Introducing IBM Tivoli Configuration Manager

Version 4.2
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Version 4.2
Note

Before using this information and the product it supports, read the information in "Notices" on page 31.

ISO 9001 Certification

This product was developed using an ISO 9001 certified quality system.

Certification has been awarded by Bureau Veritas Quality International (BVQI) (Certification No. BVQI - 92086 / A).

BVQI is a world leader in quality certification and is currently recognized by more than 20 accreditation bodies.
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Preface

IBM® Tivoli® Configuration Manager version 4.2 provides remote system management facilities for your enterprise. Introducing IBM Tivoli Configuration Manager provides an overview of this product and a series of scenarios that introduce you to the tasks you can perform.

Who should read this book

This book is intended for:

- Network operations managers and their technical advisors who are evaluating the product or planning their software distribution and management environment
- Individuals who require general information for evaluating, installing, or using the product

What this book contains

This book contains the following sections:

- Chapter 1, “Overview”
  Provides an overview of the Tivoli Configuration Manager suite and its relationship with Tivoli Management Framework.
- Chapter 2, “Scenario: Distributing software”
  Shows how to distribute software.
- Chapter 3, “Scenario: Scanning for hardware and software”
  Discusses how to perform inventory scans.
- Chapter 4, “Scenario: Automating software distribution and inventory scans”
  Describes how to automate the software distribution and inventory process.
- Chapter 5, “Scenario: Managing the network using reference models”
  Describes how to use reference models to manage the network.
- Chapter 6, “Scenario: Managing a network with firewalls”
  Describes how to distribute software across firewalls.

Publications

This section lists publications in the IBM Tivoli Configuration Manager library and other related documents. It also describes how to access Tivoli publications online, how to order Tivoli publications, and how to submit comments on Tivoli publications.

IBM Tivoli Configuration Manager library

The following documents are available in the IBM Tivoli Configuration Manager library:

- IBM Tivoli Configuration Manager: Introducing IBM Tivoli Configuration Manager, GC23-4703
  This book.
- IBM Tivoli Configuration Manager: Planning and Installation, GC23-4702
Describes how to plan for installing Tivoli Configuration Manager components and how to perform the installation.

  Provides user information about how to use the Software Distribution component of Tivoli Configuration Manager.

  Provides advanced information about how to use and customize the Software Distribution component of Tivoli Configuration Manager.

- **IBM Tivoli Configuration Manager: User’s Guide for Inventory, SC23-4713**
  Provides information about how to use the Inventory component of Tivoli Configuration Manager.

- **IBM Tivoli Configuration Manager: User’s Guide for Deployment Services, SC23-4710**
  Provides information about the different services provided as part of Tivoli Configuration Manager.

- **IBM Tivoli Configuration Manager: Database Schema Reference, SC23-4783**
  Provides information about the configuration repository of Tivoli Configuration Manager.

- **IBM Tivoli Configuration Manager: Messages and Codes, SC23-4706**
  Describes the messages issued by Tivoli Configuration Manager, its components, and its services.

- **IBM Tivoli Configuration Manager: Release Notes, GI11-0926**
  Provides late-breaking information about Tivoli Configuration Manager, its components, and its services.

## Related documents

The following documents also provide useful information:

- **Tivoli Management Framework: Planning for Deployment Guide, GC32-0803**
  Explains how to plan for deploying your Tivoli environment.

  Describes the concepts and procedures for using Tivoli Management Framework services.

- **Tivoli Management Framework: Reference Manual, GC32-0806**
  Provides in-depth information about Tivoli Management Framework commands.

## Accessing publications online

Publications in the product libraries are included in PDF format on the product CD. To access the publications using a Web browser, open the infocenter.html file, which is located in the appropriate publications directory on the product CD.

When IBM publishes an updated version of one or more online or hardcopy publications, they are posted to the Tivoli Information Center. You can access updated publications in the Tivoli Information Center from the following Customer Support Web site:

http://www.tivoli.com/support/documents/

The Tivoli Information Center contains the most recent version of the books in the product library in PDF or HTML formats, or both. Translated documents are also available for some products.
Note: If you print PDF documents on other than letter-sized paper, select the **Fit to page** check box in the Adobe Acrobat Print dialog (which is available when you click **File --> Print**) to ensure that the full dimensions of a letter-sized page are printed on the paper that you are using.

**Ordering publications**

You can order many Tivoli publications online at the following Web site:


You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, see the following Web site for a list of telephone numbers:


**Providing feedback about publications**

If you have comments or suggestions about Tivoli products and documentation, send an e-mail to pubs@tivoli.com or complete the customer feedback survey at the following Web site:


**Accessibility**

Accessibility features help users who have physical disabilities, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For additional information, see the Accessibility Appendix in the *User’s Guide for Deployment Services* guide.

