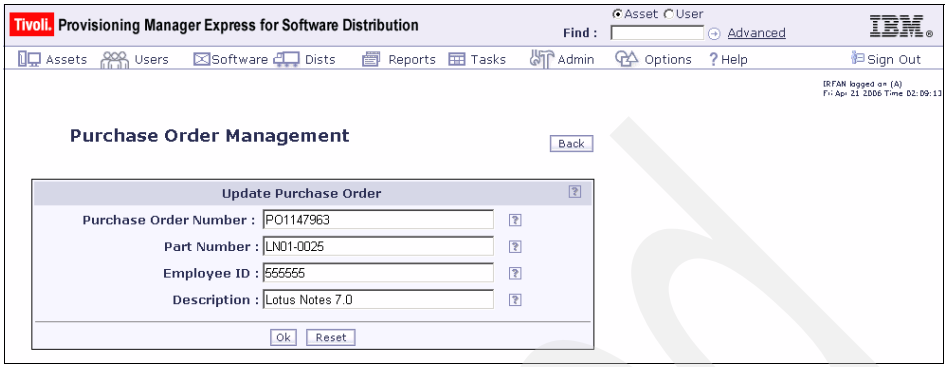


Figure 4-45 Update Purchase Order

The List Purchase Orders window shown in Figure 4-42 on page 133 opens.

4.7.4 Deleting a purchase order

To delete an existing purchase order:

1. Select **Software** → **Purchase** → **All Purchase Orders**.
2. From the List Purchase Orders table, select the check box next to the purchase order number you want to delete (Figure 4-42 on page 133). Click **Delete**.
3. Click **OK** to delete the purchase order (Figure 4-46).

   Click **Cancel** to return without making any changes to the database.

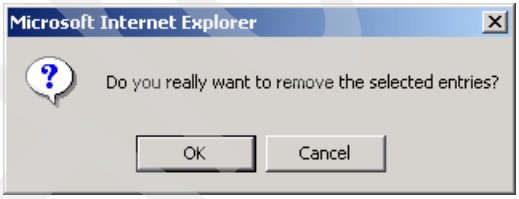


Figure 4-46 Delete confirmation

The List Purchase Order window shown in Figure 4-42 on page 133 opens.

4.8 Exporting and importing software packages and bundles

Use the export option to define a set of packages and bundles to be included in an export list. The export definition can be used to replicate packages or create portable catalogs. You can create an XML output file containing all the package and bundle definition information from those specified in the export. The XML output file is used as the source to import the library definitions created on the source server into the target server.

Throughout the following procedure, we use the term *source server* to identify the Tivoli Provisioning Manager Express for Software Distribution server that currently contains the XML source file and software packages to be exported. We use the term *target server* is used to identify the Tivoli Provisioning Manager Express for Software Distribution server to which the files will be imported.

You can also use the export definition as the source to create a portable Software Catalog, which is a library of software packages, bundles, or both, to be distributed from CD or a network drive. For more details about the import and export options, see 4.5.5, “Creating a portable catalog” on page 103 and 4.5.7, “Importing files from another server” on page 104.

4.8.1 Adding an export list

To add an export list:

1. Select **Software** → **Export/Import** → **New Export**.
2. In the Add Export area, enter the name in the Name field and the description in the Description field for the export (Figure 4-47). Click **Next**.

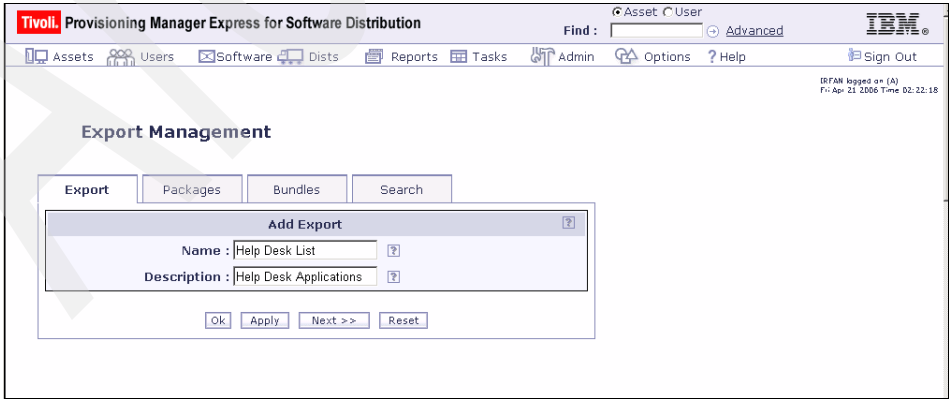


Figure 4-47 Add Export

3. Select the packages to add to the export list by selecting the check box next to the package names (Figure 4-48). Click **Next**.

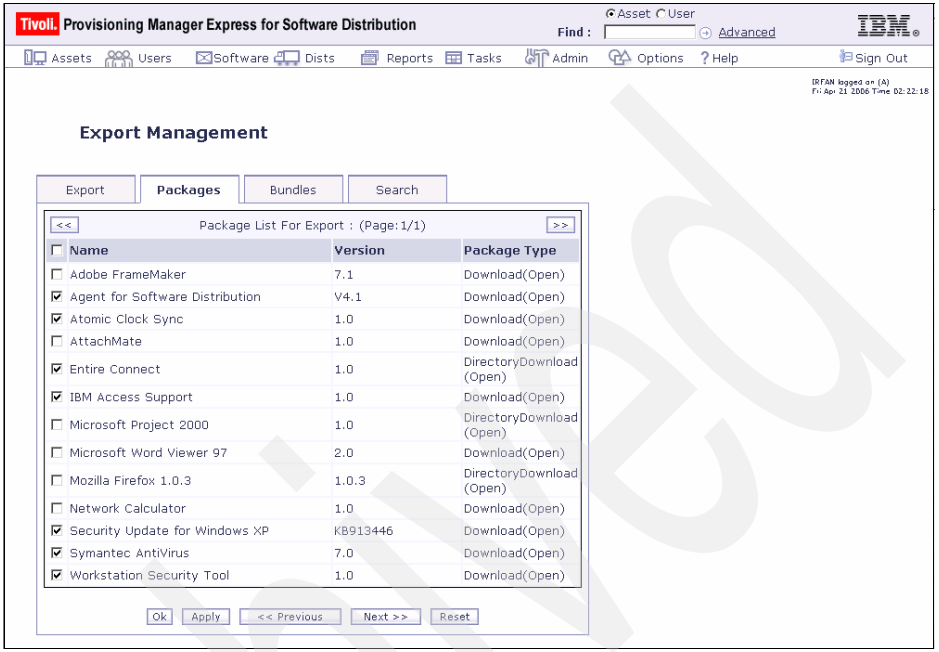


Figure 4-48 Package List for Export

4. Select the bundles to add to the export list (Figure 4-49). Click **OK** to save the export list.

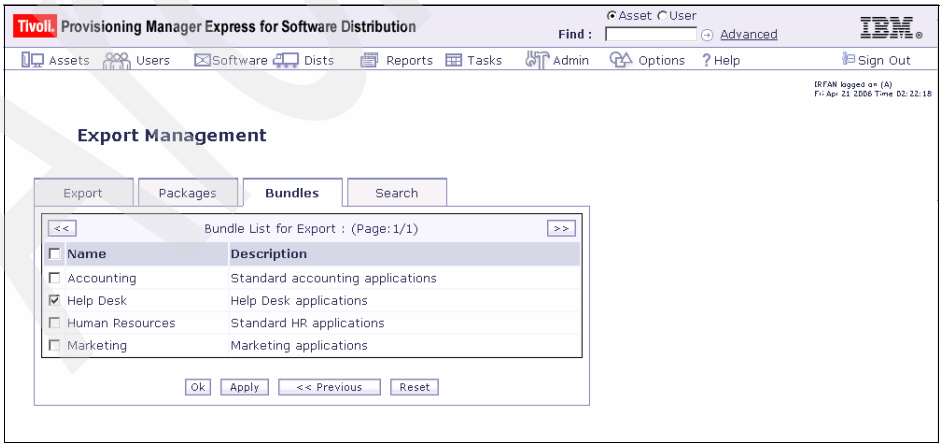


Figure 4-49 Bundle List for Export

5. The Add Purchase Order page, with a message that says “*Export_list_name* has been added successfully” (Figure 4-50), opens.

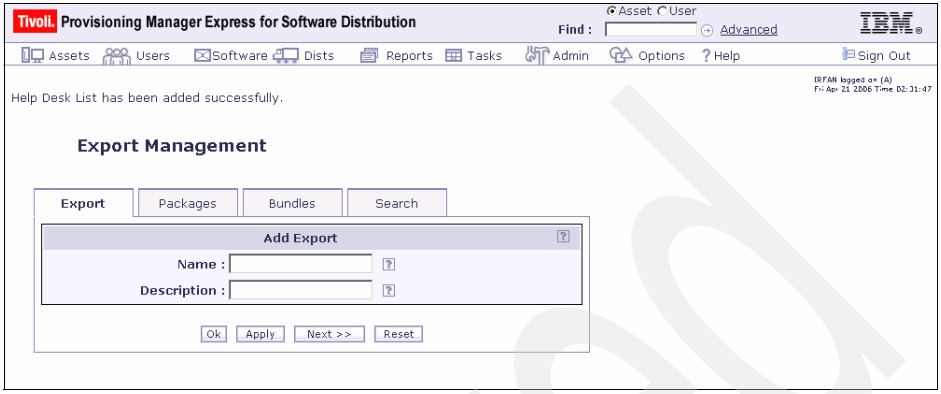


Figure 4-50 Successful export list addition message

Note: Click **Apply** to make changes permanent to the database for each page of packages/bundles.

4.8.2 Searching for an export list

To search for a specific export list name:

1. Select **Software** → **Export/Import** → **All Exports**. The List Exports table opens.
2. Select **Search** tab. The Search page opens. Enter the following values:
   - In the Name field, enter the export name. The export list name is case-sensitive. Type the name exactly as the name is listed in the export list you are searching. If you are not sure of the spelling, use the percent symbol (%) as a wild card in place of one or more characters.
   - In the Page Search field, type the maximum number of entries that match your search criteria to display per page.

   Click **Search**. The selected export list name and description appears in the List Exports table.

4.8.3 Creating an XML output file for an export list

To create an XML output file for an export list:

1. Select **Software** → **Export/Import** → **All Exports** to display the export table. For more details about adding a new export list, see 4.8.1, “Adding an export list” on page 136.
2. From the List Exports table, select the export name (Figure 4-51).

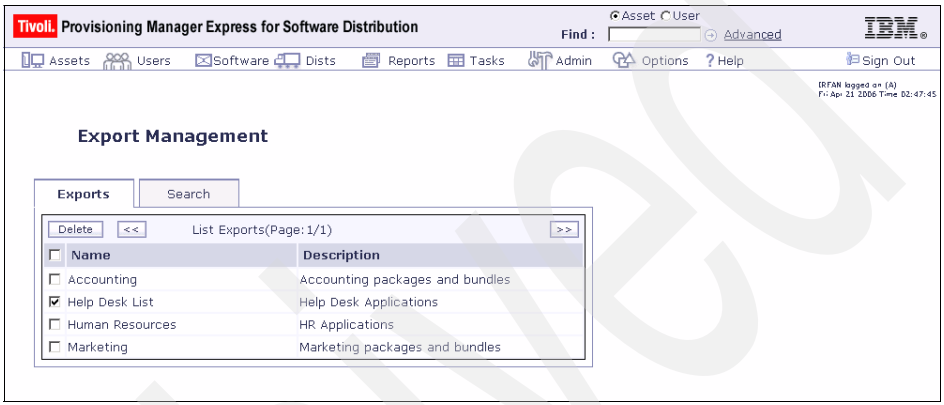


Figure 4-51 List Exports

3. From the Edit Export table, click **OutputXML** (Figure 4-52).

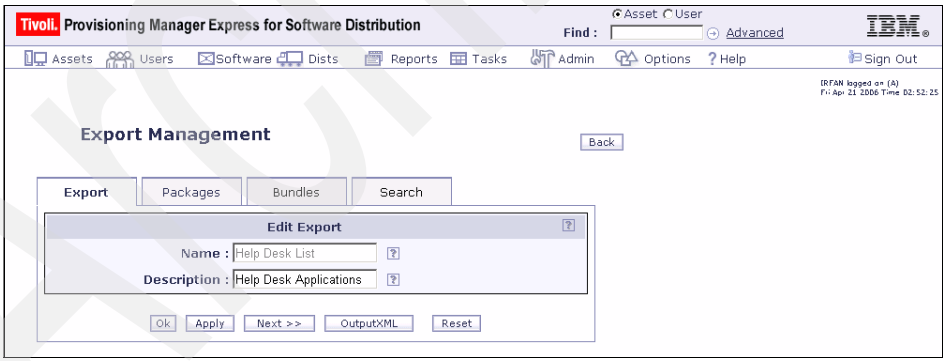


Figure 4-52 Edit Export list

4. Click **Open** to display the XML output in a browser (Figure 4-53).

   Click **Save** to save the XML output.

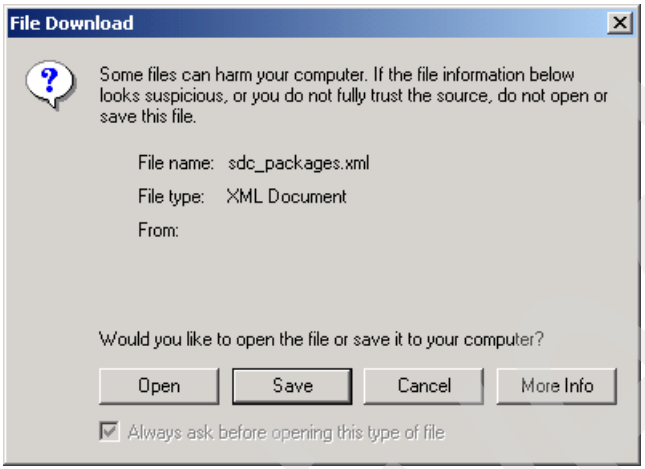


Figure 4-53 OutputXML

4.8.4 Importing Software Distribution files from another server

The following procedure assumes that you already created the XML output file from the source Tivoli Provisioning Manager Express for Software Distribution server. If you have not, export the XML file now before you start this procedure. See 4.8.3, “Creating an XML output file for an export list” on page 139.

Perform the following steps:

1. If the physical package files, detail files, and icon files are on a logical drive (a shared network drive outside of the source server), no further action is required. If the physical package files, details files, and icon files are stored on the source server, copy the files to the target server using one of the following methods:
   - From the target server, map to the source server. Then, copy the appropriate package files, detail files, and icon files to the target server.
   - At the source server, copy the appropriate package files, detail files, and icon files to portable media (such as CD or DVD). Then, bring the portable media to the target server and copy the files on the target server.

Note: The folder structure for the package files, detail files, and icon files must be the same on the target server as the source server. Otherwise, you will have to update the package information for each imported package at the target server to specify the changed paths. The affected fields are the Details field and Icon Path field on the General tab and the Remote file on the Install tab.

2. Copy the XML output file to the target server using one of the following methods:
   - From the target server, map to the source server. Then, copy the XML output file from the source server to the target server.
   - At the source server, copy the XML output file to a portable media. Then, bring the portable media to the target server and copy the XML source file anywhere on the target server.
3. At the target server, open the Tivoli Provisioning Manager Express for Software Distribution administration console and perform the following steps:
   a. Select **Software** → **Export/Import** → **Import XML**. The Select the XML File for Import page shown in Figure 4-54 opens.
   b. From the Select the XML File for Import area, in the File Name field, enter the XML source file name or click **Browse** to select the XML output file. Click **OK**.

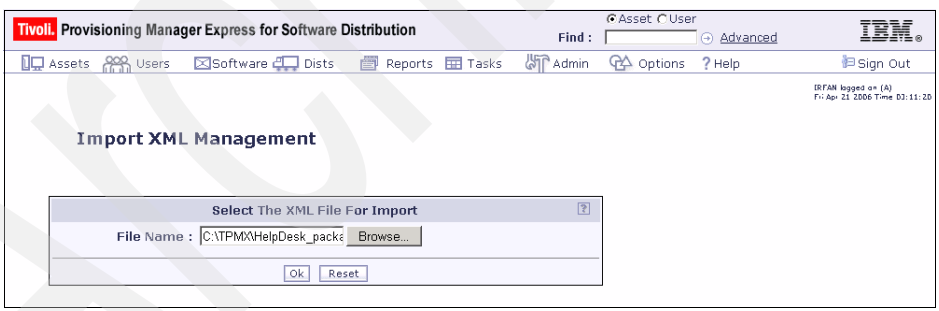


Figure 4-54 Import XML

c. In the Import Package area, click **OK** to accept each package (Figure 4-55). Click **Skip** to bypass any package you do not want to import. After all the packages and bundles contained in the output XML have been added, you will be prompted to add the export definition used to create the export output XML file shown in Figure 4-47 on page 136.

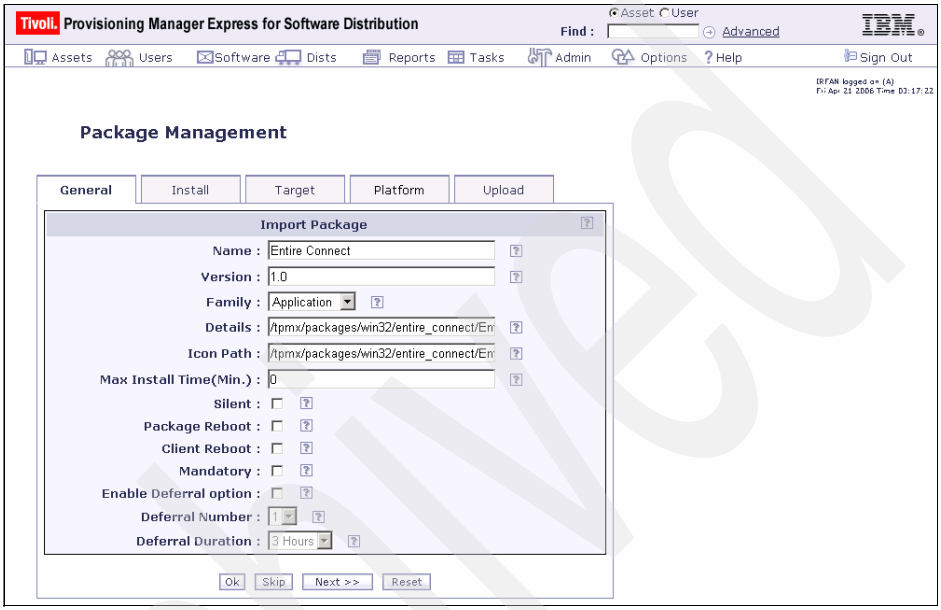


Figure 4-55 Import Package

d. Click **OK** to finish importing the XML output file. The List Export page shown in Figure 4-51 on page 139 opens.

4.8.5 Deleting an export list

To delete an export list:

1. Select **Software** → **Export/Import** → **All Exports**. The List Export page shown in Figure 4-51 on page 139 opens.
2. Select the check box beside the export list name you want to delete. Click **Delete**.
3. Click **OK** to delete an export list. The List Export page shown in Figure 4-51 on page 139 opens.

   Click **Cancel** for no action (Figure 4-46 on page 135).

4.8.6 Exporting a portable catalog

The following procedure assumes that you already created the export list definition on the Tivoli Provisioning Manager Express for Software Distribution server. If you have not, create an export list now. See 4.8.1, “Adding an export list” on page 136.

Perform the following steps:

1. Select **Software** → **Export/Import** → **CD Catalog Exporter**.
2. In the Security Warning dialog box, click **Start** (Figure 4-56).

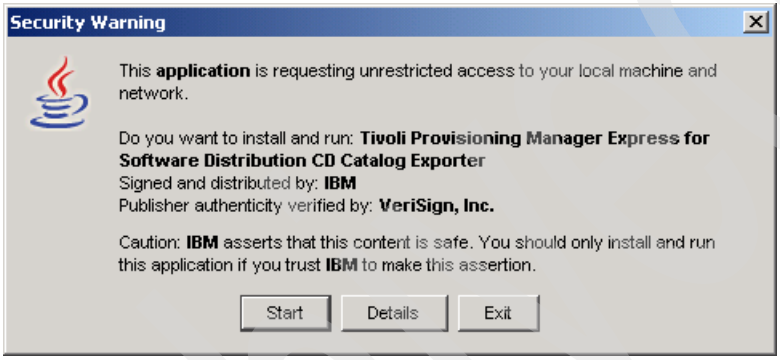


Figure 4-56 Security Warning

3. The Java-based import/export utility window shown in Figure 4-57 opens.

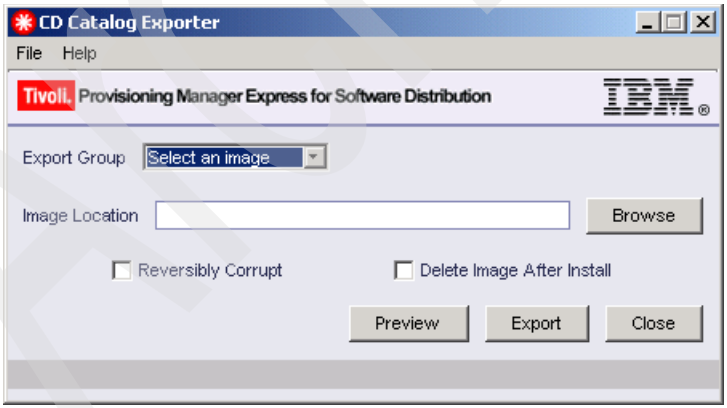


Figure 4-57 CD Catalog Exporter

However, at first launch, you might see the Tivoli Provisioning Manager for Software Distribution CD Catalog Exporter - Desktop Integration window, as shown in Figure 4-58. Click **Yes** to place an icon on desktop for easier access. Click **No** if an icon is already present on your desktop. Click **Ask Later** to defer it to a later time.

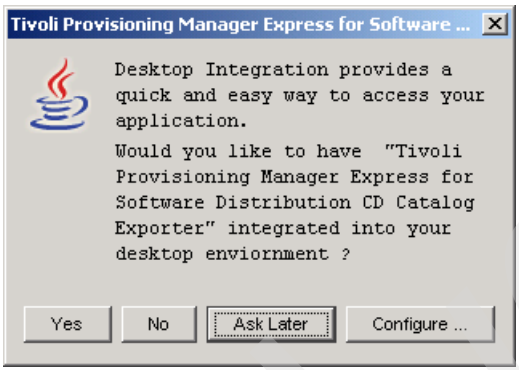


Figure 4-58 CD exporter icon

4. In the CD Catalog Exporter window:
   - Select an export group from the Export Group field (Figure 4-59 on page 145).
   - In the Image Location field, type the file name or click **Browse** to select the folder where the portable catalog files and folders are to be stored.
   - Select **Reversibly Corrupt** to indicate that the individual packages should be encoded with the Reversibly Corrupt process. When this is enabled, packages in the portable catalog will only be able to be installed through the Tivoli Provisioning Manager Express interface.
   - Select **Delete Image After Install** to indicate that the portable catalog directory structure should be deleted after the catalog is closed at the end of one session. This is to support the *Blue Button* retrieval of the package catalog.

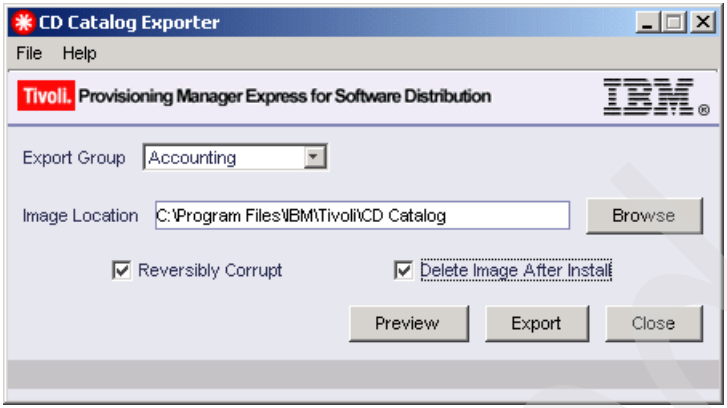


Figure 4-59 CD Catalog Exporter

Click **Preview** to display the space per package, a list of packages, the total space required, and the names of any missing files (Figure 4-60).

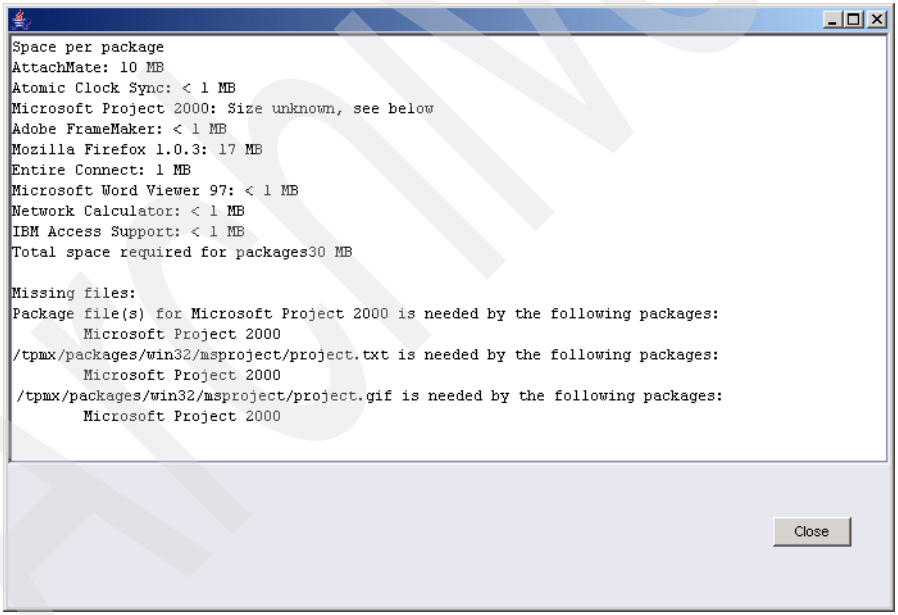


Figure 4-60 CD export package information

Click **Export** to initiate the process of creating the directory structure with the specified packages from the export list. The progress will be displayed at the bottom of the CD Catalog Exporter window (Figure 4-61).

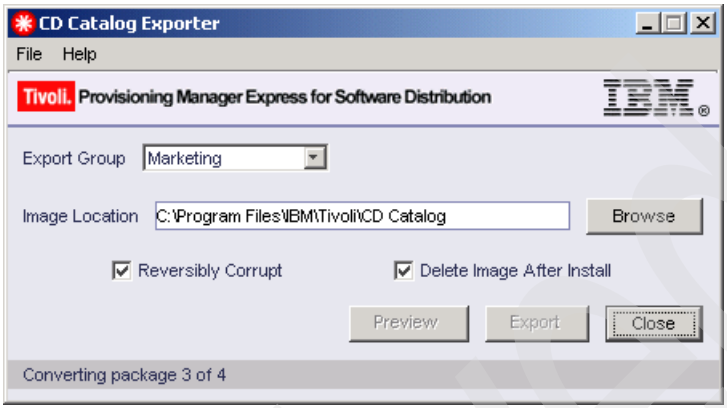


Figure 4-61 CD Catalog Exporter progress

Note: When the export process is complete, the bottom of the CD Catalog Exporter window displays “Done.”

5. The required files for portable catalog will copied into the folder shown in Figure 4-62 specified in Image Location field shown in Figure 4-61.

