



**IBM SmartCloud Control Desk 7.5
IT Asset Management Fundamentals
Student's Training Guide**

Course: TP380 ERC: 1.0

October 2012

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About this book

IBM

IBM SmartCloud Control Desk 7.5 IT Asset Management Fundamentals Student Guide



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Course description

This course introduces the fundamental concepts of managing the lifecycle of IT assets by using IBM® SmartCloud® Control Desk. Managing the lifecycle of your IT assets helps you control costs and optimize IT asset utilization. You learn how to track and manage physical assets from procurement to disposal. You also learn how to manage software licenses to mitigate license and regulatory compliance risks. This 3-day hands-on course includes lectures, discussions, demonstrations, and a wide variety of exercises.

Audience

This course is for project teams, system administrators, implementers, consultants, and anyone else who wants to learn how to use the features and functions of IBM SmartCloud Control Desk to manage hardware and software.

This course assumes that you are familiar with the following concepts:

- IBM Service Management concepts
- IBM SmartCloud Control Desk architecture
- IBM SmartCloud Control Desk navigation

You can obtain this knowledge by attending the *IBM SmartCloud Control Desk 7.5 Foundations* course.

IBM Tivoli Technical Education

The latest information about IBM Tivoli education offerings can be found online at

<http://www.ibm.com/software/tivoli/education/>

Also, if you have any questions about education offerings, send an email to the appropriate alias for your region:

- Americas: tivamedu@us.ibm.com
- Asia Pacific: tivtrainingap@au1.ibm.com
- EMEA: tived@uk.ibm.com

Tivoli User Group Community

You can get even more out of Tivoli software by participating in one of the 91 independently run Tivoli User Groups around the world. Learn about online and in-person Tivoli User Group opportunities near you at www.tivoli-ug.org.

Course objectives



Course objectives

When you complete this course, you can perform the following tasks:

- Describe the features and applications to manage IT assets in IBM® SmartCloud® Control Desk.
- Explain the different stages of the IT asset lifecycle.
- Manage the lifecycle of an asset.
- Manage software licenses.

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Course outline

The following outline is a high-level description of the contents of this course. Each unit has an overview presentation, and most have a series of student exercises designed to reinforce the concepts presented. The course contains the following units:

- **Unit 1: IT asset management overview**

IBM® SmartCloud® Control Desk is a product that provides a wide range of functions for hardware asset management and software license management. This unit provides an overview of the IT asset management features in the product.

- **Unit 2: Planning**

Determining and configuring IT assets is critical for mapping infrastructure components to applications and to services that are delivered to users. This unit focuses on planning item and asset configurations. Software configurations are covered in Unit 7: Managing software licenses. In addition, this unit covers the building blocks of the purchasing process, which include vendors and contracts.

- **Unit 3: Acquisition**

This unit describes the acquisition phase of the IT asset lifecycle. Carrying out procurement processes ensures that acquisition and outsourcing maximize the potential of the asset strategy.

- **Unit 4: Deployment**

The deployment phase includes the practices for deploying assets to the user. These deployment practices include issues, transfers, mass moves, and swaps. Hardware and software installations, moves, additions, and changes are all common activities that are related to IT assets. Changes occur when employees are hired, change positions, or leave the company. IT departments often use the acronym IMAC (Install, Move, Add, Change) to describe the movement of components in an organization. This unit covers the deployment activities. It also covers at a high-level how to use service requests and work orders to manage the deployment. To learn more about service requests, considering taking the IBM SmartCloud Control Desk 7.5 Service Request Management Fundamentals course. To learn more about work orders, consider taking the Tivoli's Process Automation Engine 7.5 Fundamentals course.

- **Unit 5: Management**

This unit describes how IBM SmartCloud Control Desk can manage deployed IT assets, which can include both hardware and software assets. This unit focuses on computer assets. Software assets are covered in Unit 7: Managing software licenses.

- **Unit 6: Disposal**

In the Disposal stage, decisions regarding asset retirement and decommissioning are made and the business processes that are needed to support those business functions are implemented. In this unit, you learn how the system supports the retirement or disposal of IT assets.

- **Unit 7: Managing software licenses**

Customers need greater visibility on their purchased software contracts, agreements, and license entitlements. They need to compare what they purchased to their deployed software inventory, software usage, and associated hardware environment. This unit covers how to manage software licenses in IBM SmartCloud Control Desk.

- **Unit 8: Discovery**

Software license management has two parts to it. First, you must track what you purchased. Unit 7: Managing software licenses focused on that aspect. Second, you must verify what was physically deployed. Often, there is a discrepancy between the two. This difference can be caused by many factors such as users installing software without permission or assets being removed from service without removing the software allocation. To verify what was deployed, you must implement a discovery tool. This unit covers the discovery process. It focuses on using IBM Tivoli Asset Discovery for Distributed as the primary discovery tool.

Typographical conventions

In this course, the following typographical conventions are used.

Convention	Usage
Bold	Commands, keywords, file names, authorization roles, URLs, or other information that you must use literally appear in bold .
<i>Italics</i>	Variables and values that you must provide appear in <i>italics</i> . Words and phrases that are emphasized also appear in <i>italics</i> .
<i>Bold Italics</i>	New terms appear in <i>bold italics</i> when they are defined in the text.
Monospace	Code examples, output, and system messages appear in a monospace font.
>	In this manual, the arrow character is used as a path arrow. The arrow indicates the path to the named window.

Product information

Software release numbers

The IBM Tivoli software and release numbers referred to in this guide are as follows.

Software	Release Number
Tivoli's Process Automation Engine	7.5
IBM SmartCloud Control Desk	7.5
IBM Tivoli Integration Composer	7.5
IBM Tivoli Asset Discovery for Distributed	7.5
Software Knowledge Base Toolkit	1.2.0.3
Tivoli Common Reporting	2.1.1

Product documentation

In some cases IBM Tivoli product documentation is available in the classroom or on the Instructor Resources CD. For access to documentation outside the classroom environment, visit the IBM website.

**[http://www.ibm.com/developerworks/wikis/display/tivolidoccentral/
IBM+SmartCloud+Control+Desk](http://www.ibm.com/developerworks/wikis/display/tivolidoccentral/IBM+SmartCloud+Control+Desk)**

Unit 1: IT asset management overview

IBM

Unit 1 IT asset management overview



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Introduction

IBM® SmartCloud® Control Desk is a product that provides a wide range of functions for hardware asset management and software license management. This unit provides an overview of the IT asset management features in the product.

Objectives



Objectives

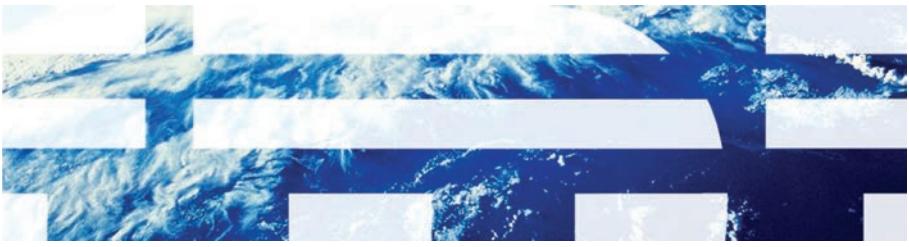
When you complete this unit, you can perform the following tasks:

- Explain IT asset management.
- Illustrate the value proposition of IT asset management with IBM SmartCloud Control Desk.
- Define the phases of the IT asset management lifecycle.
- List the common IT asset management roles.

Lesson 1: IT asset management



Lesson 1: IT asset management



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What is an IT asset



What is an IT asset

- An **IT asset** is any purchased, leased, or licensed hardware device, software product, or related contract service that is involved in supporting business services.
- IT assets include financial and legal obligations.
- The goal of **IT asset management** is to manage these IT assets through their lifecycle.

1-4

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IT asset management is critical to the business



Controlling your IT assets is critical to the business. To properly control your assets, you must be able to answer questions such as:

- What assets do you have
- How can you locate an asset
- Who is using an asset
- Is the asset compliant
- What is it costing to maintain the asset

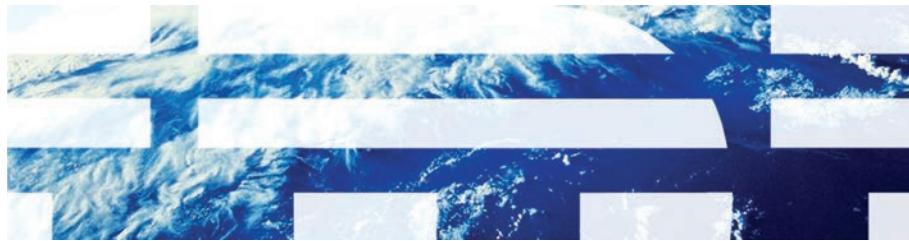
IT asset management business priorities



Lesson 2: IBM SmartCloud Control Desk IT asset management



Lesson 2: IBM SmartCloud Control Desk IT asset management



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IBM SmartCloud Control Desk IT asset management

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IBM SmartCloud Control Desk IT asset management

- Full asset lifecycle management support for hardware and software license management.
- Identifies under- or over-used software to reduce costs because of overpurchasing and to reduce risk to underpurchasing.
- Tightly integrated with the following tools to provide a complete license management solution:
 - IBM Tivoli Asset Discovery for Distributed
 - Provides discovery and identification services for distributed platforms and virtual environments
 - Monitors software usage and trends
 - Provides reporting for inventory and usage
 - IBM Tivoli Asset Discovery for z/OS
 - Provides discovery and identification services for the z/OS platform
 - Monitors software usage and trends
 - Provides reporting for inventory and usage
 - Software Knowledge Base Toolkit
 - A collection of information about software products, their components, dependencies between them and the means to discover them
 - Shared component that is used by all related IBM products

IBM SmartCloud Control Desk

Tivoli Asset Discovery for Distributed

Tivoli Asset Discovery for z/OS

IBM License Metric Tool

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IBM SmartCloud Control Desk pulls together all the information that is necessary for the full spectrum of IT asset management. Direct integration is provided to Tivoli asset discovery products to provide full software asset management:

- IBM SmartCloud Control Desk
 - Provides full asset lifecycle management support.
 - Provides support for software asset management including full support for software license management.
 - Identifies underused or overused software to reduce costs from overpurchasing and to reduce risk to underpurchasing.

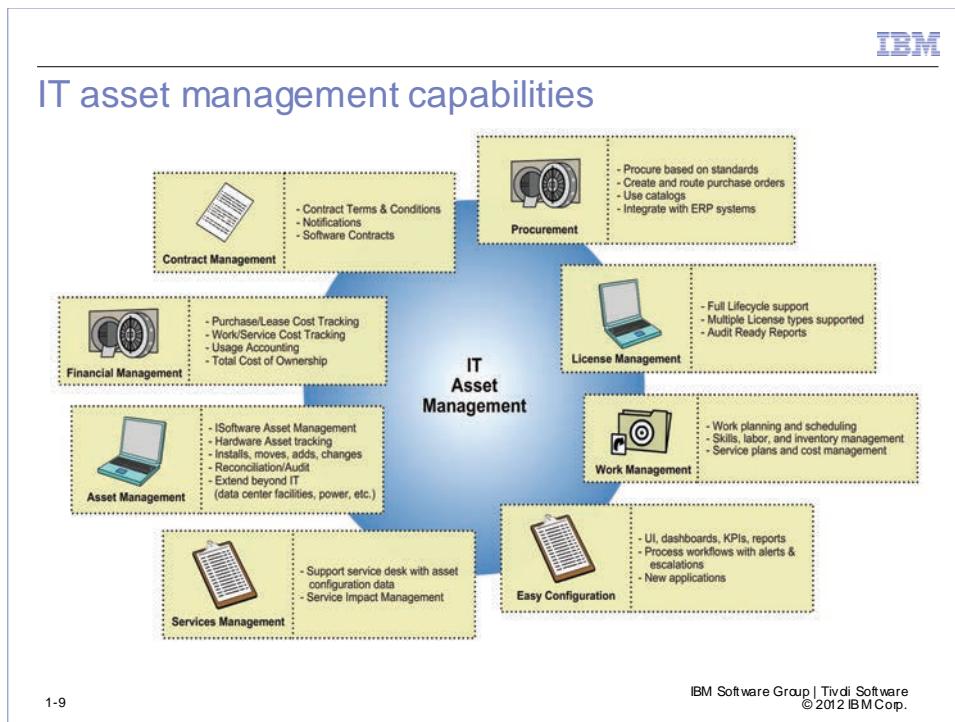
- IBM Tivoli Asset Discovery for Distributed
 - Provides discovery and identification services for IBM and non-IBM software on distributed platforms.
 - Monitors software use and trends.
 - Provides inventory and use for virtual environments including VMware.
 - Provides reporting for inventory and use.
 - Includes an upgrade path from IBM License Metric Tool.



Note: Customers who agree to PVU subcapacity pricing must implement IBM License Metric Tool or IBM Tivoli Asset Discovery for Distributed. IBM License Metric Tool is a no-fee utility that is specifically designed to monitor compliance with PVU pricing. It helps maintain an up-to-date inventory of deployed PVU-based software and measures the maximum processor core capacity in PVUs that are available to this deployed software. IBM Tivoli Asset Discovery includes all of the features of IBM License Metric Tool plus more features to monitor other license capacity types. This difference is covered in Unit 8.

- IBM Tivoli Asset Discovery for z/OS
 - Provides discovery and identification services for the z/OS platform Version Release Modification Level (VRMF).
 - Monitors software usage and trends.
 - Reports on the MIPS (formerly meaning millions of instructions per second) capacity of each LPAR under which software is running.
 - Provides reporting for inventory and usage.
- Software Knowledge Base Toolkit
 - Provides a common repository for software names, components, and signatures.
 - Is maintained by IBM and used by IBM products.
 - Can have more software added by user.

IT asset management capabilities

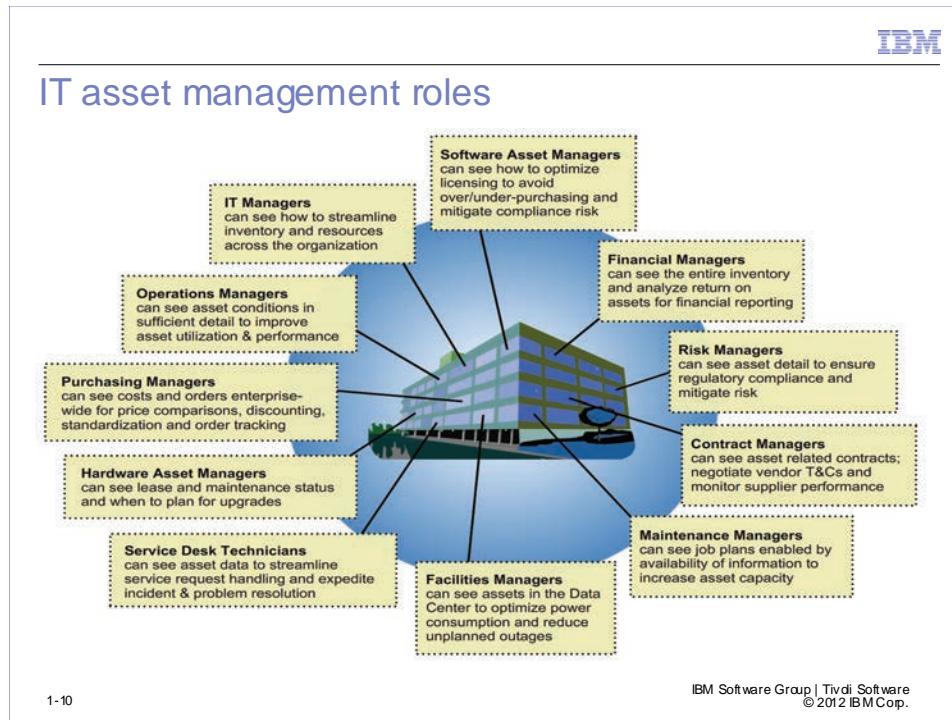


IBM SmartCloud Control Desk provides these capabilities:

- Contract management
- Procurement
- Asset management
- Financial management
- License management
- IT asset lifecycle tracking

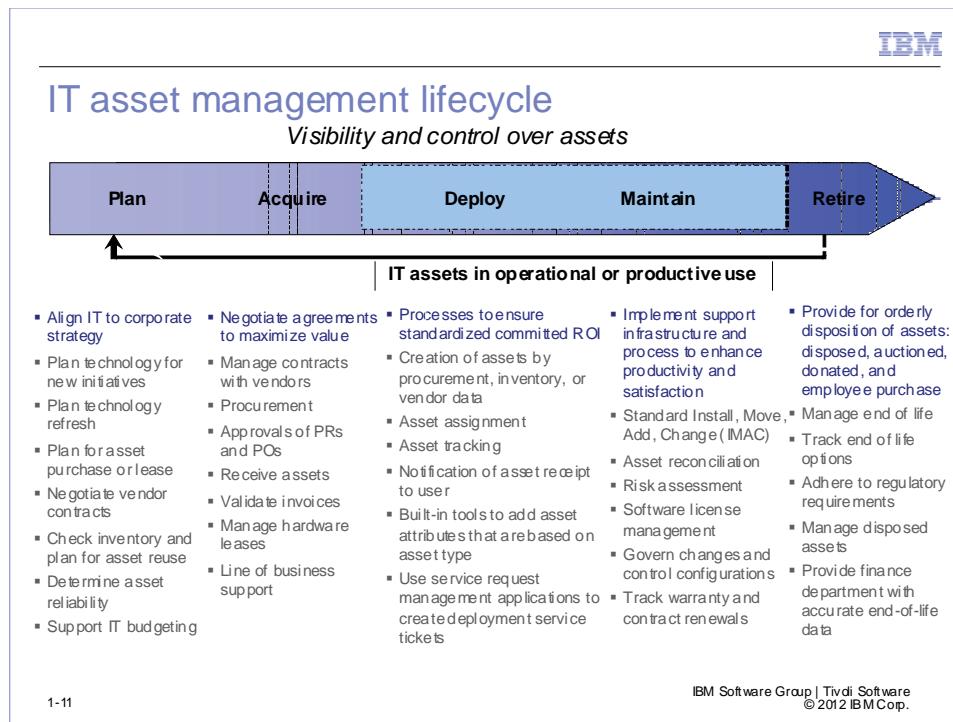
You can use IBM SmartCloud Control Desk to put strong workflow processes in place. These processes ensure that your IT asset management procedures are supported and followed.

IT asset management roles



IBM SmartCloud Control Desk facilitates many tasks that are performed by people in traditional business process roles. In many ways, it functions as a bridge and common tool for traditional business process roles and traditional IT process roles.

IT asset management lifecycle



IBM SmartCloud Control Desk can manage hardware and software assets by using the IT asset management lifecycle from planning to retirement. Managing the lifecycle with IBM SmartCloud Control Desk aligns IT with your company strategy, cost savings, and improved business processes. These lifecycle phases are included:

- Plan**

In the Plan phase, a company formulates a budget and an associated schedule for hardware and software acquisitions. The technology refresh cycle indicates when existing assets need to be replaced based on company policy. Stockrooms are used to keep spares and check inventory before a purchase is made.

- Acquire**

In the Acquire phase, the asset is purchased and created in the application. An established purchase order approval process expedites and controls purchasing. Assets can be created from a PO, receipt of an asset into inventory, or directly from a vendor.

- Deploy**

In the Deploy phase, assets are assigned to an employee, project, or business unit. Employee information, including location, is received from Human Resources (HR). The status of the asset is tracked as it moves throughout the IT asset management lifecycle. Communication with the user provides a smoother deployment. Integration with the service desk can generate service tickets for the technician.

- **Maintain**

In the Maintain phase, asset reconciliation occurs between what is discovered and what was purchased. Installations, moves, additions, and changes (IMAC) must be recorded. Integration with change management provides more robust change management processes, such as requests for change (RFC), to be implemented. During the Maintain phase, asset costs are managed by software license compliance, monitoring stock rooms, and viewing software use.