**Contacting Customer Support**

If you have a problem with any Tivoli product, you can contact Customer Support. See the *Customer Support Handbook* at the following Web site:


The handbook provides information about how to contact Customer Support, depending on the severity of your problem, and the following information:

- Registration and eligibility
- Telephone numbers and e-mail addresses, depending on the country in which you are located
- The information you should gather before contacting Customer Support
Conventions used in this book

This book uses several conventions for special terms and actions, operating system-dependent commands and paths, and margin graphics.

**Bold**

- Lowercase and mixed-case commands, command options, and flags that appear within text appear like this, in **bold** type.
- Graphical user interface elements (except for titles of windows and dialogs) and names of keys also appear like this, in **bold** type.

**Italic**

- Variables, values you must provide, new terms, and words and phrases that are emphasized appear like this, in *italic* type.

**Monospace**

- Commands, command options, and flags that appear on a separate line, code examples, output, and message text appear like this, in *monospace* type.
- Text strings you must type, names of Java™ methods and classes, and HTML and XML tags also appear like this, in *monospace* type.
Chapter 1. Overview

IBM Tivoli Configuration Manager controls software distribution and asset management inventory in a multi-platform environment. It is designed for configuration, distribution, change, version, and asset management in a distributed computing environment. Working on top of Tivoli Management Framework, Tivoli Configuration Manager provides an integrated solution for managing complex distributed enterprise environments.

Using Tivoli Configuration Manager, you can:
- Scan hardware and software to determine which enterprise assets are part of your inventory
- Reduce the time and effort in installing and configuring your network population by centralizing and automating the distribution of software across your enterprise
- Automate and schedule network operations
- Monitor system and configuration changes
- Manage the desired state of all elements of your network
- Manage your enterprise environment across firewalls
- Extend the scope of your managed network to include pervasive devices, such as personal digital assistants (PDAs)

Tivoli Management Framework

Tivoli Management Framework is the software infrastructure for Tivoli Configuration Manager and provides various resources and services used by Tivoli Configuration Manager.

The following resources make up a typical Tivoli environment:

**Tivoli server**
The server for a specific Tivoli management region (Tivoli region) that holds or references the complete set of Tivoli software, including the full object database.

**Tivoli management region**
In a Tivoli environment, a Tivoli server and the set of clients that it serves. An organization can have more than one region.

**Managed node**
A machine on which Tivoli Management Framework is installed.

**Endpoint**
The final recipient of any type of Tivoli operation.

**Gateway**
Software that provides communications services between endpoints and the rest of the Tivoli environment.

**Repeater**
A managed node or gateway that caches and transmits data through a repeater hierarchy to designated targets. Repeaters are used for multiplexed distribution and collection operations.
MDist 2
A multiplexed distribution service that enables efficient transfer of
data to multiple targets. Administrators can monitor and control a
distribution throughout its life cycle using MDist 2.

Multicast distribution
The process used by the MDist 2 service to distribute copies of packets
to selected targets.

Scalable Collection Service (SCS)
Efficient, asynchronous, multiplexed collection of large amounts of
data across complex networks.

The following are the key components used in the Tivoli environment:

Administrator
An administrator manages one or more policy regions in the Tivoli
environment. Tivoli administrators can perform system management tasks
and manage policy regions in one or more networks.

Task library
A container in which an administrator can create and store tasks and jobs.

Task
An action that needs to be performed routinely on various managed
resources in the Tivoli environment.

Job
A resource that represents a task and its preconfigured parameters that
is run on specific managed resources.

Policy region
A collection of resources that share one or more common sets of rules, or
policies. Policy regions also represent administrative domains that can be
assigned to administrators.

Profile manager
A container for profiles that links the profiles to a set of resources, called
subscribers. Profile managers are used to organize and distribute profiles.

Profile
A container for application-specific information about a particular type
of resource.

Subscriber
A resource that is subscribed to a profile manager.

Notification
A facility that informs Tivoli administrators of system management
operations and reports which administrator performed a particular
operation. It is especially useful in large installations that have many Tivoli
administrators, because it can provide an audit trail of who performed
certain actions in the system.

Scheduler
A facility that enables you to automate tasks in the Tivoli environment.

RDBMS Interface Module (RIM) object
An object that provides the attributes and methods that enable applications
to access an RDBMS.

Query library
A facility that provides a way to create and manage Tivoli queries.

For additional information about Tivoli Management Framework, refer to the Tivoli
IBM Tivoli Configuration Manager components and services

Tivoli Configuration Manager is an integrated software distribution and asset management suite that comprises two main components, Software Distribution and Inventory, and various services.

**Software Distribution**

Using the Software Distribution component, you can install, configure, and update software remotely within your network, eliminating the need to update software manually on numerous systems. You can:

- Distribute client/server applications, applications for desktops, laptops, and pervasive devices across multi-platform networks
- Update existing software with newer versions
- Synchronize software on distributed systems

The software distribution component comprises the following main elements:

**Software package**

An object that contains a sequential list of actions to be executed on a target system. These actions comprise:

- Installing, updating, and removing software
- System actions
- Program actions

**Source host**

The system on which software package definitions are stored. Any machine in a Tivoli environment can be a source host, provided Tivoli Management Framework and the Software Distribution component are installed.