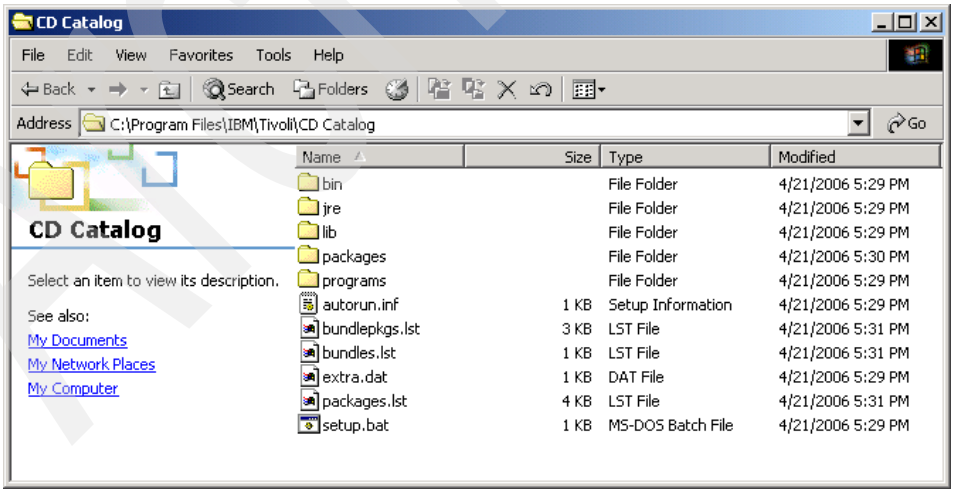


Figure 4-62 Portable Catalog files view

6. If you want to put the portable catalog on CD or DVD, use the CD/DVD recording software of your choice to copy the portable catalog files and folders to the CD or DVD. If you want to put the portable catalog on a network drive or other media, copy the files to the appropriate drive or media.

Note: Make sure that you maintain the directory structure and include all of the files and folders.

4.8.7 Previewing a portable catalog

This procedure enables you to view the list of software packages contained in a portable catalog, the space required for each package, the total space required for the packages, and the names of any missing files.

To preview the portable catalog:

1. Select **Software** → **Export/Import** → **CD Catalog Exporter**. The Java-based Import/Export Utility window shown in Figure 4-57 on page 143 opens.
2. In the Export Group field, select an export group name (Figure 4-59 on page 145).
3. In the Image Location field, type the file name or use **Browse** to select the folder where the portable catalog files and folders are stored (Figure 4-59 on page 145).
4. Click **Preview**. The space per package, a list of packages, the total space required, and the names of any missing files are displayed, as shown in Figure 4-60 on page 145.

Note: Make sure that you maintain the directory structure and include all the files and folders.

4.9 Managing evaluations

From the Evaluation Management page, you can view, add, edit, and delete evaluations.

An evaluation is a process used by administrators to establish a set of logical conditions that can be used to include a group of machines in a distribution list for software installation. The evaluation can be manually defined, using either the Software Distribution machine data or the Inventory data to establish the logical set of conditions to create the query, or automatically generated from an Inventory SQL query. After creating the evaluation, it can be linked to a

distribution list that is used to define the set of machines participating in a scheduled distribution.

When creating an evaluation, add a unique name to the definition of the evaluation that distinguishes it from other evaluations and provide any additional information in the Description field. The SD Only option allows the conditional statements to use only the Software Distribution machine data table. If you are not adding the evaluation from an Inventory report, you must establish the logical conditions for the query.

When editing an evaluation, you can make any necessary changes to the evaluation's Description, Case Sensitive status, SD Only option, and conditions. Conditional statements generated from an Inventory Report cannot be modified.

You can delete evaluations that are no longer needed from the Evaluation Management panel.

4.9.1 Adding an evaluation

To add an evaluation:

1. Select **Dists** → **Evaluations** → **New Evaluation** to display the Evaluation table.
2. In the Add Evaluation area on the General tab, enter the required name in the Name field (Figure 4-63). Optionally, enter the description, select **Case Sensitive**, and select **SD Only**, as necessary. The Case Sensitive option enables you to define if the condition will use case-sensitive criteria to find data. SD Only enables you to define if the condition will use only the Software Distribution machine data table.

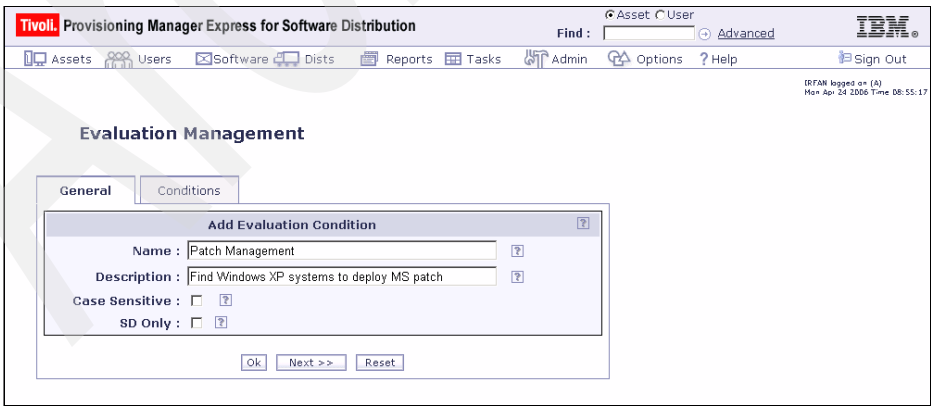


Figure 4-63 Add Evaluation General tab

3. Click the **Conditions** tab and define the evaluation conditions (Figure 4-64). Select a database field from the first drop-down list. In the corresponding text field, enter a search string from which to produce a matching list of machines. Standard search criteria apply. Join multiple fields using the operand drop-down list. Text field strings can also contain additional operands (and, or, not). Click **OK**.

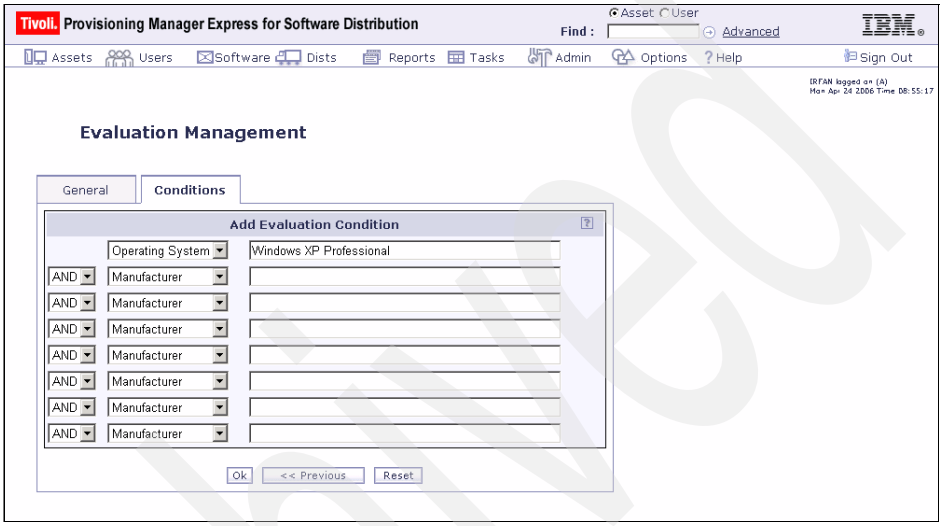


Figure 4-64 Add Evaluation Condition tab

4. The Add Evaluation Condition page, with a message that says "*Evaluation_name* has been added successfully" (Figure 4-65), opens.

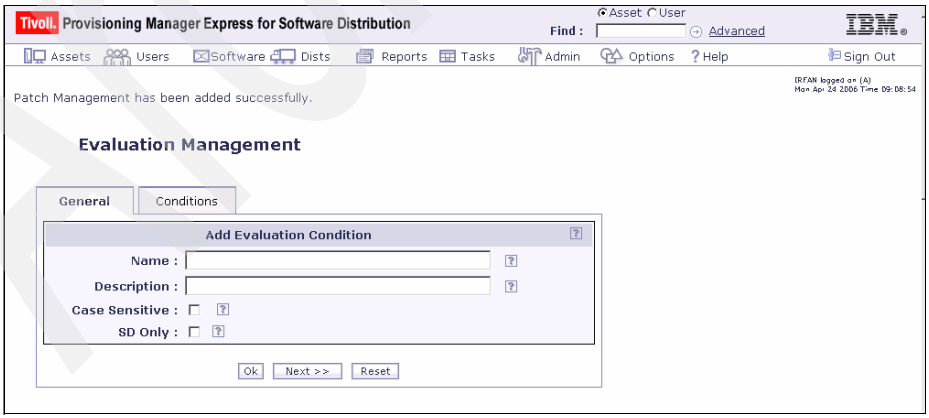


Figure 4-65 Evaluation Management: Evaluation addition message

4.9.2 Creating an evaluation

Certain Inventory reports that contain the HW Key of the machines in the report include a link to Create Evaluation. By clicking this link, the SQL query that is used to generate the report will be imported into the Condition statement of an Evaluation definition. To create an evaluation:

1. From any Inventory report that contains the Create Evaluation link, click **Create Evaluation**.
2. On the General tab, enter a unique name to identify the evaluation (Figure 4-63 on page 148). Optionally, add a description to provide more information about the evaluation.
3. The **Conditions** tab displays the SQL query used for the report (Figure 4-64 on page 149). This cannot be edited.
4. Click **OK** to save the evaluation definition. The Add Evaluation Condition page, with a message that says "*Evaluation_name* has been added successfully" (Figure 4-65 on page 149), opens.

4.9.3 Searching for an evaluation

To search for a specific evaluation name:

1. Select **Dists** → **Evaluations** → **All Evaluations**. The List Evaluation table opens (Figure 4-66).
2. Click the **Search** tab.

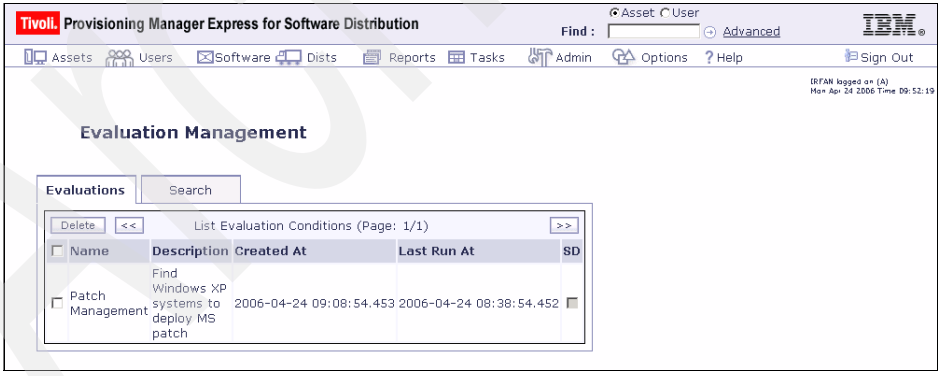


Figure 4-66 Evaluation Management: List Evaluation

3. In the Search tab:
   - Enter the name of the evaluation or leave the Name field blank and to return all created evaluations (Figure 4-67). The Name field value is case-sensitive; therefore, to return a valid search, type the exact name or perform a wild card search using the percent symbol (%) in the Name field. For example, search for all evaluations that start with A by typing `A%` in the Name field and clicking **Search**.
   - Select the **SD Only** option so that only evaluations in which SD Only has been selected will be displayed.
   - In the Page Size field, enter the maximum number of entries to display per page for the search results.

   Click **Search**.

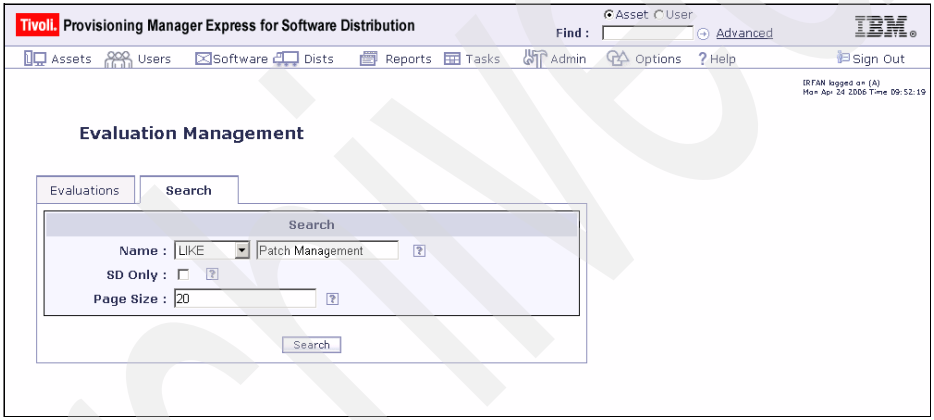


Figure 4-67 Evaluation Management: Evaluation Search

The result of the search appears in the Evaluations tab shown in Figure 4-66 on page 150.

4.9.4 Deleting an evaluation

To delete an evaluation:

1. Select **Dists** → **Evaluations** → **All Evaluations**. The List Evaluation table shown in Figure 4-66 on page 150 opens.

2. Select the check box next to the evaluation name you want to delete (Figure 4-68). Click **Delete**.

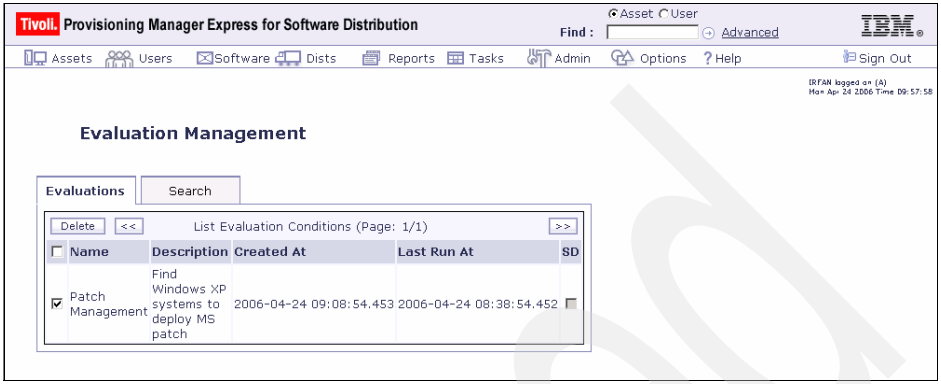


Figure 4-68 Delete Evaluation

3. From the dialog box shown in Figure 4-69, click **OK** to delete the evaluation definition.

   Click **Cancel** for no action.

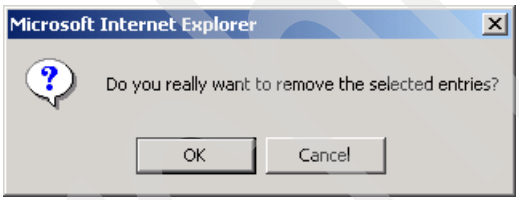


Figure 4-69 Delete confirmation message

4.10 Managing distributions

From the Distribution Management page, you can view, add, edit, and delete distributions.

A distribution list is group of machines used as the target of a scheduled distribution. In creating the distribution list, the administrator will add a unique name to the definition of the distribution that distinguishes it from other distributions and, optionally, add additional information about the distribution list in the Description field. The list of target machines can be manually selected in the Selectable Targets tab, or dynamically populated by selecting an Evaluation Name. This selected Evaluation Name is a logical query that will search the inventory data or machine data to include machines in the distribution list. By

including an evaluation from the drop-down list, the Dynamic Targets tab will be populated according to the conditions that were defined in the evaluation and it will automatically add machines to the Dynamic Targets tab when interpreted by Tivoli Provisioning Manager Express for Software Distribution. Also, as a result of not having the Software Distribution Agent installed, the Invalid Targets tab will be populated with a list of machines that meet the conditions of the evaluation, but do not show up in the Software Distribution machine table.

If an evaluation is not being used, machines will need to be added to the distribution list manually on the Selectable Targets tab. The Selectable Search tab can be used to populate the Selectable Targets tab for easier selection.

When editing a distribution, you can make necessary changes to the definition of the distribution. The distribution's description, evaluation name, or selectable targets can be modified for distribution of software to client machines.

You can delete distribution lists that are no longer needed from the Distribution Management page.

4.10.1 Distribution list information

The Add Distribution table displays the following fields and options:

- General tab
  - Name: The name of the distribution.
  - Description: A short description of the distribution.
  - Evaluation Name: Use to select evaluations, previously created logical queries, that will automatically add machines to the Dynamic Targets tab.
- Selectable Targets tab
  - Machine List for Distribution: A table that enables you to select machines to associate with a distribution list.
- Selectable Search tab
  - Name: Enter a machine name to limit a logical condition search.
  - OS: Select an operating system to limit a logical condition search.
  - IP Address: Enter an IP address to limit a logical condition search.
  - Selected Only: Use this to limit the search to selected machines associated with the distribution.
  - Page Size: Use to limit entries displayed on a page from a search.

- Dynamic Targets tab
  - Target Machine List for Evaluation: A table that automatically adds machines to the list that meets the logical conditions of the evaluation.
- Invalid Targets tab
  - Target Machine List for Evaluation: A table that automatically adds machines to the list that meets the logical conditions of the evaluation, but does not have the Software Distribution Agent installed on the client machine.

4.10.2 Adding a distribution list

To add a distribution list:

1. Select **Dists** → **Distribution Lists** → **New Distribution List** to open the Add Distribution table.
2. If an evaluation is not being used, from the General tab, enter the required name in the Name field (Figure 4-70). Optionally, include any additional information to further identify the distribution list in the Description field.

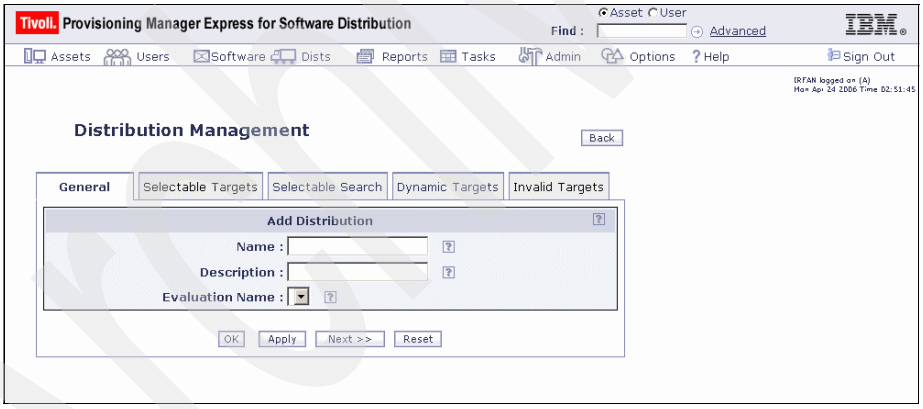


Figure 4-70 Distribution Management: Add Distribution

3. Click the **Selectable Targets** tab and add machines individually to the distribution list (Figure 4-71).

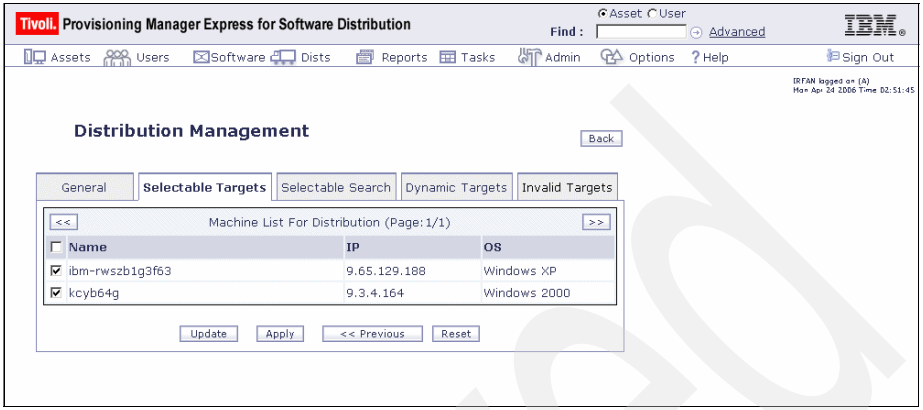


Figure 4-71 Distribution Management: Selectable Targets

4. To locate a specific machine or set of machines, click the **Selectable Search** tab to perform a search (Figure 4-72). You can select from the resulting set of machines in the Selectable Targets tab (Figure 4-71).

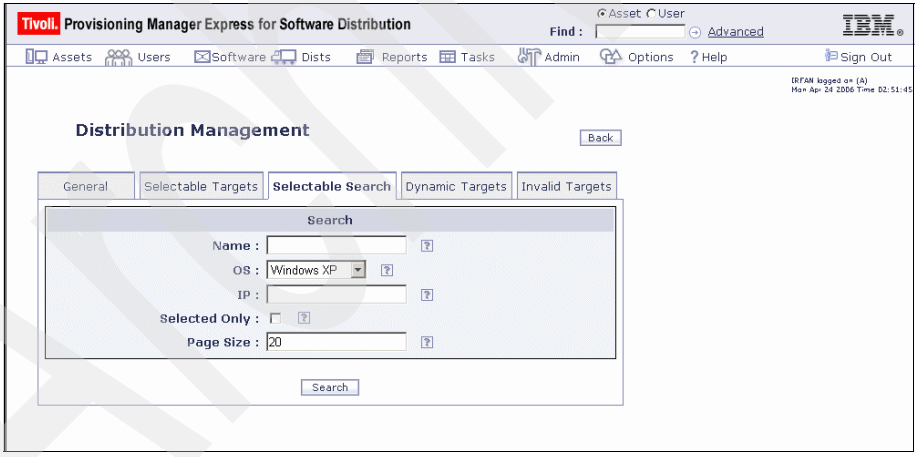


Figure 4-72 Distribution Management: Selectable Search

If an evaluation is being used, go to the **General** tab shown in Figure 4-70 on page 154 and enter the required name in the Name field. Optionally, include any additional information to further identify the distribution list in the Description field. Select the Evaluation Name from the drop-down list to assign an evaluation to the distribution. As a result, machines will be

automatically added to the Dynamic Targets tab shown in Figure 4-73 or Invalid Targets tab shown in Figure 4-74 after completing the definition.

Note: Machines might be manually included in a distribution under the Selectable Targets tab with or without an evaluation being used.

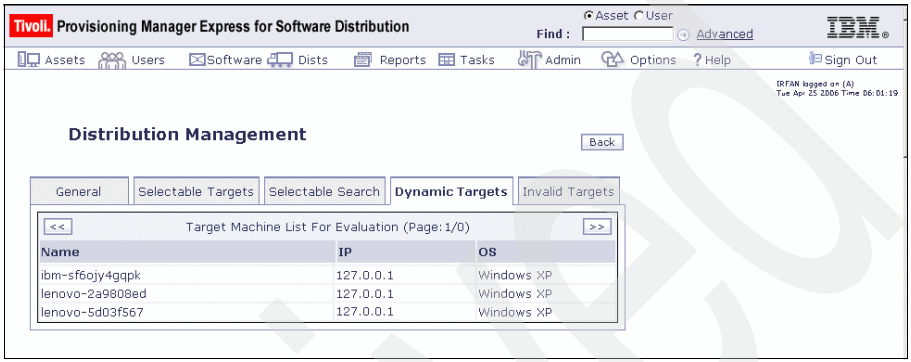


Figure 4-73 Distribution Management: Dynamic Targets

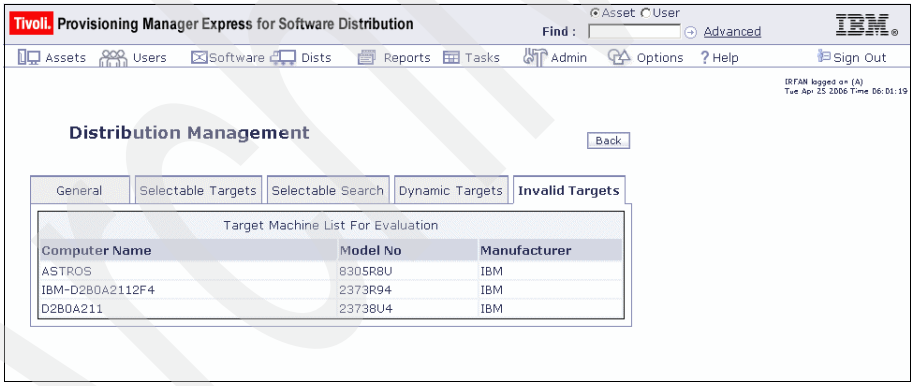


Figure 4-74 Distribution Management: Invalid Targets

5. Click **Apply**. The Edit Distribution page, with a message that says "*Distribution_name* has been added successfully" (Figure 4-75), opens.

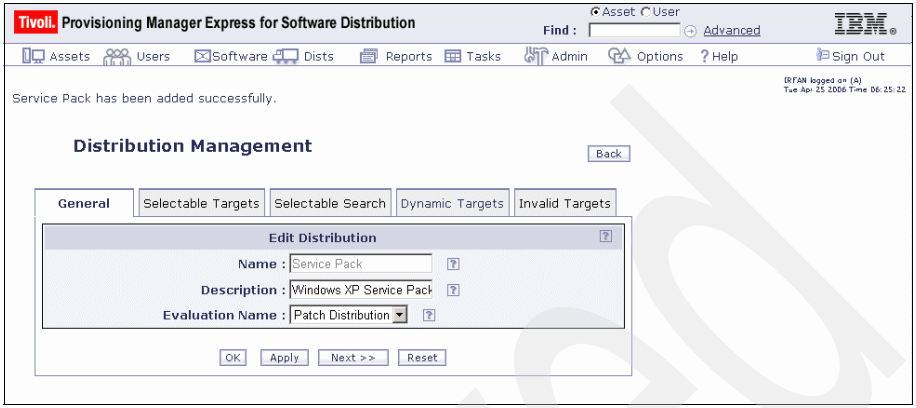


Figure 4-75 Distribution Management: Edit Distribution

4.10.3 Searching for a distribution list

To search for a specific distribution list name:

1. Select **Dists** → **Distribution Lists** → **All Distribution Lists**. The List Distributions table opens (Figure 4-76).

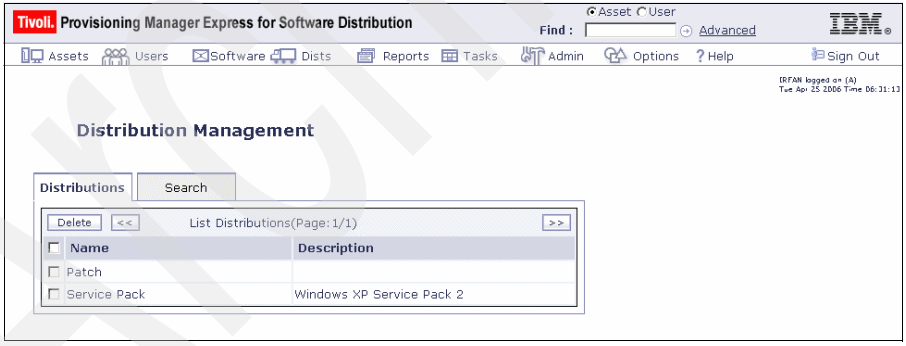


Figure 4-76 Distribution Management: List Distributions

2. Click the **Search** tab (Figure 4-77 on page 158).

3. On the Search tab:
   - Enter the name of the distribution or leave the Name field blank to return all created distributions. The Name field value is case-sensitive; therefore, to return a valid search, type the exact name or perform a wild card search using the percent symbol (%) in the name field. For example, search for all distributions that start with A by typing `A%` in the Name field and clicking **Search**.
   - In the Page Size field, enter the maximum number of entries that match your search criteria to display per page.

   Click **Search**.

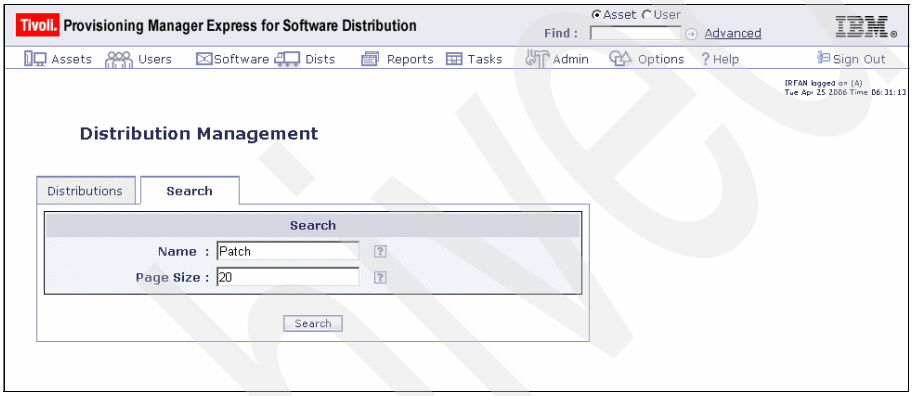


Figure 4-77 Distribution Management: Search distributions

The resulting distribution lists appear in the Distributions tab (Figure 4-78).