- **Retire**

In the Retire phase, an asset has reached its end of life. The asset can be disposed of, auctioned, donated, sold to an employee, returned to a leasing company, or purchased.

The IT asset management lifecycle is an endless loop. When an asset is retired, the planning phase begins to determine how to replace the asset, if required.

The IT asset lifecycle is more of a loop than the linear depiction in this graphic. Therefore, when you are retiring an asset, you are often planning for its replacement. The stages do not have to be completed in order. You might be faced with an unexpected need for an IT asset, which requires you to start at the acquisition phase.

Review questions

1. True or False: The goal of IT asset management is to manage the operational aspects of IT assets.
2. Which discovery tool is closely integrated with IBM SmartCloud Control Desk to provide a complete license management solution?
 - a. Tivoli Application Dependency Discovery Manager
 - b. Tivoli Asset Discovery for Distributed
 - c. IBM License Metric Tool
 - d. Tivoli License Compliance Manager
3. True or False: The steps in the asset management lifecycle must always be done in order.
4. Which tool is used to provide a collection of information about software products, their components, dependencies between them, and the means to discover them?
 - a. Software Knowledge Base Toolkit
 - b. Tivoli Asset Discovery for Distributed
 - c. Tivoli Application Dependency Discovery Manager
 - d. Software Catalog Toolkit

Review answers

1. True or False: The goal of IT asset management is to manage the operational aspects of IT assets.

False. The goal of IT asset management is to manage these IT assets through their lifecycle.

2. Which discovery tool is closely integrated with IBM SmartCloud Control Desk to provide a complete license management solution?

B. Tivoli Asset Discovery for Distributed is tightly integrated with IBM SmartCloud Control Desk to provide a complete license management solution.

3. True or False: The steps in the asset management lifecycle must always be done in order.

False. The asset management lifecycle provides a framework for discussion and characterization of the process. Many times, however, real processes are done in a different order. For example, your company might want an item that is not on contract. In that case, a purchase requisition is created before the contract.

4. Which tool is used to provide a collection of information about software products, their components, dependencies between them, and the means to discover them?

A. The Software Knowledge Base Toolkit is used to create a software catalog that contains information about software products, their components, dependencies between them and the means to discover them.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Explain IT asset management.
- Illustrate the value proposition of IT asset management with IBM SmartCloud Control Desk.
- Define the phases of the IT asset management lifecycle.
- List the common IT asset management roles.

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Unit 2: Planning

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Unit 2 Planning



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Introduction

Determining and configuring IT assets is critical for mapping infrastructure components to applications and to services that are delivered to users. This unit focuses on planning item and asset configurations. Software configurations are covered in Unit 7: Managing software licenses. In addition, this unit covers the building blocks of the purchasing process, which include vendors and contracts.

Objectives

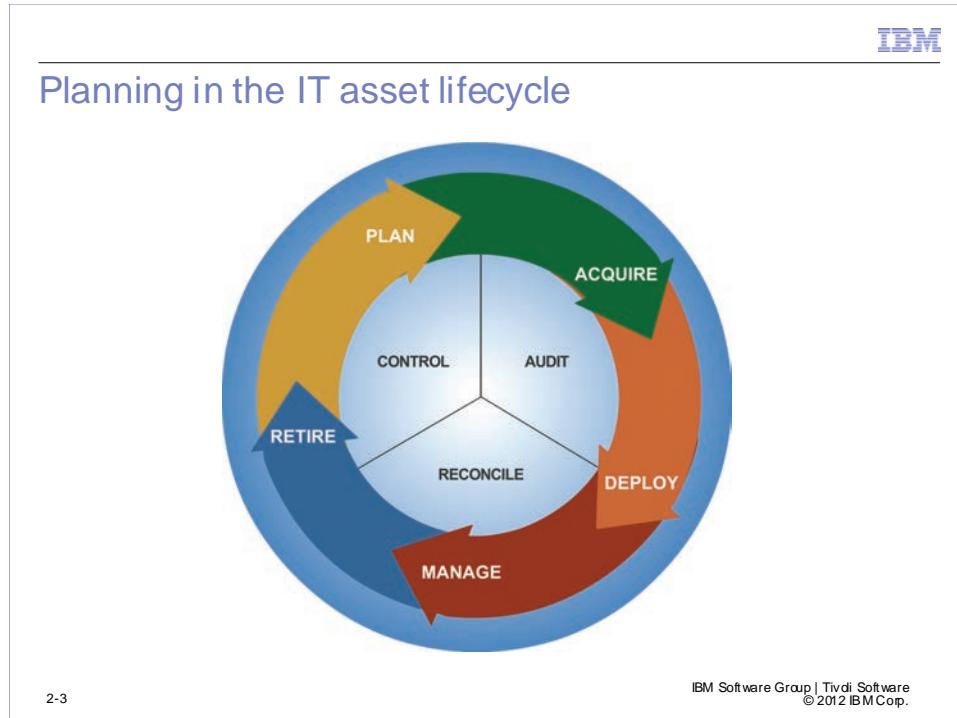


Objectives

When you complete this unit, you can perform the following tasks:

- Define items and assets.
- Plan for a technology refresh.
- Define vendors to be used for purchasing.
- Create contracts.
- Associate contracts with items and assets.

Planning in the IT asset lifecycle



This unit focuses on the planning stage of the IT asset lifecycle. Decisions are made in this phase regarding how to define these items:

- IT hardware assets
- Software licenses
- Asset structures
- Purchase plans, standards, vendors, and contracting vehicles

The understanding of these records is critical to the correct operation of the system.



Note: Software licenses are covered in Unit 7: Managing software licenses.

Lesson 1: Items and assets

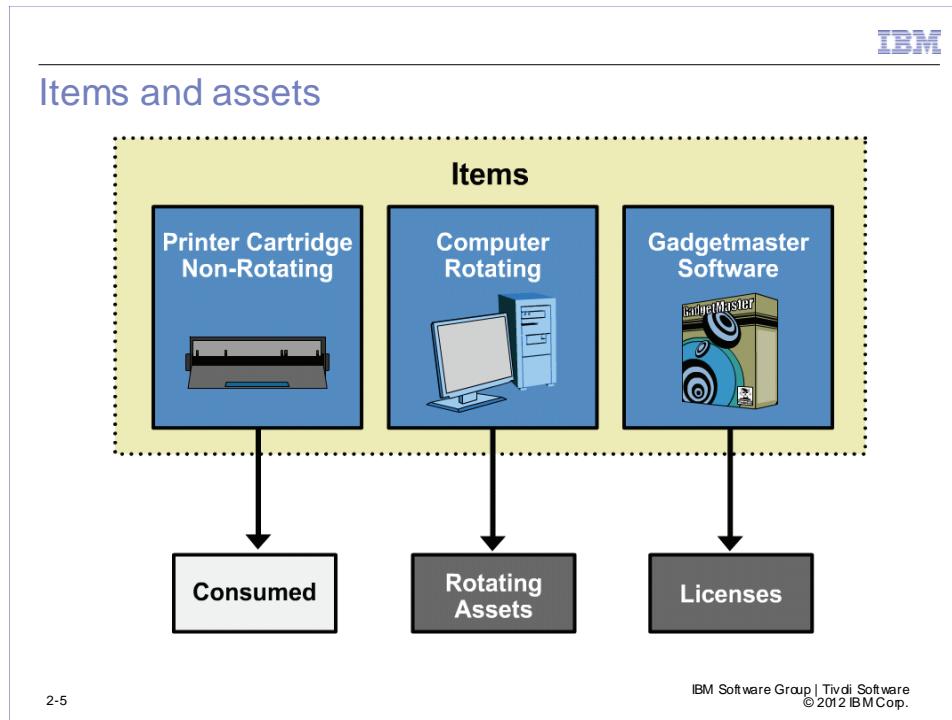
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Lesson 1: Items and assets



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Items and assets



Key terms that are used in this unit are defined in the following table.

Term	Definition
Item	An orderable entity.
Rotating item	An inventory item with a generic item number and a current balance (which can be greater than 1).
Nonrotating item	An item that is consumable.
Rotating asset	An individual instance of a rotating item, which is identified by an individual asset number.
Inventory	The function of tracking items. You can track item balances, and vendors who supply an item, down to the bin and lot level for each storeroom.
Authorized asset	An asset that is defined in the Assets application. It is tracked throughout the IT lifecycle.
Deployed asset	An asset that is discovered by using a discovery tool in an organization. It is not managed throughout the IT lifecycle unless it is linked to an authorized asset.

Item master

The screenshot shows the 'Item master' screen in the IBM SmartCloud Control Desk. At the top, there's a navigation bar with tabs: 'View Record List > W510', 'Item' (which is selected), 'Storerooms', 'Vendors', 'Specifications', 'Item Assembly Structure', and 'Price Books'. Below the navigation bar, the main area has several input fields and dropdown menus. On the left, fields include 'Item' (W510), 'Item Set' (PMSCS1), 'Commodity Group' (with a search icon), 'Commodity Code' (with a search icon), 'Meter Group' (with a search icon), 'Meter' (with a search icon), 'Lot Type' (NOLOT), 'Maximum Quantity Issued' (empty), 'Order Unit' (EACH), and 'Issue Unit' (EACH). On the right, there are checkboxes for 'Attachments', 'Status' (ACTIVE), 'Rotating?' (checked), 'Condition Enabled?' (unchecked), 'Kit?' (unchecked), 'Capitalized?' (unchecked), 'Inspect on Receipt?' (checked), 'Add as Spare Part?' (unchecked), 'Attach to Parent Asset on Issue?' (unchecked), 'Software?' (unchecked), and 'Tax Exempt?' (N). There's also a link 'Click to see image in its actual size' with a small image of a laptop. At the bottom left is a page number '2-6' and at the bottom right is a copyright notice 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The Item Master application is used to define items that you plan to purchase or stock in a storeroom. Think of an item as a template that defines the type of IT assets that you want to track in IBM SmartCloud Control Desk. You can track the IT assets from an inventory perspective or a lifecycle perspective. When creating an item record, you define the main attributes of the item. You can also enter any alternative items.

The Item Master application has five or six tabs depending on the edition of IBM SmartCloud Control Desk that is installed.

Tab	Function
Item	Enter, view, or modify items; also specify alternate items that the organization uses and that are stocked in storerooms
Storerooms	View a read-only list of information about storerooms that stock the item
Vendors	Enter, view, or modify vendor-specific information, such as lead time, last price, last order data, catalog, and order unit view; also manage a list of vendor companies that supply the item
Specifications	Enter, view, or modify specification templates that are associated with the chosen classification

Tab	Function
Item Assembly Structure (IAS)	Enter, view, or modify an IAS, which is a list of the individual parts and subassemblies that are required components of an item
Price Books	View price books that reference the selected item. A price book is a catalog of prices for items, tools, or services. It contains the published list price, which can vary depending on the customer and the situation. This tab is specific to the Service Provider edition of IBM SmartCloud Control Desk.

When you create an item record, you can perform the following tasks:

- Define the stock type of the item.
- Define whether an item has an expiration date (Lot or No Lot).
- Define the item as a rotating asset.
- Identify alternative items as substitutes for the item.
- Create condition-enabled items to track the value of an item as its condition changes.
- Create item kits, which are collections of items that are issued as a single unit.
- Add the item to one or more storerooms.
- Define information that is related to the item, such as vendors that carry the item or specifications for the item.
- List other parts that are needed to build the item (item assembly structure).

For items that are classified as IT assets, you can specify a refresh cycle that is used to calculate a technology refresh date for a specific asset. When you create software items, you can associate the items to software products that are maintained in the software catalog. You can also specify that a license is required for a software item to ensure that the license is associated with the item when it is received. This topic is covered in Unit 7: Managing software licenses.

Item sets and the item master

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Items sets and the item master

Organizations that use the same item set use the same item master and share items when they are created.

```
graph TD; IS[Item Set 1] --- IM[Item Master]; IM --- OA[Org A]; IM --- OB[Org B]; OA --- S1[Site 1]; OA --- S2[Site 2]; OA --- S3[Site 3]; OB --- S4[Site 4]; OB --- S5[Site 5]; OB --- S6[Site 6]
```

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Organizations that use the same item set use the same item master. Therefore, they can share items across organizations and sites. Items sets are covered in the *IBM SmartCloud Control Desk 7.5 Foundations* course.

Common item sets are used when multiple organizations want to share a catalog. Perhaps, through a corporate policy, they purchase from the same vendors. Or, perhaps they have many standard IT items that they must use for IT.

Rotating versus nonrotating items



Rotating versus nonrotating items

- Nonrotating items
 - Consumable
 - Not serialized
 - Tracked and managed with the Inventory application
- Rotating items
 - Template for defining specific assets
 - Serialized when issued as assets
 - Not consumed but issued as assets
 - Tracked and managed with the Assets application

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To further differentiate between a rotating and nonrotating item, remember the following points:

- Nonrotating items are created in the Item Master application and use the Inventory application to track, run actions, and contain item detail information.
- Rotating items are created in the Item Master application and use the Assets application to track, run actions, and contain asset detail information.

Rotating item and asset configuration

The screenshot shows two overlapping application windows. The top window is titled 'View Record List > W510' and is labeled 'Item record'. It displays an item record for 'W510' (WS10 notebook) with fields like 'Status: ACTIVE' and 'Commodity Group: PMSCP1'. A red circle highlights the 'Rotating?' checkbox, which is checked. The bottom window is titled 'View Record List > ITAM7001' and is labeled 'Asset record'. It displays an asset record for 'ITAM7001' (WS10 notebook) with fields like 'Status: OPERATING' and 'Site: PMSCRTP'. A red circle highlights the 'Rotating Item?' checkbox, which is also checked. Both windows show a preview image of a laptop.

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An item is designated as rotating because it shares properties of both items and assets. A rotating item can have inventory value and issue cost, like an item. However, a rotating item cannot be consumed. Rather, it is maintained as an asset. After creating an item and adding it to a storeroom, you can use the Assets application to create the asset records. You can create a purchase order for the rotating item and serialize it when it is received.

The **Rotating** option specifies whether the item is a rotating asset. If the Rotating option is selected, the item becomes an asset that can be tracked by location (such as SOUTHERN) or by item number (such as W510). It is an asset and has an asset number (such as ITAM7001) in the Assets application.

Item specifications and attributes

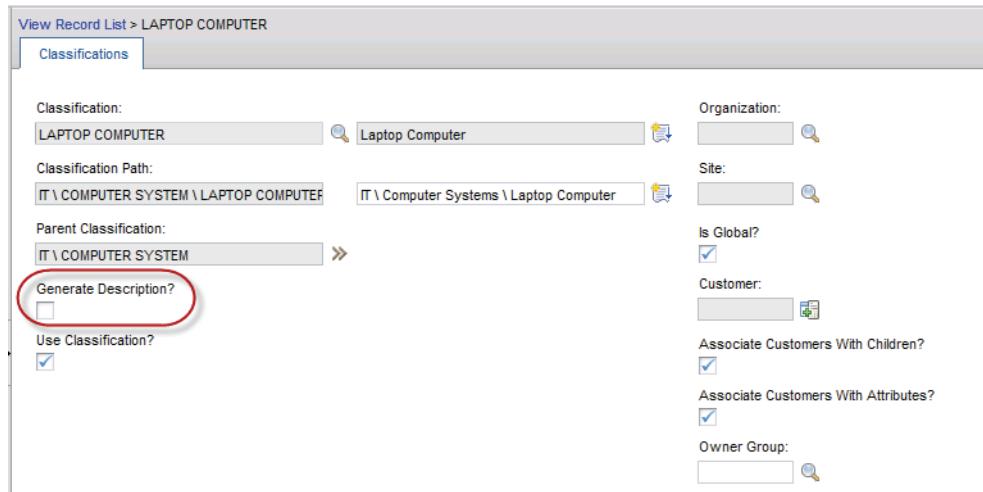
The screenshot shows the 'View Record List > W510' screen in the IBM SmartCloud Control Desk. The 'Specifications' tab is selected. The 'Item' field contains 'W510' and the 'Classification' field shows 'IT \ COMPUTER SYSTEM \ LAPTOP COMPUTER'. The 'Class Description' field shows 'IT \ Computer Systems \ Laptop Computer'. Below these fields is a table titled 'Specifications' with 1 - 10 of 10 rows. The table has columns for Attribute, Description, Value, Unit of Measure, and Match. The data in the table is as follows:

Attribute	Description	Value	Unit of Measure	Match
PRCTYPE	Processor Type	i7		GLOBAL
PRCSPEED	Processor Speed	2.6	GHZ	GLOBAL
PRCCOUNT	Processor Count			GLOBAL
DRVSIZE	Hard Drive Size	500.0	GBYTE	GLOBAL

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The specifications contain attributes about an item, such as its size, speed, material, and capacity. These attributes can be used to define specific information about the item, making it easier to distinguish from similar items. You apply the specification template that is associated with the chosen classification. After choosing a classification for an item, the Specifications section shows the predefined list of attributes. Values that are specific to the item can be changed.

Classifications have an option that is called ***Generate Description***, as illustrated in the following example.



This option automatically generates the description for an item when the classification is applied. If you entered an item description, it is overwritten with the classification description. Therefore, if you want to use a different description for your items, clear this option in the classification. Creating and modifying classifications is covered in the *IBM SmartCloud Control Desk 7.5 Foundations* course.

Item assembly structure (IAS)

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Item assembly structure (IAS)

- Are individual parts and subassemblies that are needed to build an item.
- Can be used to apply standard configurations.
- Are copied from an existing item master record.

Item	Description	Quantity	Remarks
ITAMONITOR	computer display	1.00	
G3PORT_RPLU	Thinkpad Series 3 Port Replicator	1.00	

View Record List > W510 Items Storerooms Vendors Specifications Item Assembly Structure Price Books

Top Level Item: W510 >> W510 notebook

Current Level: W510 >> W510 notebook

Belongs To: >>

Remarks:

Children Filter 1-2 of 2 Download

New Row

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An *item assembly structure* (IAS) is a hierarchical list of rotating items, subassemblies, and spare parts that are identified by the top-level item in the structure. An IAS is a generic structure that can be used to build multiple asset assembly structures. Essentially, it is a configuration template that can be applied to an asset.

There are two ways to create an IAS:

- On the **Item Assembly Structure** tab, click **New Row** to add child levels.
- Use the **Copy the Item Assembly Structure** action if structures were created in the system.

Item-specific IT fields



Item-specific IT fields

- Items can have a refresh cycle.
 - Assets that are based on an item can have a designated refresh date.
- Items can be designated as software.
 - Additional fields are displayed.
 - Association with a software catalog record is possible.
 - The item can be linked to procurement and receiving applications.

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For items that are classified as IT assets, you can specify a refresh cycle that is used to calculate a technology refresh date for a specific asset.

When you create software items, you can associate the items to software products that are maintained in the software catalog. You can also specify that a license is required for a software item to ensure that the license is associated with the item when it is received.

Item statuses



Item statuses

- Every item has a status.
- These product-provided status types are available:
 - Pending
 - Planning
 - Pending obsolescence
 - Active
- Status inheritance to organizations is controlled by the **Roll New Status to Organization and Inventory** option.
- Additional statuses can be added to the system.

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The following important status types are available:

- **Pending**: Items in Pending status are not visible from Item lookups.
- **Planning**: Items are not available to the system when you attempt to record selected GL transactions.
- **Pending Obsolescence**: You can use any existing items, but cannot replenish existing balances.
- **Active**: These items are available with no restrictions.