**Software Package Editor**

A Java-based graphical interface for creating and customizing software packages. You can use the Software Package Editor to:

- Create a new software package
- Modify an existing software package to create a new one
- Generate a software package automatically using differencing technologies (Autopack)
- Create a software package containing one of the following third party native installation packages:
  - Microsoft® Systems Management Server package definition file
  - Microsoft Software Installer file
  - AIX® package
  - Solaris Operating Environment package
  - Linux package
  - InstallShield
  - Configuration, installation, and distribution programs

You also use the Software Package Editor to arrange actions contained in the software package in the order in which they are to be performed on the target system.

**Pristine tool**

A tool for creating a repository and storing diskette images for installing an operating system remotely on a clean machine. The advantages of using the pristine tool are:

- Preparation and installation can be performed at different times
- Installation can be performed almost completely unattended
- Synchronizing reference models can be performed automatically
Web Interface plug-in
Software that enables software distribution, change management, and inventory operations to be performed across firewalls using the Web Interface service.

Inventory
Using traditional methods to assess inventory, you must physically go to each system, write down the software and hardware inventory information you collect, then enter the information into a spreadsheet or database program. When users upgrade software and hardware, you must update this spreadsheet or database. Clearly, this method is time-consuming and difficult to maintain. As a result, administrators and accounting personnel cannot reuse inventory information automatically to perform system and software upgrades and management tasks.

Using the Inventory component, you can gather and maintain up-to-date inventory information in a distributed environment quickly, accurately, and easily. This helps system administrators and accounting personnel manage complex, distributed enterprises.

Administrators and accounting personnel can perform the following tasks:
• Manage all enterprise systems centrally
• Determine the installed software base
• Confirm a software distribution
• Supplement and replace physical inventory function
• Assist in procurement planning
• Check software requirements
• Control assets

For example, you can combine inventory and software distribution operations to determine if any critical files are missing, then re-establish the proper configuration. After creating and deploying management-ready applications, you can continually maintain the desired state of your systems by synchronizing applications and system configurations on an enterprise scale.

The Inventory component uses the following elements:

Inventory profiles
Inventory uses profiles to contain information about scans, for example, the type of scan to run, which files and directories to scan, whether to run scripts, whether to collect custom MIF files, and so on.

Configuration repository
The relational database management system (RDBMS) that contains the schema (tables and columns) in which software and hardware inventory information is stored. The configuration repository schema provides a structure for storing information collected during an inventory scan.

RDBMS Interface Module (RIM) host
Software that enables the Inventory component to communicate with an RDBMS. One or more RIM objects connect Inventory to the RDBMS for access to the configuration repository. You can configure multiple RIM objects to write Scalable Collection Service (SCS) data in parallel to the configuration repository.
Collectors
Repeater sites on which SCS has been installed that store, then forward data either to other collectors or to the inventory data handler. All collectors send data to the inventory data handler, which then sends the data to the configuration repository.

Inventory data handler
An object that receives data from an inventory scan and uses one or more connections to send the data to the configuration repository.

Inventory also works with SCS to manage the flow of data efficiently across your network. After a target is scanned, Inventory uses SCS or MDist 2 to send the data to the configuration repository.

**Activity Planner**

Activity Planner is a deployment service that enables you to:
- Define a group of activities to be submitted as an activity plan
- Submit or schedule the plan for running
- Monitor the plan while it runs

Activities are tasks that can be scheduled to be performed on a set of targets at specified times. Operations can include software distribution and inventory operations and Tivoli tasks.

Activities contained in a plan can have dependencies associated with them that define circumstances under which the activity should be run. The running of the operation defined in the activity is performed by the application to which the operation belongs. The group of activities forms the activity plan.

Activity Planner comprises two components:

**Activity Plan Editor**
You can use the Activity Plan Editor to:
- Manage a group of activities, originating from different applications, as a single activity from a single machine in the network
- Schedule the activity plan to run on a specific day and time, to repeat at specific time intervals, or repeat indefinitely
- Schedule activities to run at specific time intervals during the week
- Set conditions on activities so that the execution of one activity is dependent on the completion result of other activities
- Save activity plans in a database to resubmit them at any future time

**Activity Plan Monitor**

Used to:
- Submit activity plans to be run
- View all submitted activity plans along with their status, start time, and completion time
- View the list of activities contained in the plan
- View a graphical representation of the plan in the Activity Plan Editor window
- For each activity, view the targets (gateways, depots) assigned to it
- Perform operations such as pause, cancel, and resume
- Restart an activity on an endpoint where the operation was unsuccessful
- Delete the status information of a plan from the activity plan database
- Launch the Distribution Status Console to monitor and control software distributions submitted using the Activity Planner
Change Manager

Change Manager (previously called Change Configuration Manager), is a deployment service which, together with Activity Planner, supports software distribution, inventory, and change management in a large network. Activity Planner is a prerequisite of Change Manager. Change Manager works with Activity Plan Monitor to manage specified groups of users, workstations, or devices as single subscribers. Subscribers can be users, groups of users, endpoints, a profile manager, the results of a query, or pervasive devices.