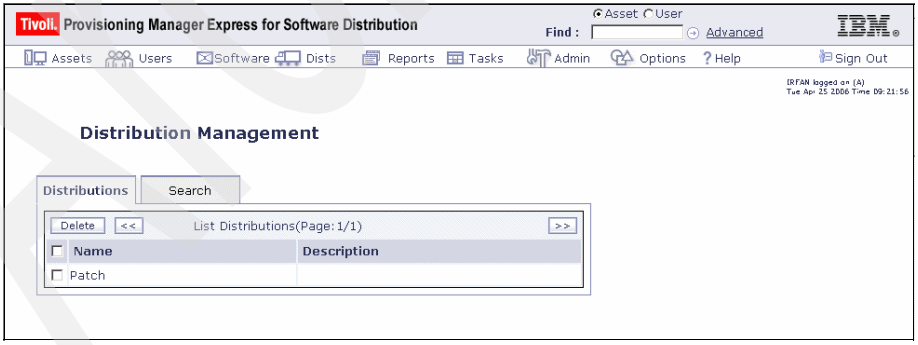


Figure 4-78 Distribution Management: Search results

4.10.4 Changing (modifying) the distribution list description

To change the distribution list description:

1. Select **Dists** → **Distribution Lists** → **All Distribution Lists** to open the List Distributions table (Figure 4-76 on page 157).
2. Select the distribution name to update, make the necessary changes to the Description, and click **Apply** to save the information (Figure 4-79).

> **Note:** Click **Apply** for each page to make changes permanent to the database.

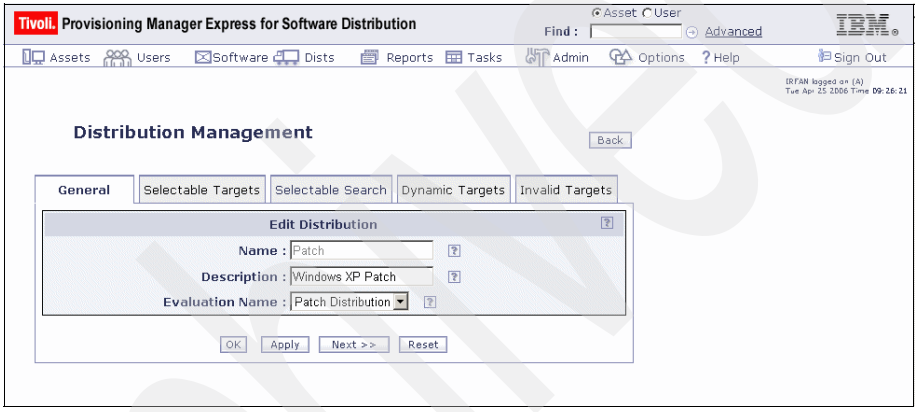


Figure 4-79 Distribution Management: Edit Distribution

3. Click **OK**. The List Distributions page opens (Figure 4-80).

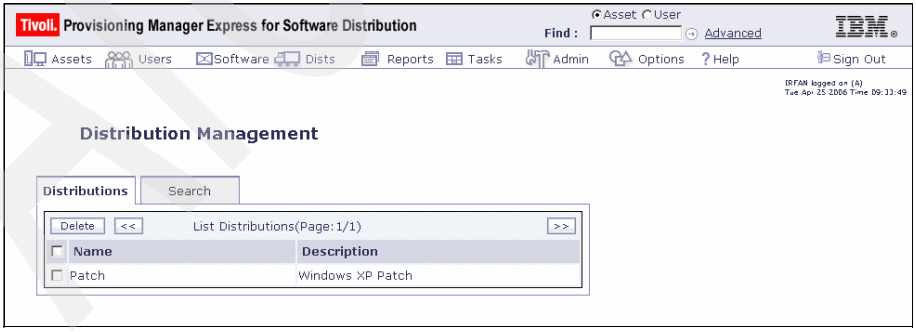


Figure 4-80 Distribution Management: Search results

4.10.5 Searching for a machine in a specific distribution list

To search for a machine in a specific distribution list:

1. Select **Dists** → **Distribution Lists** → **All Distribution Lists**. The Distributions table shown in Figure 4-76 on page 157 opens.
2. Select a distribution list name to edit the distribution.
3. Click the **Selectable Search** tab (Figure 4-81).

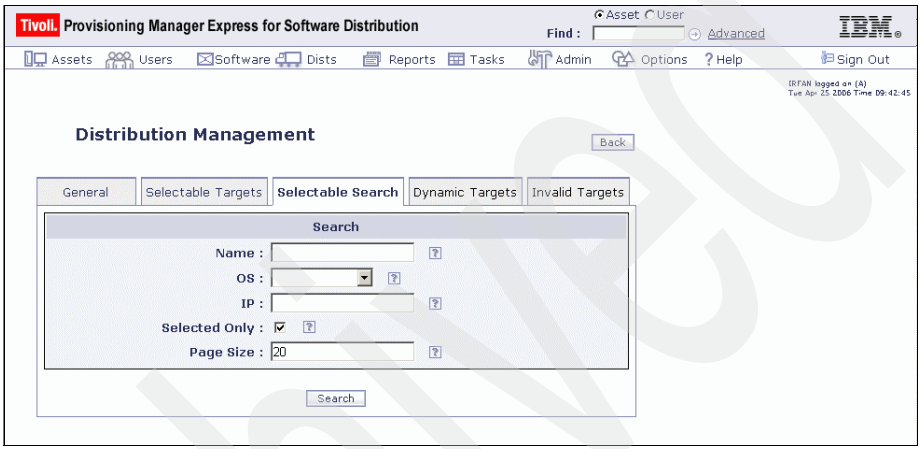


Figure 4-81 Distribution Management: Selectable Search

You can search by machine name, operating system, IP address, or selected machines associated with the distribution.

Note: By default, the Selected Only box is selected, and only machines that have been manually selected are displayed on the Selectable Targets tab. If no machines were previously selected, the list of all available machines appears.

Perform the search using any combination of the following criteria:

– In the Name field, type the name of the machine.

Note: The Name field value is case-sensitive; therefore, type the exact name, or perform a wild card search using the percent symbol (%) in the Name field.

– In the OS field, select the operating system.

– In the IP field, enter the IP address.

– For the Selected Only option, select **Selected Only** to restrict the search to the existing selected machines of the distribution.

In the Page Size field, enter the maximum number of entries per page to display.

4. Click **Search**. The results of the search criteria appear in the Selectable Targets tab (Figure 4-82).

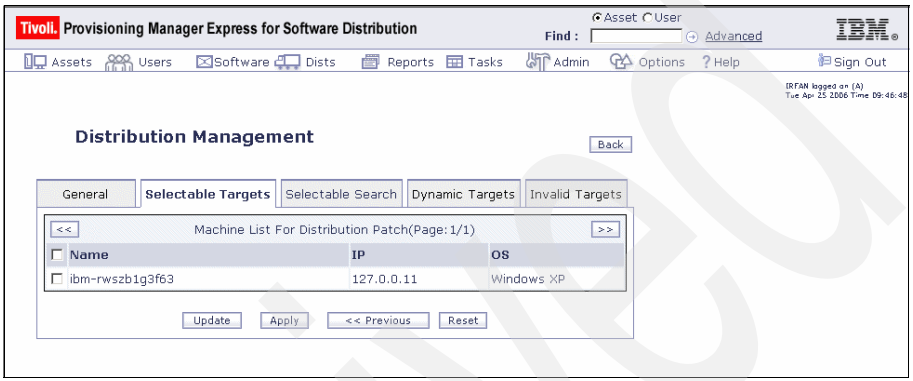


Figure 4-82 Distribution Management: Selectable Targets

4.10.6 Deleting a distribution list

To delete a distribution list:

1. Select **Dists** → **Distribution Lists** → **All Distribution Lists**. The Distributions table shown in Figure 4-76 on page 157 opens.
2. Select the check box next to the distribution name you want to delete (Figure 4-83). Click **Delete**.

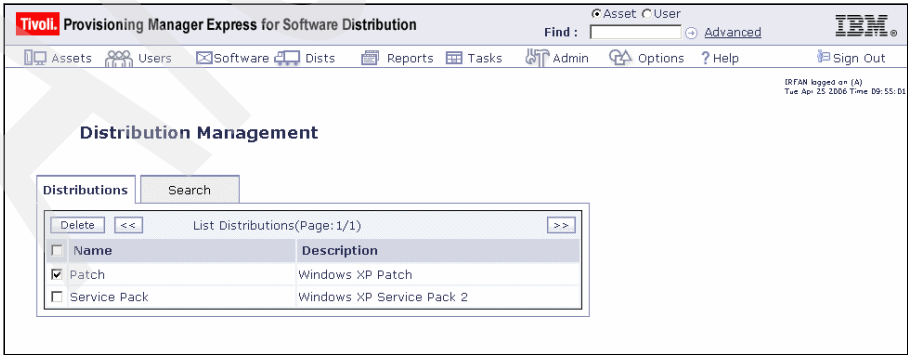


Figure 4-83 Distribution Management: Delete Distributions

3. In the dialog box, click **OK** to delete the distribution definition (Figure 4-84). The Distributions table opens (Figure 4-76 on page 157).

   Click **Cancel** for no action.

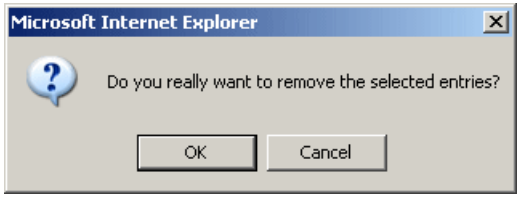


Figure 4-84 Delete confirmation message

4.11 Managing machines

From the Machine Management page, the administrator will receive a list of all machines that are auto-registered with the Tivoli Provisioning Manager Express for Software Distribution server. The auto-registration occurs for the first time after the Software Distribution Agent service is installed. Also, the service performs an update to the registration information at service startup time and every 24 hours thereafter.

The administrator can perform deletes of machine registration and searches of all machines that are registered with the Tivoli Provisioning Manager Express for Software Distribution. The searches are performed by name, operating system, or start and end date, as necessary.

4.11.1 Searching for a machine

To search for a specific machine:

1. Select **Dists** → **All Machines**. The List Machines table shown in Figure 4-85 on page 163 opens.

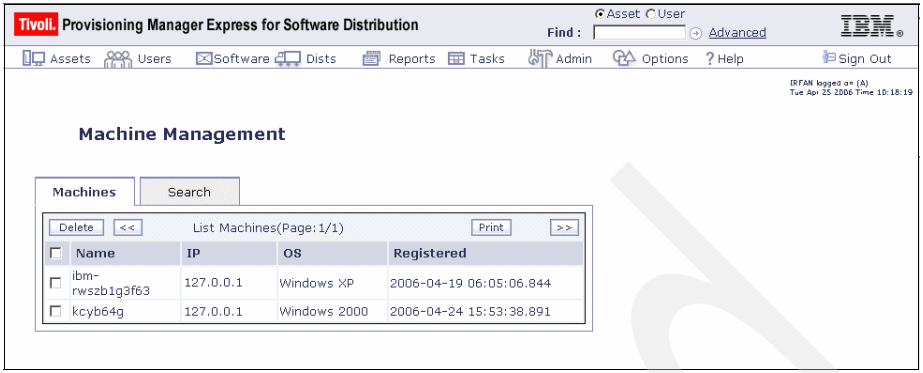


Figure 4-85 Machine Management: List Machines

2. Click the **Search** tab.
3. Enter the name of the machine or leave the Name field blank to return all registered machines (Figure 4-86). The Name field value is case-sensitive; therefore, to return a valid search, enter the exact name or perform a wild card search using the percent symbol (%) in the Name field. For example, search for all distributions that start with A by typing `A%` in the Name field and clicking **Search**.

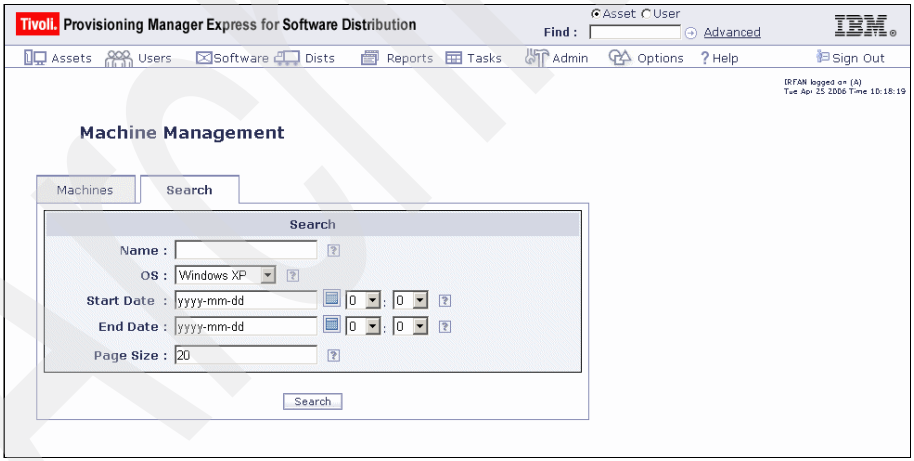


Figure 4-86 Machine Management: Machines Search

Otherwise, use any logical conditions from the search table to search for auto-registered machines using the following criteria:

– In the Name field, enter the name of the machine.

Note: The Name field value is case-sensitive; therefore, you need to enter the exact name or perform a wild card search using the percent symbol (%) in the Name field.

- In the OS field, select the operating system.
- In the Start Date field, select the schedule start date, using the format yyyy-mm-dd, and the time.
- In the End Date field, select the schedule end date, using the format yyyy-mm-dd, and the time.

Click **Search**.

The results of the search, with the name and its associated information (IP address, operating system, and date machine was registered), appear in the List Machines table on the Machines tab.

4.11.2 Deleting a machine

To delete a machine:

1. Select **Dists** → **All Machines**. The List Machines table opens.
2. Select the check box next the machine you want to delete. Click **Delete**. A dialog box opens (Figure 4-84 on page 162).
3. Click **OK** to delete the machine name. The List Machines table opens (Figure 4-85 on page 163). Click **Cancel** for no action.

4.12 Managing schedules

From the Schedule Management page, you can view, add, edit, and delete schedules. Schedules are a window of time for each distribution to install a software package or bundle to a set of client machines. This process enables the Software Distribution server to perform push distributions to the Software Distribution Agent.

The initial Schedule Management page enables you to view a list of schedules with their associated package name, distribution list, start date, end date, and whether each schedule is enabled for distribution to the client machines.

The daily start and daily stop times are based on the time on the server. The time window is specific to the server time zone and is evaluated locally on the server as each client checks for schedule availability. Group scheduled distributions to

machines in time zones different from the server into a separate distribution list to adjust the times for any server to client differences.

When adding a schedule, give the schedule a unique name to distinguish it from the other schedules and provide any additional information in the Description field. The schedule can be enabled or left in an inactive state. After selecting the distribution list that will determine the target list of machines, decide the daily start time and end time of the schedule, as well as the start date and end date, before selecting the package or bundle to be distributed.

When editing a schedule, you can update the description, enable the schedule, and change the distribution list. You can modify the daily start time and end time along with the start date and end date. You can also change the package or bundle, but we recommend that you create a new schedule for each application distribution.

When adding or editing a schedule, perform a search for packages or bundles to include in the schedule. The search is a logical condition that enables the option to search on the name of the package or bundle, package type, or operating system.

You can delete schedules that are no longer needed from the Schedule Management page.

4.12.1 Scheduling information

Use the descriptions and options in the Add Schedule table:

- General tab
  - Schedule: The name of the schedule.
  - Description: A short description of the schedule.
  - Enable: Enables the schedule for distribution of software to client machines.
  - Distribution Name: A drop-down menu that enables you to associate a distribution list to the schedule.
  - Enable Deferral option: Enables a software installation to be deferred by the end user.
  - Deferral Number: Defines the number of times the software installation can be deferred by the end user before the software will be automatically installed to the client machine.
  - Deferral Duration: Defines the duration of time between deferrals that the end user has before the dialog box is displayed again on the client side.

- Daily Start Time: The start of the time window each day that the scheduled distribution will be available to the Software Distribution Agent.
- Daily End Time: The end of the time window each day that the scheduled distribution will be available to the Software Distribution Agent.
- Start Date: The start date for a range of days in which the scheduled distribution will be available to the Software Distribution Agent. The format is YYYY-MM-DD.
- End Date: The end date for a range of days after which the scheduled distribution will no longer be available to the Software Distribution Agent. The format is YYYY-MM-DD.

► Package tab

- Query Packages/Query Bundles: Specifies if a package or a bundle will be included in the distribution.
- Package/Bundle Name: This list is the result of a search performed by the administrator. From the list, select the package or bundle to include in the schedule.
- Name: The name of a software package or bundle to search for to include in the schedule. The name is case-sensitive; therefore, type the exact name or search using the wild card percent symbol (%) in the Name field.
- Package Type: Enables you to limit the search of software packages by package type. The following are the package types:
  - Download(Open)
  - Download(Secure)
  - LogicalDrive(Open)
  - LogicalDrive(Secure)
  - DirectoryDownload(Open)
  - DirectoryDownload(Secure)
- OS: Enables you to limit the search to the operating system on which the software package can be installed.

4.12.2 Adding a schedule

To add a schedule:

1. Select **Dists** → **Schedules** → **New Schedule** to display the Add Schedule table (Figure 4-87 on page 167).

2. In the Add Schedule table:
   - Enter the name of the schedule and add any additional description information, if wanted.
   - Select **Enable** to activate the schedule for distribution, or leave it cleared to allow the schedule to remain inactive until a later point.
   - Select the distribution list from the drop-down menu to define the list of target machines to be included in the scheduled distribution.
   - If you want the end user to have the opportunity to defer the installation to a later time, select **Enable Deferral Option**, select the number of times the installation can be deferred, and select the duration between deferrals.
   - Set the daily start time and daily end time and set the start date and the end date for the distribution.

   Click **Next** to display the package/bundle search.

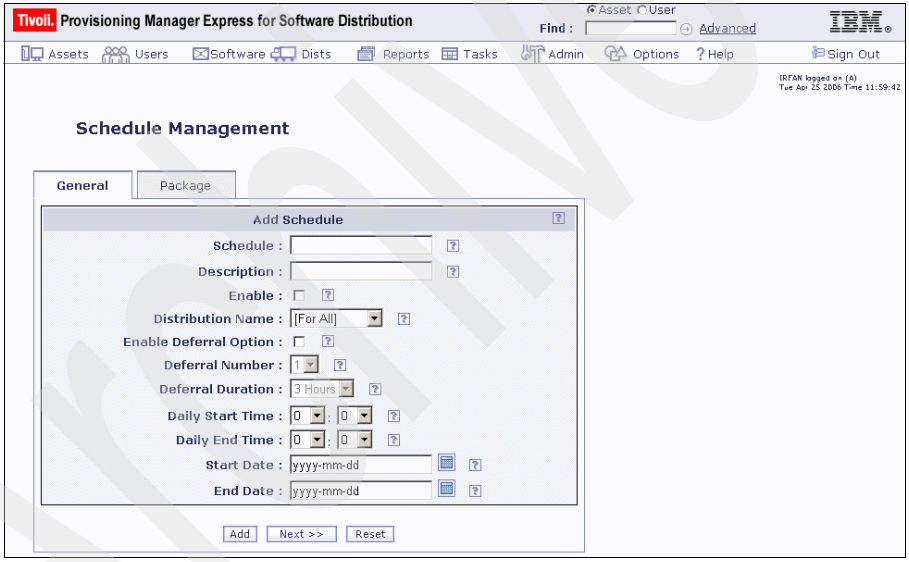


Figure 4-87 Schedule Management: Add Schedule

3. From the Package tab, select either **Query Package** or **Query Bundle** to specify what will be distributed (Figure 4-88 on page 168).

   By default, the Package/Bundle Name drop-down list is empty. Use the search box to populate the selection list by entering the search criteria based on name, package type, and operating system. Clicking Search with no preferences generates a list of all packages or bundles.

   For more about the schedule definition fields, see 4.12.1, “Scheduling information” on page 165.

Click **Add**.

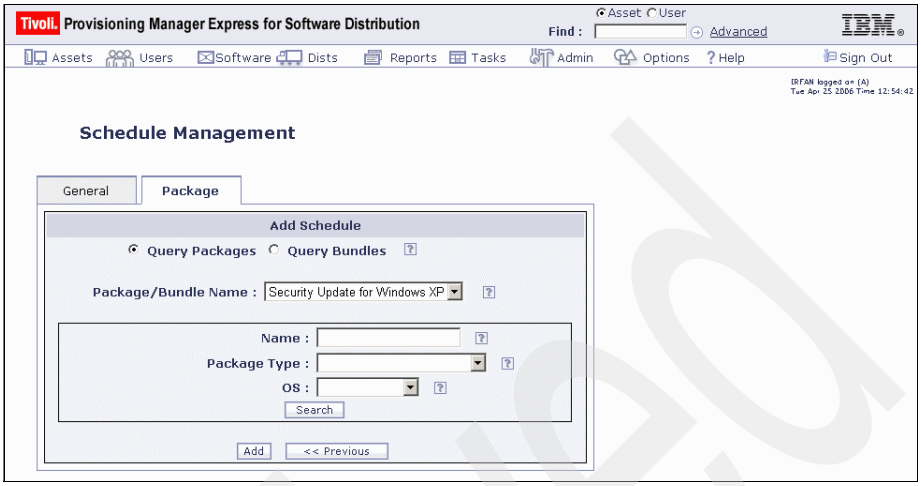


Figure 4-88 Schedule Management: Add Schedule package

4. The Add Schedule page, with a message that says "*Schedule_name* has been added successfully" (Figure 4-89), opens.

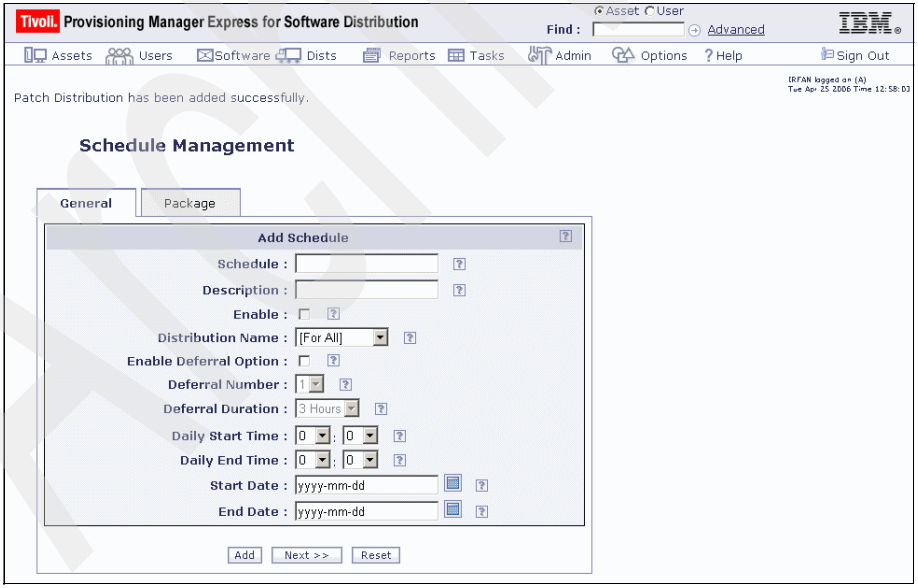


Figure 4-89 Schedule Management: Add Schedule message

4.12.3 Searching for a specific schedule

To search for a specific schedule:

1. Select **Dists** → **Schedules** → **All Schedules**. The List Schedules table opens (Figure 4-90).

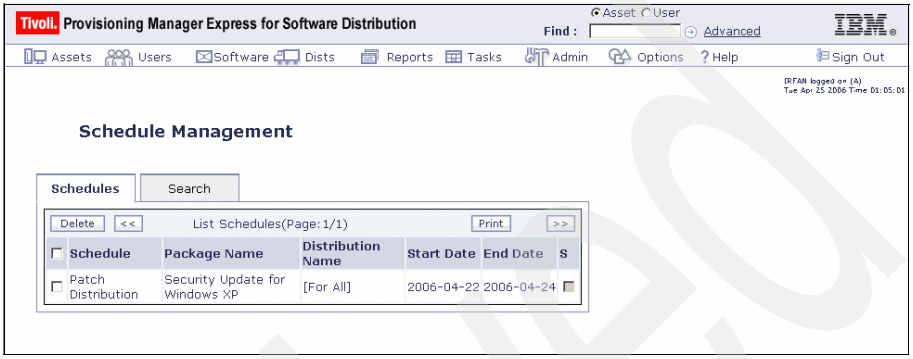


Figure 4-90 Schedule Management: List Schedules

2. Click the **Search** tab. The Search table opens (Figure 4-91).
3. Enter the name of the schedule or leave the Name field blank to return all created schedules. The Name field value is case-sensitive; therefore, to return a valid search, type the exact name or perform a wild card search using the percent symbol (%) in the name field. For example, search for all schedules that start with A by typing `A%` in the Name field and clicking **Search**.

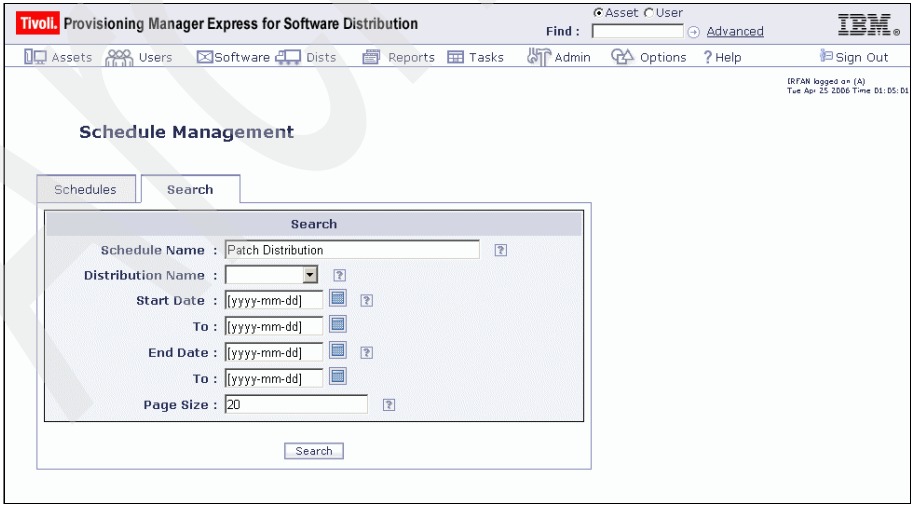


Figure 4-91 Schedule Management: Search schedule

Otherwise, use any logical conditions from the search table to search for schedules by using the following fields:

– In the Schedule Name field, enter the schedule name.

> **Note:** The Schedule Name field value is case-sensitive; therefore, type the exact name or perform a wild card search using the percent symbol (%) in the Schedule Name field.

– In the Distribution Name field, select the distribution name to which the schedule belongs.

– In the Start Date field, select the schedule date designated to start a search for a schedule.

– In the End Date field, select the schedule date designated to end a search for a schedule.

In the Page Size field, type the maximum number of entries per page to display.

Click **Search**.

The List Schedules table displays the results of the search with the schedule name, package name, distribution name, start date, end date, and if the schedule is enabled, as shown in Figure 4-90 on page 169.