Note: You can add statuses by defining alternate values for the **ITEMSTATUS** synonym domain. Modifying synonym domains is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

A user can manage the status of an item for all related records. The system uses a set of inheritance rules to apply changes to an item from a higher level to a lower level. In the Item Master application, a change to an item status is applied to the organization and inventory level. From the organization level, a status change is applied to the inventory level. You can use the **Roll New Status to Organization and Inventory** option to control when a new status is applied to an organization.

Inventory

The screenshot shows the 'Inventory' application interface. At the top, there's a navigation bar with tabs: 'View Record List > W510', 'Inventory' (which is selected), 'Reorder Details', 'Rotating Assets', and 'Where Used'. Below the navigation bar, there are several input fields and dropdown menus for item details:

- Item:** W510 > W510 notebook
- Site:** PMSCRTP
- Status:** ACTIVE
- Attachments:** A link to view attachments.
- Storeroom:** IT HARDWARE > IT Hardware
- Default Bin:** An empty input field.
- Condition Enabled?**: An unchecked checkbox.
- Lot Type:** NOLOT
- Default Stage Bin:** An empty input field.
- Rotating?**: A checked checkbox.
- Issue Cost Type:** AVERAGE
- Capitalized?**: An unchecked checkbox.
- Consignment?**: An unchecked checkbox.
- Receipt Tolerance %:** An empty input field.
- Requires hard reservation on use?**: An unchecked checkbox.
- Kit?**: An unchecked checkbox.

Below these details are four summary panels:

- Available Balance Summary**:
 - Current Balance: 5.00
 - Hard Reserved Quantity Not Staged: 0.00
 - Hard Reserved Quantity Shipped: 0.00
 - Total Quantity Shipped: 0.00
- Other Balance Summary Information**:
 - Quantity Currently Reserved: 0.00
 - Hard Reserved Quantity: 0.00
 - Soft Reserved Quantity: 0.00
 - Quantity Staged: 0.00
- ABC Analysis**:
 - ABC Type: An empty input field.
 - * Count Frequency: 0
- Issue History**:
 - Last Issue Date: 8/23/12 20:58:04
 - Year to Date: 1.00
 - Last Year: 0.00
 - 2 Years Ago: 2 Years Ago

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Inventory is crucial for managing the movement of hardware and software assets. With one inventory system you can view, manage, and report on what the current asset structure consists of. With the Inventory application, you can track items and see when numbers fall below a specified reorder point so that you know when to reorder.

You can also use the Inventory application to track the movement of items into and out of storerooms by using these options:

- Issues and transfers (Issues and Transfers application)
- Receipts and returns (Receiving application)
- Work orders (Work Order Tracking application)

Use the Inventory application to view or modify item balances, costs, balances, bins, and lots. Inventory can be used to view master inventories and items at specific storeroom locations where items are stocked.

You can track stocked, nonstocked, and special order items by checking storeroom balances. When stock falls below a specified reorder point, the balances indicate when and what quantities to reorder.

The Inventory application has four tabs.

Tab	Function
Inventory	Enter, display, and update inventory information. Enter or view alternate or interchangeable items.
Reorder Details	Enter or view reorder details, such as: <ul style="list-style-type: none">• Reorder point• Lead time• Issue units A user can enter or view information about one or more vendors for an item, and information about manufacturers or models.
Rotating Assets	Identify and track rotating assets, that is, interchangeable assets that can be identified with a single item number.
Where Used	List all assets on which an item is listed as a spare part.

The organization can also use the Inventory application to perform the following tasks:

- Track the item vendors
- Track the storeroom locations where an item is located
- Track vendors that supply an item
- Manage stock levels and reorder items
- Run issue transactions

Assets

The screenshot shows the 'Assets' application interface. At the top, there's a navigation bar with tabs: Asset, Spare Parts, IT Details, Meters, Specifications, Relationships, Work, Topology, and Asset Usage. The 'Asset' tab is selected. Below the navigation bar, there are several input fields and dropdown menus:

- Asset:** ITAM7001, W510 notebook
- Site:** PMSCRTP
- Status:** OPERATING
- Type:** IT
- Asset Template:** (button)
- Attachments:** (button)
- Moved?**: (checkbox)
- Returned To Vendor?**: (checkbox)

A large section titled 'Details' contains the following fields:

- Parent:** (button)
- Maintain Hierarchy?**: (checkbox)
- Location:** SOUTHERN, Southern Facility
- Bin:** (button)
- Rotating Item:** W510, W510 notebook
- Calendar:** (button)
- Shift:** (button)
- Priority:** (button)
- Serial #:** DG5794
- Item Type:** ITEM

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An *asset* is any equipment or technology the company owns or leases that is managed and maintained in IBM SmartCloud Control Desk. You can use the Assets application to maintain and update the records of all assets and operating locations, such as:

- Serialize assets
- Build an asset hierarchy and subassemblies
- Maintain relationships among assets
- Manage assets throughout the IT asset lifecycle

The tabs in the Assets application are described in the following table.

Tab	Function
Asset	View, modify, add, or delete the main record or a serialized part or component for assets.
Spare Parts	View, modify, add, or delete a list of spare parts for the asset.
IT Details	View details that are only for IT assets. Displays information that is specific to IT management such as reconciliation information and refresh information.

Tab	Function
Meters	View or add metering information for assets.
Specifications	Classify and apply the specification template that is associated with the classification that is used.
Relationships	View the direct relationship of the asset to other assets.
Work	View work orders and tickets that are associated with the asset.
Topology	View the relationship of the asset to other assets in a graphical format.
Asset Usage	View usage meters and the monthly usage that is associated with the asset. Service providers can use billing schedules to set up automated billing to bill customers for monthly usage transactions. This tab is specific to the Service Provider edition of IBM SmartCloud Control Desk.

Asset IT details

The screenshot shows the 'Asset IT details' screen for an asset record. At the top, there's a navigation bar with tabs: View Record List > ITAM7001, Asset, Spare Parts, IT Details (which is selected), Meters, Specifications, Relationships, Work, Topology, and Asset Usage. Below the navigation bar, there's a message: 'You can view or enter information about IT assets. IT assets are assets that are classified under the IT hierarchy when the asset record is created. [More information](#)'. The main area contains fields for Asset (ITAM7001, W510 notebook), Site (PMSCRTP), Status (OPERATING), and Location (SOUTHERN, Southern Facility). There are also fields for Configuration Item and Configuration Item Name. A 'Details' section contains fields for Serial # (DG5794), Asset Tag, Primary User (STEVE, Steve Requester), GL Account, Rotating Item (W510, W510 notebook), Usage, Partition?, and Partition ID. At the bottom, there's a 'Software Products' section with a 'Filter' button and a note '0 - 0 of 0'. The footer of the screen includes the IBM logo and the text 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The IT Details tab in the Assets application is displayed only if you are licensed for IBM SmartCloud Control Desk, and you are working with an asset that is classified as an IT asset. To be classified as an IT asset, the classification for the asset must be under the top-level IT asset hierarchy that is defined for the organization. The top-level IT asset class is defined in the System Settings of the organization. Configuring the top-level IT asset class is covered in the *IBM SmartCloud Control Desk 7.5 Foundations* course.

The IT Details tab includes the following information about an IT asset.

Pane	Information
Summary	This top section includes asset record information such as asset number, status, site, location, and linked configuration item.
Details	<p>This section includes details about the IT asset:</p> <ul style="list-style-type: none"> • Serial number, asset tag • Primary user • GL account • Rotating item that is associated with the asset • Usage (such as server or standard workstation) • If it is a partition, and the identifier of the partition
Software Products	This section displays information about software products that are associated with the selected IT asset.
Software Licenses	This section displays information about software licenses that are associated with the selected IT asset.
Deployed Asset	<p>If the IT asset is linked to a deployed asset, this section has the following information:</p> <ul style="list-style-type: none"> • Deployed asset that it is linked to • Name of the link rule that was used to link the IT asset with the deployed asset • Site of the deployed asset.
Reconciliation Results	If a reconciliation task yields results for the IT asset, this section displays the reconciliation results. For example, if no link is found between the asset and a deployed asset, the application displays the following message: <i>This asset has no matching deployed asset. For information about reconciliation results, refer to the online help for Asset Reconciliation Result.</i>

Pane	Information
Technology Refresh	This section includes details about refreshing IT assets at the end of their lifecycles. The Cycle and Qualified Refresh Date fields display information that is specified in the Item Master application, which indicates the expected life of the asset in months and the date on which the asset is eligible for replacement. In this section, you can specify a date on which to refresh the asset, assign the asset a refresh status, and add comments about replacement plan.
End of Life	This section includes details about disposing of IT assets at the end of their lifecycles. You can specify: <ul style="list-style-type: none">• How you disposed of an asset (sold, donated, lost, or retired)• Date you disposed of it• Who received the asset• Any costs that you incurred when disposing of the asset, or the amount of any payment received for the asset

Associating people to assets

The screenshot shows the IBM SmartCloud Control Desk interface. On the left, there's a navigation bar with various options like 'Available Queries', 'All Records', 'Common Actions', and 'Associate Users and Custodians'. The 'Associate Users and Custodians' option is highlighted with a red circle. The main area displays a record for asset ITAM7001, which is a 'W510 notebook' in an 'OPERATING' status. Below this, there's a 'Details' section with fields for 'Serial#', 'Asset Tag', and 'Primary User'. To the right, a modal window titled 'Associate Users and Custodians' is open. It lists 'STEVE' as the primary user. Under 'Planned Modifications', there are checkboxes for 'Will be Primary?', 'Will be Custodian?', and 'Will be User?'. There are also buttons for 'Add!', 'Modify!', 'Remove!', and 'Class...'. At the bottom of the modal are 'OK' and 'Cancel' buttons. The footer of the page includes the text 'IBM Software Group | Tivoli Software © 2012 IBM Corp.' and the number '2-17'.

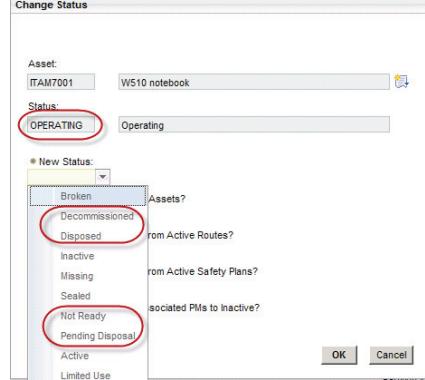
The system enables identification of one or more people who are associated with an asset in some way. The following table describes the three types of associations between people and assets in the system.

Asset Association	Description
Primary	This person has ultimate responsibility for the asset. The first person associated with an asset must be the primary owner. If other people are associated with the asset, then primary ownership can be moved to someone other than the first person.
Custodian	This person has the next level of responsibility for an asset. This person might work directly with the user of the asset, but does not directly access the asset.
User	This person has direct access to and use of the asset. If someone searches for a mobile asset, the user is the person to contact.

Asset statuses

Asset statuses

- Every asset has a status.
- There are five product-provided statuses:
 - Decommissioned
 - Disposed
 - Not Ready
 - Pending Disposal
 - Operating
- Additional statuses can be added to the system.



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The Status field indicates the status of an asset. There are five product-provided status types:

- **Decommissioned:** The asset was retired from service.
- **Disposed:** This status is similar to the decommissioned status. It indicates that the asset was moved to salvage or a similar location.
- **Not Ready:** The default status for new asset records. Asset records can be created before assets are received, installed, configured, inspected, or otherwise approved for their intended use.
- **Pending Disposal:** This status is similar to the *not ready* status. The asset is being prepared for removal from the enterprise.
- **Operating:** The asset was received, installed, configured, inspected, or otherwise approved for use or operation.



Note: You can add statuses by defining alternate values for the **LOCASSETSTATUS** synonym domain. Modifying synonym domains is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Some additional information about asset status includes the following points:

- The system defaults to a Not Ready status upon initial entry of an asset record.
- When an asset has a status of Decommissioned, it cannot be viewed from other applications, such as Work Order Tracking. However, it can be viewed in the Assets application.

Populating asset records



Populating asset records

Initial population of the Authorized Asset table can be achieved in four ways:

- Receiving information during the purchasing process
- Importing information by using the quick configuration tool
- Manual data entry of the asset records
- Promotion of deployed assets to authorized assets (individual or in bulk)

Lesson 2: Vendors

IBM

Lesson 2: Vendors



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Vendors



Vendors

- **Vendors** support purchasing, leasing, and establishing financial contracts as a part of the management of IT assets.
- When a vendor field is displayed on a system record, the value in the field represents a company record that is created in the Companies application.

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Although vendors are not required to manage assets, they help effectively manage and support the inventory and acquisition business functions. If the plan is to purchase, lease, or manage vendor contracts, then company records must be created in the system. When vendors exist, other modules, such as Inventory or Purchasing, can access them.

Company sets and company master records

The screenshot shows a user interface for managing company sets. At the top, there's a navigation bar with links like 'All Sets', 'Filter', 'Download', and a search icon. Below the navigation is a table with columns: Set, Description, Type, and Default Item Status. Two rows are visible: 'PMSCCS1' (Set) and 'PMSCS1' (Item set). The 'PMSCCS1' row has a dropdown arrow icon next to it. The 'PMSCS1' row has a blue triangle icon next to it. To the right of the table, there's a 'Details' panel. In the 'Details' panel, under 'Set', the value 'PMSCCS1' is highlighted in blue, while 'Company set 1' is also shown. Under 'Type', 'COMPANY' is selected. Under 'Default Item Status', 'PENDING' is selected. A checkbox labeled 'Automatically Add Companies to Company Master?' is present, and it is circled with a red oval. At the bottom of the interface, there's a footer with the text 'IBM Software Group | Tivoli Software © 2012 IBM Corp.' and the page number '2-22'.

Company sets are similar to item sets in that they are used to share company information across organizations. All company master records in the system belong to a company set. The company set is defined in the Sets application. When you create a company set, you can specify whether a company record should create a company master. If it is not specified, then the Company Master application must be used to create a company master record.



Note: Creating company sets is covered in the *IBM SmartCloud Control Desk 7.5 Foundations* course.

Company master records have these qualities:

- Define the records that belong to a company set
- Represent a vendor from whom goods or services are purchased, asset manufacturers, and other companies with whom business is done

Company records define the records that contain organization-specific information about a vendor, such as contact names and addresses.

If it is not specified that the company set automatically creates a company master record, then you must perform these steps:

1. Create the company master record in the Company Master application.
2. Search for the company master record in the Companies application and supply the contact and address information.

For searching and reporting purposes, companies can be grouped into one of three types:

- Courier or transport company
- Manufacturer of items or assets
- Vendor of items or assets

Company master

The screenshot shows the 'Company master' application window. At the top, there's a navigation bar with 'View Record List > COMPWLD' and tabs for 'Company Master', 'Contacts', and 'Addresses'. On the right side of the header is the 'IBM' logo. Below the header, the main area has several input fields: 'Company' (set to 'COMPWLD'), 'Customer #' (empty), 'Home Page' (empty), 'Company Set' (set to 'PMSCCS1' and highlighted with a red oval), 'Company Type' (set to 'V'), and a checkbox for 'Update Related Companies?'. Below these are two expandable sections: 'Purchasing Details' and 'Payment Details'. The 'Purchasing Details' section contains fields for 'Currency' (set to 'USD'), 'Freight Terms' (empty), 'Tax Exempt Code' (empty), 'FOB Point' (empty), 'Tax Exempt Number' (empty), 'Ship Via' (empty), 'Disqualified Vendor?' (unchecked), and 'Registration #' (empty). The 'Payment Details' section contains fields for 'Bank' (empty), 'Bank Reference #' (empty), 'DUNS #' (empty), and 'Pay To' (empty). At the bottom left is a page number '2-23', and at the bottom right is copyright information: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The Company Master application is used to create company master records that belong to a particular company set. Company master records contain data such as contact information, purchasing details, e-commerce details, and payment details of the company. After a company master record is created, the record must be added to one or more organizations.

The Company Master application has three tabs.

Tab	Function
Company Master	Create, view, modify, and delete company master records that belong to a company set.
Contacts	Display contact information for people within that company.
Addresses	Add and modify the General and Remit To contact information for the vendor.

Companies

The screenshot shows the 'Companies' application interface. At the top right is the IBM logo. Below it, the title 'Companies' is displayed. A navigation bar at the top includes 'View Record List > COMPWLD', 'Company' (which is selected), 'Contacts', 'Addresses', and 'Branches'. The main area contains several input fields and dropdown menus. On the left, there's a 'Company' section with fields for 'Company' (set to 'COMPWLD'), 'Parent' (with a dropdown menu), 'Customer #', and 'Home Page'. To the right of this is an 'Attachments' section with a file icon and a 'Company Type' dropdown set to 'V'. Below these are 'Organization' (set to 'PMSCIBM') and a 'Use Parent Remit To?' checkbox. Two large panels are centered: 'Purchasing Details' on the left and 'Payment Details' on the right. The 'Purchasing Details' panel includes fields for 'Currency' (set to 'USD'), 'Freight Terms', 'Tax Code', 'FOB Point', 'Tax Exempt Code', 'Ship Via', 'Tax Exempt Number', 'Registration #', 'Pay Tax to Vendor?' (with a checked checkbox), and 'Inspection Required?'. The 'Payment Details' panel includes fields for 'Bank', 'Bank Reference #', 'DUNS #', 'Pay To', and 'Payment Terms'. At the bottom left is a page number '2-24' and at the bottom right is a copyright notice: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The Companies application maintains detailed information about vendors, manufacturers, and other companies. You can create company branches to show when purchases are made from national vendors with local offices.

You can also disqualify a vendor with the Companies application. When a vendor is disqualified, new transactions cannot be entered for the vendor. However, existing transactions for that vendor are not affected.

The Companies application has the following four tabs.

Tab	Function
Company	Add, view, modify, or delete a company record.
Contacts	Add, view, modify, or delete the contacts for a company record.
Addresses	View and modify the General and Remit To contact information for the vendor.
Branches	Create, view, or modify the company and company branch (parent-child) relationships.

Lesson 3: Contracts

IBM

Lesson 3: Contracts



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Contracts

The image shows a screenshot of the IBM SmartCloud Control Desk interface. At the top right is the IBM logo. Below it, the word "Contracts" is displayed in blue. To the right of the title is a navigation pane titled "Go To Applications" which lists various modules: Administration, Assets, Change, Contracts, Financial, IT Infrastructure, and Integration. Under the Contracts module, several sub-options are listed: Purchase Contracts, Lease/Rental Contracts, Labor Rate Contracts, Master Contracts, Warranty Contracts, Software Contracts, and Terms and Conditions. At the bottom left of the main content area is the page number "2-26". At the bottom right is the copyright notice "IBM Software Group | Tivoli Software © 2012 IBM Corp."

Contracts are typically set up before you create an asset in the Assets application. There are six product-provided contract types. These contract types are managed in applications under the Contracts module:

- **Purchase contracts:** A purchase contract defines the terms and conditions of a purchase contract.
- **Lease or rental contracts:** A lease or rental contract record defines the overall terms and conditions of the agreement between a vendor and a customer regarding one or more rotating assets. The primary difference between a lease and rental contract is that a lease agreement allows for a buy-out at the end of the term.
- **Labor rate:** A labor contract provides a way to define the rates that are paid for a combination of craft and skill. It can also be used to specify the rates to be paid to contract labor. You enter a labor rate contract to create invoices for all approved labor transactions within a specified time period, such as every month.
- **Master contracts:** A master contract provides a mechanism to associate many contract types together for the same vendor and define terms and conditions for the relationship with the vendor. The Master Contracts application, in the Contracts module, is used to associate many types of contracts with the same vendor. A master contract defines the relationship with a vendor that applies to the contracts that are associated with it. It can also provide detailed information about contract terms and contact information.

You can include the following information in a master contract:

- Vendor information
- Effective dates
- Cost information
- Terms and conditions

The Master Contracts application contains the following tabs.