Change Manager uses reference models, which contain an association of configuration elements and subscribers, to simplify the management of your network environment. Configuration elements define hardware and software requirements. Subscribers define groups of users, workstations, or pervasive devices.

Reference models define required hardware and software configuration for a given set of target subscribers, which represent different groups of users. Using reference models, you can manage subscribers according to the role each plays within your organization.

After you have created the reference model, it is automatically included in an activity plan that includes all the tasks needed to ensure that the desired state of the subscribers matches the requirements defined in the reference model. Change Manager then submits this activity plan to Activity Planner.

If there is a change to requirements, or if a subscriber changes its role, you can simply update the reference model to reflect the changes and generate a new activity plan.

Resource Manager

A Tivoli management region is a three-tier architecture, including servers, gateways, and endpoints, that is created using Tivoli Management Framework. By using the Resource Manager deployment service, you can extend the Tivoli region to a fourth tier, pervasive devices, such as PDAs.

Resource Manager is installed on a Tivoli server and on the gateways. A resource gateway connects resources, the pervasive devices, with the endpoint in the Tivoli environment. In this release, the Web Gateway component is used as the resource gateway.

You can use Resource Manager, together with the Software Distribution, Inventory, and Web Gateway components, to perform the following operations:

- Add or remove pervasive devices
- Provide access to devices for software distribution
- Provide access to devices for inventory operations
- Customize devices

The Web Gateway component, which acts as the resource gateway, uses Web protocol communications to connect the pervasive devices to the Web Gateway component in the Tivoli environment.

Although the resource gateway has its own resource database, Resource Manager maintains a master database. The Resource Manager database is similar to the endpoint manager used by Tivoli Management Framework to support endpoints.
The databases of the various resource gateway configurations are subordinate to the master database. The databases notify each other of any changes. For example, when you update the Resource Manager database, Resource Manager notifies the Web Gateway component to update its database. When a new device connects, it is automatically enrolled and the Web Gateway component notifies Resource Manager to update its database.

Web Interface

The Web Interface deployment service is a browser-based tool that you use to install and manage various Tivoli Configuration Manager Web objects. The Web Interface has two components, a server component and an endpoint component. The server component pushes software packages, inventory profiles, and reference models from the Tivoli region to the Web Gateway component where they are stored until they are pulled by the endpoint component.

The Software Distribution component, Inventory component, and Change Manager deployment service each have a Java plug-in that is registered with the Web Interface. These enable Tivoli Configuration Manager operations to be performed using the Web Interface.

Using the command line, you can grant and remove access to and from Web objects such as software packages, inventory profiles, and reference models.

Using the Web Interface, you can access the Web Gateway component and:

- Install and verify software packages
- Run inventory scans
- View and synchronize reference models

Enterprise Directory Query Facility

The Enterprise Directory Query Facility is a deployment service that allows an administrator to use information stored in enterprise directories inside a Tivoli environment. The administrator can select a specific directory object, or container of directory objects, as subscribers for a reference model or an activity plan. The subscribers can then be targets for software distribution or inventory scans.

The Enterprise Directory Query Facility enables you to access the information contained in an enterprise directory server. For example, the Microsoft Windows® 2000 Active Directory service.

The Enterprise Directory Query Facility consists of directory query libraries and directory queries. Directory query libraries reside in policy regions and are created to contain directory queries. Directory queries enable you to find information about the users or the workstations defined in the enterprise directory server.
Introducing the scenarios

The remaining chapters in this book contain a series of scenarios that illustrate the main functions of IBM Tivoli Configuration Manager. Using a fictitious company, the XYZ Instruments Corporation, the scenarios describes the different ways in which you can perform Tivoli Configuration Manager operations.

The XYZ Instruments Corporation designs and manufactures precision test instruments for the process control industry and for analytical laboratories.

In a highly-competitive industry, XYZ relies heavily on its network environment to provide and maintain the services required by its staff to produce and sell its products. To this end, XYZ installed Tivoli Configuration Manager.

The company network architecture comprises a number of regions, based on its geographical locations and local business activities. In the region used in the following scenarios, the main architectural elements are as shown in Figure 1:

Figure 1. XYZ Instruments Corporation Network Environment

The Tivoli server in this network environment has the following software installed on it:

- Activity Planner
- Change Manager
- Enterprise Directory Query Facility
- Inventory
- Resource Manager
- Software Distribution
- Web Interface
- SCS
- All Java components
- MDist 2 console
Connected to the Tivoli server is a source host and a configuration repository providing storage for the Software Distribution and Inventory components. The configuration repository, in turn, is connected to a database handler. The Tivoli server, source host, and database handler are each connected to each repeater in the next tier of the network.