4.12.4 Deleting a schedule

To delete a schedule:

1. Select **Dists** → **Schedules** → **All Schedules**. The List Schedules table opens (Figure 4-90 on page 169).
2. Select the check box next the schedule you want to delete. Click **Delete**.
3. Click **OK** to delete the schedule name (Figure 4-84 on page 162). The List Schedule table shown in Figure 4-90 on page 169 opens.

   Click **Cancel** for no action.

4.13 Using Tivoli Provisioning Manager for Software Distribution logs

This section provides information about using the Tivoli Provisioning Manager for Software Distribution logs.

4.13.1 Software Distribution log entry details

The logs contain the following information:

- TimeStamp: The date and time of the log entry
- UserID: The user's name
- Client: Agent or Client
- HostName: The host name of the client machine
- UUID: The UUID address of the client machine
- Client IP Address: The IP address of the client machine
- Operating System: The operating system of the client machine
- OS Version: The operating system version number of the client machine
- Java Vendor: The Java vendor name of the JRE used by the client machine
- Java Version: The Java version of the JRE used by the client machine
- Login: The user account used to log on to the operating system
- Package: The name of the software package
- Install Type: The installation type of the package
- Schedule Name: The name of the schedule to install the package
- Transaction ID: The transaction ID of a client-side installation of a package
- Bundle ID: The bundle ID for a set of packages to be installed on a client machine
- Package ID: The package ID for a package to be installed on a client machine
- Status: The current status of the software package
- Message: The description of the status of the software package

4.13.2 Viewing a Software Distribution log

To view a distribution log:

1. Select **Reports** → **Distribution Reports** → **View Logs**. The List Logs page opens (Figure 4-92).

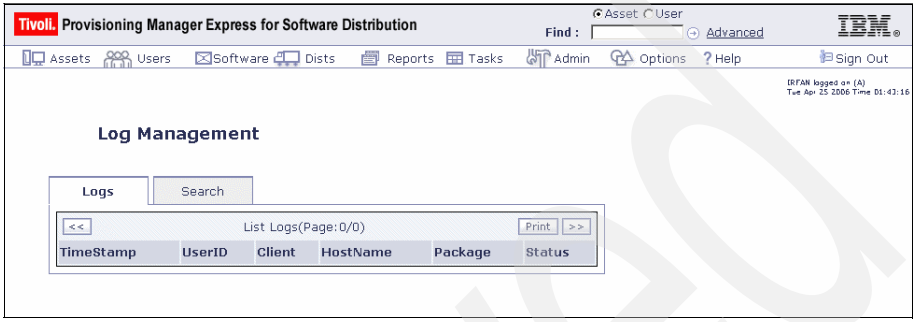


Figure 4-92 Log Management: List Logs

If available, this table displays the current day's event logs.

2. Click the **Search** tab to change the Start Date to view any previous log events (Figure 4-93).

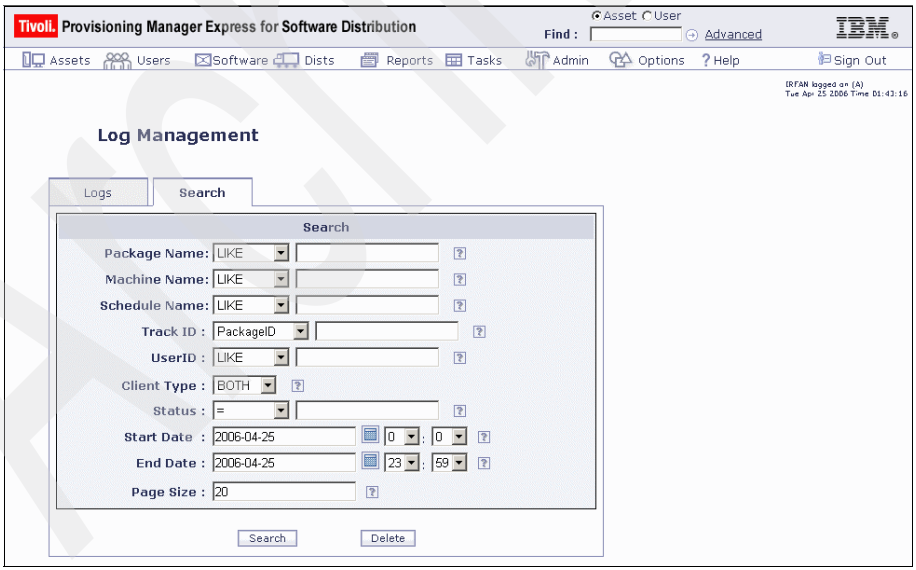


Figure 4-93 Log Management: Log Search

3. Change the Start Date value and click **Search**. A page with the list of logs opens (Figure 4-94).

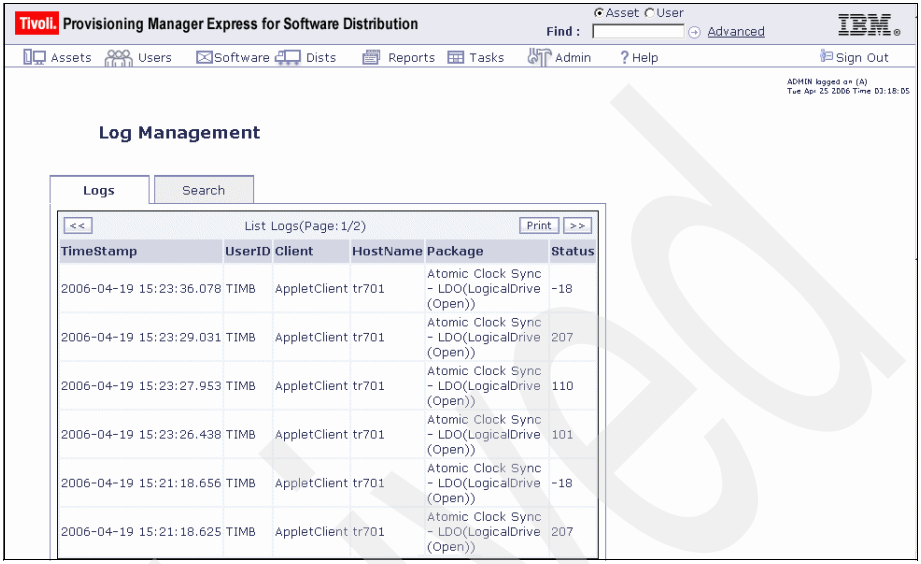


Figure 4-94 Log Management: Log Search results

4. From Logs list, select a TimeStamp. The distribution details log displaying information about the event opens (Figure 4-95). In addition, you can view the complete package log sequence from an event log.

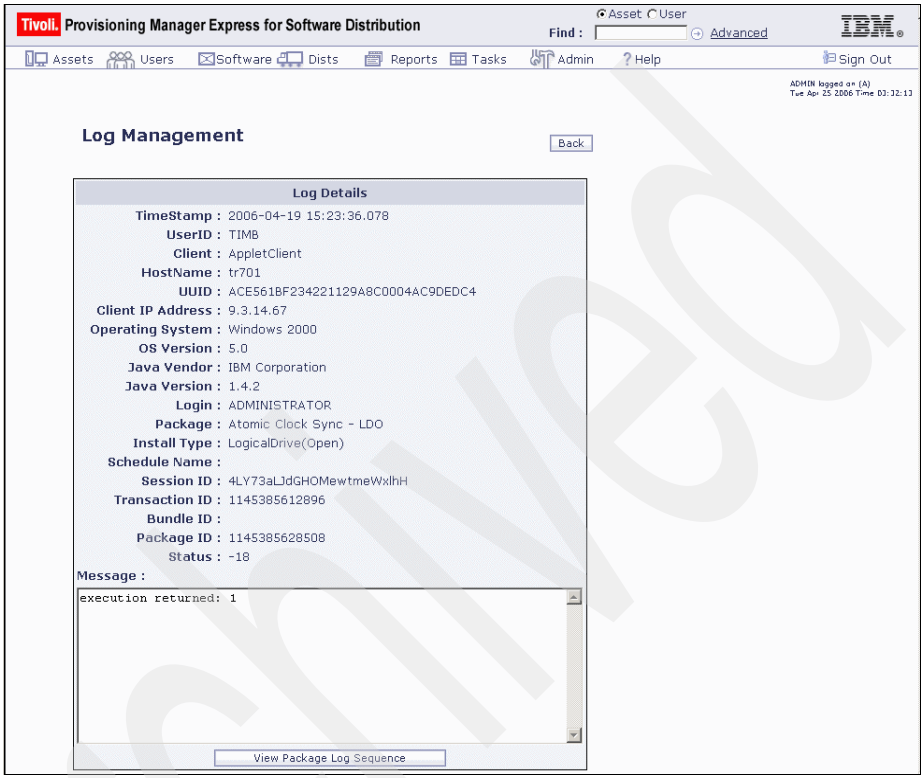


Figure 4-95 Log Management: Log Details

4.13.3 Searching for a distribution log

To search for a specific log:

1. Select **Reports** → **Distribution Reports** → **View Logs**. The List Logs page opens (Figure 4-92 on page 172). The table displays the current day's event logs.
2. Click the **Search** tab. The Search table opens (Figure 4-93 on page 172).

3. Perform a logical condition search by using a combination of the following fields:
   - In the Package Name field, type the package name and set the logical condition for the search. The Package Name field value is case-sensitive; therefore, type the exact name of the package or perform a wild card search using the percent symbol (%).
   - In the Machine Name field, type the machine name and set the logical condition for the search. The Machine Name field value is case-sensitive; therefore, type the exact name of the machine or perform a wild card search using the percent symbol (%).
   - In the Schedule Name field, type the schedule name and set the logical condition for the search. The Schedule Name field value is case-sensitive; therefore, type the exact name of the schedule or perform a wild card search using the percent symbol (%).
   - In the Track ID field, type the track ID and set the logical condition for the search. The track ID is established each time a user selects to install on a client-side pull of software.
   - In the UserID field, type the user name and set the logical condition for the search. The UserID field value is not case-sensitive.
   - In the Client Type field, select **AGENT** for all agent pushes of software to the client machines, or **CLIENT** for all client pulls of software to the client machine, or **BOTH** for agent pushes and client pulls of software to the client machine.
   - In the Status field, enter the status and set the logical condition for the search.
   - In the Start Date field, type the date or select it from the calendar. Select the start time for the search.
   - In the End Date field, type the date or select it from the calendar. Select the end time for the search.

   Click **Search**.

The Logs tab displays the logs (Figure 4-94 on page 173).

4.13.4 Deleting a distribution log

To delete a distribution log:

1. Select **Reports** → **Distribution Reports** → **View Logs**. The Log Management table opens (Figure 4-92 on page 172).

2. Click the **Search** tab and the Search table opens (Figure 4-93 on page 172). Perform a logical condition search by preference on package name, machine name, schedule name, track ID, user ID, client type, status, start date, and end date.
3. Verify that results of the search contain only the records to be deleted.
4. Return to the Search tab. Click **Delete**. The List Logs page opens (Figure 4-92 on page 172).

4.13.5 Viewing package reports

To view a package report:

1. Select **Reports** → **Distribution Reports** → **Package Reports**. The Package Management page opens (Figure 4-96). From here, you can select one or more packages to be included in the report.
2. Select any package name or select multiple packages to view the Package Summary Report (Figure 4-96).

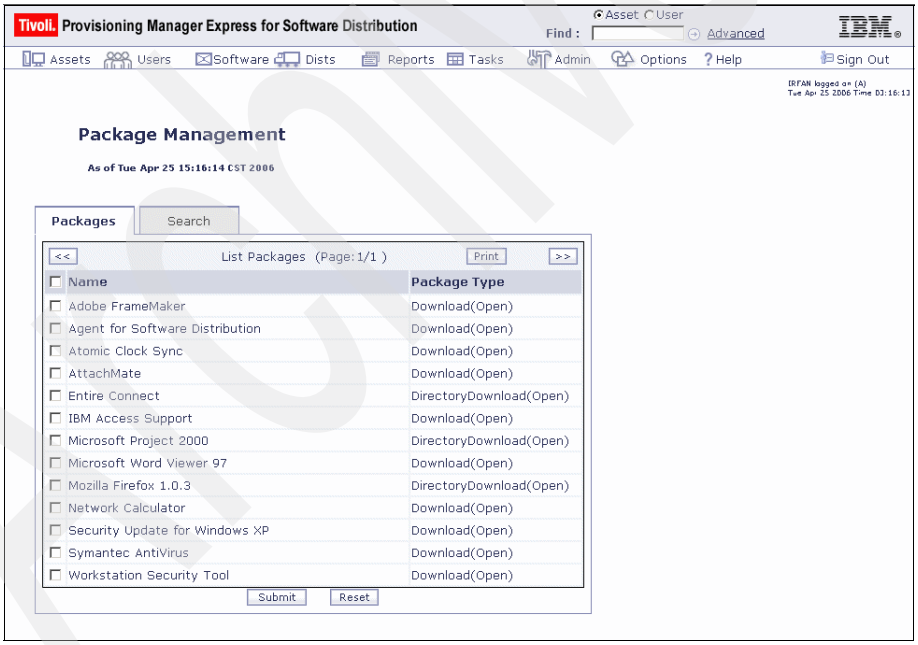


Figure 4-96 Package Management: List Packages

3. From the Package Summary Report, select Total Distributions, Success, or Failed to view detailed information for the package (Figure 4-97):
   - Total Distributions: Selecting the number under this column displays a list of all machines that have installed the associated package. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - Success: Selecting the number under this column displays a list of all machines that have successfully installed the associated package. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - Failed: Selecting the number under this column displays a list of all machines that have failed installing the associated package. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.

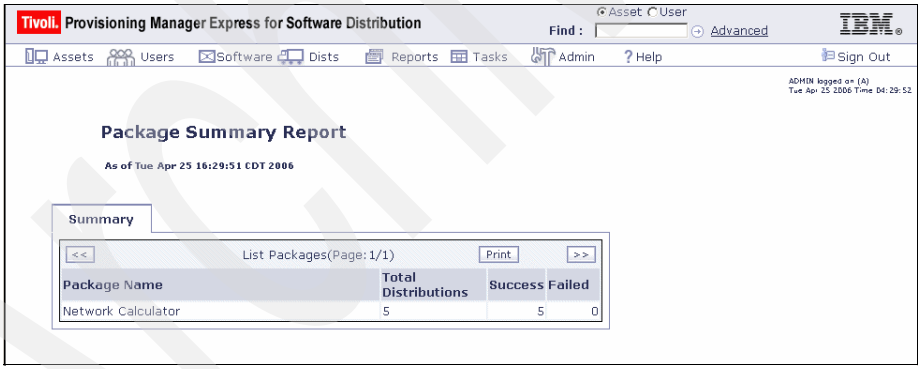


Figure 4-97 Package Summary Report

4.13.6 Searching for a package to report

To search for a package to report:

1. Select **Reports** → **Distribution Reports** → **Package Report**. The Package Management page opens, where you can select one or more packages to be included in the report (Figure 4-96 on page 176).

2. Click the **Search** tab to open the Search table (Figure 4-98).

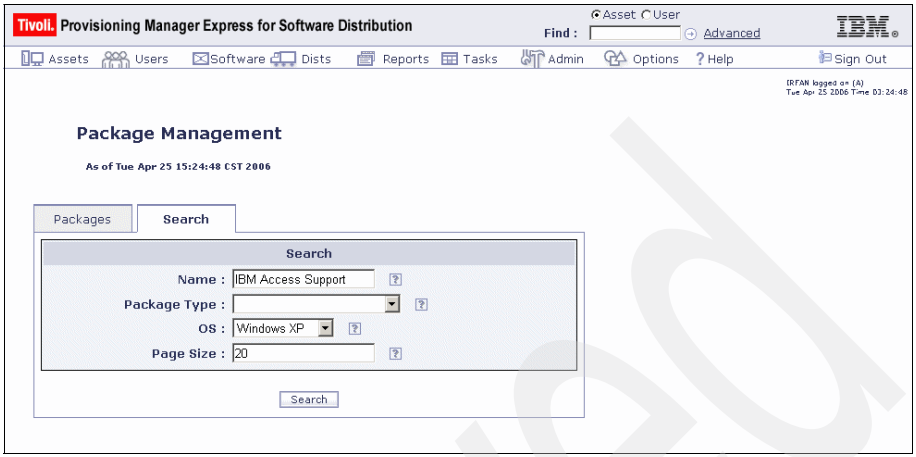


Figure 4-98 Package Management: Distribution report search

3. Perform a logical condition search by using the following fields:
   - In the package Name field, type the package name and set the logical condition for the search. The package Name field value is case-sensitive; therefore, type the exact name of the package or perform a wild card search using the percent symbol (%).
   - In the Package Type field, select **AGENT** for all agent pushes of software to the client machines, or **CLIENT** for all client pulls of software to the client machine, or **BOTH** for agent pushes and client pulls of software to the client machine.
   - In the OS field, select the operating system.

   In the Page Size field, enter the desired size of the search results to be displayed on each page or use the default of 20.

   Click **Search**.
4. The Package Management page opens (Figure 4-96 on page 176). Select a package name to view the report.

4.13.7 Viewing a machine report

To view a machine report:

1. Select **Reports** → **Distribution Reports** → **Machine Reports**. The Machine Management page opens, where you can select one or more machines to be included in the report (Figure 4-99 on page 179).

2. Select any machine name or select multiple machines to view the Machine Summary Report.

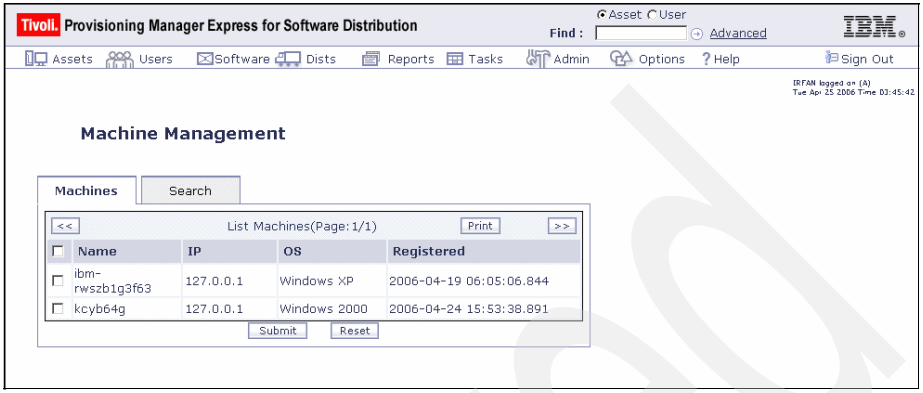


Figure 4-99 Machine Management: List Machines

3. From the Machine Summary Report, select Total Distributions, Success, or Failed to view detailed information for the machines (Figure 4-100 on page 180):
   - Total Distributions: Selecting the number under this column displays a list of all packages that have been installed on the associated machine. Selecting the time stamp for any package displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - Success: Selecting the number under this column displays a list of all packages that have been successfully installed on the associated machine. Selecting the time stamp for any package displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - Failed: Selecting the number under this column displays a list of all packages that have failed installing on the associated machine. Selecting the time stamp for any package displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.

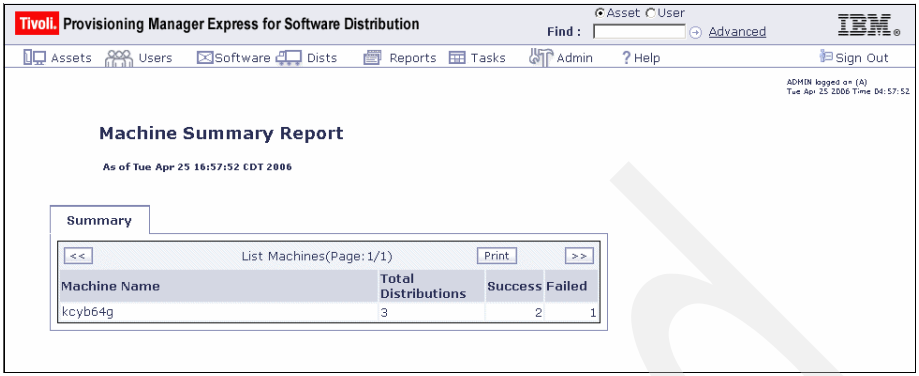


Figure 4-100 Machine Summary Report

4.13.8 Searching for a machine to report

To search for a machine to report:

1. Select **Reports** → **Distribution Reports** → **Machine Report**. The Machine Management page opens, where you can select one or more machines to be included in the report (Figure 4-99 on page 179).
2. Click the **Search** tab. The Search table opens.
3. Perform a logical condition search by using the following fields:
   - In the machine Name field, enter the machine name and set the logical condition for the search. The machine Name field value is case-sensitive; therefore, type the exact name of the machine or perform a wild card search using the percent symbol (%).
   - In the OS field, select the operating system.
   - In the Start Date field, type the date or select it from the calendar. Select the start time for the search.
   - In the End Date field, type the date or select it from the calendar. Select the end time for the search.

   In the Page Size field, enter the desired size of the search results to be displayed for each page or use the default of 20.

   Click **Search**.

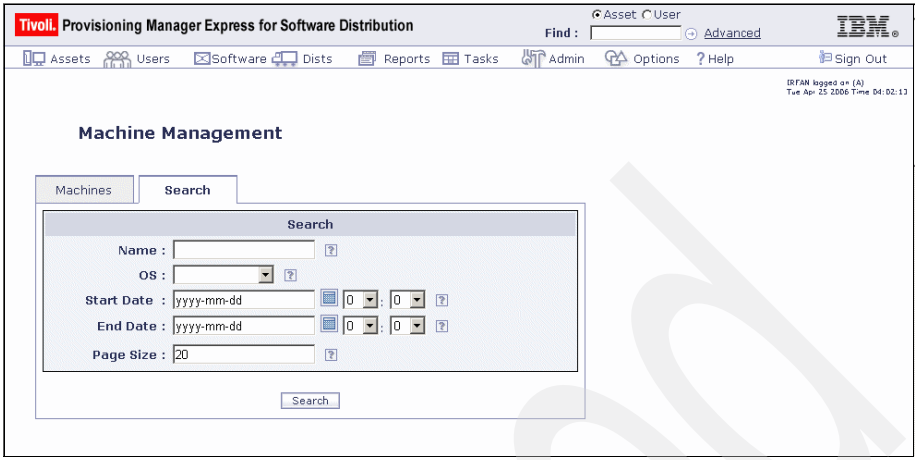


Figure 4-101 Machine Management: Machine Search

The Machine Management page opens, where you can select machines to view the reports (Figure 4-99 on page 179).

4.13.9 Viewing a schedule report

To view a schedule report:

1. Select **Reports** → **Distribution Reports** → **Schedule Reports**. The Schedule Summary Report page opens, where you can select one or more schedules to be included in the report (Figure 4-102).
2. Select any schedule name or select multiple schedules to view the Schedule Summary Report.

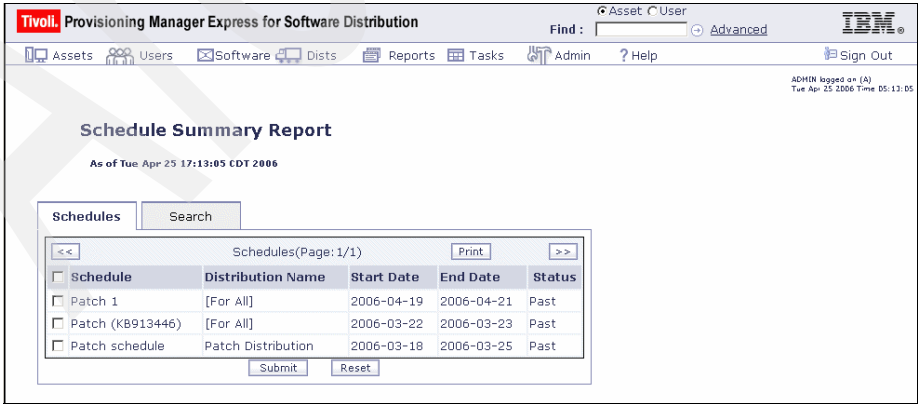


Figure 4-102 Schedule Summary Report

3. From Schedule Report Details page, select Total Machines, Success, Fail, In Process, No Data, or Already Installed for the schedule (Figure 4-103 on page 183):
   - Total Machines: Selecting the number under this column displays a list of all machines that were included in the distribution list for the schedule. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - Success: Selecting the number under this column displays a list of all machines that were successful in completing the package installation. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - Fail: Selecting the number under this column displays a list of all machines that failed while completing the package installation. The Status column includes the Software Distribution return code to be used for troubleshooting. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - In Process: Selecting the number under this column displays a list of all machines that had not returned a final completion code at the time of the report. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.
   - No Data: Selecting the number under this column displays a list of all machines that were included in the distribution list for the schedule, but have not checked in or logged any events for the distribution. The last machine registration date is displayed, and these machines should have the agent service verified to be running.
   - Already Installed: Selecting the number under this column displays a list of all machines that returned a status indicating the package was already installed by another process. The stamp file was found on the machine, and no logs are present to show that the package was installed by Software Distribution. Selecting the time stamp for any machine displays the log details of the package installation. In addition, selecting the view package log sequence displays the complete log sequence of the package installation for the selected machine.

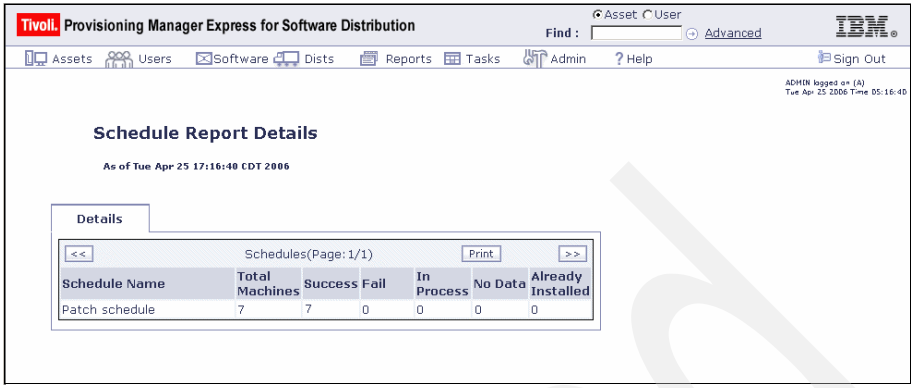


Figure 4-103 Schedule Report Details

4.13.10 Searching for a schedule to report

To search for a schedule to report:

1. Select **Reports** → **Distribution Reports** → **Schedule Report**. The Schedule Summary Report table opens, where you can select one or more schedules to be included in the report (Figure 4-102 on page 181).
2. Select the **Search** tab. The Search table opens (Figure 4-104 on page 184).
3. Perform a logical condition search by using the following fields:
   - In the Schedule Name field, enter the schedule name. The Schedule Name field value is case-sensitive; therefore, type the exact name of the schedule or perform a wild card search using the percent symbol (%).
   - In the Distribution Name field, select the distribution name for the search.
   - In the Start Date field, enter the date or select it from the calendar for the search.
   - In the End Date field, enter the date or select it from the calendar for the search.

   In the Page Size field, enter the desired size of the search results to be displayed for each page or use the default of 20.

   Click **Search**.

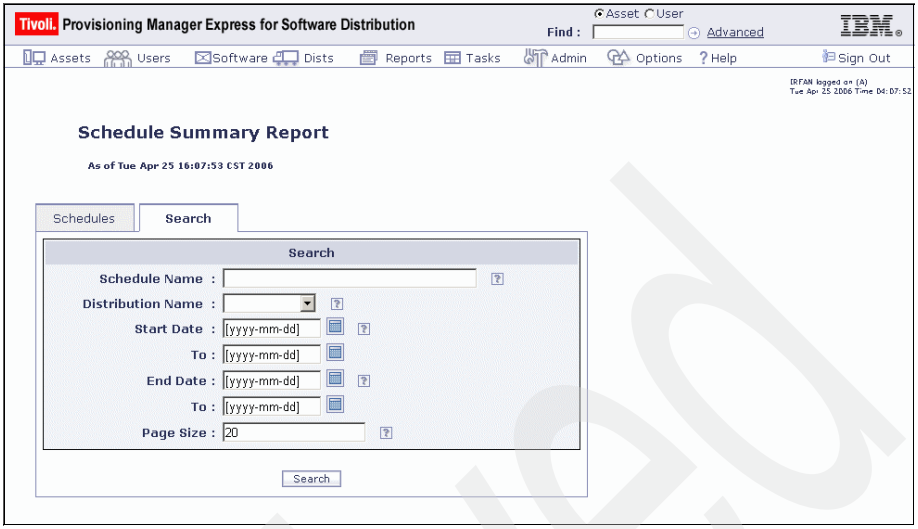


Figure 4-104 Schedule Summary Report Search

The Schedule Summary Report table opens, where you can select a schedule to view the report (Figure 4-102 on page 181).