Tab Name	Description
Contract	Use the Contract tab to add, review, or modify commonly used information about the master contract.
Properties	Use the Properties tab to view or modify the properties, or attributes, of the contract. Default values and editing rules can be set for some or all of the properties. These values are set in the Organizations application.
Associated Contracts	Use the Associated Contracts tab to view contracts that are associated with this master contract. Master contracts can have one or more associated contracts and can contain multiples of a particular type of contract.
Terms and Conditions	<p>Use the Terms and Conditions tab to associate terms and conditions with the contract, or to view applied terms and conditions. These terms can contain such information as:</p> <ul style="list-style-type: none">• Liability concerns• Shipping and handling details• Delivery time expectations <p>Default values and editing rules can be set for some or all of the terms. These values are set in the Organizations application.</p>

- **Software contracts:** A software contract specifies the terms of the license agreement for computer software use. The terms can include users, license keys, maintenance fees, and whether the software can be transferred. Software contracts are created in the Software Contracts application.
- **Warranty contracts:** The Warranty Contracts application is used to create warranty contracts. A warranty contract defines the agreement to maintain one or more assets with an outside service provider for a fee or scheduled set of payments. It also tracks warranty information for assets and locations by time or meter. When any asset is purchased, details

regarding the warranty for the asset must be captured. In addition, the asset management system must recognize that warranty conditions work or that configuration change is defined. If the asset ~~has failed somehow~~ fails, then compensation or replacement is a possibility for the organization. Therefore, control of the warranty conditions, and details regarding the activity performed and the costs incurred, are critical to realizing the greatest value from the warranty certification for the vendor or manufacturer.

The system accommodates all of these warranty-related requirements through the Warranty Contracts application and integration with the customer service desk and work management applications. You can use a warranty or service contract for these purposes:

- Maintain one or more assets with an outside service provider for a fixed fee, or regularly scheduled payment over a specified time period.
- Track warranty information for multiple assets or locations by time or meter.

You can also use a warranty contract to create a service contract. A service contract indicates that an outside service provider maintains one or more assets. Payment for service can be made with a single fee or with a scheduled set of payments.

You can set several options for contracts in the Organization application. The options are available on the Select Action menu and allow you to set default terms and conditions and property types.

Contract example

The screenshot shows a software application window titled "Contract example". At the top, there's a navigation bar with tabs: "View Record List > 1027", "Contract", "Properties", "Contract Lines", "Associated Assets", and "Terms and Conditions". Below the navigation bar, the main area is divided into several sections:

- Contract:** 1027, Notebook Lease Agreement for training classes, Type: LEASE, Status: APPR.
- Revision:** 0
- Organization:** PMSCBM
- Attachments:** A link labeled "Attachments" with a file icon.
- Details:** Master Contract: [link], Vendor Reference #: [link], Buyer: [link].
- Dates:** Start Date: 8/23/12, End Date: 12/23/12, Renewal Date: [link].
- Vendor:** Company: COMPVLD (Computer World), Address: [link], City: [link]. Freight Terms: [link], FOB Point: [link], Ship Via: [link].
- Document Terms:** A section labeled "Document Terms" with a link.

At the bottom left, it says "2-27". On the right, there's a copyright notice: "IBM Software Group | Tivoli Software © 2012 IBM Corp."

In the various contract applications, you can define the terms and conditions and payment information for the contracts. The attributes for each contract are defined on tabs which vary by contract type. The following table details the different tabs that are available in the contract applications:

Tab	Function	Contract Types
Contract	Create, view, or modify contract records.	All
Properties	Enable or disable properties for the contract.	All
Contract Lines	Create, view, modify, or delete line items listed on a contract.	All except labor (see rate schedule) and master
Rate Schedule	Create labor rate schedules to manage the crafts and skills of the people in a labor contract.	Labor
Associated Assets	Add, modify, or delete asset records that are associated with a lease, rental, or warranty contract.	Lease and warranty

Tab	Function	Contract Types
Associate Contracts	List the contracts that are associated with a master contract.	Master
Associated Labor	List the labor that is associated with a labor contract.	Labor
Associated Licenses	List the licenses that are associated with a software contract.	Software
Associated Assets and People	List the assets and users where licenses are allocated for software that is associated with the contract.	Software
Terms and Conditions	Add, view, or delete terms and conditions that are associated with the contract.	All

Contract statuses



Contract statuses

- Every contract has a status.
- These statuses are available:
 - Draft (DRAFT)
 - Waiting on approval (WAPPR)
 - Waiting to start (WSTART)
 - Approved (APPR)
 - Canceled (CAN)
 - Closed (CLOSE)
 - Pending review (PNDREV)
 - Revised (REVISD)
 - Suspended (SUSPND)
 - Expired (EXPIRD)
- Additional statuses can be added to the system.

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Every contract has a status value that indicates the current status. The **Status** field is part of the whole contract and can be used on the line level.

The following table lists and describes important statuses.

Status	Description
Draft (DRAFT)	Default status when inserting a new contract.
Waiting on approval (WAPPR)	Contract is waiting for approval.
Approved (APPR)	Approval was given, and contract is ready for use.
Waiting to start (WSTART)	The start date for the contract is set to a future date.
Canceled (CAN)	Contract is canceled.

Status	Description
Closed (CLOSE)	Contract ended, and all the terms and conditions were met.
Pending Revision (PNDREV)	Default status for contract revisions that are created by using the Revise Contract action.
Revised (REVISD)	When you change the status of a contract revision from PNDREV to APPR, the previous version of the contract changes status to REVISD. That version of the contract becomes a history record and cannot be edited.
Suspended (SUSPND)	The contact is suspended.
Expired (EXPIRD)	The end date of the contract passed.



Note: You can add statuses by defining alternate values for the **CONTRACTSTATUS** synonym domain. Modifying synonym domains is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Terms and conditions



Terms and conditions

- Associate applicable agreed-upon legal terms and conditions with these items:
 - Contracts
 - Purchase requisitions
 - Purchase orders
- Use the Terms and Conditions application to build a library of terms to be applied.

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When a contract, purchase requisition, or purchase order is built, the applicable agreed-upon legal terms and conditions must be associated with the document. These terms can be selected from the library of available clauses or can be added as free-form text to any purchasing document.

You can use the Terms and Conditions application to build the library of terms that can be selected for contracts, purchase requisitions, or purchase orders. During setup, terms can be marked to always be included on a purchase order and indicate whether the user can edit these values. Some terms can be created in a template format with specific information that requires the user to enter values. Building a library of terms and conditions can help your organization standardize your business processes and enforce company policies.



Note: A contract must be in the status of DRAFT, WAPPR, or PNDREV in order to add terms and conditions to it. However, in PNDREV, only specified fields can be edited.

Associating assets with a contract

IBM

Associating assets with a contract

- Click the **Associated Assets** tab in the contract
- Select **View Contracts** in the Asset record

The screenshot shows two windows from the IBM SmartCloud Control Desk interface. The top window is titled 'Associated Assets' and displays a list of assets associated with a specific contract. The bottom window is titled 'View Contracts' and shows the details of the selected contract.

Associated Assets (Contract 1027 details):

Line #	Asset	Description	Site	Location	Start Date	End Date	Status	Action
1	1 ITAMT001	>> WS10 notebook	PMSCTR	SOUTHERN	6/23/12	12/21/12	OPERATING	[Edit]
2	2 ITAMT002	>> WS10 notebook	PMSCTR	SOUTHERN	6/23/12	12/21/12	OPERATING	[Edit]
3	3 ITAMT003	>> WS10 notebook	PMSCTR	SOUTHERN	6/23/12	12/21/12	OPERATING	[Edit]
4	4 ITAMT004	>> WS10 notebook	PMSCTR	SOUTHERN	6/23/12	12/21/12	OPERATING	[Edit]
5	5 ITAMT004	>> WS10 notebook	PMSCTR	SOUTHERN	6/23/12	12/21/12	OPERATING	[Edit]

View Contracts (Contract 1027 details):

Contract	Revision	Description	Contract Type	Status	Vendor	Description
1027	0	Notebook Lease Agreement for training classes	LEASE	APPR	COMPWLD	Computer World

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Assets can be associated with contracts. This feature allows asset managers to view the contract before taking action on asset. For example, when a lease contract expires, the asset manager can look at the contract to determine which assets need to be prepared for return to the vendor.

Student exercise

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Student exercise



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Open your *Student Exercises* book and perform the exercises for this unit.

Review questions

1. True or false: An asset is serialized.
2. The IT Details tab is not visible in an IT asset record. What is wrong?
 - a. The asset type is not set to IT.
 - b. The asset is not classified in a classification under the top-level IT asset classification defined for the organization.
 - c. Only administrators can view the IT Details tab.
 - d. There were no IT details defined when the asset was created. Therefore, it is hidden.
3. True or false: A company record can be created without a company master record.
4. What contract type can be used to group other contracts together?
 - a. Master
 - b. Top-level
 - c. Purchase
 - d. Blanket

Review answers

1. True or false: An asset is serialized.

*True. An asset has a specific asset number and is tracked throughout the asset lifecycle.
An item is consumed.*

2. The IT Details tab is not visible in an IT asset record. What is wrong?

B. The asset is not classified in a classification under the top-level IT asset classification that is defined for the organization.

3. True or false: A company record can be created without a company master record.

False. A company master is required for all companies.

4. What contract type can be used to group other contracts together?

A. The master contract type is used to group contracts together.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Define items and assets.
- Plan for a technology refresh.
- Define vendors to be used for purchasing.
- Create contracts.
- Associate contracts with items and assets.

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Unit 3: Acquisition

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Unit 3 Acquisition



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Introduction

This unit describes the acquisition phase of the IT asset lifecycle. Carrying out procurement processes ensures that acquisition and outsourcing maximize the potential of the asset strategy.

Companies can use the acquisition lifecycle to gain control over and centralize the requisition and procurement of IT assets and take advantage of centrally negotiated contracts. ITIL and other standards suggest that policies and standards be in place for purchasing new assets, and that companies have a documented process for receiving hardware and software.

Objectives

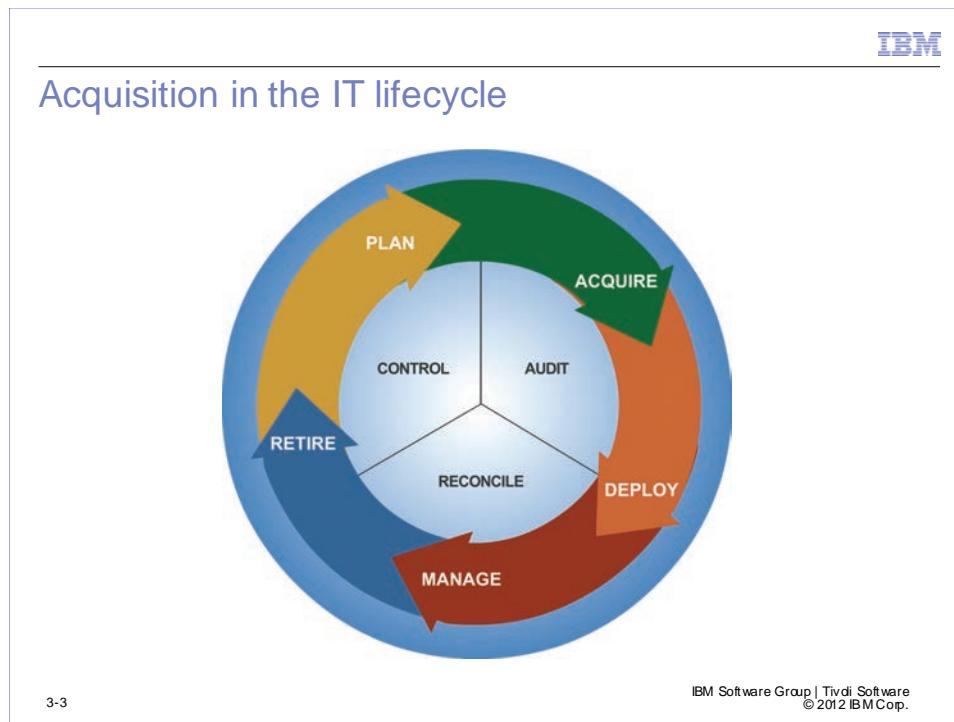


Objectives

When you complete this unit, you can perform the following tasks:

- Describe the acquisition lifecycle.
- Create and approve requisitions.
- Create purchase orders.
- Receive items.
- Reconcile invoices.

Acquisition in the IT lifecycle



3-3

The second phase in the IT lifecycle of an asset is *acquisition*. In this phase, items are purchased or reordered, entered into the system, described, and tracked. These items can include both hardware and software. This unit focuses on hardware.



Note: The acquisition of software is covered in Unit 7: Managing software licenses.

Lesson 1: Acquisition overview

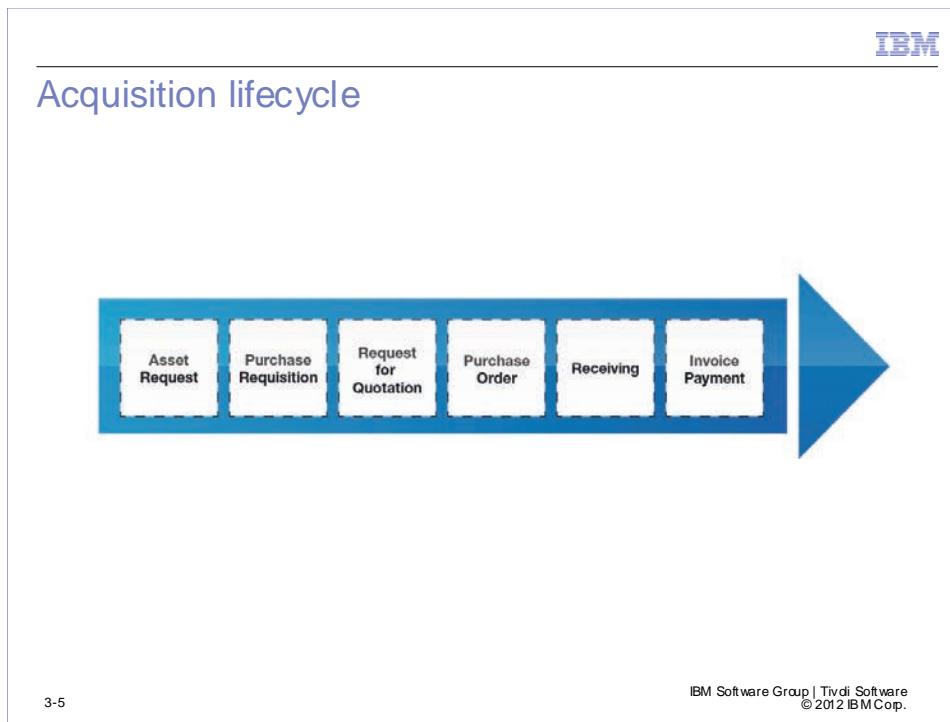
IBM

Lesson 1: Acquisition overview



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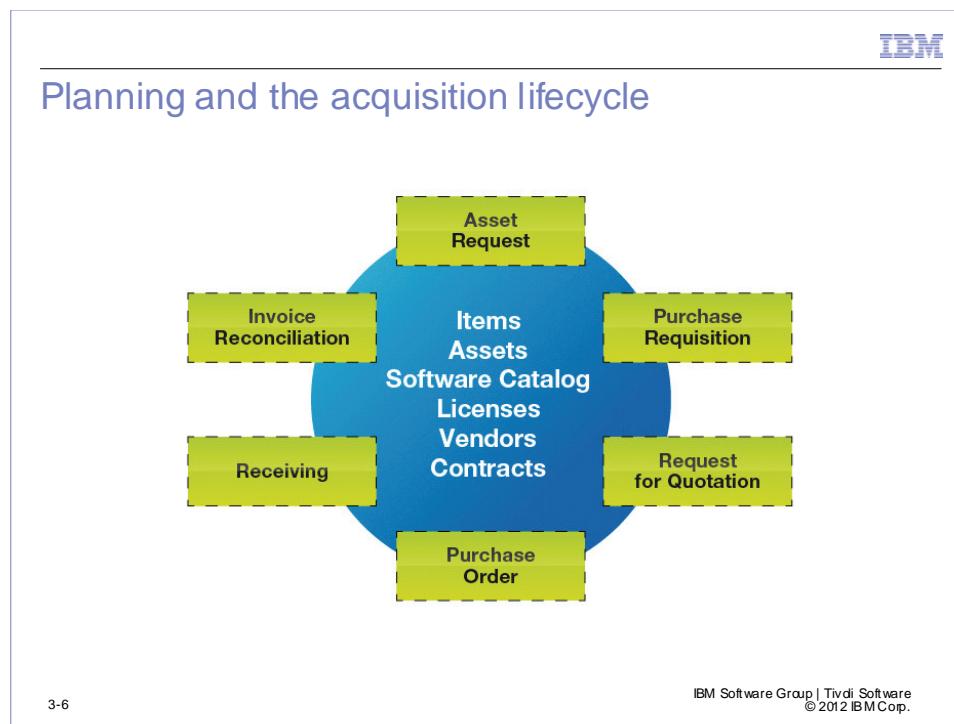
Acquisition lifecycle



This diagram illustrates the sequential flow of the acquisition lifecycle. The lifecycle consists of these steps:

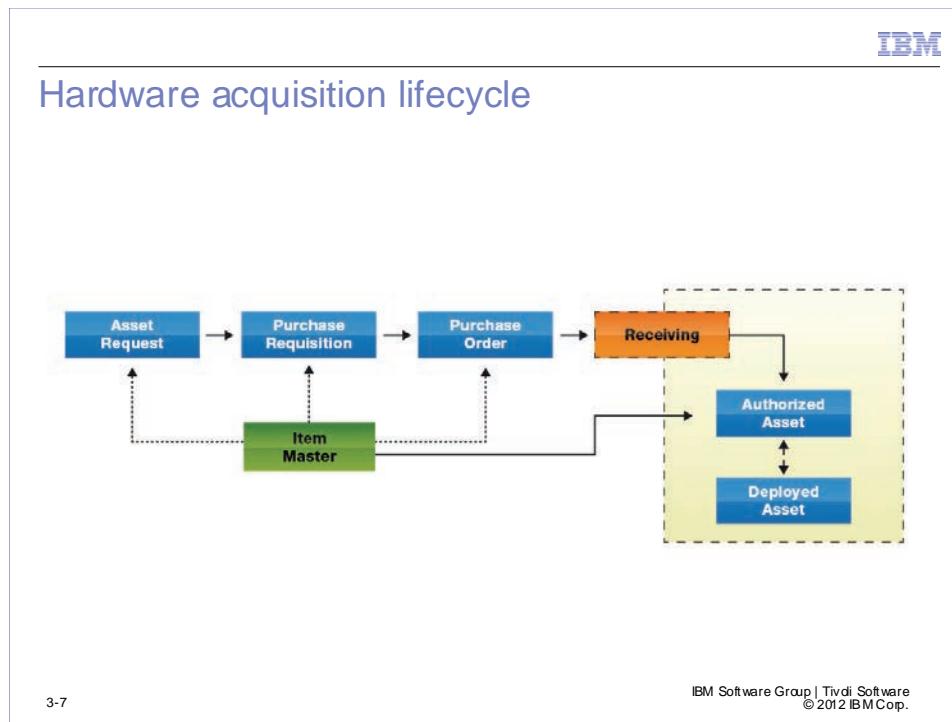
- A user can submit a request to order an item.
- An official document is sent to purchasing for the request.
- Purchasing can put the item out to bid and get quotations on the item.
- A purchase order is issued for the item, which is an official request to purchase.
- The organization receives the item.
- An invoice for the purchase is received and paid.

Planning and the acquisition lifecycle



As noted earlier, each organization is unique in the steps it follows in the purchasing lifecycle. Many different paths can be taken. These paths depend on purchasing controls and operational efficiencies. This diagram depicts the primary planning records (covered in Unit 2: Planning) that also play a role in the acquisition lifecycle.