Each repeater is a managed node on which the following software is installed:

- Activity Planner
- Change Manager
- Inventory
- Software Distribution
- Software Package Editor
- Resource Gateway
- SCS
- Web Interface

The repeaters are connected through resource gateways to the endpoints, on which the following software is installed:

- Software Package Editor
- Web Gateway
  - Database
  - Server
- Tivoli Desktop for Windows, including extensions for:
  - Activity Planner
  - Change Manager
  - Inventory
  - Software Distribution
- Web Interface
  - Access Manager WebSEAL
  - IBM HTTP Web Server
  - Web application server (WebSphere®)
  - DB 2™
Chapter 2. Scenario: Distributing software

XYZ Instruments Corporation wants to deploy the following software:

- Lotus Notes® e-mail client to the workstations in its Administration, Research, Production, and Sales departments.
- Lotus® EasySync™ Pro, software that synchronizes Lotus Notes e-mail to PDAs. Only sales personnel use PDAs. So Lotus Notes is distributed to all workstations, EasySync Pro is distributed only to the workstations in the Sales department.
- IBM DB2® Everyplace, relational database and synchronization software that provides access to corporate data and applications from PDAs. Only sales personnel use PDAs. So DB2 Everyplace is distributed only to the PDAs in the Sales department, as shown in Figure 2.

Overview

Distributing software using IBM Tivoli Configuration Manager involves the following overall process:

1. Creating the software packages
2. Creating the profile and profile manager
3. Distributing the software packages and verifying the distribution
Creating the software packages

The Tivoli administrator first creates the software packages:

- Two software packages, one each for Lotus Notes and EasySync Pro, called LOTUS_NOTES_WSN and EASYSYNC_WSN
- One device software package for the DB2 Everyplace distribution to the PDAs called DB2EPLACE_PDA

To do this, the administrator uses the Software Package Editor wizard at the endpoint where the editor is installed.

For each endpoint, the LOTUS_NOTES_WSN and EASYSYNC_WSN software packages will:

- Check for sufficient space
- Check that Lotus Notes is installed before installing EasySync Pro using a defined dependency

**Note:** Lotus Notes must be installed before EasySync Pro because EasySync Pro needs an e-mail client present for installation.

- Install the software in various locations depending on the variables set

The administrator also creates an inventory signature so that information about each software package is returned after an inventory scan.

For each PDA target, the DB2EPLACE_PDA software package will:

- Check for sufficient space
- Install the software

**Note:** The DB2EPLACE_PDA software package will not contain an inventory signature. This is because the Inventory component does not run signature scans of PDAs. Instead, it scans the operating system of the PDA for installed software products.

Creating the profile and profile manager

After creating the software packages, the administrator uses the Tivoli desktop to create a profile manager for this Tivoli region. Then, the administrator creates a software package profile in this new profile manager.

Next, the administrator assigns the subscribers to the profile, associating the software package profile contained in the profile manager and the endpoints. Subscribers are the twelve endpoints shown in Figure 2 on page 11.

The administrator also creates a profile to be distributed to the resource group for the PDAs and assigns the resource group as the subscriber to the profile.

The administrator imports the software package definitions into the software package profiles. When the import is performed, the software package definitions are transferred from the endpoint where they were created to the Tivoli server, where the database is updated with the new software package information.
Distributing the software packages and verifying the distribution

The administrator then distributes the software packages through the network to the endpoints. The Software Distribution component distributes the software packages from the source host through the repeater hierarchy to the gateways, then from the gateways to the endpoints. The DB2PLACE_PDA software package is distributed to the endpoint where the Web Gateway component is installed, where it is stored until each PDA connects to the Web Gateway component and pulls the software.

The Software Distribution component checks the endpoints for status information and transmits the results back through the network, on the exact reverse path, to the Tivoli server. The status of the software packages on each endpoint is updated in the configuration repository.

The administrator can then verify the software packages are correctly installed by using the MDist 2 console and checking the software distribution log files.

Additional information

Chapter 4, “Scenario: Automating software distribution and inventory scans” on page 19 and Chapter 5, “Scenario: Managing the network using reference models” on page 23 describe other ways to distribute software.

Chapter 3, “Scenario: Scanning for hardware and software” on page 15 describes how to:

- Verify that the software distribution of Lotus Notes and EasySync Pro to the endpoints completed successfully
- Verify that all systems in the enterprise have adequate memory
- Verify that the software distribution of DB2 Everyplace to the PDAs completed successfully

For more information about distributing software, refer to:

- User’s Guide for Software Distribution
- Reference Manual for Software Distribution
- User’s Guide for Deployment Services
Chapter 3. Scenario: Scanning for hardware and software

The XYZ Instruments Corporation wants to gather hardware and software information about each system in the company. To do this, the administrator wants to perform the following tasks:

- Verify that the software distribution of Lotus Notes and EasySync Pro to the endpoints in Chapter 2, “Scenario: Distributing software” on page 11 completed successfully.
- Verify that the software distribution of DB2 Everyplace to the PDAs in Chapter 2, “Scenario: Distributing software” on page 11 completed successfully.
- Verify that all systems in the corporation have adequate memory.