4.14 Software Distribution Catalog

The Tivoli Provisioning Manager Express for Software Distribution Catalog is a Java program used on client machines to install software applications. The client catalog enables users to select and install software packages and bundles from a custom list of applications. The catalog can be installed and run as a stand-alone application, or it can be run as a Java Web Start applet.

The Software Distribution Agent service must be installed to provide full functionality. The agent service allows for packaged applications to be installed in a restricted user environment and also to be automatically installed as a part of a scheduled distribution.

4.14.1 Client catalog overview

The client catalog can run either from a Web browser as a Java Web Start applet, or if installed, as a stand-alone Java application. Figure 4-105 on page 185 illustrates the various functions of the Software Distribution Catalog.

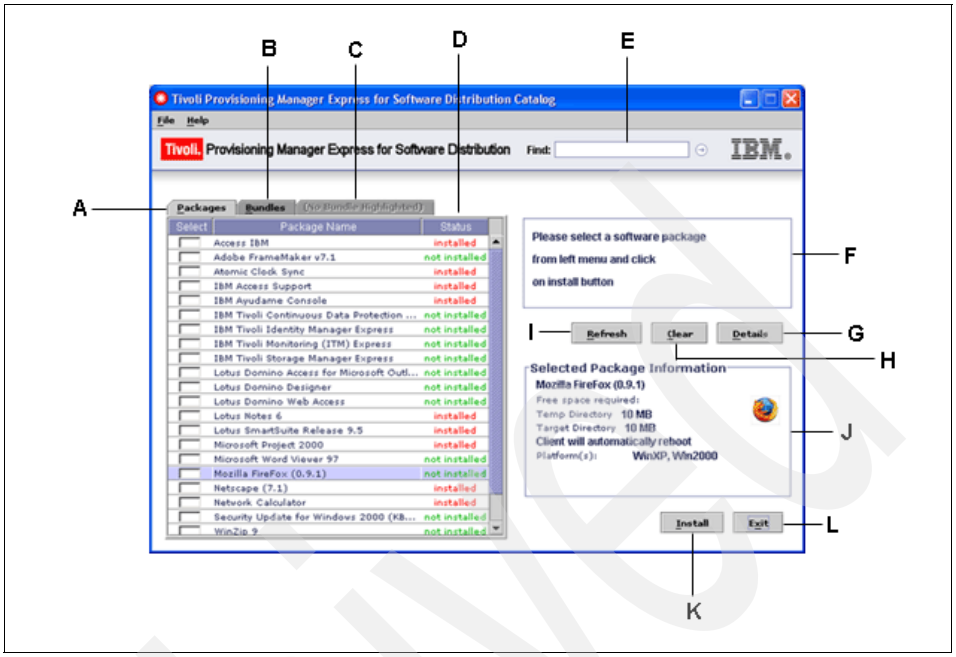


Figure 4-105 Software Distribution Catalog functions

The following list illustrates functions shown in Figure 4-105:

- Packages, A: A list of all the applications available for download. Highlighting a particular application displays the size of that package in MB. The operating systems the package supports are displayed in the Selected Package Information Pane, J. Selecting an application and selecting Install, K, begins the installation process. Selecting multiple packages is supported, and those packages are installed sequentially.
- Bundles, B: Displays packages that were “bundled” or grouped together to facilitate installation. Selecting a bundle causes a list packages that will be installed to be displayed in the next pane. Selecting a bundle and selecting Install, K, begins the installation process.
- Bundle Details, C: Displays a list of packages included in a bundle.
- Status, D: Displays whether a package is currently installed on the workstation.
- Search, E: To narrow the list of packages displayed, you can perform a search. The search is based on the package name. To display all the packages after a search, perform a search with standard search wildcard characters, such as an asterisk (*) or a question mark (?).

- Install in Progress, F: When a package is in the process of being installed, the Install in Progress area changes to an active state. When the installation completes, the area returns to an inactive state.
- Details, G: Selecting Details displays package-specific information or instructions.
- Clear, H: Clears all package selections.
- Refresh, I: Refreshes the catalog with the latest available packages and bundles.
- Selected Package Information, J: Displays platform and package size information for the selected package or bundle.
- Install, K: Starts the installation process for all of the selected packages or bundles.
- Exit, L: Closes the Tivoli Provisioning Manager Express for Software Distribution client catalog applet.

4.14.2 Accessing the catalog

This section describes how to access the catalog.

Starting the Software Distribution Catalog from a local system

After installing the Software Distribution Agent service, perform the following steps to access the catalog:

1. Launch the client catalog using the Start menu by selecting **Start** → **Programs** → **IBM Tivoli Provisioning Manager Express** → **Software Distribution Catalog**.

   The Software Distribution Catalog Login window shown in Figure 4-106 opens.

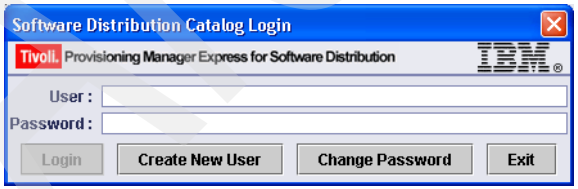


Figure 4-106 Software Distribution Catalog Login

2. Enter the user name and password (or create a new ID) and then click **Login**.

The Software Distribution Catalog shown in Figure 4-107 opens.

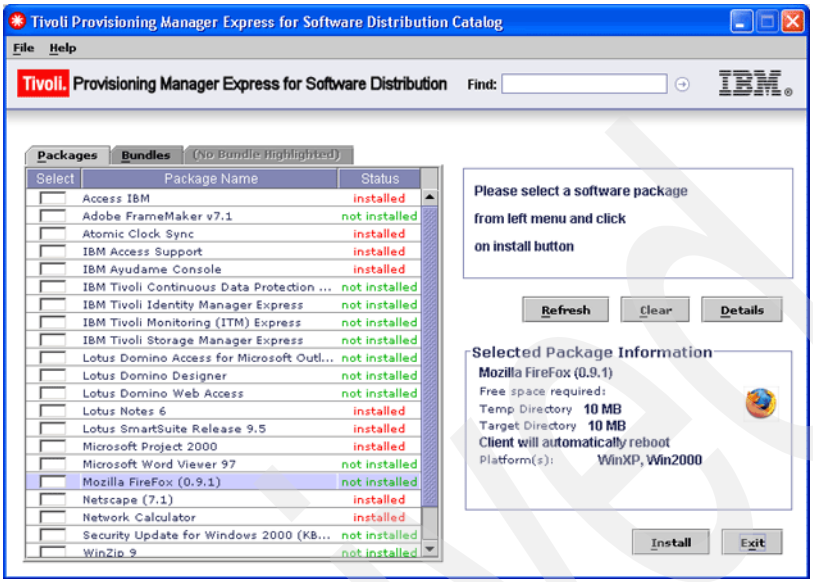


Figure 4-107 Software Distribution Catalog

Java Web Start applet

Use the following steps to access the client catalog using Java Web Start:

1. Open a Web browser, and in the Address bar, enter one of the following URLs:

   – `http://server_name/tpmx/`

     Where *server_name* is the name of the Tivoli Provisioning Manager Express for Software Distribution server.

   – `http://server_IP_address/tpmx/`

     Where *server_IP_address* is the IP address of the Tivoli Provisioning Manager Express for Software Distribution server.

   Press Enter.

2. Tivoli Provisioning Manager Express for Software Distribution Welcome page shown in Figure 4-3 on page 81 opens. If your system already has Java 1.4 or later installed and defined, the Access Catalog button will be displayed in the left column. If your system does not have Java installed, an error message is displayed with a link to download and install IBM Java 1.4.2.

   Click **Access Catalog**.

3. Click **Start** in the Tivoli Provisioning Manager Express for Software Distribution Security Warning window (Figure 4-108).

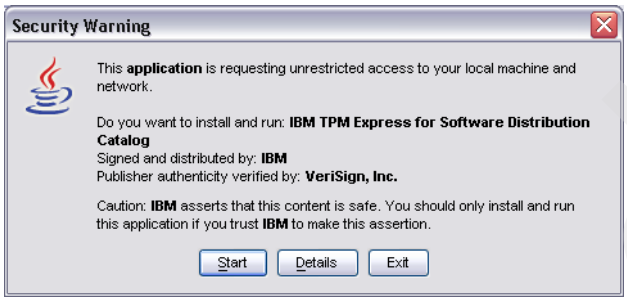


Figure 4-108 Security Warning

The Software Distribution Catalog Login window opens (Figure 4-106 on page 186).

4. Enter the user name and password (or create a new ID) and then click **Login**.

The Software Distribution Catalog opens (Figure 4-107 on page 187).

You might see a Tivoli Provisioning Manager Express for Software Distribution Desktop Integration window (Figure 4-109):

- Click **Yes** to add a Tivoli Provisioning Manager Express for Software Distribution Catalog icon on the desktop for easier access.
- Click **No** to decline adding the icon on your desktop.
- Click **Ask Later** to defer creation of the desktop icon to a later time.

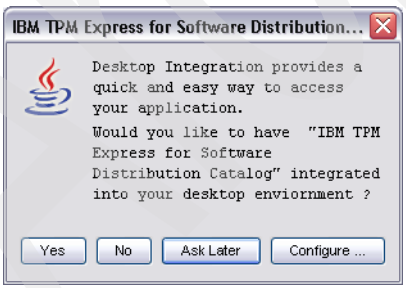


Figure 4-109 Desktop Integration

4.15 Installing a package using the client catalog

The client catalog displays all software packages that a particular user has authority to access. When the user selects a software package, the client catalog displays detailed data about the package. If the package selected meets the user's needs, the user clicks the Install button and the installation procedure starts automatically.

Use the following steps to install packages from the Software Distribution Catalog:

1. Launch the Tivoli Provisioning Manager Express for Software Distribution client catalog using the steps described in 4.14.2, “Accessing the catalog” on page 186.
2. You can designate packages as “mandatory.” Mandatory packages appear in a separate window (Figure 4-110).

   Select the **Install Now** drop-down menu to reveal if the installation can be deferred.

   Click **OK** after defining the appropriate action.

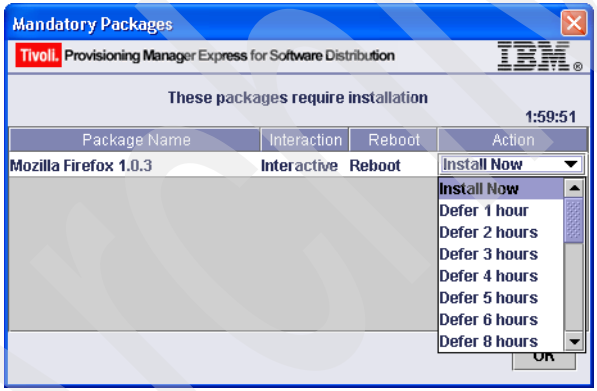


Figure 4-110 Mandatory Packages

   The Software Distribution Catalog opens (Figure 4-107 on page 187).

3. Select a package or bundle to install.

4. Click the **Details** button to view any package-specific information or instructions prior to the installation. The Package Details page opens (Figure 4-111).
5. Click **Dismiss** to close the Package Details window.

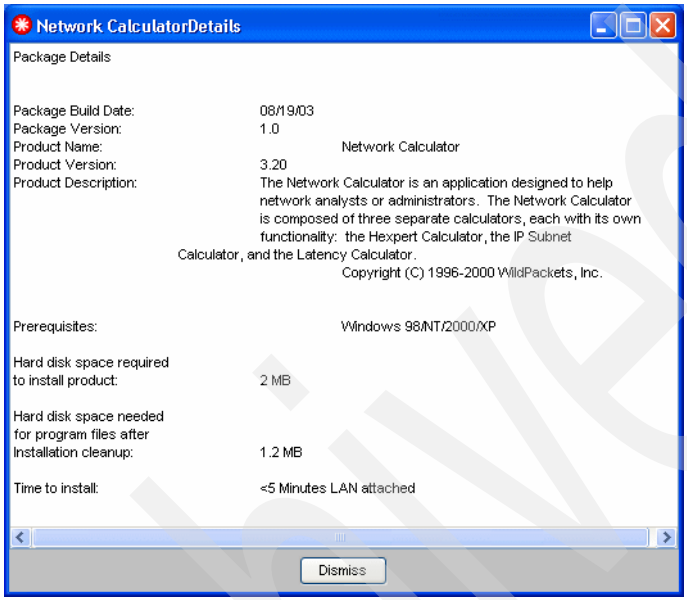


Figure 4-111 Package Details

6. When you are ready to install, click **Install** to start the installation process for the selected package. The Install In Progress area activates on the client applet (Figure 4-112).

Figure 4-112 Install In Progress

As part of the installation process, you might be prompted to enter purchase order information. See “Purchase orders” on page 191.

7. A download window opens as the package is transferred to your system for installation (Figure 4-113). The package installation process begins after a successful download of the package resource files.

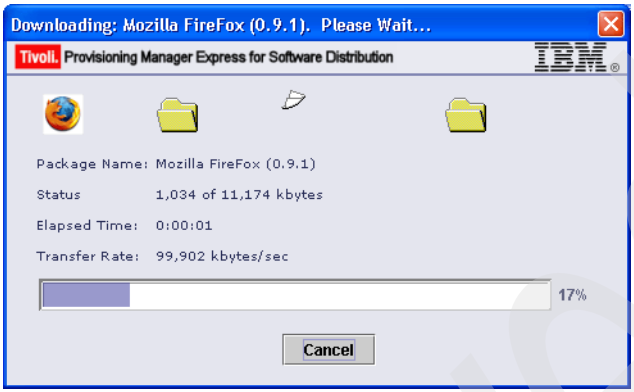


Figure 4-113 Package file download progress

8. After the installation completes, the Install In Progress area returns to its original state, as shown in Figure 4-114, and the status changes to installed.

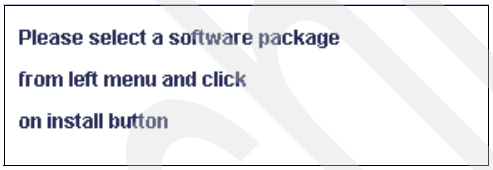


Figure 4-114 Install In Progress

9. Click **Exit** to close the Tivoli Provisioning Manager Express for Software Distribution client catalog.

Purchase orders

Certain packages require that a purchase order number is entered in order to allow the download. The purchase order number is used to verify that the user has the necessary approvals and licenses to install the application selected.

When an application requires a purchase order number, the Purchase Order Entry window opens (Figure 4-115).

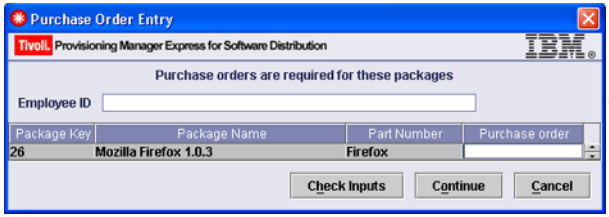


Figure 4-115 Purchase Order Entry

Note the following fields and actions on the Purchase Order Entry window:

- Employee ID: The company's assigned employee identification number for this software; this entry is case-sensitive.
- Purchase order: The purchase order number that was received for the package; this entry is case-sensitive. This entry is verified against the information contained in the Tivoli Provisioning Manager Express for Software Distribution server to ensure the user's eligibility to download.
- Check Inputs: Click to validate the information entered.
- Continue: Begins the installation process.
- Cancel: Ends the purchase order entry process and displays the purchase order cancel window shown in Figure 4-116. If multiple packages were selected and a particular package did not require a purchase order, installation of that package will now begin. Packages that required a purchase order number will not be installed.

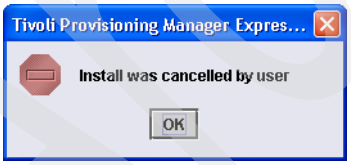


Figure 4-116 Cancel installation message

Click **OK** to return to the purchase order number window.

If the purchase order number or employee ID for a package was entered incorrectly, you receive the error message shown in Figure 4-117.

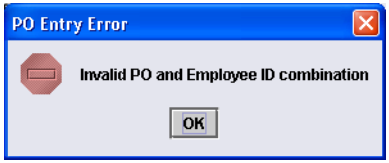


Figure 4-117 Invalid information

Click **OK** to return to the purchase order number window.

5

Using the Inventory component

IBM Tivoli Provisioning Manager Express for Inventory is a Java server application designed to meet the asset inventory and management needs of the small and medium-sized business (SMB). As mentioned in Chapter 1, “Introduction” on page 1, when you buy Tivoli Provisioning Manager Express for Software Distribution, you also get licenses for the Tivoli Provisioning Manager Express for Inventory product (also referred as the Inventory component) with no additional cost. But if you only need the Inventory functionality, you can buy Tivoli Provisioning Manager Express for Inventory as a separate product. The information presented in this chapter applies to both cases.

In this chapter, we describe the purpose of Tivoli Provisioning Manager Express for Inventory and explain how to use it. Note that we provide information about installing the Tivoli Provisioning Manager Express for Inventory server and agent components in 3.1, “Installing the server” on page 24 and 3.3, “Installing the agent” on page 48, respectively.

Note: When you install Tivoli Provisioning Manager Express for Software Distribution, the installation program also automatically installs Tivoli Provisioning Manager Express for Inventory. If you license only Tivoli Provisioning Manager Express for Inventory, you need to install it separately. Refer to *IBM Tivoli Provisioning Manager Express Installation Guide,* SC32-0175, for more information.

We discuss the following topics in this chapter:

- Introduction to Tivoli Provisioning Manager Express for Inventory
- Logging on to Tivoli Provisioning Manager Express for Inventory
- Inventory menu options
- Downloading and installing the Tivoli eGatherer agent
- Customization and advanced usage

5.1 Introduction to Tivoli Provisioning Manager Express for Inventory

Tivoli Provisioning Manager Express for Inventory is a small and flexible inventory management tool that gathers inventory information from a client system. It sends this information to the database, where it is stored. The information in the database can then be accessed with a Web browser.

Tivoli Provisioning Manager Express for Inventory is designed for small and medium business customers, who do not require a large enterprise inventory management solution (for example, IBM Tivoli, which typically supports 20,000-seat and greater environments). Tivoli Provisioning Manager Express for Inventory provides a cost-effective and resource-effective inventory management solution.

Tivoli Provisioning Manager Express for Inventory can benefit SMBs as follows:

- SMBs can use the product to leverage existing server assets. For example, Provisioning Manager Express for Inventory can be installed on an existing Web server.
- The process of collecting asset data can be automated and scheduled. A small client application that is required to gather the information will be installed during the registration of each client on the Provisioning Manager Express for Inventory server.

5.1.1 Tivoli Provisioning Manager Express for Inventory components

A complete Tivoli Provisioning Manager Express for Inventory solution has the following components:

- Microsoft Windows 2000 Server or Microsoft Server 2003
- SQL database with JDBC support
- Java Web server (Bobcat)
- IBM Tivoli Provisioning Manager Express server
- IBM Tivoli eGatherer program agent (Inventory client agent)

See 5.4, “IBM Tivoli eGatherer agent” on page 211 for a discussion of the IBM Tivoli eGatherer program agent.

5.1.2 Tivoli Provisioning Manager Express for Inventory requirements

Tivoli Provisioning Manager Express for Inventory is supported on Microsoft Windows 2000 Server or Windows Server 2003. The Web browser used to

access the Provisioning Manager Express for Inventory server must be Microsoft Internet Explorer 6.0 or later. The minimum hardware for a Provisioning Manager Express for Inventory server is 120 MB of hard drive space and 1.0 GB of RAM. This is in addition to any requirements needed for the Bobcat application server (a limited version of WebSphere Application Server - Express with no administrative interface and a function similar to Apache Tomcat) and alternative enterprise databases.

5.1.3 Tivoli Provisioning Manager Express for Inventory overview

Tivoli Provisioning Manager Express for Inventory receives client data from the IBM Tivoli eGatherer agent and stores the client data in a SQL database. It provides a user friendly Web interface for viewing, editing, and reporting the client data. These reports can be displayed in a Web browser, stored as an output file, or e-mailed.

Figure 5-1 provides an overview of the Tivoli Provisioning Manager Express for Inventory components.

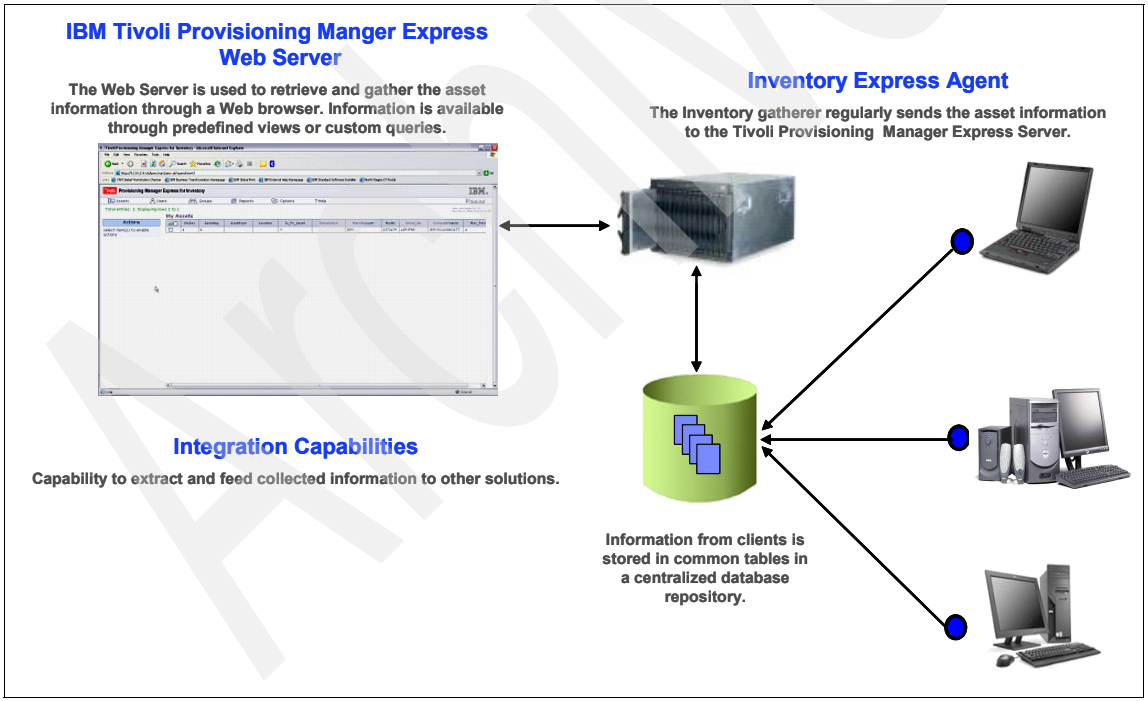


Figure 5-1 Tivoli Provisioning Manager Express for Inventory components

5.2 Logging on to Tivoli Provisioning Manager Express for Inventory

This section describes how to log on to Tivoli Provisioning Manager Express for Inventory for the first time and establish user accounts for subsequent logons.

5.2.1 Tivoli Provisioning Manager Express for Inventory user accounts

In 4.4, “Managing users” on page 90, we describe how you can manage users with Tivoli Provisioning Manager Express for Software Distribution. The Inventory component supports three types of user accounts:

- User

  This account type is limited to viewing data and running prespecified reports. User is the most limited account type. Most Provisioning Manager Express for Inventory accounts will be User.

- Superuser

  A Superuser can perform all User tasks, as well as certain advanced functions such as creating reports.

- Administrator

  An Administrator can perform all available tasks.

The installation of Tivoli Provisioning Manager Express automatically creates a Provisioning Manager Express Administrator user type named *admin* with a password of *password* (passwords are not case-sensitive). The first time an administrator user logs on, the Tivoli Provisioning Manager Express for Inventory Change User Details window opens. The administrator must enter a new password for the administrator user ID at this time to complete the first logon process.

5.2.2 The logon process

Tivoli Provisioning Manager Express for Inventory user accounts can be created by any user with account type Administrator. Also, any user can create a User account by logging on to Tivoli Provisioning Manager Express for Inventory the first time and registering.

To start the logon process, open Microsoft Internet Explorer 6.0 and enter the following address:

`http://servername/tpmx`

Where *servername* is the name of your IBM Tivoli Provisioning Manager Express server.

Notes:

- The Web-based administration interface is fully supported only with Microsoft Internet Explorer 6.0 or later.
- In the following window, you will see the name “Tivoli Provisioning Manager Express for Software Distribution,” because in our lab environment, we installed the Tivoli Provisioning Manager Express for Software Distribution, product, which is also bundled with the Inventory component. If you install the Tivoli Provisioning Manager Express for Inventory separately, you will see the “Tivoli Provisioning Manager Express for Inventory” name on the configuration windows.

The Tivoli Provisioning Manager Express for Software Distribution logon window opens (Figure 5-2). No matter what type of user logs on the Tivoli Provisioning Manager Express for Inventory server, or what machine from which the user is accessing Tivoli Provisioning Manager Express for Inventory, the logon window will be the same.

Figure 5-2 Tivoli Provisioning Manager for Software Distribution logon page

There are two possible paths that can be taken at this point. Which path depends on whether:

- The user is a new user and does not have a Tivoli Provisioning Manager Express for Inventory user account.
- The user already has a user account from a previous logon or one that was created by the Tivoli Provisioning Manager Express for Inventory Administrator.

If the user does not have a user account

Users can create their own user accounts from the initial page. If you do not have a user ID and password, simply enter your desired user ID, select **New user**, and then click **Submit**. This opens a new page similiar to the one shown in Figure 5-3.

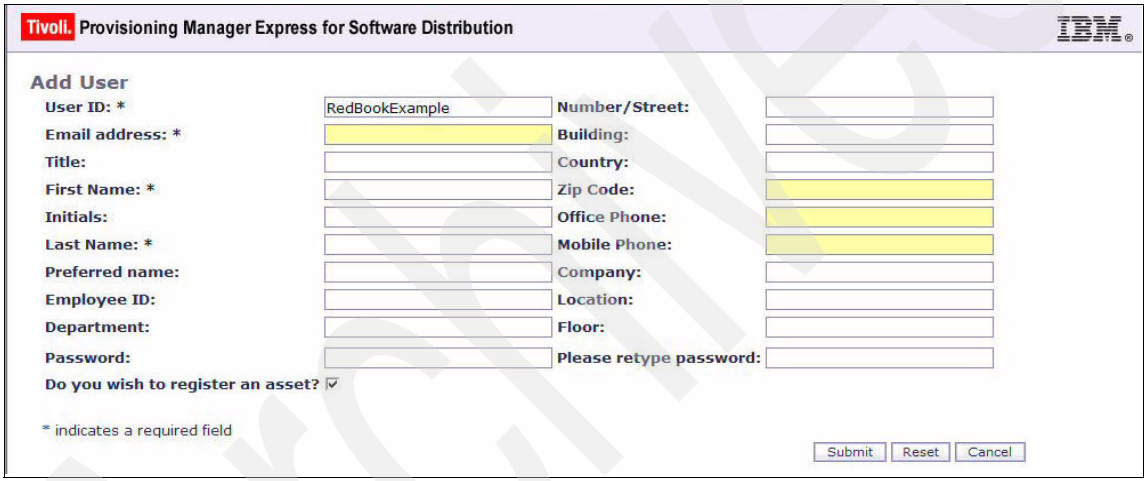


Figure 5-3 Tivoli Provisioning Manager for Software Distribution: New user initial logon

On this page, enter your demographic and location information. The fields marked with an asterisk (*) are required. Your account type will default to User. It takes Administrator intervention to change your account type.