Hardware acquisition lifecycle



After the initial deployment of the system, most hardware assets arrive through an organizational transfer or through the purchasing process. As you can see on this slide, you can use the item master to drive consistency throughout the purchasing phase. After the item is received, it then becomes an authorized asset and can be reconciled to deployed assets by using a discovery process.

Requesting an asset

The screenshot shows the IBM SmartCloud Control Desk interface. At the top, there's a navigation bar with links like 'Self-Service Center', 'Cart', 'Search', and 'Create Request'. On the right, there's an 'IBM' logo. Below the navigation, a main title 'Requesting an asset' is displayed. The central area is a form titled 'Report an Issue' for a 'New Asset Request'. The form includes fields for 'Summary' (containing 'New Asset Request'), 'Details' (containing 'I need a more powerful laptop for my new role'), 'Reported For' (set to 'BOB'), 'Priority' (set to 'Normal'), 'Class Description' (set to 'Request for Service \ IT \ New Asset Request'), 'Phone' (set to '713-297-7900'), and 'E-mail' (set to 'bob@tivoli.edu'). At the bottom of the form, there are buttons for 'Add to Favorites', 'Submit Now', and 'Cancel'. The footer of the page includes the text 'IBM Software Group | Tivoli Software' and '© 2012 IBM Corp.'

One of the key advantages of IBM SmartCloud Control Desk is the tight integration between IT asset management and a full set of service request management features. Users can use offerings in the service catalog and self service center to initiate a request for an asset.

External purchasing system interfaces



External purchasing system interfaces

- Many users interface external purchasing systems to IBM SmartCloud Control Desk.
 - Items
 - Vendors
 - Contracts
 - Purchase requisitions
 - Purchase orders
 - Receiving
 - Invoicing
- You can integrate them by using customized Integration Framework solution or IBM Maximo Enterprise adapters.

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Preconfigured IBM Maximo Enterprise adapters are available for both SAP and Oracle as add-ons.

Lesson 2: Purchasing

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Lesson 2: Purchasing



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Terms and definitions



Terms and definitions

- Purchase requisition
- Request for quotation
- Purchase order
- Contract
- Line item

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The following terms are used in this lesson:

- **Purchase requisition (PR):** A request that is issued internally to a purchasing department to order materials or services from a vendor.
- **Request for quotation (RFQ):** A request for a vendor to bid on an item or items to be purchased.
- **Purchase order (PO):** An order request for materials or services from a vendor.
- **Contract:** An agreement to purchase an item or service at a specified price.
- **Line items:** Individual items, materials, or services on a purchase requisition, request for quotation, purchase order, or contract.

Purchase requisitions

IBM

Purchase requisitions

- A purchase requisition (PR) is a request that is issued internally to a purchasing department to order materials or services.
- A PR record can be generated in several ways:
 - Result of a service request
 - Manually in the PR application
 - Inventory reorder
 - Awarding of a request for quotation
- Users can request hardware or software through service request applications.
 - Users can generate related records automatically.
 - Users have templates to preconfigure a requisition.
 - Templates are typically customized and used with a workflow.

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The self service application and the purchasing module were developed to allow users to create and submit purchase requisitions. Requisitions can also be automatically generated by using either of the following methods:

- The Inventory application reorder items function
- The reorder direct issue item or services action in the Inventory module

A purchase requisition (PR) is typically considered an official purchasing document. People who are familiar with items and purchasing framework submit purchase requests to organizations to purchase goods and services for the organization.

PR types



PR types

- **Internal PRs:** Request the transfer of materials from one storeroom to another.
- **External PRs:** Request the purchase of the necessary materials from an outside vendor.

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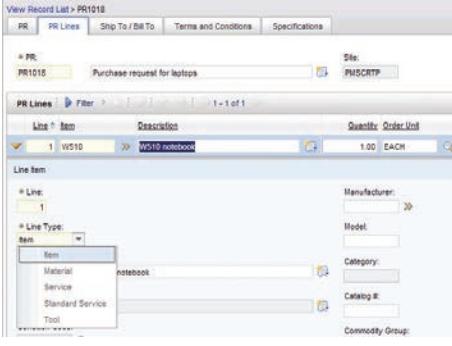
PR lines

IBM

PR lines

Can be used for any of the following types of items or services:

- **Item:** Items from inventory
- **Material:** Items that are not from inventory
- **Service:** Services that are not associated to service items
- **Standard Service:** Services that are associated to service items
- **Tool:** Items that belong to the tools commodity group



View Record List > PR1018

PR Lines Purchase request for laptops Site: PWSCRTP

PR Lines Filter 1 - 1 of 1

Line	Item	Description	Quantity	Order Unit
1	WS10	WS10 notebook	1.00	EACH

Line Item

Line	Item	Description	Manufacturer	Model	Category	Catalog #	Commodity Group
1	notebook						

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After the initial PR records are entered, you can specify the individual items or services that you need. A PR line can be for any of the following types of items or services:

- **Item:** Items from inventory.
- **Material:** Items not from inventory.
- **Tool:** Items belonging to the tools commodity group.
- **Service:** Services that are not associated to a service item.
- **Standard Service:** Services that are associated to service items.
- **Tool:** Items belonging to the tools commodity group.

On the PR Lines tab, you must populate the following fields before PO approval if your organization requires GL account validation for transactions:

- Quantity
- Unit Cost
- Storeroom
- Work Order
- Location
- Asset GL Debit Account

After the purchase requisition is approved, you can assign its line items to one or more purchase orders. A purchase requisition is closed when all of its line items are assigned to a purchase order.

PR status

IBM

PR status

- Waiting on approval (WAPPR) is the status that a purchase requisition is assigned when it is created. Some fields are read-only.
- Approved (APPR) is available if your business rules require approvals.
- Closed (CLOSE) indicates that all of the line items of the PR are assigned to one or more purchase orders. All fields are read-only, and the record can no longer be modified.
- Canceled (CAN) is available if the current PR status is APPR and if none of its line items are assigned to a PO. All fields become read-only, and a record can no longer be modified.

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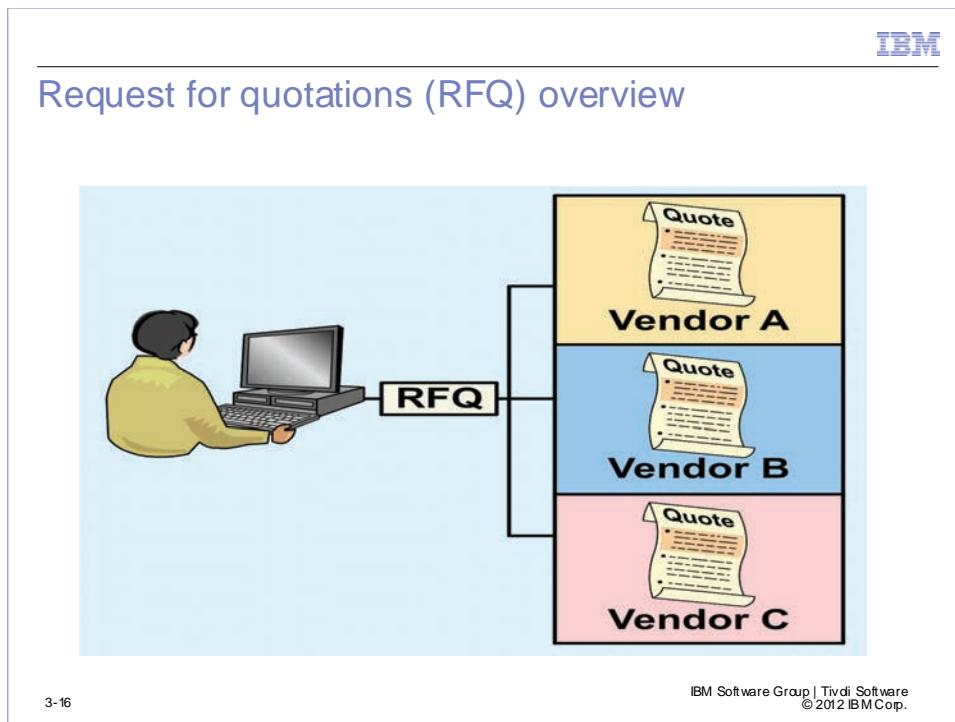
Every PR has a status value that indicates its position in the PO processing cycle. The following table describes each status.

Status	Description
Waiting on Approval (WAPPR)	The assigned status for new PR records.
Approved (APPR)	Available only if your business rules require approvals. The default Maximo configuration does not require approvals for PRs and PR line items that you transfer to POs.
Closed (CLOSE)	All of the PR line items are assigned to one or more POs. All fields are read-only, and the record can no longer be modified. If you try to close a PR and a line item is not assigned, Maximo displays a message. Note: Your system administrator can set Maximo to automatically close PRs after you transfer all the line items to POs, RFQs, or contracts.
Canceled (CAN)	Available if the current PR status is APPR and none of its line items are assigned to a purchase order. All fields are read-only, and a record can no longer be modified.



Note: You can add statuses by defining alternate values for the **PRSTATUS** synonym domain. Modifying synonym domains is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Request for quotations (RFQ) overview



A *request for quotations (RFQ)* is a request that is sent out to one or more potential vendors. In the request, you can ask for specific costs and conditions for the delivery of an item or service and manage quotations to make the best purchasing decisions. You can use the Request for Quotations application to create requests and store quotations to assess which vendor best fits your needs.

A new purchase might require that requests for quotations (RFQs) be sent out to several vendors before deciding which vendor to purchase materials or services from. Purchasers can use RFQs to compare pricing, delivery commitments, and other factors when selecting a new supplier.



Note: Before a vendor can be included on an RFQ record, the vendor must have a record in the Company Master application.

Request for quotations

The screenshot shows the 'Request for quotations' screen. At the top, there's a navigation bar with tabs: RFQ, RFQ Lines, Vendors, Quotations, Terms and Conditions, and Specifications. The 'RFQ' tab is selected. Below the navigation bar, there are several input fields and dropdown menus. On the left, under 'Details', there are fields for Requested By (ELMO), Buyer, Priority (1), Entered By (ARUN), and Type. In the center, there are fields for Dates (Required Date: 9/6/12 20:06:03, Reply Date: 8/30/12, Printed Date: 8/23/12 20:07:37, Close Date: 9/6/12, Status Date: 8/23/12 20:13:09). On the right, there are fields for Terms (Freight Terms, Ship Via, Payment Terms, FOB Point). At the bottom left, there's a 'Ship To' section with fields for Ship To (HQ, World Head Quarters) and Address (1324 Park Rd). On the right, there's a 'Reply To' section with similar fields. The bottom right corner of the interface displays the IBM logo.

The Request for Quotations application has the following tabs.

Tab	Function
RFQ	Enter, view, or modify general information about the RFQ, including a description of the RFQ, the requested date of the response, the close date of the RFQ, and other information pertinent to this quotation.
RFQ Lines	Enter the line items or services that require quotations, including the items, quantities, and other specific information.
Vendors	Enter information about vendors who receive an RFQ.
Quotations	Record, compare, and award quotations received from vendors.
Terms and Conditions	Add, view, or delete terms and conditions.
Specifications	Shows the attribute details of RFQ line items.

Awarding a quotation to a vendor

The screenshot shows the 'Quotations' tab selected in the top navigation bar. The RFQ number is 1005 and the Site is PMSC RTP. The 'Awarded?' checkbox is checked for the LENOVO entry in the Quotations for Item table.

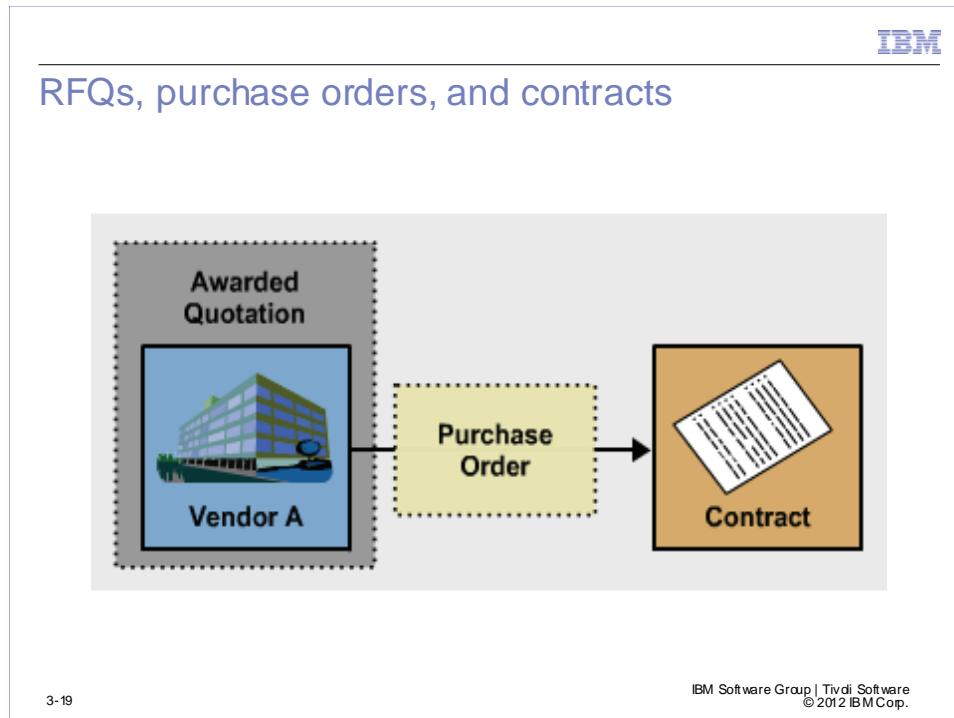
Vendor	Order Unit	Quantity	Currency	Unit Cost	Base Currency	Base Unit Cost	Manufacturer	Model	Delivery Time	Awarded?
COMPWLD	EACH	6.00	USD	1,200.00	USD	1,200.00				<input type="checkbox"/>
LENOVO	EACH	6.00	USD	1,100.00	USD	1,100.00				<input checked="" type="checkbox"/>

The responses from the vendors are reviewed and awarded one RFQ line at a time. Select a vendor by clicking the name of a vendor on the **Vendor** subtab. The information pertaining to that vendor populates the Quotations for Vendor section. Select the **Awarded** check box next to each item that applies.



Note: You can award individual line items to different vendors, or award all quoted line items to a single vendor.

RFQs, purchase orders, and contracts



You can use several methods to create a purchase order:

- From the Purchase Requisitions application, use the Create PO action.
- From the Purchase Orders application, use the Copy PR Line Items to PO action.

Use the Purchase Orders application to generate an internal PO against another storeroom. You can think of a storeroom-to-storeroom purchase as a *transfer order* or an *internal PO*. IBM SmartCloud Control Desk uses the Purchase Orders and Issues and Transfers applications to track these types of item movements.

Purchase orders

The screenshot shows the 'Purchase orders' application interface. At the top, there's a navigation bar with tabs: 'View Record List > 1079', 'PO', 'PO Lines', 'Ship To / Bill To', 'Terms and Conditions', and 'Specifications'. Below the navigation bar, the main area is divided into three columns: 'Details', 'Dates', and 'Costs'. The 'Details' column contains fields for Type (STD), Buyer Company, Buyer, Priority (1), Receipts (COMPLETE), Contract Reference, and Contract Type. The 'Dates' column contains fields for Status Date (8/2/12 20:28:32), Ordered Date (8/2/12 20:13:09), Required Date (9/6/12 20:06:03), Follow-up Date, and Vendor Date. The 'Costs' column contains fields for Pretax Total (\$6,600.00), Total Tax (0.00), Total Cost (\$6,600.00), Currency (USD), and Total Base Cost (\$6,600.00). At the bottom right of the application window, it says 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'.

A **purchase order (PO)** is an authorized order of hardware or software from a purchasing agent or department to an internal supplier or external vendor. Purchase orders are managed in the Purchase Order application. The Purchase Orders application is an application in the Purchasing module.

Multiple purchase requisitions can be combined to create a single purchase order in the Purchase Orders application. Combining them reduces the number of POs that must be processed as part of the site procurement system and still delivers the same procurement performance. The cost per purchase order for the site is ultimately reduced. You also can use the Purchase Orders application to generate an internal PO against another storeroom.

The Purchase Orders application contains the following tabs.

Tab	Function
PO	Enter, view, or modify PO, either from purchase requisitions, from RFQs, or from scratch.
PO Lines	Enter, view, or modify line items on the PO. Also, view summary information from the Material Receipts and Service Receipts tabs in the Receiving application.

Tab	Function
Ship To/Bill To	Enter, view, or modify shipping information that is used as a default on each line, and billing information for the entire order.
Terms and Conditions	Add, view, or delete terms and conditions that are associated with the record.
Specifications	View the attribute details of purchase requisition line items.

PO status

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PO status

- Waiting on Approval (WAPPR) is the default status for a PO when you create it. Some fields are read-only in this status.
- In Progress (INPRG) indicates that a PO must be modified before it can be approved.
- Approved (APPR) is available only if the current PO status is WAPPR or INPRG. All fields are read-only.
- Canceled (CAN) is available if the current PO status is WAPPR or APPR.
- Closed (CLOSE) indicates that all of the line items of the PO were received. After a PO is closed, it is stored as a history record and cannot be modified.

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Every purchase order has a status value that indicates its position in the purchase order processing cycle. The following table describes each status.

Status	Description
Waiting on Approval (WAPPR)	The status that a PO is assigned when it is created.
In Progress (INPRG)	A PO needs to be modified before it can be approved.
Approved (APPR)	Available only if the current PO status is WAPPR or INPRG. All fields are read-only. To approve a PO, your monetary approval limit must be equal to or greater than the total cost of the PO. After a PO is approved, you cannot edit any of its fields.
Canceled (CAN)	Available if the current PO status is APPR.
Closed (CLOSE)	All of the PO line items were received. After a PO is closed, it is stored as a history record and cannot be modified.



Note: You can add statuses by defining alternate values for the **POSTATUS** synonym domain. Modifying synonym domains is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Waiting on Approval and Approval Limits

When you create a PO, IBM SmartCloud Control Desk gives the PO a status of Waiting on Approval (WAPPR). Only a user with an approval limit equal to or greater than the purchase order amount can approve a purchase order.

Editing POs

You can edit a PO when its status is WAPPR. For example, you can change vendors, change PO tab information, add, or delete PO lines, and change quantities.

Approving POs

To approve a PO, you must have a monetary approval limit equal to or greater than the total cost of the PO. In the Security Groups application, your system administrator sets monetary limits for each user.

Your system administrator also can specify that PRs be approved before any of their items can be assigned to POs. This configuration is done in the Organizations application.

After a PO is approved, you cannot edit any of its fields.

Canceling POs

You cannot cancel an approved PO if any of the following conditions exist:

- One or more PO line items were received.
- The supplier sent notification of delivery of items through an advanced shipment notice (ASN) transaction.
- The supplier rejected the PO cancellation.

You might need to notify the supplier before canceling a PO if you are integrating with an external system. The Cancel PO transaction might be automatically sent to the supplier upon PO cancellation.