Figure 3 shows the region where the tasks are performed:

![Diagram of network for inventory scan]

Figure 3. Network for Inventory Scan

Overview

Performing an inventory scan using IBM Tivoli Configuration Manager involves the following overall process:

1. Creating profile managers and inventory profiles
2. Customizing inventory profiles
3. Distributing inventory profiles
4. Viewing the scan data
Creating profile managers and inventory profiles

First, the Tivoli administrator uses the Tivoli desktop to create profile managers and inventory profiles. The administrator creates two types of profile managers: a dataless profile manager and a database profile manager. Profiles created within dataless profile managers can be distributed to endpoints, and profiles created within database profile managers can be distributed to resource groups.

The administrator chooses to create separate inventory profiles for the hardware and software scans, called INSTALLED_MEMORY_WSN and INSTALLED_SW_WSN. By creating separate profiles, the administrator is able to collect only the information needed each time a scan is run. This is more efficient than creating a single profile that gathers all hardware and software information each time a scan is run. The administrator creates these inventory profiles in the dataless profile manager, because profiles created within this profile manager can be distributed to endpoints.

The administrator then creates a third profile to scan pervasive devices, called INSTALLED_SW_PDA. The administrator creates this profile in the database profile manager so it can be distributed to the resource group to which the PDAs are subscribed.

Next, the administrator subscribes the targets to the profile managers. The administrator subscribes the endpoints to the dataless profile manager, which contains the INSTALLED_MEMORY_WSN and INSTALLED_SW_WSN profiles, and subscribes the resource group for the PDAs to the database profile manager, which contains the INSTALLED_SW_PDA profile.

When you distribute an inventory profile to a resource group that contains pervasive devices, jobs are created on the Web Gateway components for the devices to be scanned. Devices are scanned when they connect to the Web Gateway component. Inventory processes the information forwarded from the Web Gateway component, then sends the data to the configuration repository.

Customizing inventory profiles

A new inventory profile is configured by default to collect a certain set of hardware and software information. The administrator must now customize the three profiles to collect only the information required. Using either the Tivoli desktop or the command line, the administrator customizes the profiles in the following ways:

<table>
<thead>
<tr>
<th>This profile ...</th>
<th>Is customized to do this ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTALLED_MEMORY_WSN</td>
<td>Scan endpoints for memory information.</td>
</tr>
<tr>
<td>INSTALLED_SW_WSN</td>
<td>Run a signature scan on the endpoints to collect information about installed software products.</td>
</tr>
<tr>
<td>INSTALLED_SW_PDA</td>
<td>Scan the PDAs for information about installed software.</td>
</tr>
</tbody>
</table>
Distributing inventory profiles

The administrator distributes the inventory profiles using the Tivoli desktop or the command line. The administrator distributes the INSTALLED_MEMORY_WSN and INSTALLED_SW_WSN profiles to each endpoint in the corporation and the INSTALLED_SW_PDA profile to the resource group to which the PDAs of the sales team are subscribed.

Viewing the scan data

After the scans complete, the administrator can view the scan data in the configuration repository using the Tivoli Configuration Manager query library.

Additional information

Chapter 2, “Scenario: Distributing software” on page 11 described how to distribute software using the Software Distribution component. Chapter 4, “Scenario: Automating software distribution and inventory scans” on page 19 describes how to perform the same tasks, but automatically.

For more information about scanning hardware and software, refer to:

- User’s Guide for Deployment Services
- User’s Guide for Inventory
Chapter 4. Scenario: Automating software distribution and inventory scans

Chapter 2, “Scenario: Distributing software” on page 11 showed how to distribute the Lotus Notes e-mail client and EasySync Pro software to a set of endpoints and the DB2 Everyplace software to a set of targets in the Tivoli region. Figure 2 on page 11 shows the network environment. Chapter 3, “Scenario: Scanning for hardware and software” on page 15 showed how to verify the distribution, check the systems in the corporation for memory, check the software of the company workstations and the PDAs in the Sales department. This scenario shows how to perform the same operations, but with more efficiency by automating the tasks to be performed and scheduling the tasks to be run at any time.

Activities are single operations that are performed on a set of targets at specified times. Activities in a plan can also have dependencies associated with them, as there is with the Lotus Notes and EasySync Pro installation. Lotus Notes must be installed before EasySync Pro because EasySync Pro needs an e-mail client present for installation. EasySync Pro is therefore dependent on Lotus Notes.