Important: Fields marked with an asterisk (*) are required fields. The Provisioning Manager Express for Inventory Administrator can change the required fields at any time by modifying the installation.

Tip: It is important to define a policy for creating user IDs so that the IDs follow some rule for easier recognition. E-mail addresses are recommended and normally already established for other applications. This makes it easier for an administrator to identify users.

In the bottom-left corner of the window, there is a check box labeled “Do you wish to register an asset?” that is selected by default. If you click **Submit** when this option is selected**,** the computer registration page in the Provisioning Manager Express for Inventory opens.

If you clear this check box and click **Submit**, you create yourself as a new user in Provisioning Manager Express for Inventory and open the system page shown in Figure 5-4.

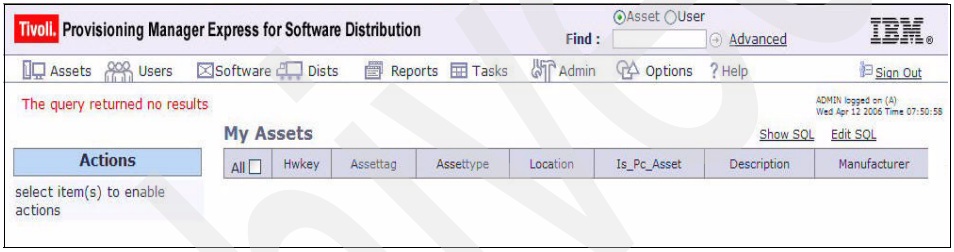


Figure 5-4 Tivoli Provisioning Manager for Software Distribution: System

If the user already has a user account

On the log-on page (Figure 5-2 on page 200), enter your Tivoli Provisioning Manager for Software Distribution user ID and password. Click **Submit** to go the system page shown in Figure 5-4.

5.3 Inventory menu options

This section provides an overview of the Inventory menu options and the primary menus from the menu bar:

- Assets
- Users
- Software
- Distributions
- Reports
- Tasks
- Admin
- Options
- Help

Figure 5-5 illustrates the Provisioning Manager Express for Inventory menu bar.

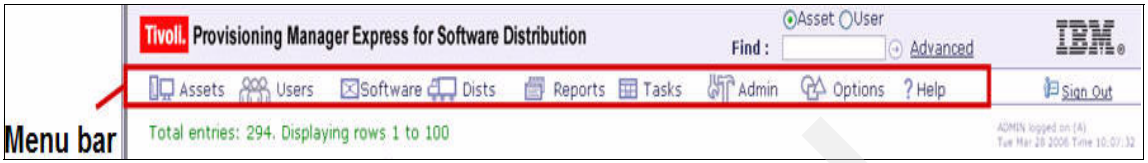


Figure 5-5 Tivoli Provisioning Manager Express for Software Distribution: Inventory menu bar

5.3.1 Assets

The far left menu bar option is *Assets*. Use this to display the primary menu of available asset actions including view, add, and edit asset information (see Figure 5-6 on page 204).

The following asset actions are available on the Assets primary menu:

- New
- My Assets
- All Assets
- Download Agent Installer
- Filter
- Information

The following actions shown in gray on the Assets primary menu are indicated as unavailable based on either our account type or the presence of retrieved/selected data on which to take action:

- Compare Selected
- Compare Revisions
- Edit Asset(s)
- Change Owner
- Delete
- Surplus
- Retire
- Return
- Show Detail As HTML
- Reprocess
- Show Detail As TEXT
- Download XML File
- Mark scan stale
- Mark scan fresh
- Remove ownership
- Edit My Asset(s)
- Transfer Out

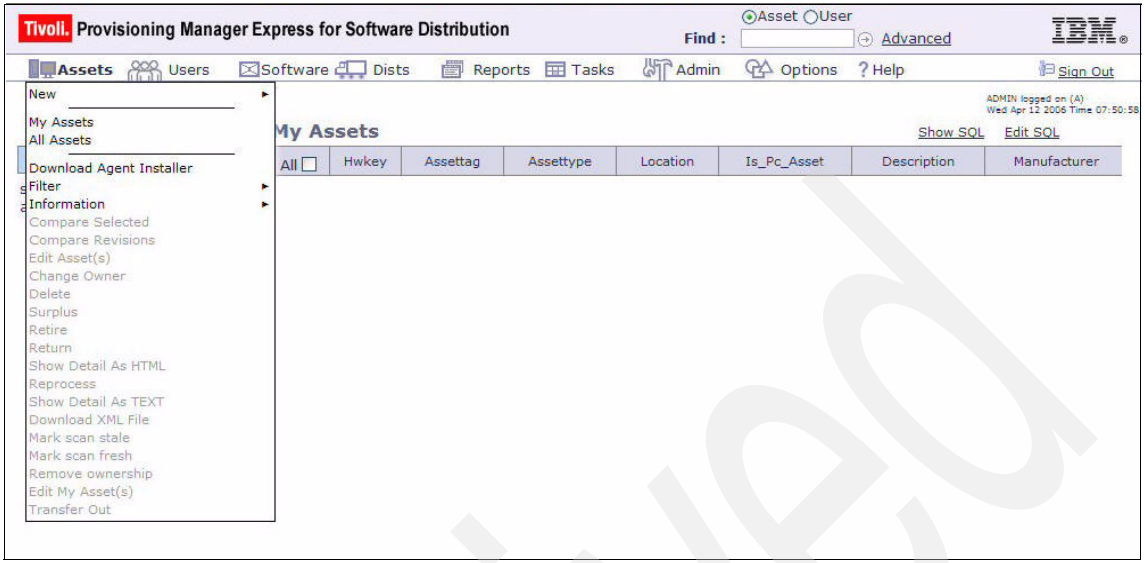


Figure 5-6 Assets primary menu

5.3.2 Users

The menu bar option second from the left is *Users*. Use this to display the menu of users and user groups (Figure 5-6).

The following user actions are available on the Users primary menu:

- Users
- Software Catalog Groups
- Inventory Groups

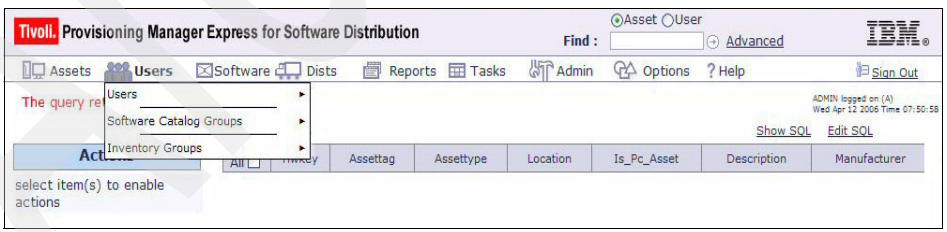


Figure 5-7 Users primary menu

5.3.3 Software

The menu bar option to the right of Users is *Software*. Use this to display the menu of software inventory actions (Figure 5-8).

The following software inventory actions are available on the Software primary menu:

- Packages
- Bundles
- Purchase
- Export/Import

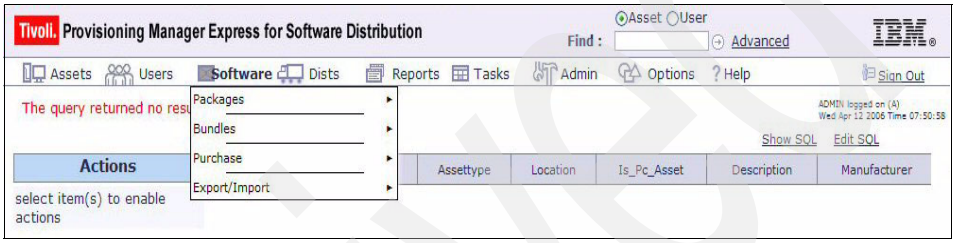


Figure 5-8 Software primary menu

5.3.4 Distributions

The menu bar option to the right of Software is *Distributions*. Use this to display the menu of list actions for equipment and software distributions (Figure 5-9).

The following actions are available on the Distributions primary menu:

- All Machines
- Evaluations
- Distribution Lists
- Schedules

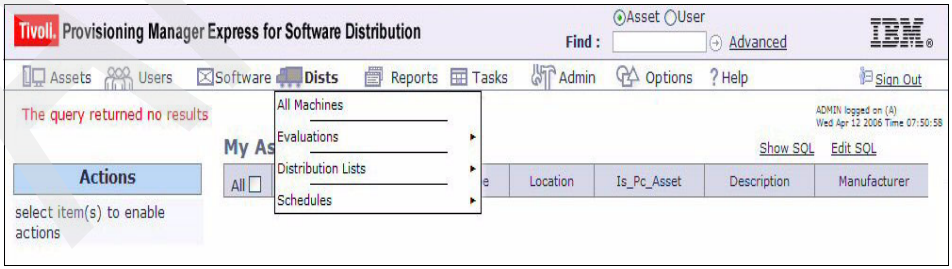


Figure 5-9 Distributions primary menu

5.3.5 Reports

The menu bar options to the right of Distributions is *Reports*. Use this to display the menu of available reports (Figure 5-10 on page 207).

Reports are a powerful way to search the Tivoli Provisioning Manager Express for Inventory database quickly for key information that is needed regularly. Tivoli Provisioning Manager Express for Inventory supports two types of reports:

- Common

  These predefined reports are provided with Tivoli Provisioning Manager Express. They are designed for generating general information from Tivoli Provisioning Manager Express for Inventory database entries on a regular basis.

- Custom

  These are modified reports designed to generate information specific to your business requirements.

The following options and reports are available from the Reports primary menu:

- Distribution Reports
- New
- All Reports
- All Custom Reports
- Save custom query
- All Assets
- Statistics
- Users
- Workstation Security
- Information
- Import Templates
- My Assets
- Groups
- Data Maintenance
- Tasks
- Software
- Logs
- Filescan Licenses
- Installed Software Licenses
- Show table data

Reports are typically only used by Administrator or Superuser accounts. However, users within a group can be given access to custom reports that they otherwise would not be able to access with their individual user accounts.

For more information about custom reports, see *IBM Tivoli Provisioning Manager Express for Inventory User's Guide*, SC32-0174, and the online help available from the Tivoli Provisioning Manager Express for Inventory pages.

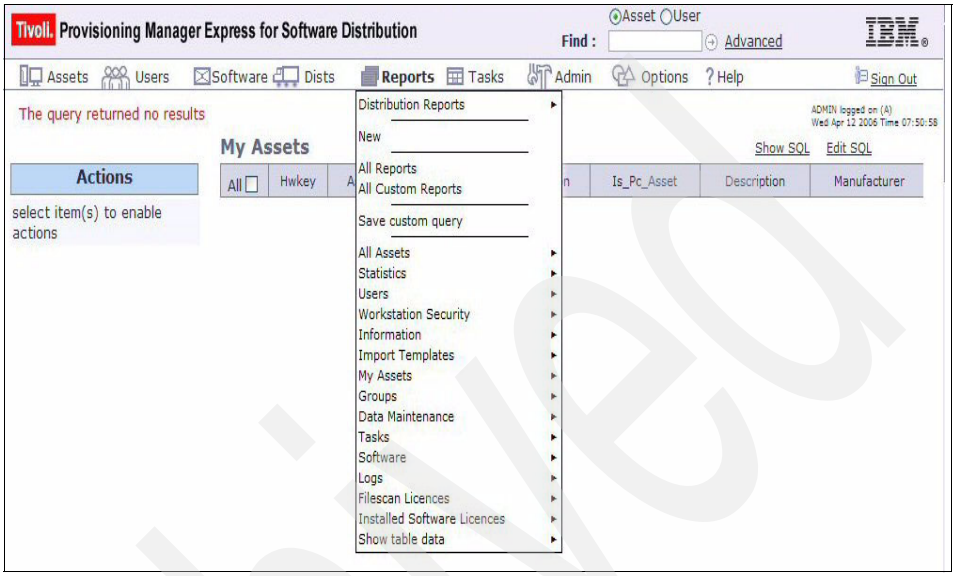


Figure 5-10 Reports primary menu

5.3.6 Tasks

The menu bar option to the right of Reports is *Tasks*. Use this to display the menu of available tasks and task management options (Figure 5-11 on page 208).

Tasks are background processes that are run on the Tivoli Provisioning Manager Express for Inventory server. An example of a task is an action that runs a specific report, attaches the report to an e-mail, and sends the report to a target user or group of users. Another example is a task that can automatically collect client computer asset data at specific intervals.

Tasks are typically performed by an administrator. They can be run once or be set to run automatically at set intervals. You can invoke them from the Tasks menu in the Tivoli Provisioning Manager Express for Inventory menu bar or by using the Task Scheduler. The Task Scheduler automatically checks for scheduled tasks.

The following tasks and task management options are available from the Tasks primary menu:

- Create New Task
- All Tasks
- Check Asset Security
- Email
- Process Event Logs
- Process Files
- Process Mail
- Process SWL
- Process XML
- Selected
- Email templates
- Event Log Reports
- Filescan License Reporting
- Installed Application License
- Reporting

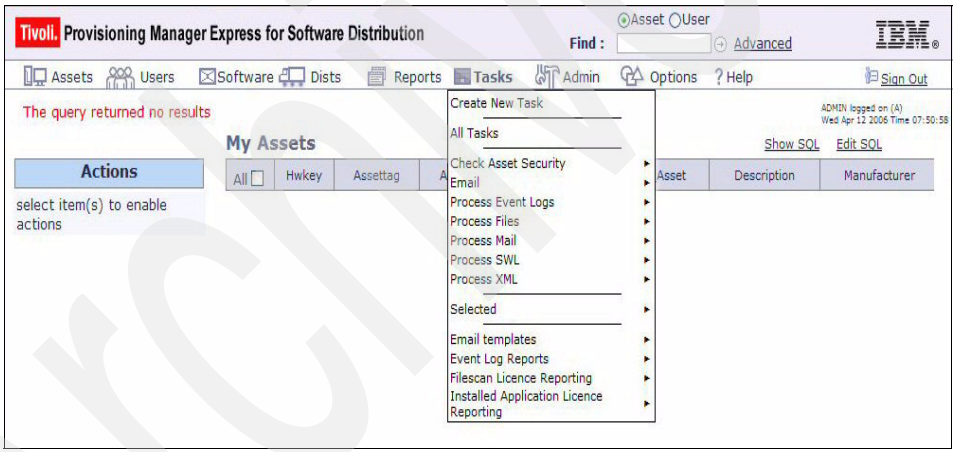


Figure 5-11 Tasks primary menu

5.3.7 Admin

The menu bar option to the right of Tasks is *Admin*. Use this to display the menu of activities available only to an Administrator account type user (Figure 5-12 on page 209).

The Admin feature of Tivoli Provisioning Manager Express for Inventory is used to perform administrative tasks. This feature is most often used to monitor the status of the system.

The Admin primary menu contains the following activities:

- Edit properties file
- View Application Log
- Send Application Log
- Upload File to Server
- Import Data
- View Current Server Status
- View Current Queue Status
- Stop and Requeue Background Tasks
- Interrupt Current Background Tasks
- Drain and save Background tasks
- Restore saved Background tasks
- Stop Task Scheduler
- Reset Task Scheduler
- Reset Application

You must be logged on to Tivoli Provisioning Manager Express for Inventory with an Administrator account type to use this feature. Users and Superusers will not see the Admin menu item when they log on to the Tivoli Provisioning Manager Express for Inventory server.

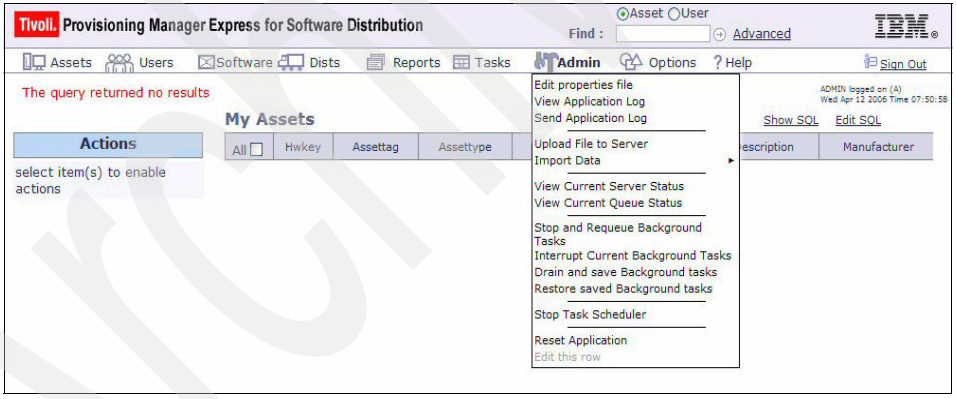


Figure 5-12 Admin primary menu

5.3.8 Options

The menu bar option to the right of Admin is *Options*. Use this to change the way a user will see the report that is selected (Figure 5-13 on page 210). For example, you can change the columns and tables that are included and how many lines are in a report.

The Options primary menu contains the following report formatting options:

- Set Current Query as Default
- Refresh Results
- Add Query Column
- Add Query Table
- Page Options
- Output

You must be logged on to Tivoli Provisioning Manager Express for Inventory with an Administrator account type to use this feature. Users and Superusers will not see the Options menu item when they log on to the Tivoli Provisioning Manager Express for Inventory server.

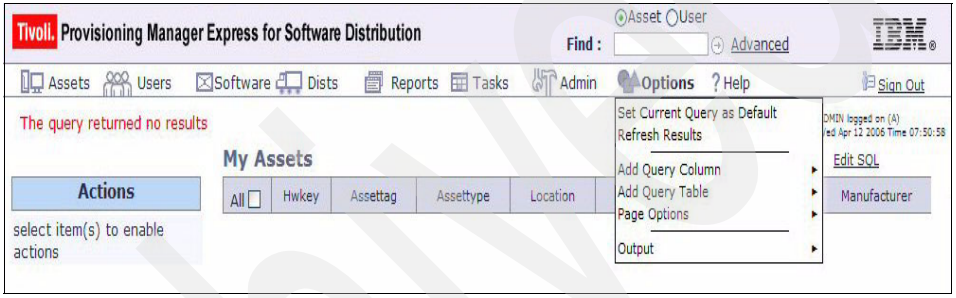


Figure 5-13 Options primary menu

5.3.9 Help

The far right option on the menu bar is *Help*. Use this to search and view the *IBM Tivoli Provisioning Manager Express for Inventory User's Guide*, SC32-0174 (Figure 5-14 on page 211).

The Help primary menu contains the help information sources:

- System Documentation
- On-Line Documentation
- About

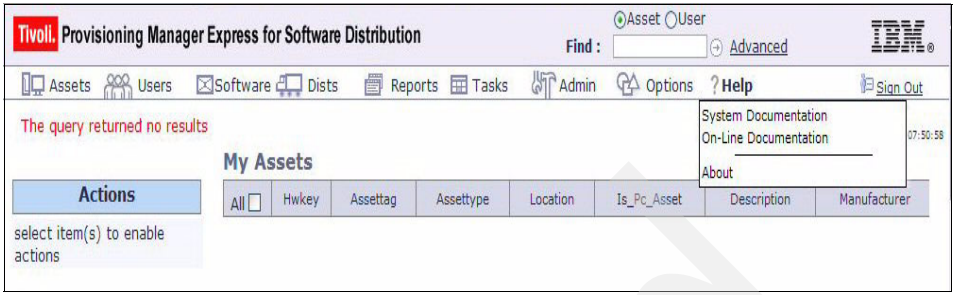


Figure 5-14 Help primary menu

5.3.10 Sign Out

When you are ready to stop your Tivoli Provisioning Manager Express for Inventory work, click the **Sign Out** icon to the right of the menu bar. Tivoli Provisioning Manager Express for Inventory closes your account activity for this session.

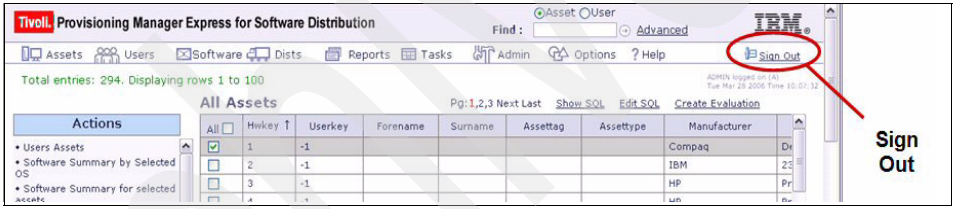


Figure 5-15 Sign Out option

5.4 IBM Tivoli eGatherer agent

The IBM Tivoli eGatherer is a technology developed at IBM Greenock that scans a computer system for information about installed hardware and software. It is designed to be small, fast and standalone. IBM Tivoli eGatherer program agent supports all 32-bit versions of Windows and Linux® on Intel x86 or compatible systems. The agent reads information from the Windows Registry, Windows Management Instrumentation (WMI) and the SMBIOS of a client computer. It runs on IA-64, EM64T and AMD64 in 32-bit compatibility mode or 32-bit emulation.

Note: The IBM Tivoli eGatherer program may be compatible with Microsoft Windows 98 and NT clients, however it is not normally supported in those environments. Support can be provided from IBM Global Services through an IT Specialist during-on site visits. These additional customization services are also available through IBM Global Services:

- Creation of new reports
- Customization of Web pages
- Integration with other solutions

After collecting the data from the computer, the IBM Tivoli eGatherer program creates a file with all the information in it. This file can include:

- Processor type and speed
- Memory size
- PCI devices
- Logical disk information
- Operating system information
- Device drivers
- Installed software
- Regional settings

IBM Tivoli eGatherer can also accommodates portable computers. The collected inventory information can be stored locally. When network connectivity is restored, the inventory information will be sent to the Tivoli Provisioning Manager Express for Inventory database.

Other operating systems may be supported through the customization of Provisioning Manager Express provided by an IBM Global Services IT Specialist during onsite visits. The following additional customization services are also available through IBM Global Services:

- Creation of new reports
- Customization of Web pages
- Integration with other solutions

Downloading and installing the Tivoli eGatherer agent

As mentioned in 3.3, “Installing the agent” on page 48, when you install the IBM Tivoli Provisioning Manager Express for Software Distribution agent, it also installs the Inventory client agent, also called the IBM Tivoli eGatherer agent.

If you are installing IBM Tivoli Provisioning Manager Express for Inventory as a stand-alone product, you need to install the agent separately. You can use the IBM Tivoli Provisioning Manager Express for Inventory GUI in order to download

and install permanently on the client computers. Client computers that have the client agent permanently installed can be prompted from the server to perform scheduled scans and other tasks. Information gathered during scheduled scans is uploaded to the database where the existing information is updated. To install the agent, you need the IP address or host name of the IBM Tivoli Provisioning Manager Express for Inventory server.

Perform the following steps to install the agent:

1. From the Tivoli Provisioning Manager Express for Inventory menu bar, select **Assets** → **Download Agent Installer**. The File Download window opens, as shown in Figure 5-16.
2. Click **Run**.

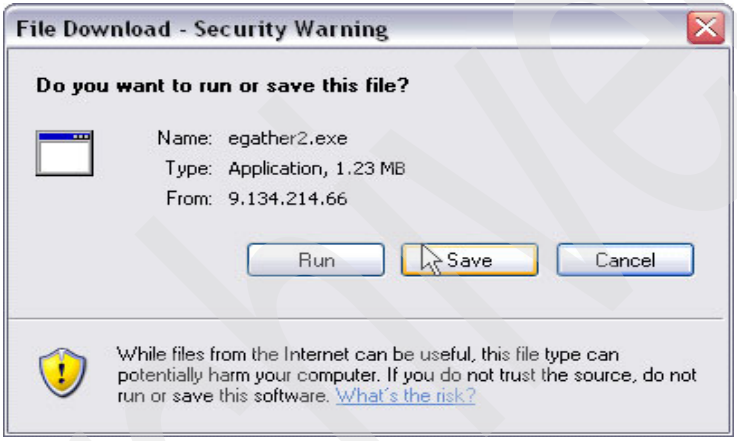


Figure 5-16 File Download

3. Select **Typical Install**.
4. Enter the IP address or host name of your Tivoli Provisioning Manager Express for Inventory server.
5. Click **Install**, and then **Finish**.

Alternatively, you can first save the file to a location on your system and then install it.

After the agent is installed, open a MS-DOS® window, navigate to where the eGather2.exe file is located and type **`egather2`**. This scans the current machine and creates an EG2 file. You can upload this file through the window shown in Figure 5-17 on page 214.

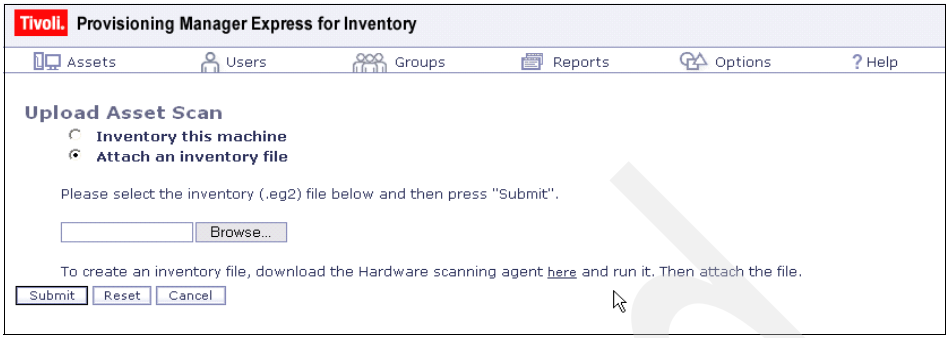


Figure 5-17 Adding additional assets

5.5 Customization and advanced usage

This section provides an outline of some typical enterprise scenarios that might use Tivoli Provisioning Manager Express for Inventory.

5.5.1 Enterprise environment considerations

Enterprise environments present two different scenarios:

- Asset information must be gathered automatically. An agent is installed as a service with Microsoft Windows operating systems. This agent is able to run under a locked-down desktop. Using Tivoli Provisioning Manager Express for Inventory, this agent can send the asset information, scheduled on a weekly or monthly basis, to the Tivoli Provisioning Manager Express for Inventory server. To match the user information with an inventoried asset, the asset information can be configured to work with the directory services used by the enterprise.
- Enterprise environments often have thousands of assets, which results in a very large, detailed report. Locating a single asset in such a report can be very difficult. Using Provisioning Manager Express, these report views can be customized to meet the needs of the user. For example, a report can be created that lists all assets assigned to a specific department or it can be structured based on a company, unit, division, team, users, and computers.

5.5.2 Deployment scenarios

This section describes several deployment scenarios for Tivoli Provisioning Manager Express. To fully implement these scenarios, however, you must import additional information from existing enterprise systems and databases.

The scenarios discussed in this section have the following requirements:

- Unattended activation of the probe (without user interventions or windows)

  If the Tivoli Provisioning Manager Express for Inventory client is packaged with a Software Distribution tool and distributed to all clients, it must be configured to suppress user dialog boxes during installation. It should also be configured to send inventory data back to Tivoli Provisioning Manager Express for Inventory using the client Call Home feature.

- Collection of user identification such as e-mail address, Windows account, or user logon

  Enterprise users must be populated in the Tivoli Provisioning Manager Express for Inventory database so that it is not necessary to create accounts manually.

  Tip: We recommend that you use the enterprise e-mail addresses to identify users. The e-mail address should be used to populate the User ID field in Tivoli Provisioning Manager Express for Inventory. This field must be globally unique.

- Previous population of Tivoli Provisioning Manager Express for Inventory properties file fields where applicable

  Data relevant to Tivoli Provisioning Manager Express for Inventory contained in the import source data should populate the corresponding Tivoli Provisioning Manager Express for Inventory fields. For example, if a user's e-mail address is entered in the User ID field, the same information should populate the Email Address field. The user's first name should go into the First field and the user's last name should go into the Last field. All fields that have been designated as required fields need to be populated to ensure that each user entry is valid.