Lesson 3: Receiving

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Lesson 3: Receiving



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Terms and definitions



Terms and definitions

- Receiving
- Invoice
- Reconciliation

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The following terms are used in this lesson:

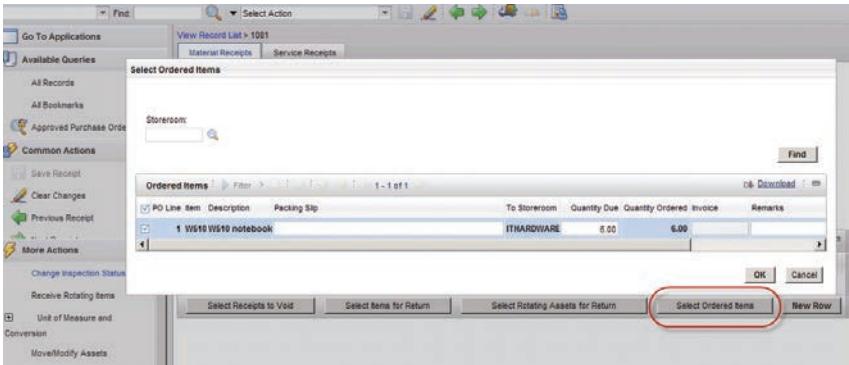
- **Receiving:** Receiving is the act of accepting items or services. Typically, a company does not receive items unless a purchase order is issued.
- **Invoice:** An invoice is a document from a vendor that describes the costs for items that are requested in a PO and received by a company.
- **Reconciliation:** In purchasing, reconciliation is the process of reconciling items that are purchased by using a purchase order with invoiced items.

Receiving

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Receiving

- Open the PO in the Receiving application.
- Use **Select Ordered Items** or **Services** to copy items from the PO into the receipt.



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A *receipt* is a record of goods and services that are received from a vendor. Receipts are created from approved purchase order records.

The Receiving application, in the Purchasing module, is used to receive materials and services from purchase orders. A user can search for and receive existing PO line items from the Select Ordered Items and the Select Ordered Services dialog boxes. The user can manually enter received items on the Receipts tabs. With Invoice Management, use the invoice claim number or other invoice fields to search for items or services.

To approve materials and service receipts, use the Approve Receipts action. The Approve Receipts dialog box shows all services materials for PO line items that require inspection.

The Receiving application contains the following tabs.

Tab	Function
List	Search for receipt records. Use more fields for a specific search and fewer fields for a general search.
Material Receipts	Add, view, or modify materials that are received on a PO.

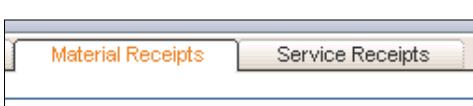
Tab	Function
Service Receipts	Add, view, or modify services that are received on a PO.

Receipt types

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Receipt types

- **Material receipts** refer to data that is associated with items used or completed on site by your employees; for example, quantities and lot numbers. When inventory items are received against a PO, the quantities in inventory are updated and an inventory transaction is generated.
- **Service receipts** refer to data that is associated with any service provided by a vendor or contractor, such as asset repairs. The service can be performed on-site or off-site. You specify service purchases in terms of a quantity and a unit cost or as a single lump-sum amount.



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Before a material or service item is received, the PO status should be APPROVED. For a PO to be complete, all of the PO lines must be complete. The PO Lines tab in the Purchase Orders application has a Receipts field, which indicates whether the materials or services for the PO line were received.

The value in the Receipts field of the Purchase Orders application correlates to the Receipt Status field in the Receiving application. These fields have the following indicators:

- Before any receipts are made, these fields indicate NONE.
- When some items are not received, the fields indicate PARTIAL.
- When some items are not received but the purchase order receipts are manually complete, the fields indicate COMPLETE.

Line status

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Line status

- Waiting on inspection (WINSP) status indicates that the line item is in the process of being received, but is not yet entered into inventory.
- Waiting on serialization (WASSET) status indicates that the line item is a rotating item that is waiting to have an asset number assigned to it.
- Complete (COMP) status indicates that the line item was received, and if necessary, inspected and serialized. When the status of the line item changes to COMP, a transfer transaction is created.

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The following statuses describe where the line item is in an inspection or asset serialization process:

- **Waiting on inspection** (WINSP) indicates that the line item is in the process of being received, but was not yet entered into inventory. The line item is currently in a holding location, where it stays until an inspection is completed. When an inspection is completed, the line item goes to either WASSET or COMP status, depending on whether it is a rotating item.
- **Waiting on serialization** (WASSET) indicates that the line item is a rotating item awaiting serialization (waiting to have an asset number assigned to it). If the line item requires inspection, the inspection has already taken place if its status is WASSET. The item is still in the holding location, and has not yet been sent to its appropriate storeroom or direct issue location. After the item is serialized by using the Receive Rotating Items dialog box, its status is COMP.
- **Complete** (COMP) indicates that the line item was received and, if necessary, inspected, serialized, or both. When the system changes the status of the line item to COMP, it also creates a transfer transaction. This transaction transfers the item to its appropriate storeroom or direct issue location. If the line item is not rotating and does not require inspection, the status goes directly to COMP upon receipt.

Receiving rotating items

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Receiving rotating items

- Change the inspection status if item requires inspection.
- Use **Receive Rotating Items** action.
- Assign asset records to rotating items.

The screenshot shows a software interface with two main windows. The top window is titled 'Change Inspection Status' and displays a table with one row: PO Line Item (W510), Inspected Qty (6.00), Quantity Accepted (6.00), and Reject Quantity (0.00). The bottom window is titled 'Receive Rotating Items' and shows a grid of assets. The grid has columns for Asset, Description, Item, Unit Cost, GL Account, and Serial #. There are six rows, each representing a 'W510 notebook'. An 'Autonumber' button is located at the bottom right of the grid. Both windows have a sidebar on the left with 'Common Actions' including 'Save Receipt', 'Clear Charges', 'Previous Receipt', 'More Actions', 'Change Inspection Status' (which is circled in red), 'Receive Rotating Items' (which is also circled in red), 'Unit of Measure and Conversion', and 'All Documents'.

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When a rotating item is received, the status of the item is typically set to WINSPI. You use the Change Inspection Status action to indicate that the assets were inspected. After the asset is inspected, the status changes to WASSET. The Receive Rotating Items action can be used to create an asset record. Item assembly structures can also be assigned to asset numbers by using this dialog box.

Invoices overview

The screenshot shows the 'Invoices overview' screen of the IBM SmartCloud Control Desk. At the top, there's a navigation bar with tabs for 'Invoice', 'Invoice Lines', 'Terms and Conditions', and 'Specifications'. Below the navigation bar, there's a search bar with fields for 'Invoice' (containing '1056'), 'Site' (containing 'PMSCRTP'), 'Type' (containing 'INVOICE'), and 'Status' (containing 'ENTERED').

The main area is divided into three columns: 'Invoice Details', 'PO Details', and 'Dates'.

- Invoice Details:** Contains fields for Original Invoice (link), Reverse Invoice (link), Vendor Invoice (159), Approval #, and Entered By (MAXADMIN).
- PO Details:** Contains fields for PO (1081), Site (PMSCRTP), Company (LENOVO), Currency (USD), Buyer (link), Receipts (COMPLETE), and Total Cost (\$6,600.00).
Contract Reference, Contract Type, Contract Reference Revision, and Payment Schedule are also listed.
- Dates:** Contains fields for Entered Date (8/29/12 03:26:16), Invoice Date (link), G/L Posting Date (8/29/12 03:26:16), Due Date (link), and Paid Date (link).

At the bottom right of the screen, there's a footer with the text 'IBM Software Group | Tivdi Software © 2012 IBM Corp.' and a page number '3-28' at the bottom left.

As a result of purchasing materials and services, your company receives invoices from vendors. An *invoice* is a bill from a vendor for delivered products or services.

You can enter vendor invoice information and match that information against the PO and receipt of materials and services. Then, you can approve the invoice so that it can be passed on to your accounts payable system.

Use the Invoices application to record invoices and debit and credit notes from vendors, and to match invoice details against POs and receipts. You can also create invoices for which there are no receipts.

Types of invoices



Types of invoices

- **Single PO:** An invoice that is related to a single purchase order.
- **Multiple POs:** An invoice that is related to many purchase orders.
- **No PO:** An invoice without a related purchase order.

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The invoice you create might represent one of the following invoice types:

- **Single PO:** An invoice that is related to a single purchase order. You enter information such as the invoice number, corresponding PO number, any receipts that are recorded for the PO, and information that is specific to the invoice.
- **Multiple POs:** An invoice that is related to many purchase orders. You enter general invoice data on the Invoice tab, and then list the related POs on the Invoice Lines tab.
- **No PO:** An invoice without a related purchase order. Typically, such an invoice represents a bill for which there is no purchase requisition or purchase order. Invoice-specific information is entered into the application.

Invoice statuses

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Invoice statuses

- Scheduled (SCHED) indicates that the invoice is part of a payment schedule, set up for a specific contract.
- Waiting on Approval (WAPPR) is available only if the current invoice status is Entered or Hold.
- Entered (ENTERED) is the default status when an invoice is created.
- Approved (APPR) is available only if the current invoice status is Entered, Waiting on Approval, or Hold.
- Hold (HOLD) is available only if the current invoice status is Entered or Waiting on Approval.
- Paid (PAID) is available only if the current invoice status is Entered, Waiting on Approval, Approved, or Hold.
- Cancel (CANCEL) is available on the **Change Status** dialog box only if the current invoice status is Entered, Waiting on Approval, or Hold.

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The following list describes invoice statuses:

- **Scheduled** (SCHED): Indicates that the invoice is part of a payment schedule that is defined for a specific contract. Invoices with this status can be created only from the Contracts applications. An invoice with a status of Scheduled can be changed to any status except Entered.
- **Waiting on Approval** (WAPPR): Is only available if the current invoice status is Entered or Hold. Use this status to indicate that invoice information was entered and the invoice is ready for review and approval by the appropriate level of staff. An invoice waiting for approval can be edited.
- **Entered** (ENTERED): Is the default status when you create an invoice. A newly entered invoice has some fields completed by default; some of these fields are read-only. An invoice with the status of Entered can be edited. After the status of an invoice is changed from Entered by using the Change Status dialog box, the Entered status is no longer available.
- **Approved** (APPR): Is available only if the current invoice status is Entered, Waiting on Approval, or Hold. If you change the status directly to Paid without first approving the invoice, the system automatically validates the invoice for approval criteria. An approved

invoice is stored as a history record. For invoices in history, you can only change the Check Code, Check Number, and Paid fields.

- **Hold (HOLD):** Is available only if the current invoice status is Entered or Waiting on Approval. If the invoice should not yet be approved or paid, you can change the invoice to Hold status. For example, you can put an invoice on Hold status in these circumstances:

- You received an invoice but did not receive the items.
- There is a discrepancy between the invoice and receipts.

An invoice on hold can be edited.

- **Paid (PAID):** Is available only if the current invoice status is Entered, Waiting on Approval, Approved, or Hold. If you change the status directly to Paid without first approving the invoice, the system automatically approves the invoice. A paid invoice is stored as a history record and cannot be modified.
- **Cancel (CANCEL):** Is available on the Change Status dialog box only if the current invoice status is Entered, Waiting on Approval, or Hold. You cannot cancel an approved invoice. A canceled invoice is stored as a history record and cannot be modified.

Basic process for invoice reconciliation



Basic process for invoice reconciliation

The basic invoice process consists of four steps:

1. Receive the invoice from the vendor.
2. Create or enter vendor invoice information into the system.
3. Match the vendor invoice to the purchase order.
4. Approve the invoice and route it to the accounts payable department.

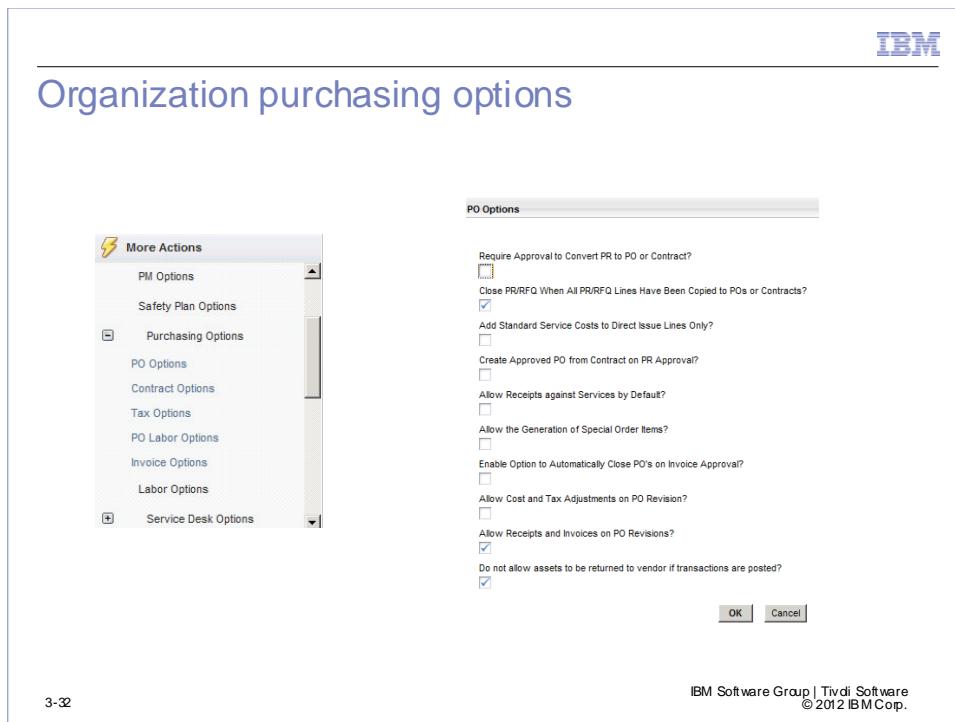
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The basic invoice process consists of four steps. Step 1 starts the process, but your work in the system consists of steps 2, 3, and 4.

1. Receive the invoice from the vendor.
2. Create and enter vendor invoice information in the system.
3. Match the vendor invoice to the POs so that it can be approved and routed to accounts payable.
4. Approve the invoice and route it to accounts payable.

Organization purchasing options



Within the Organizations application, you set defaults for a wide variety of options relating to applications or groups of applications, such as work orders, inventory, purchasing, and assets. You access these options from the More Actions option in the navigation bar.

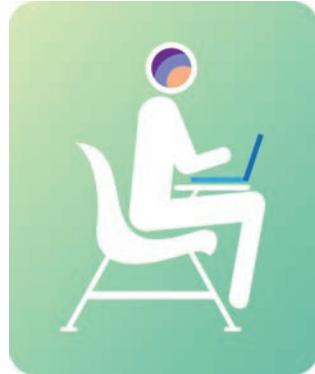
The following information is of particular note for purchasing:

- **Tax Options:** You use the Tax Options dialog box in the Organizations application to specify default tax GL accounts. You also use the dialog box to define tax codes for the system to calculate the amount of tax that is due on a PR, RFQ, PO, or invoice. You can define up to five different tax types, each of which can have any number of tax codes. The system adds the tax to the line cost for the item. The total for the line appears in the Loaded Cost column on the PR Lines tab, PO Lines tab, and Invoice Lines tab.
- **PO Options:** Boolean options control how the purchasing function works. For example, you can select the **Enable Option to Automatically Close PO's on Invoice Approval?** option to automatically close the PO when the invoice status changes to approved.

Student exercise

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Student exercise



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Open your *Student Exercises* book and perform the exercises for this unit.

Review questions

1. True or False: The Purchase Order application is considered a self-service application.
2. Which record type is a request that is issued internally to a purchasing department to order materials or services?
 - a. PO
 - b. PR
 - c. RFQ
 - d. Invoice
3. True or False: All items on an RFQ must be awarded to the same vendor.
4. Where do you configure purchasing options?
 - a. In the purchase order
 - b. In the Purchasing application
 - c. In the Organization application
 - d. In the contract

Review answers

1. True or False: The Purchase Order application is considered a self-service application.
False. The purchase order application is a power application.
2. Which record type is a request that is issued internally to a purchasing department to order materials or services?
B. A PR is a request that is issued internally to a purchasing department to order materials or services.
3. True or False: All items on an RFQ must be awarded to the same vendor.
False. You can award RFQ items to different vendors.
4. Where do you configure purchasing options?
C. Purchasing options are configured in the Organization application.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Describe the acquisition lifecycle.
- Create and approve requisitions.
- Create purchase orders.
- Receive items.
- Reconcile invoices.

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Unit 4: Deployment

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Unit 4 Deployment



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Introduction

The deployment phase includes the practices for deploying assets to the user. These deployment practices include issues, transfers, mass moves, and swaps. Hardware and software installations, moves, additions, and changes are all common activities that are related to IT assets. Changes occur when employees are hired, change positions, or leave the company. IT departments often use the acronym IMAC (Install, Move, Add, Change) to describe the movement of components in an organization. This unit covers the deployment activities. It also covers at a high-level how to use service requests and work orders to manage the deployment. To learn more about service requests, considering taking the *IBM SmartCloud Control Desk 7.5 Service Request Management Fundamentals* course. To learn more about work orders, consider taking the *Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Objectives

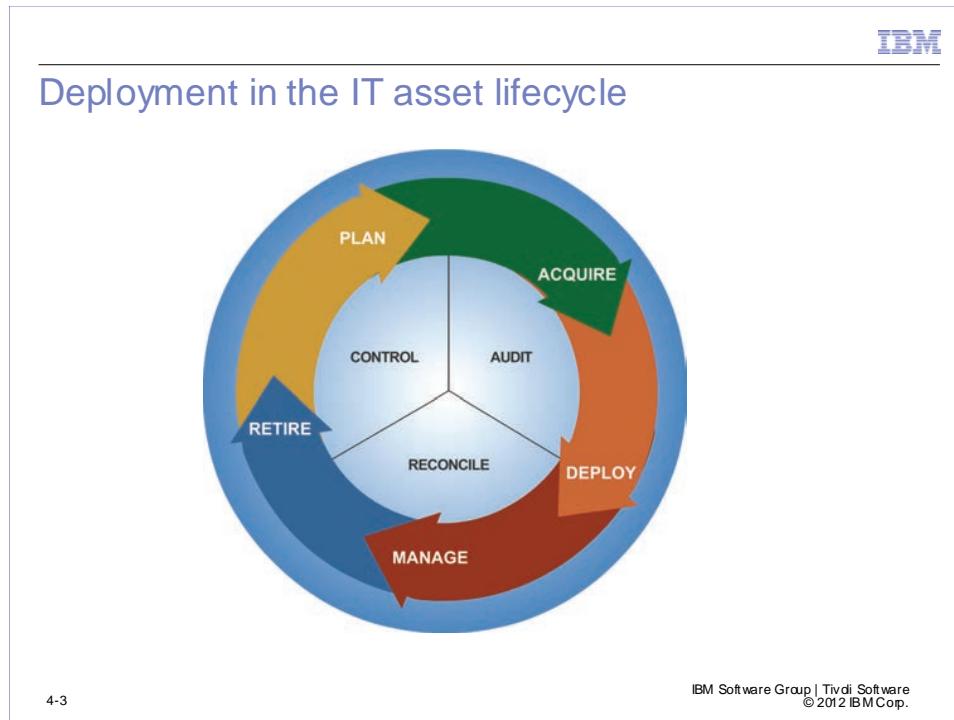


Objectives

When you complete this unit, you can perform the following tasks:

- Issue and transfer assets.
- Move, modify, and swap assets.
- Use request and work management applications to manage and track deployment.

Deployment in the IT asset lifecycle



In the deployment stage, you deploy the assets that you acquired in the acquisition phase.