Overview

Automating this distribution using IBM Tivoli Configuration Manager involves the following overall process:
1. Creating activity plans and activities
2. Selecting the targets
3. Scheduling and running the activity plan
4. Monitoring the activity plan

Creating activities and activity plans

First, the administrator uses the Activity Plan Editor to define the following activities:

<table>
<thead>
<tr>
<th>This activity ...</th>
<th>Does this ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTES_INSTALL_WSN</td>
<td>Installs Lotus Notes on target workstations</td>
</tr>
<tr>
<td>EASYSYNC_INSTALL_WSN</td>
<td>Installs EasySync Pro on target workstations</td>
</tr>
<tr>
<td>DB2EPLACE_INSTALL_PDA</td>
<td>Installs DB2 Everyplace on target PDAs</td>
</tr>
</tbody>
</table>

Note: The administrator sets a condition on the EASYSYNC_INSTALL_WSN activity. This condition ensures that EasySync Pro is not installed unless Lotus Notes has already been installed.

The administrator also selects the following inventory profiles that were created in “Creating profile managers and inventory profiles” on page 16:

<table>
<thead>
<tr>
<th>This profile ...</th>
<th>Does this ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>INSTALLED_SW_WSN</td>
<td>Scans target workstations for installed software</td>
</tr>
<tr>
<td>INSTALLED_SW_PDA</td>
<td>Scans target PDAs for installed software</td>
</tr>
</tbody>
</table>

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Selecting the targets

The administrator uses the Activity Plan editor to select the twelve endpoints as targets for:

- NOTES_INSTALL_WSN
- EASYSYNC_INSTALL_WSN
- INSTALLED_SW_WSN

and the PDAs as the targets for:

- DB2EPLACE_INSTALL_PDA
- INSTALLED_SW_PDA

Scheduling and running the activity plan

To reduce network traffic, the administrator uses the Activity Plan Editor to schedule the activity plan to run on a Saturday. This also allows time for a recovery plan (see "Monitoring the activity plan") to be run the following day, if necessary, before the network traffic increases again on the Monday morning.

The administrator then saves the plan and uses the Activity Plan Monitor to submit it. An entry for the plan now appears in the Activity Plan Monitor window from where the administrator can monitor the status of the plan and its activities.

Monitoring the activity plan

When the activity plan runs, the software is installed on the targets. The INSTALLED_SW_WSN activity scans the workstation targets for installed software and the INSTALLED_SW_PDA scans the PDAs for installed software.

The administrator uses the Activity Plan Monitor to monitor and control the distribution in each defined activity and to see which targets receive a distribution and which ones experience errors. Should unavailable targets, failed installations, or network outages be encountered, the administrator could pause, resume, cancel, or delete a distribution.

If the activity plan fails in any way, for example, installation failed on one of the targets, the administrator can use the Activity Plan Monitor to either:

- Rerun the plan
- Generate a recovery plan containing only those activities that failed and run the plan
- Generate a recovery plan and run the plan on only those targets that failed

Verifying the distribution

After the scans complete, the administrator can view the scan data in the configuration repository using the Tivoli Management Framework query facility. The administrator can use the queries provided with Tivoli Configuration Manager or create custom queries.
Chapter 5, “Scenario: Managing the network using reference models” on page 23 shows how to manage the distributed environment and maintain the preferred configuration using reference models.

For additional information about automating software distributions, refer to:

- User’s Guide for Software Distribution
- User’s Guide for Deployment Services
- Tivoli Management Framework: User’s Guide
Chapter 5. Scenario: Managing the network using reference models

The first scenario, Chapter 2, “Scenario: Distributing software” on page 11, showed how to use the Software Distribution component to distribute the Lotus Notes, EasySync Pro, and DB2 Everyplace software packages. The third scenario, Chapter 4, “Scenario: Automating software distribution and inventory scans” on page 19, showed how to automate the distribution using Activity Planner. This scenario shows how to distribute the same software using reference models that define and apply a preferred configuration.

Reference models represent the software and hardware requirements of different categories of user in your organization. The reference model is made up of component models organized in a hierarchical structure. The root level defines requirements that are common to all users and the child models define additional specific requirements that apply only to a particular group of users.

Change Manager uses reference models to distribute software. For each department, the administrator can create a model of the department requirements and also a model for the organization as a whole. The organization model, or root reference model, defines the requirements that are common to all departments. Child reference models define requirements that are specific to individual departments. Target machines are called subscribers because they subscribe to the model.

In this release of IBM Tivoli Configuration Manager, you can now have more than one root reference model. This provides greater flexibility in the number of ways in which you can model your enterprise.