- Agent/probe behavior

  When first scanned, the probe executable should stay in the client hard disk (optional/IT configurable).

  The Call Home feature should check for a newer version on the server. If one is found, it should be downloaded if necessary and used.

Inventory only

In this case, the enterprise is only using Tivoli Provisioning Manager Express for Inventory to maintain a hardware inventory, software inventory, or both. The user demographics are not to be collected or correlated to the inventory information. This is the most limited use of Tivoli Provisioning Manager Express for Inventory

in an enterprise. There is no need for advanced user demographics. All clients are owned by the default user.

Full function (manual user setup)

In this case, each enterprise user logs on to the Tivoli Provisioning Manager Express for Inventory site, creates a user account, and uploads their assets. The user then enters demographic information.

The benefit of this scenario is that the Tivoli Provisioning Manager Express for Inventory database does not need to be populated by outside data. The Provisioning Manager Express database is populated with relevant location, department, and asset type data as users create accounts and enter assets.

The disadvantage of this approach is that the consistency of entries and completeness of the asset inventory depends on the individual user. Some of these issues can be minimized by customizing the input windows and providing the end users with instructions to follow.

Tip: By default, Tivoli Provisioning Manager Express for Inventory does not have prepopulated values for fields in the user and asset demographic forms. A manual workaround is to have the administrator populate these fields before by selecting **Other** and entering the values that the company wants to be available to the end users. All values added in this manner become available to all users immediately after the asset is added to the database.

Full function (automated user setup)

In this scenario, there is no user input. The user account is created based on a full e-mail address selected from user identification provided by the inventory scan described in “Inventory only” on page 215. The Tivoli Provisioning Manager Express for Inventory password will expire and is reset by user after the initial logon process. An e-mail prompting a user to update user information is sent by Tivoli Provisioning Manager Express for Inventory after the initial scan has been completed to ensure that each user’s asset information is current.

The benefit of this scenario is the consistency of initial data. It guarantees that all users in the source data will be added to the Tivoli Provisioning Manager Express for Inventory database.

The disadvantage of this solution is that an outside source such as LDAP or an HR record system must be able to provide the required data to Tivoli Provisioning Manager Express for Inventory in a usable format.

6

Case study: XYX Corporation

This chapter describes a sample client environment and provides an overview of the client's situation and how they can use IBM Tivoli Provisioning Manager Express for Software Distribution to reduce their workload and provide a more efficient method for managing their hardware and software assets.

We discuss the following topics:

- Small company implementation: XYZ Corporation
- Expanding the server infrastructure

6.1 Small company implementation: XYZ Corporation

In the following sections, we introduce you the XYZ Corporation, a fictitious small company. We show you the how this company used IBM Tivoli Provisioning Manager Express for Software Distribution to solve their current change management problem. We also review the options and considerations involved in expanding this Software Distribution solution into a larger environment.

6.1.1 Problem

Milton, the systems administrator for XYZ Corporation, a growing software company, is no longer able to keep up with the increasing demands to maintain the operating system and software applications on the now 500 plus computers.

When XYZ Corporation started, it was easy for Milton's small IT staff to go from machine to machine and complete individual application installations and operating system patches, but this is not longer possible. Sometimes, it is hard to determine where the systems are, let alone what patches have been applied, or which applications the end-user needs to have installed. Something needs to be done.

Note: XYZ Corporation is a fictitious company and all similarities with real company names are coincidental.

6.1.2 Solution

With Tivoli Provisioning Manager Express for Software Distribution, most of XYZ Corporation's problems can be solved. The built-in inventory data collection can provide the IT staff with a complete list of all the systems in the company, along with who the owner is and what software has been installed or needs to be installed. The ability to provide a custom application catalog for end users to browse and select their own software for installation removes the burden from the IT staff having to individually access each machine. Urgent applications or patches can also be pushed out to all the necessary systems automatically, without any end-user interaction.

6.1.3 Installing the product

The first thing Milton needs to do is identify a server with appropriate resources (recommend 1 GB memory, 2 GB processor, 2 GB free disk space) on which Tivoli Provisioning Manager Express for Software Distribution will be installed. Refer to 3.1.1, “Installation requirements” on page 24 for additional information.

The product installation is a very easy to follow, single application installations process. The setup of IBM WebSphere Application Server, the Cloudscape database, and the Software Distribution application itself is completed automatically after collecting some basic system configuration information. The installation panels collect basic environment security information, such as user ID password requirements and workstation security requirements. These settings will be used for system configuration and can also be modified after the system is running.

Refer to Chapter 3, “Installation and configuration” on page 23 for additional information.

6.1.4 Collecting data

After the Software Distribution application installation has been verified as complete (refer to 3.1.4, “Testing the installation” on page 40 for additional details), there are several pieces of information that need to be collected.

It is important to understand the structural layout of the infrastructure, the population of the machines, and the applications requirements for the end-user demographics. Architectural decisions will be made base on this environmental information. Refer to 4.1, “Software Distribution setup overview” on page 72 for additional information.

At XYZ Corporation, there has never been a standardized approach for computer system rollouts or operating system imaging. The systems have been purchased and rolled out in parallel with growth and expansion of the company. Therefore, there is a mixed population of client machines, mostly Microsoft Windows XP, with some Windows 2000, and a small number of Windows Server 2003 operating systems.

All of the end users have complete authority over their systems, and their user IDs are running with administrative rights. Although mapped drives and file shares are used to share information, no central file share repository exists. The employee population has varying needs for different software applications based on their job classifications: Sales, Marketing, Development, Finance.

Although Microsoft Active Directory has been reviewed for implementation, the infrastructure at XYZ Corporation has always had a one-to-one relationship between end users and computers and does not require users to access multiple systems. Therefore, no Active Directory or LDAP environments have been established.

6.1.5 Setting up the environment

Based on the information collected, Milton will set up Software Distribution to use primarily the Download and DirectoryDownload type packages. The Secure feature is not required because the end users have administrative authority. Refer to 4.6.8, “Software package definition information” on page 121 for additional information.

The software application package repository will reside on the Software Distribution server. It will be helpful to organize the repository structure on the server by the operating system on which the application is supported. Refer to 4.5.1, “Creating a folder structure for the software library” on page 95 for additional information.

Milton has already spent significant time modifying many of the application installation routines to automate the installation process. These same routines can be reused as the source resources for the Software Distribution packages and can be copied into their source directory on the server based on the organizational structure previously established.

Because there is no Active Directory environment to take advantage of, user IDs will have to be individually established, and the group association will be performed by Milton as the Software Distribution administrator.

The four categories of job classifications can be taken advantage of by creating groups to support the user community structure. Refer to 4.3, “Managing groups” on page 83 for additional information.

Milton can spend the time to establish the individual user IDs, but it might be easier to allow the end users to create their own IDs when they install the Software Distribution Agent. We provide more details about the user ID options when we discuss deploying the agent.

6.1.6 Populating the package library

Now it is time for Milton to explore the Software Distribution packages and create definitions for all of the existing applications that were copied onto the server. Refer to 4.6, “Managing software packages and bundles” on page 104 for additional information.

Any of the application installation source files that are a single executable file can be defined as the Download package type. This package type covers many applications that require a minimum amount of custom modifications, or that have already been wrapped in a third-party package scripting tool, such as InstallShield, Wise InstallManager, and Microsoft Software Installer (MSI).

Any command line installation parameters can be specified, along with any automation response files, such as MST or ISS files associated with Microsoft Software Installer or InstallShield packages.

Milton can also take advantage of the Details and Icons features. The Details file provides an easy location to display good to know information about the application to the end users, for example, readmes, product overviews, and additional requirements. The Icons file is a GIF image displayed in the Software Distribution Catalog that provides end users with a visual reference for easier product recognition.

Some of Milton's applications consist of multiple files that use scripted (CMD or BAT) installation sequences. These are ideal for taking advantage of the DirectoryDownload package type. The source directory for all of the resources is identified in the package definition. That directory and all of its contents will be transferred to the target machine as a part of the Software Distribution installation process. Refer to 4.6.8, “Software package definition information” on page 121 for additional information.

Use third-party packaging applications to address the most complex applications. Many times, application installation requirements are so unique to the environment or require many detailed configuration steps that the only way to achieve all of the requirements is to use these packaging tools. Tivoli Provisioning Manager Express for Software Distribution is not tied to any one packaging convention and is versatile enough to support all of the standard packaging tools on the market. Refer to 4.5.2, “Creating a software package” on page 96 for additional information.

After Milton completes packaging the software applications, it is time to make them available to the Software Distribution Catalog. Because all the users are automatically associated with the Default group, it is a good practice to make a set of applications universally available. When a new user logs on, the Software Distribution Catalog will be populated with packages assigned only to the Default group until Milton is able to assign the user to their custom group. The packages that are unique to each of the custom groups established earlier need to be associated to the appropriate group for availability. Refer to 4.3.5, “Adding or deleting (modifying) a software package or bundle for a specific group” on page 88 for additional information.

6.1.7 Deploying the agent

In a new environment, there is no standard way to deploy the Software Distribution Agent. At some point, each of the machines will have to be touched (by the administrator or user) in order to complete the installation. A common method of deployment uses an e-mail link to provide the end-user population

with information about the Software Distribution product and about the steps they are required to complete the installation.

Sample e-mail to initiate the process

In the e-mail, Milton advises the users how to:

- Access the server
- Get the information about installing the agent
- Use the access catalog after modifying the default agent package
- Supply server information
- If using Active Directory:
  - Log in
  - Register the client machine
- If not using Active Directory:
  - Create a user ID (use e-mail address)
  - Use department/location/company values (set required, isic.prop) to gather group information

If Active Directory was integrated with Tivoli Provisioning Manager Express for Software Distribution, all Active Directory groups can be imported with a single request, and the user's group membership would be imported when the user ID and password is authenticated. Because Milton took the time to associate the packages to their association group when creating the package definitions, the Software Distribution Catalog would be ready to go.

Without Active Directory, user membership to the custom groups becomes one of the administrator's responsibilities. Because XYZ Corporation did not implement Active Directory, there are two options when establishing user IDs:

- The users can be created by the administrator. This allows for more control in establishing the Software Distribution Catalog group membership, but is time-consuming and does not associate the asset inventory record to the user.
- The alternative is to allow each end user to create their own user ID and perform their machine registration at the same time they install the Software Distribution Agent. This option both creates the user ID and associates the asset inventory record to the user, but it does not associate the user to any of the custom groups.

After all of the user IDs have been created, their custom group membership needs to be established. Process methodologies can be used to provide Milton the means to quickly associate the user IDs with the appropriate group. By

instructing the users to indicate their primary job role in the Dept, Location, or Company field, Milton can use an Inventory report to display the user IDs based on this criteria and easily make group assignments.

6.1.8 Using Inventory data

Inventory data has many uses, containing complete information about all aspects of the hardware and software of every machine in the database. These reports can be used for many purposes, from troubleshooting problems and monitoring event logs of other application servers to tracking machine locations and retiring older hardware. Many “canned” reports are available, and endless custom reports can be created from the wealth of data.

By establishing the workstation security compliance requirements during installation, Milton is now able to run a Detailed Security Compliance Report. This report displays security information about all the machines that have completed inventory scans and provides Milton with a method to enforce basic security practices across the entire XYZ Corporation user community.

6.1.9 Automating distributions

Now it is time for Milton to use the data that has been collected to begin creating automatic scheduled distributions. Milton uses distribution lists to define which machines will participate in a scheduled distribution. Refer to 4.10, “Managing distributions” on page 152 for additional information.

There are three ways to populate a distribution list:

- Use the Selectable Targets tab and the Search Targets tab to manually and individually select a specific machine or list of machines to be included in the distribution list.
- Use evaluations to create a set of logical conditions from the list of database categories. When allocated to a distribution list, the resulting list of machines will populate the Dynamic Targets list. Refer to 4.9, “Managing evaluations” on page 147 for additional information.
- Use Inventory reports to create the SQL query used by the evaluation. The evaluation can then be allocated to a distribution list, and the resulting list of machines will populate the Dynamic Targets list. Refer to 4.9.1, “Adding an evaluation” on page 148 for additional information.

Tip: We recommend that the maximum number of machines allocated to a distribution list be limited to 250-300 machines. Higher numbers might cause client connections to be rejected by the application server. Rejected machines will attempt the scheduled distribution at the next offset check-in time.

After the distribution list is established, Milton is able to define a schedule for automated distributions to occur. Schedules are the method of distribution Milton will use to automatically push out any urgent software applications, data files, or operating system patches. The schedule definition contains information to define a window of time each day, over a period of days, in which to make a specific package or bundle available for automated distribution. When the Software Distribution Agent checks in (hourly), it determines if it is a part of the distribution list and if the package has or has not already been installed. The package installation will be completed as necessary. Refer to 4.12, “Managing schedules” on page 164 for additional information.

6.1.10 Reporting

Last of all, Milton now needs to be able to verify the results of the installations. Because he will no longer be going from machine to machine to perform installations, he needs to have the ability to view the installation events. From troubleshooting, to distribution health, to the tracking of a scheduled distribution, reports are available to view the sequence of events during each installation.

Machine reports are most often used for troubleshooting user problems. Event logs can be accessed based on machine name, displaying the total number of distributions and the number of successes and failures. By selecting any number, the logs can drill down to the list of packages, any individual results, and finally to the entire installation sequence for that package. Refer to 4.13.7, “Viewing a machine report” on page 178 for additional information.

Package reports are most often used to review the distribution health for any particular package. Event logs can be accessed based on package name, displaying the total number of distributions and the number of successes and failures. By selecting any number, the logs can drill down to the list of machines, any individual results, and finally to the entire installation sequence for that package. Refer to 4.13.5, “Viewing package reports” on page 176 for additional information.

Schedule reports are most often used to track the results of a scheduled distribution. Event logs can be accessed based on schedule name, displaying the total number of machines in the distribution list and the number of successes, failures, in progress, no data, and already installed. By selecting any number, the logs can drill down to the list of machines, any individual results, and finally to the entire installation sequence for that package. Refer to 4.13.9, “Viewing a schedule report” on page 181 for additional information.

6.1.11 Summary

For Milton, his workload is now more manageable. Gone are the inefficient days of running from one system to another, trying to keep track of application CDs and system requirements. Instead, he is able to focus on the details and requirements of application installations and create automated packages to perform the task. He is able to accurately retrieve, display, and use the detailed array of inventory data to locate company assets, track aging machine hardware, review security compliance, and perform urgent automated distributions. His work day includes time for keeping up with operating system patch releases and creating packages to test patches before deploying.

6.2 Expanding the server infrastructure

Now that XYZ Corporation has deployed Tivoli Provisioning Manager Express for Software Distribution, Milton has to prepare for any future company expansion and plan for his Software Distribution process to be able to handle a larger population of machines.

There comes a point when, due to expansion in physical location or just the number of machines, it becomes necessary to add additional servers to the Tivoli Provisioning Manager Express for Software Distribution infrastructure.

There are several ways for the expansion to be handled by Software Distribution, depending on the resources that are available and the characteristics of the target machine population. We discuss adding additional support servers (file share and HTTP) and adding additional Software Distribution servers.

6.2.1 File share servers

The Logical Drive package types can offload some of the server bandwidth requirements by taking advantage of file share servers to provide the package resources to the target machines.

Considerations

Review the following items to determine if this option should be implemented.

- User credentials

  Shared drives are often set up with user ID and password access requirements. These user credentials need to be established on the client machine.

A single, global user ID and password can be shared by all client systems by defining it to the sdc.conf file and deploying it through the auto-update process. Refer to “Process for using auto-update for sdc.conf” on page 68.

- Restricted users

  In order to support restricted user environments, additional setup requirements are necessary on the file share server. Anonymous users must be enabled for the Software Distribution Agent to be able to access the package resources from the file share. Refer to 4.5.3, “Providing security for LogicalDrive(Secure) packages on the file share server” on page 100.

- UNC paths versus mapped drive paths

  UNC paths are preferred for the installation file path. UNC paths provide the Software Distribution client or agent the appropriate server information.

  Mapped drive paths for the installation file do not include the file share server information. Mapped drives must already be mapped to the client machine for Software Distribution to complete a package installation.

- Multiple file share servers

  Define the packages using UNC path names for the installation files resources. Using mapped drives in the installation file path does not allow Software Distribution to interpret a variable to use multiple file share servers.

  A variable will be used in place of the server name in the installation file path:

  ```
  \\%FILESERVER%\win32\pkgdir\pkgexe.exe
  ```

  This can be an environment variable or it can also be defined in the sdclocal.conf file.

Limitations

Consider the following potential issues when using file share servers:

- Security settings require anonymous user

  The Software Distribution Agent requires anonymous user access to be established for the file share. The Software Distribution Agent is required for both push distributions and secure package installations in a restricted user environment.

  If an anonymous user setting for the file share server is an issue, this might not be an option for you.

- Firewalls

  Most firewalls do not allow file share servers to pass through. If the firewall does not leave open access for the file share, this option cannot be supported.

Deployment

Add variable definitions to the sdclocal.conf file when establishing file share servers and using Logical Drive package types.

In order to add the file share server variable to the sdclocal.conf file, type:

```
echo FILESERVER=<http server> >> c: \Program
Files\IBM\Tivoli\Agent\logs\sdclocal.conf
```

Then, use auto-stampfile mode.

6.2.2 Download servers

The Download URL property used by the target machine allows the primary Software Distribution server to communicate with the target clients and track any distributions, but offloads the workload of transferring the package resource files to another HTTP server.

Considerations

Review the following items to determine if this option should be implemented:

- Additional HTTP server resource

  An additional HTTP server will have to be made available to house the package resources in the same paths, as defined on the Software Distribution server.

- Maintaining package resources

  The package resources will have to be manually maintained on the additional HTTP server or servers.

- Limitations

  When using additional HTTP download servers, consider that the Software Distribution server will still have communication bandwidth requirements and might reject connections when too many target clients connect simultaneously.

Deployment

Perform the following actions when establishing HTTP servers to use the DownloadURL property:

1. Establish the HTTP server.

   Install and set up any standard HTTP server.

2. Package the resource data replication.

Refer to 7.4.2, “Using Robocopy to synchronize resources on multiple servers” on page 235 for more information.

3. Add variable definitions to sdclocal.conf.

   Each Software Distribution client system that uses the alternate HTTP server requires that the DownloadURL server property is added to the configuration file. To add the variable definitions to the sdclocal.conf file, type:

   ```
   echo com.ibm.sdc.client.downloadURL=<http server> >> c: \Program
   Files\IBM\Tivoli\Agent\logs\sdclocal.conf
   ```

   Then, use auto-stampfile mode.

6.2.3 Software Distribution servers

Additional Software Distribution servers might also needed to be set up an environment spread across different physical locations. Depending on the network connectivity and target populations, a new server might need to be established for each region to be serviced.

Considerations

Review the following items to determine if this option should be implemented:

- Multiple Software Distribution servers are most effective when the target machines are deployed in physically separate regions. Users will only access the Software Distribution server in their local region.
- The most efficient implementation is to deploy new users and machines into each of the regional servers.

Limitations

When using additional Software Distribution servers, note the potential issue that, currently, there is no process for database replication.

By default each of the Software Distribution servers is independent and does not share database information. There is no built-in process to transfer any database information from the source server.

Deployment

Perform the following actions when establishing additional Software Distribution servers:

1. Install the new server.

   Refer to 3.1, “Installing the server” on page 24 for more information.

2. Import existing package definitions.

Refer to 4.5.7, “Importing files from another server” on page 104 for more information.

3. Package the resource data replication.

   Refer to 7.4.2, “Using Robocopy to synchronize resources on multiple servers” on page 235 for more information.

7

Troubleshooting

In this chapter, we discuss the information available for resolving problems with the application server, with a distribution, or with the client service. We include the following topics:

- Server log information
- Server database information
- Client log information
- Hints and tips

7.1 Server log information

Software Distribution server activity logging is provided by WebSphere Application Server - Express.

Logging information is available in the following location:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\
PROFILES\TPMXPROFILE\logs\TPMXSERVER

The primary locations for application message logging are:

- SystemErr.log
- SystemOut.log

Log4j provides additional logging information:

- Levels of logging, in order, are ALL, DEBUG, INFO, WARN, ERROR, FATAL, OFF.
- See the PatternLayout class (org.apache.log4j) for pattern information.

The level of logging is set and can be modified in the following file:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\
TPMXAPP.ear\tpmx.war\WEB-INF\classes\log4j.properties

The following attributes are the default settings:

- Default Log Level: INFO
- Default Location: c:\tpmx.log

7.2 Server database information

IBM Cloudscape V 5.1 is provided with WebSphere Application Server - Express.

The database location is:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\db\tpmxdb

The database structure (the tpmxdb directory and all of its subcontents) can be copied without stopping the service. The copied tpmxdb structure is useful to replicate problems from one server environment onto another and might be used by support.

It is also a good practice to periodically make a backup copy of the tpmxdb directory structure.

The database logging level is controlled in:

C:\Program Files\IBM\Tivoli\TPMX\SERVER\
TPMXAPP.ear\tpmx.war\cloudscape\db2j.properties

Set the following property:

```
db2j.stream.error.logSeverityLevel=0
```

Database access is restricted to a single user and cannot be accessed while the service is running.

After stopping the service or creating a copy, the Cloudscape database can be accessed using:

- IJ (command line interface to Cloudscape)
- CVIEW (CloudView, graphical interface to Cloudscape)

7.3 Client log information

All startup and distribution event logs are recorded on the client system in the following directory:

C:\Program Files\IBM\Tivoli\TPMX\Agent\logs

The Software Distribution Agent startup, registration, and schedule distribution events are stored in sdcagent.txt.

The Software Distribution Catalog distribution events are stored in sdcclient.txt.

All distribution event logs are sent to the server and can be accessed by selecting **Reports** → **Distribution Reports** → **View Logs**.

7.3.1 Failing return codes

The codes shown in Table 7-1 might be returned by Software Distribution during a failed installation.

Table 7-1 Failing return codes

Code	Description	Code	Description
1	Bundle aborted by package failure.	15	Software Distribution Agent did not respond.
2	Free space check.	16	Installation cancelled by user.
3	Prerequisite check.	17	Could not create temp space.

Code	Description	Code	Description
4	Installation cancelled by user.	18	Error in install program.
5	Reboot cancelled by user.	19	Error retrieving directory.
6	Post-install non-zero return code.	20	Download file did not exist.
7	Post-install cancelled by user.	21	Stamp file not found after installation.
8	Download exception.	22	Stamp file could not be created.
9	File not found on server.	23	After reboot, stamp file check cancelled.
10	Operating system not supported.	24	After reboot, stamp file check skipped.
11	Pre-install exception.	25	Exception downloading installation file.
12	Exception in installation program.	26	Exception downloading response file.
13	Download incomplete.	27	Checkfree script download error.
14	Download cancelled by user.		

7.3.2 Enabling client debug mode

You can set the Software Distribution Agent to use debug mode to increase the amount of event logging. To enable debugging for the agent service, perform the following steps:

1. On the client system, using a text editor (such as Notepad) open C:\Program Files\IBM\Tivoli\TPMX\Agent\sdc.conf.
2. Add the entry:

   ```
   com.ibm.sdc.agent.debug=true
   ```

3. Restart the service IBM Tivoli Provisioning Manager Express - Software Distribution Agent.

7.4 Hints and tips

In this section, we provide some hints and tips for troubleshooting IBM Tivoli Provisioning Manager Express for Software Distribution.

7.4.1 Using Remote Desktop connections

With the growing use of Remote Desktop sessions, the following information might help avoid a problem situation. Packages that require interaction with the desktop cannot be installed while logged into a system using Remote Desktop connections. The interactive display will, by default, be routed to the primary system console session. It will appear as a package hang.

7.4.2 Using Robocopy to synchronize resources on multiple servers

Robocopy is a 32-bit command line tool used for file replication. This tool helps maintain identical copies of a directory structure on a single computer or in separate network locations. Robocopy is included in the Microsoft Windows Resource Kit.

By using the free Microsoft utility Robocopy, a solution for package resource replication can be provided for Software Distribution servers. Using Robocopy can save administrative time and ensure that packages are available across all Software Distribution distribution points in an environment. Robocopy is available in the Windows Server 2003 administration kit.

For more information about file replication using Robocopy, refer to Appendix C, “Package replication tips” on page 251.

A

Sample folder structure

In this appendix, we discuss theTivoli Provisioning Manager Express for Software Distribution server folder structure and show a sample file structure.

This appendix provides three folder structures as samples that you can use as a reference to set up a folder structure on your Tivoli Provisioning Manager Express for Software Distribution server. All software packages, detail files, and icon files stored on the Tivoli Provisioning Manager Express for Software Distribution server must be stored under the document root, which by default is C:\ProgramFiles\IBM\Tivoli\TPMX\SERVER\TPMXAPP.ear\tpmx.war. The document root on your server might be different depending on the options you chose during installation. All sample folder structures in this appendix show the default document root.

The folder structure you implement is entirely up to you as long as it resides under the document root. You can organize your files by operating system, type of application, or any other characteristic that meets the needs of your organization.

Figure A-1 on page 238 is a sample that shows the use of separate folders for software packages, detail files, and icon files.

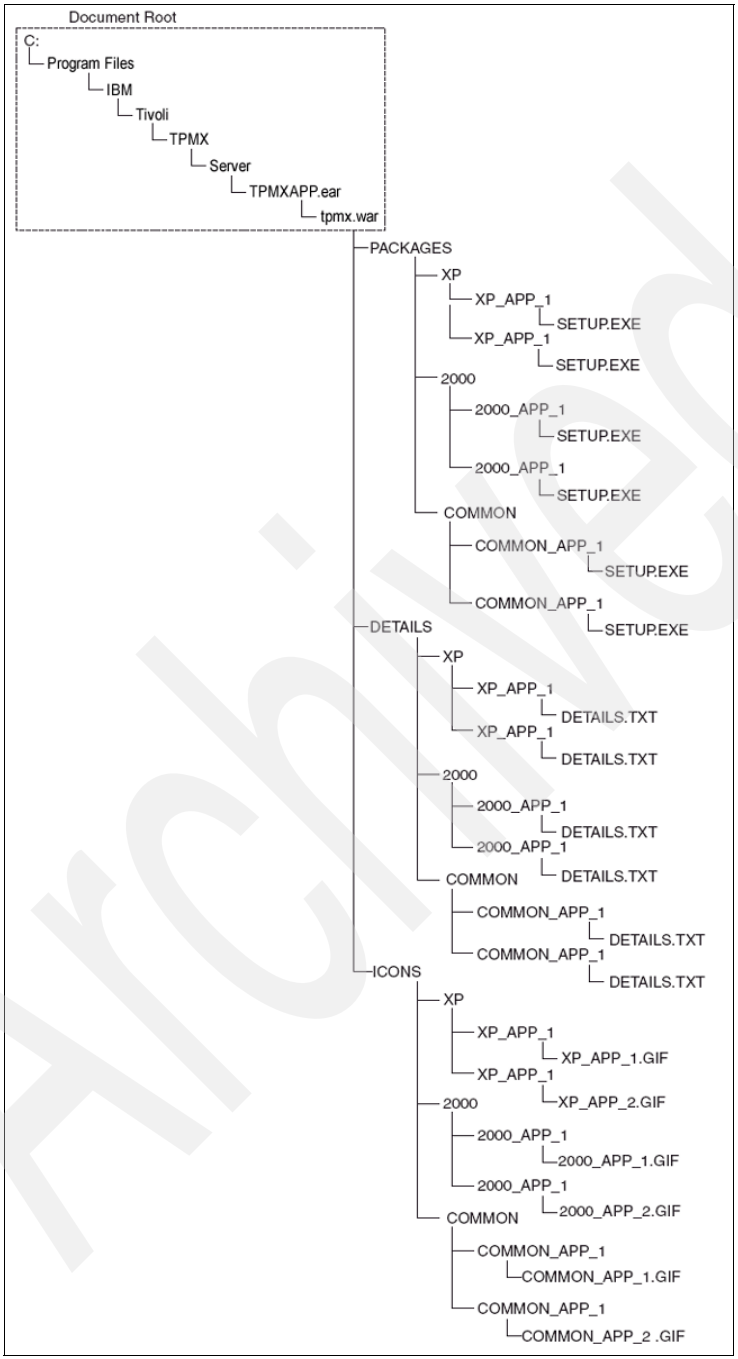


Figure A-1 Separate folders for software packages

Figure A-2 is a sample that shows a folder for each software package, each containing the package file, the details file, and the icon file.