Lesson 1: Deploying assets

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Lesson 1: Deploying assets



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Deploying assets

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Deploying assets

- Assets are received into the organization as part of the acquisition lifecycle phase.
- IT staff must physically conduct activities to put the assets into operation.
- Deploying assets can include these tasks:
 - Issues and transfers
 - Moves
 - Swaps
 - Allocating software licenses

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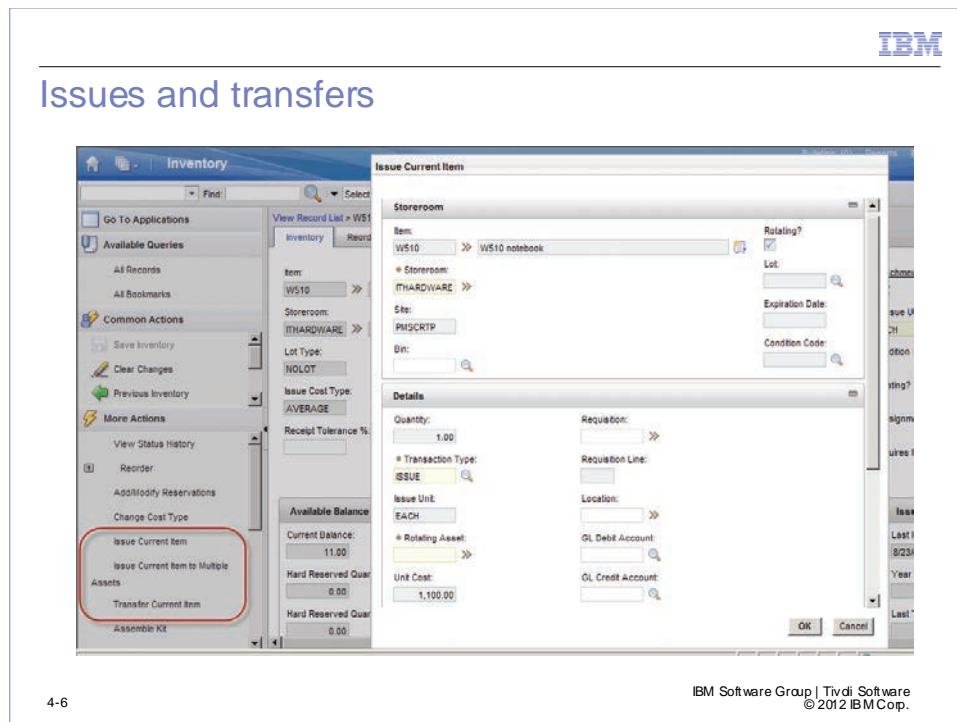
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After an asset is received into the organization, the IT staff must physically conduct activities that configure and put the asset into operation. Then, they must electronically indicate that the asset is in operation by entering it into the system.

Deployments can include these items:

- **Issues:** Assets are issued from a storeroom to a location, person, GL account, or work order with the Issues and Transfers application.
- **Transfers:** Assets are transferred from one storeroom to another storeroom with the Issues and Transfers application.
- **Moves:** Assets are moved from one location to another or one site to another with the Assets application or the Work Orders application.
- **Swaps:** Assets can be swapped from one asset to another with a Swap Asset action in the Assets application.
- **Allocations:** Software capacity can be allocated to people, computers, partitions, and GL Accounts. Software allocations are covered in Unit 7: Managing software licenses.

Issues and transfers



You can use the Inventory and Inventory Usage applications to issue assets and items from the storeroom to these areas:

- Assets
- Locations
- Work orders
- GL accounts

The transfers of items can be performed from storeroom to storeroom, labor, or courier locations. Nonrotating items can be transferred in the Inventory application. Rotating items must be transferred in the Inventory Usage application. When issuing an inventory item from any one of these applications, the system decreases the inventory balance for that item. The type (Operating or Storeroom) of the asset location dictates actions and applications that can be used to relocate an asset.

The following list summarizes location types and what actions can be used:

- **Operating location to Operating location:** Move/Modify or Swap action from the Assets application.
- **Storeroom to Storeroom:** Transfer action by using the Issues and Transfers action from the Inventory application.
- **Storeroom to Operating location:** Issue action by using the Issues and Transfers action from the Inventory application.

Software License capacity is not issued by using the Issues and Transfers application. Capacity is allocated within the License application. This topic is covered in Unit 7: Managing software licenses.

Direct issues



Direct issues

- Select **Issue on Receipt** on the purchase order.
- Items are not received into a storeroom.
- You must identify a work order, asset, GL account, or location in the **Charge To** information of the purchase order.
- The Receiving application issues the item directly to the work order, asset, GL account, or location that is identified in the purchase order.

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Move and modify assets



Move and modify assets

- Use the **Move/Modify Assets** action to move an asset or a set of assets (mass move) from a noninventory location:
 - Across sites
 - To another noninventory location
 - To a storeroom
- The **Move/Swap/Modify** action is available from Activities and Tasks and Work Order Tracking applications.
 - Allows planned moves for a later date and for immediate moves.
- The **Move/Modify Assets** action is available from the Assets and Purchase Orders applications.
 - Does not allow planned moves.
 - Allows modification of users, custodians, groups, GL accounts, and attributes.

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An asset cannot be moved to a storeroom in another site unless the item exists in the storeroom. If it does not exist, use the Item Master application to create the item in the destination storeroom. If there is an open work order for an asset, it must be closed or canceled before the asset is moved.

Performing mass moves

The screenshot shows the 'Performing mass moves' interface in the Assets application. The left sidebar includes 'Available Queries' (All Records, All Bookmarks, Assets Pending Disposal), 'Common Actions' (New Asset, Change Status, Move/Modify Assets, Swap Assets, Create KPI, More Actions, Associate Customers), and a navigation bar with 'Go To Applications', 'Advanced Search', 'Save Query', 'Bookmarks', and '1 - 10 of 10'. The main area displays a table of assets with columns: Asset, Description, and Location. Three assets are listed: ITAM7001 (WS10 notebook, SOUTHERN), ITAM7002 (WS10 notebook, NORTHERN), and ITAM7003 (WS10 notebook, NORTHERN). Below this is a 'Move/Modify Assets' section with tabs for Assets, Users and Custodians, Groups, and Attributes. A note says: 'To make changes to an asset's location, parent/child relationship, users and custodians, and attributes, select the appropriate tab below.' Under the Assets tab, three assets are selected: ITAM7004 (WS10 notebook, NORTHERN), ITAM7005 (WS10 notebook, NORTHERN), and ITAM7006 (WS10 notebook, SOUTHERN). The 'Mass Move' section allows specifying new location, parent, or bin for all selected assets. Fields include 'To Site' (PHOSCRTP), 'To Location' (with an 'Apply' button), 'To Parent' (with an 'Apply' button), 'To Location' (repeated), 'To Bin' (with an 'Apply' button), and 'To GL Account' (with an 'Apply' button). Buttons for 'OK' and 'Cancel' are at the bottom right. The footer reads 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

A *mass move* is performed in the Assets module by using the Assets application. To perform a mass move, you perform these steps:

1. Search for assets to move in the Assets application. All assets in a search become part of the mass move. To select individual assets from the list, you can click **Select Records** and select the assets that you want to move.
2. After selecting the assets to move, click **Move/Modify Assets** under More Actions in the navigation bar.
3. Enter the move information. You can use the Mass Move section to define the move information for all assets in one step. For example, if you want to define the same **To Location**, enter the location in the Mass Move section and click **Apply** next to the To Location field. After you click Apply, all of the selected assets show the new location in the **To Location** fields.
4. After entering all of the move information, click **OK** to complete the move.

Viewing asset move history

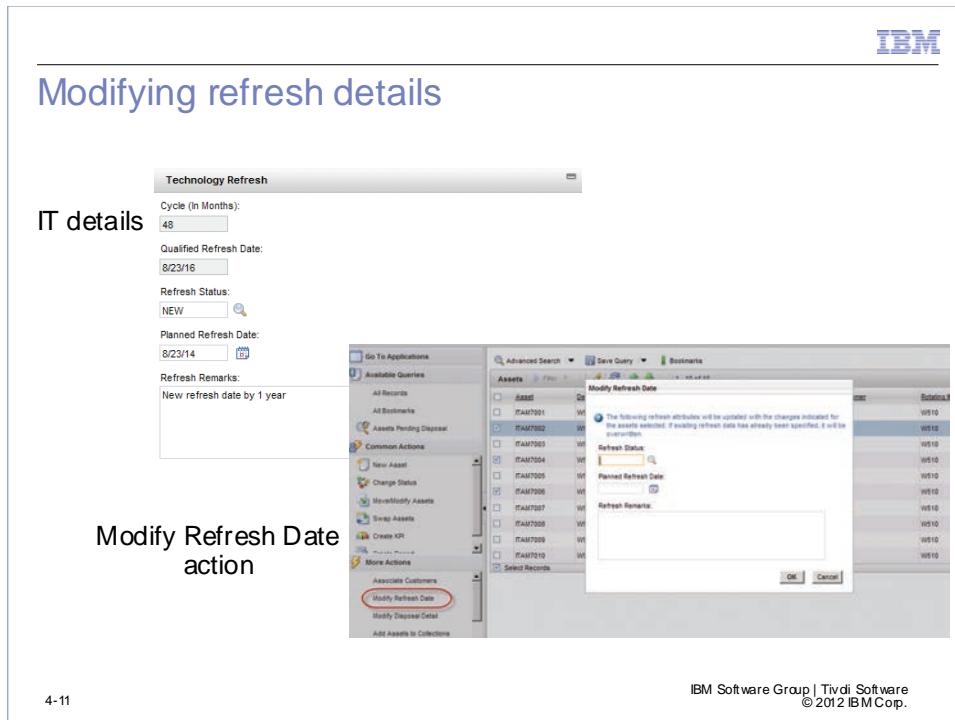
The screenshot shows the 'View Record List > ITAM7001' screen for asset ITAM7001, which is a WS10 notebook. The navigation bar on the left includes 'Available Queries', 'Common Actions' (with 'View Asset Move History' highlighted and circled in red), and 'More Actions'. The main area displays the asset details and the 'View Asset Move History' dialog. The dialog lists three moves:

Transaction Type	Moved Date	From Parent	From Location	From GL Account	From Site	To Parent	To Location	To GL Account	To Site
CREATED	8/23/12 10:06:39					PMSCRTP	SOUTHERN	PMSCRTP	
MOVED	8/23/12 22:51:01		SOUTHERN			PMSCRTP	NORTHERN	PMSCRTP	
MOVED	8/23/12 22:52:21		NORTHERN			PMSCRTP	SOUTHERN	PMSCRTP	

At the bottom of the dialog, there is a 'Condition Code' field and an 'OK' button. The footer of the main screen includes 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

In the Assets application, you can view the move history of an asset by clicking **View > View Asset Move History** under More Actions in the navigation bar. If you do not see any results, click the **Filter** option and search for all records.

Modifying refresh details



The Refresh Status is set during the technology refresh cycle process and can be used for reporting during various stages of the process. These statuses are included:

- **New**: The asset is new to the refresh cycle.
- **Qualified**: The asset qualifies for refresh.
- **Planned**: A refresh is planned for the future.
- **Scheduled**: The asset is scheduled for replacement.
- **Refreshed**: The asset was refreshed.

You can change the refresh details for a single asset on the IT Details page or multiple assets with the **Modify Refresh Date** action. The Qualified Refresh Date is based on what is entered in the Item Master refresh cycle. The Qualified Refresh Date cannot be changed, but an alternate date can be set in the **Planned Refresh Date** field.



Note: You can use the **Advanced Search** in the Assets application to find assets based on the Technology Refresh details.

Swapping assets

The screenshot shows the 'Swap Assets' window in the Assets application. The window has a header 'View Record List x ITAM7002' and tabs for Asset, Spare Parts, IT Details, Meters, Specifications, Relationships, Work, Topology, and Asset Usage. The 'Asset' tab is selected. The main area is titled 'Swap Assets' with a note: 'To complete an asset swap, make sure the asset to be swapped out is listed in the Asset field. Use the Replacing Asset field to specify the asset to be swapped in. Specify a new location for the swapped out asset in the To Location field.' A table lists one asset: ITAM7002 (W510 notebook) with Location NORTHERN and Replacing Asset ITAM7001 with Location SOUTHERN. Below this is a section for 'Manage Software License Allocations' which is currently empty. At the bottom are 'OK' and 'Cancel' buttons. The left sidebar shows navigation links like Go To Applications, Available Queries, Common Actions (Assets Pending Deposit, Change Status, Move/Modify Assets, Swap Assets, Associate Users and Custodians, Create Report), More Actions (Manage Software License Allocations, Configure Topology Viewer), and Asset Details. The 'Swap Assets' link is highlighted with a red circle. The footer includes the IBM logo and copyright information: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

An asset manager commonly needs to exchange one asset for another. One simple and common example is when an asset fails and a replacement is installed. A swap is performed in the Assets module by using the Assets application. The Swap Assets action replaces one asset with another asset and specifies a location for the asset that is swapped out.

To perform a swap, you perform these steps:

1. Click the **Swap Assets** action under Common Actions in the navigation bar to open the Swap Assets window. This action can be performed on a single asset or multiple assets.
2. In the **Replacing Asset** field, enter the asset number that replaces the old asset. The location in the **To Location** field is the new location of the outgoing asset or the asset being replaced.
3. Click **OK** to complete the swap. To verify that the swap was successful, you can click **View > View Asset History** under More Actions in the navigation bar.

When you perform a swap, two transactions are performed behind the scenes:

- One transaction is for the outgoing asset.
- One transaction is for the replacing asset.

A few key points about swapping assets:

- You cannot swap rotating assets from inventory locations.
- You can swap assets across organizations if both use the same item set.
- You can plan swaps in Activities and Tasks and the Work Order Tracking applications.
- You cannot swap rotating assets from inventory locations.
- You must issue or transfer rotating assets by using the inventory applications.

Lesson 2: Managing requests and work

IBM

Lesson 2: Managing requests and work



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Managing requests and work



Managing requests and work

- You can initiate the activities and transactions to deploy assets at various points in the IT asset lifecycle.
- The background information, activity tracking, and recording of actual work is not part of these individual transactions.
- Service requests and work orders enable the tracking and management of deployment and other activities.

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This course briefly covers how to use service requests and work orders. To learn more about service requests, consider taking the *IBM SmartCloud Control Desk 7.5 Service Request Management Fundamentals* course. To learn more about work orders, consider taking the *Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Request and work management examples



Request and work management examples

- A lease contract is due, and all the assets must be returned to the vendor.
- A new employee starts with your organization and needs a new notebook, printer, connectivity, user ID, and an office location.
- An employee is moving office locations and requests the movement of assets and connectivity to the new location.
- A server hard disk drive stops functioning and must be exchanged for another hard disk drive.

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Service requests



Service requests

- Use the Service Requests application to create, view, and resolve service requests from customers or requesters.
- Requests can include resolving an issue, obtaining new service or information, or changing a current service.
- You can use the Service Requests application as the starting point for all work orders.
- Service Request statuses are used to control the process flow.

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Creating service requests



Creating service requests

- Service Request application is in the Work Orders, Service Desk, and Self Service modules.
- Service Requests can be initiated from the Assets, Locations, and Assets Reconciliation Results applications.

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Service requests

The screenshot shows the 'View Record List > 1003' screen in the IBM Service Requests application. The top navigation bar includes tabs for 'Service Request', 'Activities', 'Related Records', 'Solution Details', 'Log', 'Service Address', and 'Specifications'. The main content area displays the following details for Service Request 1003:

Field	Value
Service Request	1003
Catalog Request ID	
External ID	
Owner	
Source	SELF-SERVICE
Owner Group	
Created By	BOB
Status	RESOLVED
Attachments	(Icon)

User Information

Service Request Details

Field	Value
Offering	
Quantity	
Summary	New Asset Request
Details	Starting a new role and I need a more powerful laptop to perform my job tasks. This laptop will be my primary workstation.
Classification	20104
Classification Path	2 \ 2011 \ 20104
Classification Path	2 \ 2011 \ 20104
Class Description	Request for Service \ IT \ New Asset Request
Virtualized?	(Icon)

At the bottom left is a page number '4-18' and at the bottom right is a copyright notice: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

Use the Service Requests application to create, view, and resolve service requests from customers or other requesters. The request can be to resolve an issue, obtain new service or information, or change a current service.

An agent creates a service request record to track contacts, capture information, and determine what, if any, further action is needed. A requester can either contact the service desk agent or create a service request from an email or other form of communication. The agent views these requests in the Service Requests application and resolves them or delegates them to another party for resolution.

The types of status are described in the following table.

Status	Description
NEW	The service request was created or inserted. You cannot revert to this status after you change it.
QUEUED	Service request ownership is given to a person or a group.

Status	Description
INPROG	Someone is working on this service request. The first time that a service request is changed to this status, the system populates the Actual Start field (if it is empty).
PENDING	A service request is pending an action (for example, vendor or user callback, or waiting for parts).
RESOLVED	Information was gathered and routed, service was restored, or a solution was provided. The first time that a service request is changed to this status, the system populates the Actual Finish field (if it is empty). If needed, a service request can be reopened and the status changed from RESOLVED to INPROG (In Progress).
CLOSE	The service request becomes a historical record. When a record is closed, you cannot change the status. However, certain parts of the history record can be edited.

Related records

The screenshot shows the 'Related records' page for Service Request 1003. The top navigation bar includes tabs for Service Request, Activities, Related Records, Solution Details, Log, Service Address, and Specifications. The 'Related Records' tab is selected. The main content area contains four tables:

- Related Tickets:** Shows 0 - 0 of 0 rows.
- Related Work Orders:** Shows 1 - 1 of 1 row.

Work Order #	Description	Class	Status	Relationship
1156	New Asset Request	WORKORDER	COMP	FOLLOWUP
- Solutions:** Shows 0 - 0 of 0 rows.
- Related Survey Records:** Shows 0 - 0 of 0 rows.

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When a service request is created, multiple work orders can be created by using the **Create Work Order** action. All the related work orders are listed in the Related Work Orders table.

Work orders

Work orders

- You can document moves, mass moves, swaps, and the corresponding work that is associated with these transactions by using these applications:
 - Work Order Tracking
 - Service Requests
- Creating a work order initiates the work process and creates a historical record of the work being performed.
- You create work orders by using the Work Order Tracking application in the Work Orders module.

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The Work Orders module has four applications:

- The Work Order Tracking application is used to plan, review, and approve work orders for assets and locations.
- The Assignment Manager application is used to dispatch urgent work and schedule future work requirements.
- The Service Requests application is used to create, view, and resolve service requests from customers.
- The Activities and Tasks application is a subset of the Work Order Tracking application that supports the tracking and management of single tasks and activities.

Creating work orders



Creating work orders

- Initiate work orders from the Assets, Location, and Asset Reconciliation Results applications.
- View work details by asset and location.
- Create a work order and search for all assets that you need to work on by using these attributes:
 - Classification
 - Attribute
 - Technology refresh data
 - Reconciliation status

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Work order features



Work order features

- Use flow control to set finish-to-start relationships between work orders and tasks.
- Use planning applications to quickly add required tasks.
- Use work management applications to manage work activities and assignments:
 - Use the Activities and Tasks application.
 - Assign and schedule craft and labor to work orders by using the Assignment Manager application.
- Statuses can be used to control process flow.

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Use Flow Control to set finish-to-start actions between the work order and tasks. Successive work can be initiated as soon as its predecessor is completed. Flow control works from task numbers and dependencies. It ignores task sequences.

The Activities and Tasks application is used to plan, review, and manage activities and tasks. When you create an activity, you initiate the work process and create a historical record of work being performed. Activities are created in the Incidents and Problems applications. An activity is a type of work order.

Use the Assignment Manager application to dispatch labor and schedule work in the same place. You can view work order assignments and their craft, skill level, vendor, contract, and organization requirements. You can also dispatch labor according to work priority, or view labor and schedule work according to labor availability.