Overview

Performing this distribution involves the following overall process:

1. Creating a reference model and adding configuration elements
2. Adding subscribers to a reference model
3. Synchronizing the reference model

Creating a reference model

Before the administrator creates a reference model, the contents, or configuration elements of each part of the model, must be determined. Each configuration element references a preferred hardware or software configuration. For example, the XYZCorp reference model contains the following elements:

<table>
<thead>
<tr>
<th>This model ...</th>
<th>Contains this element type ...</th>
<th>Which means ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>XYZCorp</td>
<td>Inventory Data</td>
<td>Check that the memory on the endpoints is at least 131072 KB</td>
</tr>
<tr>
<td></td>
<td>Software Distribution</td>
<td>Install Software Package LotusClient^1.0</td>
</tr>
<tr>
<td></td>
<td>Software Distribution</td>
<td>Install Software Package EasySync^1.0</td>
</tr>
<tr>
<td></td>
<td>Inventory Configuration</td>
<td>Run software scan on targets</td>
</tr>
</tbody>
</table>
This model ... Contains this element type ... Which means ...

| Administration | Software Distribution | Install Software Package LotusClient^1.0 |
| Research       | Software Distribution | Install Software Package LotusClient^1.0 |
| Production     | Software Distribution | Install Software Package LotusClient^1.0 |
| Sales          | Software Distribution | Install Software Package LotusClient^1.0 |
| PDAs           | Software Distribution | Install Software Package EasySync^1.0 |

Once the configuration elements have been determined, the administrator uses Change Manager to create a new reference model and specify the configuration elements. As part of this operation, the administrator selects the LotusClient^1.0 software distribution configuration element and specifies EasySync Pro as a co-requisite. This ensures EasySync Pro is not installed unless Lotus Notes is already installed.

Note: Reference models can also be created by copying or importing existing ones, and changing them.

Adding subscribers to a reference model

Once the reference model is ready, the administrator assigns subscribers to the reference model by building a list of targets, then assigning the contents of the list as subscribers to the model. Alternatively, the administrator can choose an inventory query or a profile manager as a subscriber.

Synchronizing the reference model

The administrator then uses Change Manager to synchronize the reference model. When the administrator synchronizes the reference model, Change Manager first performs the check described by the Inventory Data element. This check is performed against all the subscribers associated to the reference model. If the check fails, the synchronization fails. If the check is successful, Change Manager automatically creates a new activity plan containing only those activities that are needed to maintain the preferred configuration of the target. Once the activity plan is created, the administrator submits it to Activity Planner for running.

When the plan runs, the LotusClient^1.0 and EasySync^1.0 software packages are distributed to the endpoints and the DB2EPlace^1.0 software package is distributed to the PDAs. The Inventory Configuration element then runs a scan to verify the distribution.
Chapter 6, “Scenario: Managing a network with firewalls” on page 27 describes how to distribute software across firewalls using the Web Interface.

For additional information about using reference models to manage your network, refer to:

- User’s Guide for Software Distribution
- User’s Guide for Inventory
- User’s Guide for Deployment Services
Introducing IBM Tivoli Configuration Manager
Chapter 6. Scenario: Managing a network with firewalls

The more complex and sophisticated that a network becomes, the greater is the concern about security. XYZ Instruments Corporation wants to distribute the Lotus Notes, EasySync Pro, and DB2 Everyplace applications again, but this time their network has been made more secure by introducing firewalls. In this scenario, the administrator uses the Web Interface to perform Tivoli Configuration Manager operations across firewalls.

The Web Interface provides a two-step, push-pull solution to performing Tivoli Configuration Manager operations across firewalls, see Figure 4.

First, the administrator distributes a software package to the endpoint where the Web Gateway component is installed. The package is stored there in a depot and the administrator provides access to the package to Web Interface client users. This is the push and is called publishing. Next, the user uses a Web browser to access the Web Interface servlet that queries the Web Gateway component for Web objects that have been published for the user. The user selects the Web object, which is then downloaded to the user machine together with software to run the object. This is the pull. The operation runs and the results are pushed back to the Web.
Gateway component where the results are stored temporarily in the database. The Web Gateway then sends the data to the appropriate Tivoli server.

Overview

The administrator decides to distribute the software using reference models. Doing this involves the following overall process:

1. Creating the reference model (see “Creating a reference model” on page 23)
2. Adding subscribers to the reference model (see “Adding subscribers to a reference model” on page 24)
3. Publishing the reference model
4. Synchronizing the reference model
5. Verifying the installation

Publishing the reference model

The administrator uses the command line to define the category tree seen in the Web Interface category panel and publish the reference model. For example:

/Company
 /All
   – Lotus Notes
 /Sales
   – EasySync Pro
   – DB2 Everyplace

Synchronizing the reference model

When the Web Interface user decides to synchronize a reference model, the user logs onto the Web Interface and selects the reference model from the appropriate category.

Note: Only users in the Sales department can see the EasySync Pro and DB2 Everyplace reference models.

The Web Interface user synchronizes the reference model. This synchronization installs the software.

Verifying the distribution

To verify the distribution, the administrator publishes an inventory profile which the Web Interface user can use to run a scan.

When you distribute an inventory profile across a firewall, the profile is stored by the Web Gateway component. An endpoint user then uses the Web Interface to connect to the Web Gateway component, pull the profile, and run it locally. When a PDA connects to the Web Gateway component, the profile is pulled automatically.
Additional information

For more information about managing networks with firewalls, refer to:

- User’s Guide for Deployment Services
- Planning and Installation
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