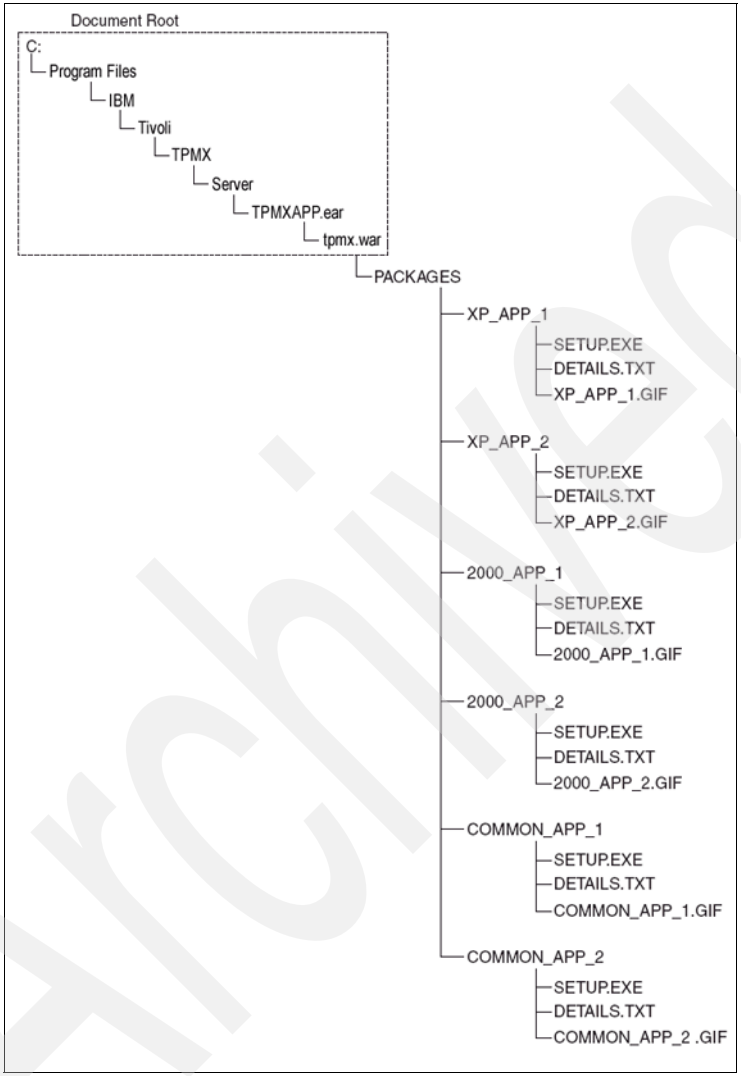


Figure A-2 Single folder for software packages

Figure A-3 shows separate folders for each operating system, under which are folders for each software package to be used for that operating system. The COMMON folder shown in this example contains folders for software packages that can be installed on either Microsoft Windows XP or Windows 2000.

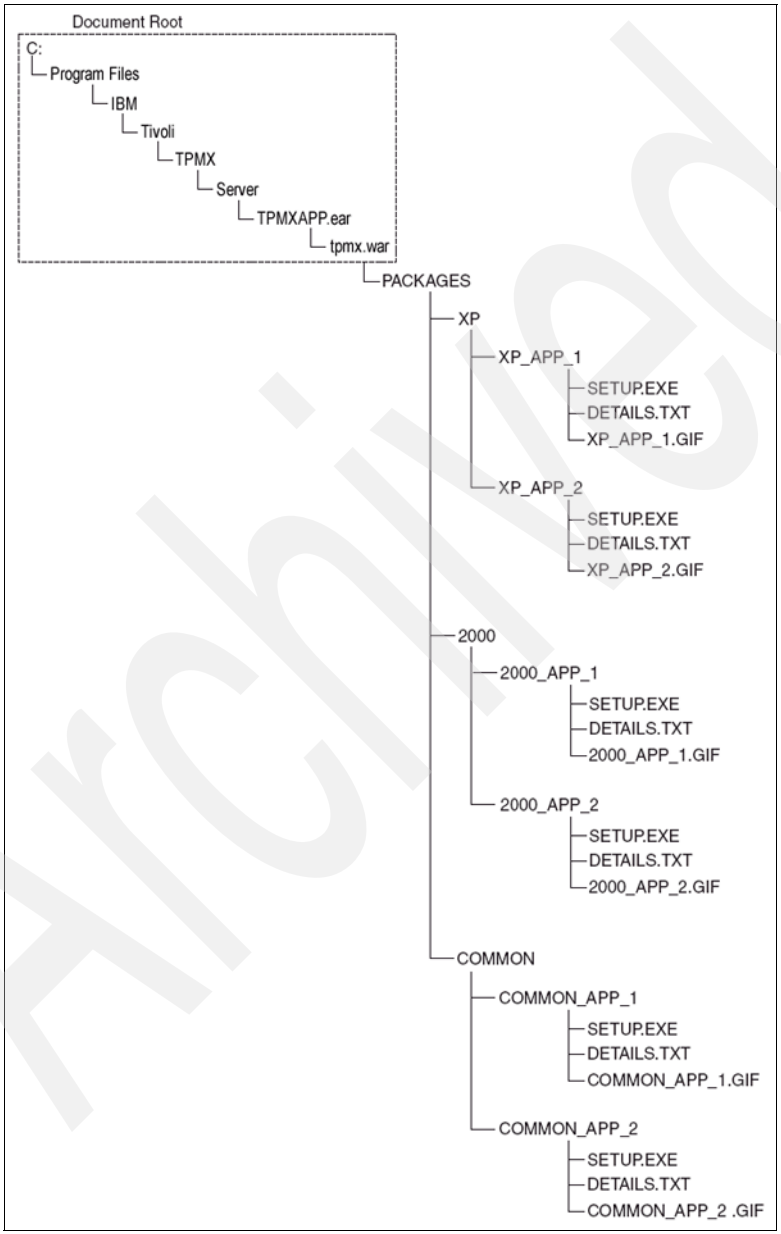


Figure A-3 Separate folders for each operating system

B

Active Directory integration

In this appendix, we explain the steps necessary to successfully configure the Software Distribution component to use resources from an LDAP directory server. It is intended for administrators who will be using Tivoli Provisioning Manager Express for Software Distribution in conjunction with an LDAP server.

Active Directory integration

This section provides the details about the Tivoli Provisioning Manager Express for Software Distribution and Active Directory integration.

Required information from the LDAP server

Before beginning the configuration, obtain some prerequisite information. This information will simplify the configuration process. Consider the following information:

- With what type and version of LDAP server will the Software Distribution component be communicating?
- Microsoft Windows Server 2003 Active Directory, Windows 2000 Server Active Directory, IBM LDAP Server, and Sun™ Java™ Directory Server are some of the most popular LDAP servers.
- Simple Authentication Security Layer (SASL) authentication using the Digest MD5 protocol is the default authentication method. Is this format compatible with the LDAP server?

  If compatible, we require the following information:

  - A user name and password with the rights necessary read all required information from directory.
  - The fully qualified LDAP server domain name (myserver.mydomain.mycompany.com).
  - If necessary, the realm name of the LDAP realm from which the Software Distribution component will be accessing user information.

  If SASL is not supported, what other kind of security will be required to connect to LDAP server? A basic user name and password, another type of SASL, SSL, and so on? Also consider any connection-specific information, that is, the LDAP server IP address, digital certificates for SSL, and so on.

Configuring LDAP authentication for the Software Distribution component

All configuration information required for LDAP authentication is located in the ldap.properties file. This file is in the %DocRoot%\web-inf\classes directory.

The ldap.properties file consists of the following five sections:

- Software Distribution authentication to LDAP server
- SASL parameters
- SSL parameters
- LDAP group membership search parameters
- End-user authentication parameters

We explain each section and it associated parameters here. Each section also contains sample entries in italics. There is a sample ldap.properties file attached to the end of the document.

Software Distribution authentication to the LDAP server

The parameters in this section define how the Software Distribution component will connect (bind) to the LDAP server. The connection is used query the LDAP server for user and group information. Unless otherwise noted, all parameters in this section are mandatory.

- ldap.connectionName= The user name used to authenticate to a read-only LDAP connection. If left unset, an anonymous connection will be attempted.

  ldap.connectionName=userid

- ldap.connectionPassword= The password used to establish a read-only LDAP connection. The password can be entered here in plain text or it can be encrypted.
- ldap.connectionPasswordEncrypted= Instructs Software Distribution to read the value of the password parameter as encrypted (TRUE) or plain text (FALSE).
- ldap.connectionPassword=40lw9xkoJj78UOEnq5Gt71j6/ydZ6di07m3hbNeg connectionPasswordEncrypted=TRUE.
- ldap.connectionURL= The directory URL used to establish an LDAP connection.

  ldap.connectionURL=ldap://servername.domain.com

- ldap.alternateURL= Secondary directory URL. If the primary is down, the secondary URL is used for authentication.
- ldap.alternateURL= ldap://servername2.domain.com ldap.contextFactory= The fully qualified Java class name of the JNDI context factory to be used for this connection. If left unset, the default JNDI LDAP provider class is used. By default, this line is commented out.

  #ldap.contextFactory=com.sun.jndi.ldap.LdapCtxFactory

- ldap.debug= Sets the debug level. The debug level controls the amount of information that is stored in the Software Distribution component log file. The default installation will set the debug level to 6. This log file is typically in %Inst_dir%\logs\sdc_log.datestamp.log.

  ldap.debug=6

SASL parameters

The following parameters all define the level of security to be used on the connection. Although most LDAP servers support simple plain text login, most

network administrators require a more secure connection. The following parameters relate to using SASL to secure the connection to the LDAP server. If not using SASL, comment out these parameters.

- ldap.security_authentication= Specifies the security level to use. Its value is one of the following strings:
  - none
  - simple
  - strong

  If this property is unspecified, the behavior is determined by the service provider. If using SSL, you have to use simple. Here, only simple and DIGEST-MD5 are supported.
- ldap.security_authentication=DIGEST-MD5.
- ldap.connectionRealm= The realm name were the user ID and password reside. ldap.connectionRealm=internal.corporation.domain.com.
- ldap.connectionQop= This value can be either:
  - auth = Authentication only
  - auth-int = Authentication and integrity checking by using signatures
  - auth-conf = (SASL only) Authentication, integrity, and confidentiality checking by using signatures and encryption

  ldap.connectionQop=auth-conf
- ldap.connectionMaxbuf= Number indicating the size of the largest buffer the server is able to receive when using *auth-int* or *auth-conf*. The default is 65536.
- ldap.connectionMaxbuf=16384 ldap.connectionStrength= Connection strength can be either:
  - low
  - medium
  - high

  ldap.connectionStrength=high

SSL parameters

The following parameters all define the use of SSL to connect to the LDAP server. If SSL is not used, you can comment out these parameters.

- ldap.security_protocol= Specifies the security protocol to use. Its value is a string determined by the service provider (for example, ssl). If this property is unspecified, the behavior is determined by the service provider.

  ldap.security_protocol= ssl

- ldap.ssl_keyStore=PathOfKeyStoreFile.
- ldap.ssl_keyStorePassword=KeystorePassword.

  In order to use SSL, install a root CA public key certificate (keystore) on the Software Distribution server. The location of the keystore and its password need to entered for the previous two parameters.
- ldap.referrals= Specifies how referrals encountered by the service provider are to be processed. If this property is not specified, the default is determined by the provider.

  The value of the property is one of the following strings:

  – follow: Follow referrals automatically.
  – ignore: Ignore referrals.
  – throw: Throw ReferralException when a referral is encountered.

  ldap.referrals=follow

LDAP group membership search parameters

The Software Distribution component can search the directory tree for group memberships. The group memberships can be used to create groups. Use the following parameters to determine which group memberships the Software Distribution component will look at and which it will ignore. These parameters are LDAP attributes that the Software Distribution component should read when searching for group names. If groupName or groupSearch is not defined, Software Distribution does not query LDAP for group information. The following example searches for groups in the ou and distinguishedNames attributes. Note that you can have multiple entries for each parameter.

- ldap.groupName=ou.
- ldap.groupName=distinguishedName.
- ldap.groupDescription=description ldap.groupNameTrim=false.
- ldap.groupBase = The base LDAP directory entry for looking up group information. If left unspecified, the default is to use the top-level element in the directory context.

  ldap.groupBase=ou=austin,dc=ActDirTest,dc=SD,dc=COM
- ldap.groupSearch= The LDAP filter expression used for performing group searches. With this parameter, you can filter results from the ldap.groupName parameter.

  For example if all your user groups are ou with a name that began with the letter U, you can enter the following value and filter out any other ou groups returned from the ldap.groupName parameter:

  ldap.groupSearch=(ou=U*)

ldap.groupSearch=(objectClass=group)

- ldap.groupSubtree= If set to true, Software Distribution searches recursively through the subtree of the element specified in the ldap.groupBase parameter for groups associated with a user. If left unspecified, the default value of false causes only the top level to be searched (a nonrecursive search).

  ldap.groupSubtree=true

End-user authentication parameters

The following parameters all define to Software Distribution how the end user should be authenticated when attempting to log on to Software Distribution:

- ldap.digest= Digest algorithm (SHA, MD2, or MD5 only) used by LDAP. The default is cleartext. If the LDAP servers returns a password, Software Distribution uses the Digest algorithm to encrypt the user input password and compare it with the password it receives from the LDAP server. If no password is returned from the LDAP server, Software Distribution uses the user name and password provided by the end user to authenticate with LDAP (bind).

  ldap.digest=SHA

- ldap.userPassword= The name of the LDAP attribute in the user's directory entry containing the user's password.

  ldap.userPassword=password

- ldap.userEmail= The name of the LDAP attribute in the user's directory entry containing the user's e-mail.

  ldap.userEmail=mail

- ldap.userGroupName= The name of the LDAP attribute in the user's directory entry containing values for the names of roles associated with this user. You can use this in conjunction with the roleName attribute. If left unspecified, all roles for a user derive from the role search.

  ldap.userGroupName= memberOf

- ldap.userRealm= Realm name used for end-user authentication (bind). This is optional.

  ldap.userRealm=users.company.domail.com

- ldap.principalPattern= Pattern for constructing the user principal for using LDAP authentication. Some LDAP servers require e-mail addresses, such as userid@domain.com, and others require the user ID only. The string g{0}h will be substituted by the end users user ID entered on the logon window.

  ldap.principalPattern={0}
  The following parameters further define searches for getting all the groups the user belongs to besides the userGroupName. For userRoleSearch, you can enter two parameters. The first one {0} is the DN for the user, the second one

{1} is the user name. If not specified, a role search does not take place and roles are taken only from the attribute in the user's entry specified by the userRoleName property.

- ldap.userRoleName=cn
- ldap.userRoleBase=dc=ActDirTest,dc=SD,dc=COM
- ldap.userRoleSearch=(member={0})
- ldap.userRoleSubtree=true

The following two sections define how Software Distribution searches for the end-user information in the directory. Only one section is needed.

- ldap.userPattern= This parameter defines search patterns used by Software Distribution to query the LDAP server. Each pattern represents a possible location for the end-user's directory entry. If you want Software Distribution to search for the user name in multiple places, you can supply multiple locations in the userPattern parameter by surrounding each separate location with parentheses. For example, (cn={0},ou=users1,o=myorg)(cn={0},ou=users2,o=myorg) will result in Software Distribution looking in ou=users1,o=myorg, and then ou=users2,o=myorg for the user name passed in from the logon window. You can also use the standard LDAP *OR* search format, for example, g(|(cn={0},o=myorg)({0})). Note that, as in this example, you can do both context-less and fully-typed logons using this technique. This is accomplished by using a pattern for the distinguished name (DN) of the user's directory entry, conforming to the syntax of java.text.MessageFormat, with {0} marking where the actual user name will be inserted. Using this method is helpful when user information is stored within a single or couple locations within the directory tree because it will avoid having to traverse the entire tree for end-user information.

  ldap.userPattern=dn=cn={0},ou=austin, dc=ActDirTest,dc=SD,dc=COM

- The second method available for finding the end-user information involves entering the following parameters. Software Distribution uses these parameters to search the directory specified by the userBase attribute to find a unique entry containing the user name information. This method enables you to select the highest common branch of the directory tree and search it recursively until the user information is found. This method is especially helpful if user information is contained under a single branch of the tree but broken up by department or underneath the branch, for example:

  USERS ---

  - | --- HR
  - | --- Engineering

– ldap.userBase= The base of the subtree containing users. If not specified, the search base is the top-level context.

  ldap.userBase=dc=users, dc=internal, dc=domain, dc=com

– ldap.userSearch= The LDAP filter expression to use when searching for a user's directory entry, with {0} marking where the user name will be inserted. In the following example, the LDAP attribute userPrincipalName is used as the primary search pattern.

  ldap.userSearch=(userPrincipalName={0}@users.internal.domain.com)

– ldap.userSubtree= Set this value to true if you want to recursively search the subtree of the element specified by the userBase attribute for the user's directory entry. The default value of false causes only the top level to be searched (a nonrecursive search). This is ignored if you are using the userPattern expression.

  ldap.userSubtree=true

Enabling LDAP authentication for Software Distribution

In order to enable LDAP authentication for Software Distribution, add the following information to the sdc.properties file. The sdc.properties file is in the %DocRoot%\web-inf\classes directory.

- authentication.LDAP=true
  Tells Software Distribution to use LDAP authentication.
- authentication.LDAP.config=ldap.properties
  Tells Software Distribution the name of the file that contains LDAP configuration information. By default, the file is called ldap.properties.

Sample sdc.properties file

Here is the contents of a sample sdc.properties file that is enabled for LDAP authentication:

- # Database properties. The context is what is referenced in the web.xml/server.xml file for the application server.
- #The default value is jdbc/sdc datasource.context=jdbc/sdc.
- # Password control parameters. The default value is true.
- # Encrypt password in SHA-1 password. encrypt=true.
- # Automatic Purchase Order update parameters.
- # purchase.autoupdate.offset's unit is hour purchase.autoupdate=FALSE purchase.autoupdate.path= purchase.autoupdate.offset= purchase.autoupdate.seperator=.
- # Multi-file Transfer parameters.

- # dirFTP.threshold, default value is 10485760 (10 binary MB).
- # the sum of the space consumed by a directory is greater than the threshold.
- # then the files will be transferred one at a time. If less than the threshold.
- # then the files will be zipped and transferred.
- #dirFTP.threshold=10485760.
- # Define Software Distribution to use LDAP for user authentication.
- # if this is set false(default value), use Software Distribution its own authentication.
- # use config file to define LDAP parameters. authentication.LDAP=true authentication.LDAP.config=ldap.properties.

Note: A Java utility is included in the Software Distribution code that allows a password to be encrypted. To use this utility, start a command prompt from the %DocRoot%\WEB-INF\lib directory and enter the following command:

```
java -cp .\sdcserver.jar com.ibm.webd.server.common
```

Encrypt password: The command will output an encrypted version of the password. Enter this version in the ldap.connectionPassword parameter.

Hints and tips

With the growing use of Remote Desktop sessions, the following information might help avoid a problem situation. Packages that require interaction with the desktop cannot be installed while logged into a system using Remote Desktop connections. The interactive display will, by default, be routed to the primary system console session. It will appear as a package hang.

Interact with Desktop option

When selected, this enables the service to interact with the desktop of the currently logged-on user. Remember that services run in a different security context, so their visibility is not always assured especially when used in conjunction with Remote Desktop. A service might run under an account other than the local system account, with the Interact with Desktop option enabled. The application will only be visible if the logon account is a member of the local or domain Administrator group.

Client configuration modifications

Note the following client configuration modifications:

- Enabling client debug mode:

  You can set the Software Distribution Agent to use debug mode to increase the amount of event logging. To enable debugging for the agent service, perform the following steps:

  a. On the client system, using a text editor (such as Notepad) open C:\Program Files\IBM\Tivoli\TPMX\Agent\sdc.conf.

  b. Add the entry `com.ibm.sdc.agent.debug=true`.

  c. Restart the service IBM Tivoli Provisioning Manager Express - Software Distribution Agent.

- Changing the frequency of agent check-in:

  The default interval for client queries is 60 minutes. To change the interval length, perform the following steps:

  a. On the client system, using a text editor (such as Notepad) open C:\Program Files\IBM\Tivoli\TPMX\Agent\sdc.conf.

  b. Look for the entry `com.ibm.sdc.agent.offset=xx`. By default, the value for xx will be 60.

  c. Change the numeric value to any value in the range 1 to 999.

  d. Restart the service IBM Tivoli Provisioning Manager Express - Software Distribution Agent.

C

Package replication tips

In this appendix, we provide some hints and tips for package directory replication.

If more than one server is used or there are multiple distribution points for packages, an administrator might be required to keep several package repositories synchronized. Microsoft provides a command-prompt tool called Robocopy that saves administrative time and ensures that packages are available across all distribution points in an environment.

Robocopy is a 32-bit command-prompt tool used for file replication. This tool helps maintain identical copies of a directory structure on a single computer or in separate network locations. Robocopy is in the Windows Server 2003 administration kit. You can copy a single directory, or you can recursively copy a directory and its subdirectories with Robocopy. The tool classifies files based on whether they exist in the source directory, in the destination directory, or in both. In the latter case, the tool further classifies files by comparing time stamps and file sizes between the source file and the corresponding destination file. You control which classes of files get copied. If a file exists in both the source and destination locations, by default Robocopy copies the file only if the two versions have different time stamps or different sizes. This saves time if the source and destination are connected by a slow network link. You can also specify that copies are restarted in the event of a failure, which saves even more time when network links are unreliable.

With Robocopy, you can do the following actions:

- Use file names, wildcard characters, paths, or file attributes to include or exclude source files as candidates for copying.
- Exclude directories by name or by path.
- Delete source files and directories after copying (that is, move rather than copy them).
- Delete destination files and directories that no longer exist in the source.
- Control the number of times the program retries an operation after encountering a recoverable network error.
- Schedule copy jobs to run automatically.
- Specify when copying occurs.
- Monitor a directory tree for changes.
- Selectively copy file data.

Robocopy version XP010 system requirements are:

- Microsoft Windows Server 2003
- Microsoft Windows 2000

To run Robocopy, use the following syntax at the command prompt:

```
ROBOCOPY source destination [file [file]...] [options]
```

Table C-1 defines these syntax elements.

Table C-1 Robocopy syntax elements

Variable	Meaning	Comments
Source	Source directory	You can use drive:\path or \\server\share\path.
Destination	Destination directory	You can use drive:\path or \\server\share\path.
File	Names of files to act upon	You can use wildcard characters (? and *). If no files are listed, Robocopy defaults to all files (*.*).
Options	Command-prompt options	Available options are described later in this document.

Tip: To view brief usage instructions at the command prompt, run ROBOCOPY without specifying any command prompt options.

Using Robocopy

To use Robocopy, enter the following strings into a batch file:

```
robocopy <source> <destination> /E /R:x /NP  /w:min /V /XD <directory>
/LOG+:<logfile> /MOT:min /RH:hhmm-hhmm
```

Table C-2 describes the options.

Table C-2 Robocopy option descriptions

Option	Description
/E	Copies all subdirectories (including empty ones).
/R:x	Specifies the number of retries on failed copies (the default is 1 million).
/NP	Turns off copy progress indicator (% copied); otherwise, log file gets very big.
/w:min	Specifies the wait time between retries (the default is 30 seconds).
/V	Produces verbose output (including skipped files), creating a record of all files copied or not in the log file.
/XD <directory>	Excludes directories with the specified names, paths, or wildcard characters in case there are server-specific packages.
/LOG+:	Redirects output to the specified file, appending it to the file if it already exists.
/MOT	Monitors the source directory for changes, and runs again when further *n* minutes elapse, and the minimum number of changes specified by /MON are detected (default for /MON is 1 if not specified).
/RH	Defines the time slot during which starting new copies is allowed, which is useful for restricting copies to certain times of the day. Both values must be 24 hour times in the range 0000 to 2359.

Sample Robocopy batch file

The sample batch file in Example C-1 first maps a drive to a target server. After the drive is mapped, Robocopy monitors both the source package directory and package signature directories for any changes. Any changes are copied only to the target server during the designated time window (2300–0300). Any changes are logged in the c:\temp\sync.log log file.

Example: C-1 Robocopy batch file

```
@echo off
net use z: /d

net use z: \\157.235.3.231\d$

start robocopy D:\IBMSDC\SDCServer\sdc\packages\win32
         Z:\IBMSDC\SDCServer\sdc\packages\win32 /E /R:3 /NP  /w:5 /V /XD
         webdagent  /LOG+:c:\temp\sync.log /MOT:60 /RH:2300-0300

start robocopy D:\IBMSDC\SDCServer\sdc\signatures
         Z:\IBMSDC\SDCServer\sdc\signatures /E /R:3 /NP  /w:5 /V
         /LOG+:c:\temp\sync.log /MOT:60/RH:2300-0300
```

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

Publications

These publications are also relevant as further information sources:

- *IBM Tivoli Provisioning Manager Express Installation Guide,* SC32-0175
- *IBM Tivoli Provisioning Manager Express for Inventory User's Guide*, SC32-0174

Online resources

These Web sites and URLs are also relevant as further information sources:

- IBM Tivoli SMB Web site

  http://www.ibm.com/tivoli/smb

- IBM Software Services Web site

  http://www.ibm.com/software/sw-services

- IBM Global Services Web site

  http://www.ibm.com/services

- IBM Business Partners Web site

  http://www.ibm.com/software/solutions/isv

How to get IBM Redbooks

You can search for, view, or download Redbooks, Redpapers, Hints and Tips, draft publications and Additional materials, as well as order hardcopy Redbooks or CD-ROMs, at this Web site:

ibm.com/redbooks

Help from IBM

IBM Support and downloads

ibm.com/support

IBM Global Services

ibm.com/services

Index

G

H

I

S

T

U

V

W

Deployment Guide Series: IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution

(0.5” spine)
0.475”<->0.875”
250 <-> 459 pages

Deployment Guide Series

IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution

Provides a step-by-step deployment guide

Describes Inventory and Software Distribution scenarios

Discusses best practices for customization

IBM Tivoli Provisioning Manager Express Version 4.1 for Software Distribution is an easy-to-use, comprehensive solution for software distribution, patch, inventory, and asset management. This Web-based solution is designed for ease of use and implementation so that you can quickly begin to manage the PCs in your enterprise. IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution is implemented with both a client agent on the managed PCs and a centralized data repository. The product is specifically targeted for the small-to-medium business (SMB) market.

This IBM Redbook presents a deployment guide for IBM Tivoli Provisioning Manager Express V4.1 for Software Distribution. We discuss the planning, installation, configuration, usage and troubleshooting of the operation. In addition, we provide a case study using a fictitious company, called XYZ Corporation.

The target audience for this book is IT specialists working on IBM Tivoli Provisioning Manager Express V4.1 Software Distribution installations and proof of concepts.

INTERNATIONAL TECHNICAL SUPPORT ORGANIZATION

BUILDING TECHNICAL INFORMATION BASED ON PRACTICAL EXPERIENCE

IBM Redbooks are developed by the IBM International Technical Support Organization. Experts from IBM, Customers and Partners from around the world create timely technical information based on realistic scenarios. Specific recommendations are provided to help you implement IT solutions more effectively in your environment.

For more information:
ibm.com/redbooks

SG24-7236-00 ISBN 0738497061