Work order tracking

The screenshot shows the 'Work order tracking' application interface. At the top, there's a navigation bar with tabs: 'View Record List > 1156', 'Work Order' (which is selected), 'Plans', 'Assignments', 'Related Records', 'Actuals', 'Safety Plan', 'Log', 'Failure Reporting', 'Service Address', and 'Specifications'. Below the navigation bar, the main area displays various fields for a work order record. On the left, fields include: 'Work Order' (1156), 'Location' (SOUTHERN), 'Asset' (2081), 'License' (empty), 'Configuration Item' (empty), 'Configuration Item Name' (empty), 'Customer' (empty), 'Parent WO' (empty), 'Classification' (2\201\20104), and 'Class Description' (empty). On the right, fields include: 'Site' (PMSCRTR), 'Class' (WORKORDER), 'Work Type' (empty), 'GL Account' (empty), 'Failure Class' (empty), 'Problem Code' (empty), 'Storeroom Material Status' (empty), 'Direct Issue Material Status' (empty), 'Work Package Material Status' (empty), and 'Attachments' (empty). There are also status-related fields: 'Status' (COMP), 'Status Date' (8/23/12 22:33:46), 'Inherit Status Changes' (checked), 'Accepts Charges?' (checked), 'Is Task?' (unchecked), 'Under Flow Control?' (checked), 'Suspend Flow Control' (unchecked), 'Flow Action' (empty), 'Flow Action Assist?' (unchecked), and 'Material Status Last Updated' (empty). At the bottom left, it says '4-23', and at the bottom right, it says 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

Use the Work Order Tracking application to plan, review, and approve work orders for assets and locations. A work order that is created here initiates the work process and creates a historical record of work being performed. To create a new work order, click the **New Record** icon beside **Select Action**.



Note: The number sign (#) on the **New Record** icon indicates that the administrator set up the application to automatically number the new entries.

The following table describes the **Work Order Tracking** tabs.

Tab	Function
List	Search the database for a specific record or group of records that meet the criteria.
Work Order	Create, plan, review, and approve work orders. On this tab, process work orders created with the Work Order Tracking application and those created or generated by other applications.

Tab	Function
Plans	View, enter, and modify several types of work plan data on a work order. A work plan describes the tasks, labor, materials, services, and the tools that are needed to complete the work. Enter information about estimated labor, materials, services, and the tools that are needed to carry out a work plan on the Labor , Material , Services , and Tools subtabs.
Related Records	Link the selected work order to other work orders and tickets, and view work orders and tickets that are already related to the selected work order. Also, delete the relationship between a work order and a related record if the relationship type is Related.
Actuals	Enter, view, and modify the actual job tasks, labor, materials, licenses, and the tools that are used on the work order. To report actual labor, material, license, and the tools that are used, click the appropriate subtab. Use windows that are available from the subtabs to copy plan data or to insert different or additional information. Only approved labor is used in calculating actuals for labor hours and costs.
Safety Plans	Add, view, or modify safety information about a work order.
Log	View and create entries about the current record.
Failure Reporting	Record and view asset and location problems, causes, and remedies. This data is used to identify trends and isolate probable causes of breakdowns.
Specifications	Display the attribute details of the work order.

Plans

View Record List > 1156

Work Order: 1156 Site: PMSCRTP Status: COMP

Parent WO: >

Quote Type: Quoted Price:

Children of Work Order 1156: Filter > 0 - 0 of 0

Sequence	Record	Record Class	Summary	Location	Asset	Status
...No rows to display...						

Select Assets Select Locations Select Work Orders New Row

Tasks for Work Order 1156: Filter > 1 - 3 of 3

Sequence	Task	Summary	Estimated Duration	Status	Owner	Owner Group
20	20	Create Purchase Request for New Asset	1:00	COMP	ITAMINVN	>> [edit] [trash]
25	25	Issue Asset from Inventory to Work Order	1:00	COMP	ITAMINVN	>> [edit] [trash]
30	30	Build, Image and Deliver New Asset	1:00	COMP	ITAMHAM	>> [edit] [trash]

New Row

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Use the Plans tab to view, enter, and modify several types of work plan data on work orders. You can also apply a job plan to the work order to quickly add the planned tasks. The job plan is specified on the Work Order tab.



Note: Creating job plans is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

A work plan describes the tasks, labor, materials, services, licenses, and the tools needed to complete the work order. The **Plans** tab has four subtabs to enter labor, materials, services, tools, licenses, and fees and charges that you plan to use while doing the work.

The following table describes each of those subtabs.

Subtab	Function
Labor	Insert, view, or edit planned labor. If the work order has a job plan, the system copies all tasks and plan data from the job plan to the work plan. When labor and craft information is entered, the system shows the labor or craft description and rate. When quantities or hours are inserted, deleted, or modified, the system updates the line cost, total labor hours, and total labor cost fields. Labor and crafts can be entered individually, or multiple crafts can be entered.
Materials	Insert, view, or edit planned materials or items for a work order. If the work plan is based on a job plan, the tasks and plan data is copied from the job plan to the work plan.
Services	View services and add line types of Service or Standard Service (STD SERVICE) to the work plan.
Tools	Insert, view, or edit planned tool requirements for a work order. Use the Select Tools window to apply multiple tools to a work order. When the work order is approved, the system reserves the tools if they are in a storeroom. If the work plan is based on a job plan, all tasks and plan data is copied to the work plan.
Licenses	Insert, view, or edit licenses that are planned for work orders. If the work plan is based on a job plan, all task and plan data is copied from the job plan to the work plan. This topic is covered in Unit 7: Managing software licenses.
Fees and Charges	Specify additional fees and charges, such as management, incentive, or penalty fees.

Actuals

The screenshot shows the 'Actuals' tab of the IBM SmartCloud Control Desk interface. At the top, there are tabs for Work Order, Plans, Assignments, Related Records, Actuals (which is selected), Safety Plan, Log, Failure Reporting, Service Address, and Specifications. Below the tabs, there are fields for Work Order (1156, New Asset Request), Site (PMSCRTP), Status (COMP), Parent WO (empty), Quote Type (empty), and Quoted Price (empty). A 'Children of Work Order 1156' section shows 0 - 0 of 0. The main area displays 'Tasks for Work Order 1156' with three tasks: Create Purchase Request for New Asset (Sequence 20, Status COMP), Issue Asset from Inventory to Work Order (Sequence 25, Status COMP), and Build, Image and Deliver New Asset (Sequence 30, Status COMP). Below this is a 'Labor' section with a table:

Task	Labor	Name	Approved?	Start Date	Start Time	End Time	Regular Hours	Rate
No rows to display.								

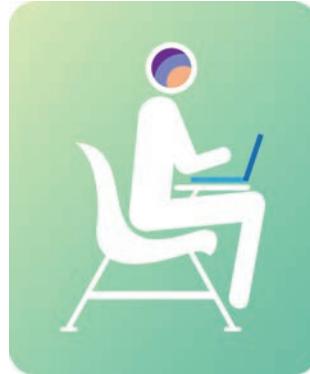
A red box highlights the 'Labor' tab in the navigation bar and the 'Labor' column in the table above. The bottom right corner of the interface shows the IBM logo and the text 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

Use the **Actuals** tab to assign the assets, licenses, and the labor that is used for this work order. You can also issue assets from the Materials tab.

Student exercise

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Student exercise



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Open your *Student Exercises* book and perform the exercises for this unit.

Review questions

1. True or False. You can transfer rotating assets in the Inventory application.
2. Which field is updated when you modify the refresh date?
 - a. Qualified Refresh Date
 - b. Planned Refresh Date
 - c. Technology Refresh Date
 - d. IT Details Refresh Date
3. True or False. You can use the Work Orders application to plan materials, licenses, labor, tools, and services for work done on assets and locations.
4. What can be used to quickly add tasks to a work order?
 - a. Job plan
 - b. Task plan
 - c. Activities plan
 - d. Plan tracking

Review answers

1. True or False. You can transfer rotating assets in the Inventory application.
False. Rotating assets must be transferred in the Inventory Usage application.
2. Which field is updated when you modify the refresh date?
B. The Planned Refresh Date field is updated.
3. True or False. You can use the Work Orders application to plan materials, licenses, labor, tools, and services for work done on assets and locations.
True. The Work Orders application can be used to plan for materials, licenses, labor, tools, and services.
4. What can be used to quickly add tasks to a work order?
A. A job plan can be added to the work order. Job plans have predefined tasks. Those tasks are added to the Plans tab of the work order.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Issue and transfer assets.
- Move, modify, and swap assets.
- Use request and work management applications to manage and track deployment.

Unit 5: Management

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Unit 5 Management



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Introduction

This unit describes how IBM SmartCloud Control Desk can manage deployed IT assets, which can include both hardware and software assets. This unit focuses on computer assets. Software assets are covered in Unit 7: Managing software licenses.

Objectives

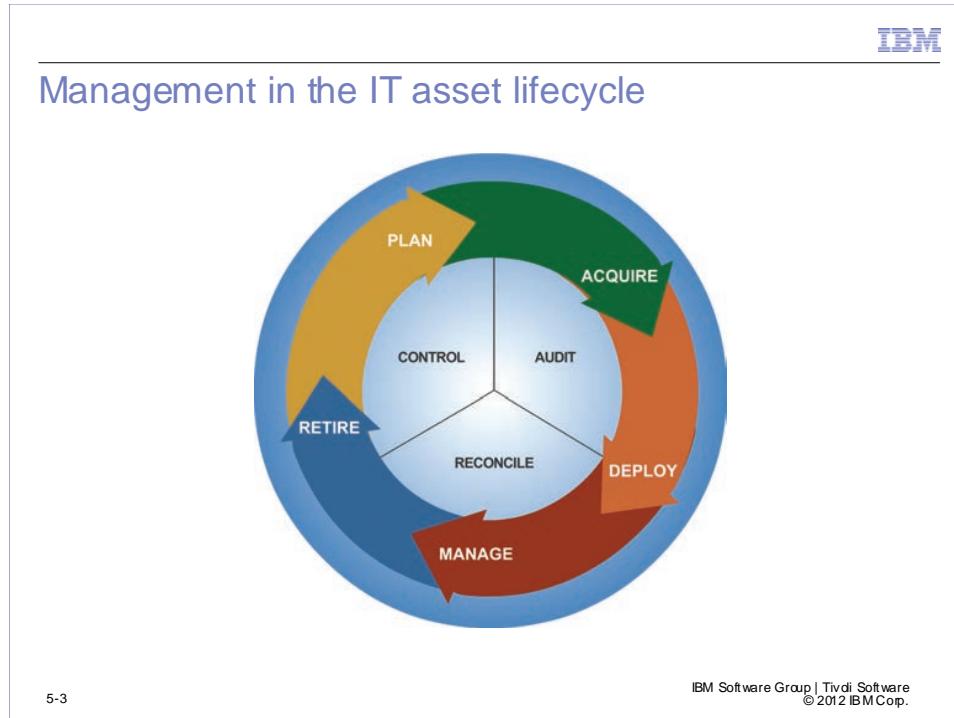


Objectives

When you complete this unit, you can perform the following tasks:

- List the required components for managing assets.
- Update and run reconciliation tasks to link authorized and deployed assets.
- View and interpret reconciliation results by using the Deployed Assets and Reconciliation module.

Management in the IT asset lifecycle



Effectively monitoring software and hardware usage is key to optimizing usage and minimizing costs. In addition, keeping track of deployed assets helps to maintain software and hardware compliance.

Asset managers can track every asset on the enterprise network and all of the specific information that applies to each asset by using the following features:

- A discovery tool
- IBM Tivoli Integration Composer
- Reconciliation module
- Deployed Assets module
- Software Catalog
- License Audit reports

The Software Catalog and License Audit reports are covered in Unit 7: Managing software licenses.

Lesson 1: Managing assets

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Lesson 1: Managing assets



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Managing assets



Managing assets

- An asset discovery tool can track the presence and configuration of IT assets that are deployed in a network environment.
- Managing deployed assets involves the following components:
 - An asset discovery tool
 - IBM Tivoli Integration Composer
 - Reconciliation module
 - Deployed Assets module

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Large organizations are constantly adding new and improved IT devices and software. IBM SmartCloud Control Desk provides a versatile, end-to-end solution for managing these assets. The discovery process is covered in Unit 8: Discovery. This unit focuses on how to manage deployed assets after they are imported into IBM SmartCloud Control Desk.

IT assets

IBM

IT assets

- IBM SmartCloud Control Desk maintains two distinct sets of IT asset data in two different modules.
- The Assets module maintains asset records for purchased and leased assets, called *authorized assets*.
- The Deployed Assets module maintains data that is collected directly from assets that are installed in the enterprise through discovery.

5-6

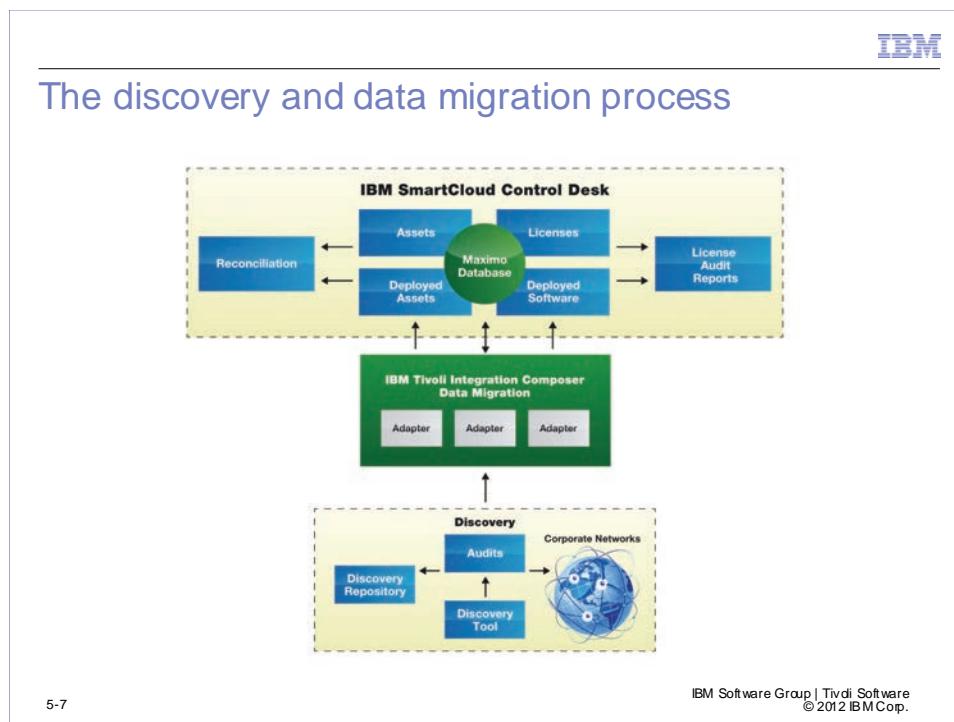
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IBM SmartCloud Control Desk maintains data that identifies and tracks IT assets including software and hardware. To help you track asset information, IBM SmartCloud Control Desk maintains two distinct kinds of data about IT assets: authorized asset data and deployed asset data.

Authorized asset data is data that you record in IBM SmartCloud Control Desk about what you acquired and installed. This data represents your authorized inventory, what you expect to have in your inventory based on what you planned, purchased, and received.

Deployed asset data is information that a discovery tool collects about equipment that is deployed in your enterprise. To gather this data, discovery tools such as IBM Tivoli Asset Discovery for Distributed or IBM Tivoli Asset Discovery for z/OS® can scan the assets. The discovery tool scans computers, network devices, and network printers that are deployed in your enterprise and records information about the hardware and software that are installed on those assets. The data that the discovery tools collect is imported into the database by using the integration tool, IBM Tivoli Integration Composer. In the context of IBM SmartCloud Control Desk, the term IT asset generally refers to authorized asset data, whereas the term deployed asset refers to data gathered by a discovery tool.

The discovery and data migration process



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The discovery and migration of software and hardware data is a process that requires planning and setup by administrators who understand the corporate enterprise infrastructure. Data is discovered by using agent-based or agentless discovery tools.

This data is aggregated and then imported into the IBM SmartCloud Control Desk Deployed Assets tables. The import process must use IBM Tivoli Integration Composer, whereas discovery can be handled by various IBM and third-party tools. These discovery tools must have a supported IBM Tivoli Integration Composer adapter; otherwise, you must create a custom adapter to import the discovered data. After the data is imported into Deployed Assets, you can run Reconciliation tasks to compare what was discovered to what authorized assets are in the system.

Asset discovery



Asset discovery

Discovering assets can range from the basic to the detailed:

- What assets does the organization have?
- What do they look like?
- What are they connected to?
- Are they being used?
- Are they license-compliant?

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A large part of managing a dynamic IT department is knowing where the assets are and how they are currently configured. It is important to know what changes have taken place over time with the asset configuration.

An example might be when memory is added or a higher capacity drive is installed. IBM SmartCloud Control Desk captures all the work that is done on the asset and the configuration of the final authorized asset.

You can compare whether the upgrade that was done on the asset reflects what was authorized for that asset in the system. In addition, hardware and software configurations might need to be implemented for corporate compliance. You can use IBM SmartCloud Control Desk to audit for that configuration to ensure what was authorized is what is deployed.

Viewing deployed assets



Viewing deployed assets

- The Deployed Assets module maintains data that is collected directly from assets that are installed in your enterprise through discovery.
- The Deployed Assets module contains four applications:
 - Computers
 - Network Devices
 - Network Printers
 - Deployed Software

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The data collected in the Deployed Assets application is dependent on the discovery tools that are used. Not all fields are populated. If required fields are empty, an administrator must investigate if the discovery tool is capturing the data. Review the IBM Tivoli Integration Composer adapter for appropriate mapping expressions.

Computers

The screenshot shows the 'Computers' application interface. At the top, there's a navigation bar with links like 'Go To Applications', 'Available Queries', 'All Records', 'All Bookmarks', and various reporting and common actions. Below the navigation is a search bar with 'Advanced Search' and 'Save Query' buttons. The main area is divided into two sections: a 'List' view on the left and a 'Computer record' view on the right. The 'List' view displays a table of computer records with columns: Computer ID, Description, Login, Selector, and Role. A specific row (ID 0003511) is selected and highlighted with a red box. The 'Computer record' view on the right shows detailed information for this selected computer, including its serial number (0003511), asset tag, manufacturer (IBM), model (0003117-000A), platform (DESKTOP/VD), login (0003511), domain (UNODEWIV), GUID, MAC address, and NDS UUID. There are tabs at the bottom of the record view for Computer, Processors, Storage, Software, Networks, Communication, Media Adapters, Displays, Image Devices, Users, and Partitions. A red box highlights the 'Partitions' tab. At the bottom of the page, there's a footer with the text 'IBM Software Group | Tivoli Software' and '© 2012 IBM Corp.'

The Computers application displays data about computers that are deployed in your enterprise. It includes tabs with specific information about the computer itself and the following items:

- Software
- Storage devices
- Processors
- Media adapters (such as sound and video cards)
- Communication devices (such as modems and network adapters)
- Network settings for TCP/IP and IPX
- Image devices (such as printers and scanners)
- Displays
- Partitions

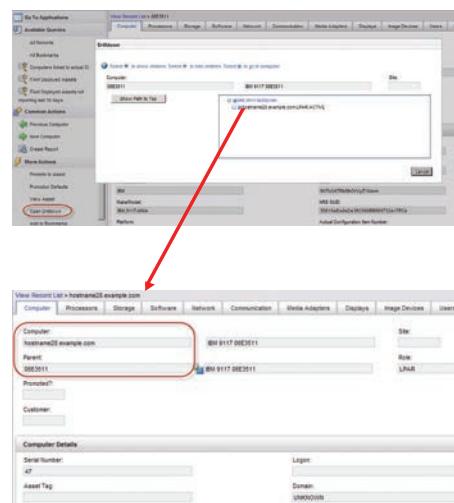
Computer records that are displayed in the Computers application are read-only; you cannot edit them. You can use this application to delete computer records from the database, but you cannot delete a component, such as a processor, from a computer record.

Data that is displayed in this application varies depending on the discovery tool that is used to collect the data. Some data fields in the Computers application might be empty. An empty field indicates that the discovery tool did not collect the data or that administrators did not map the data for import into the database.

Data that is displayed in some fields in the Computers application is affected by parameters that your administrator defines in administrative applications. Administrative applications affect how the system displays manufacturer, media adapter, operating system, and processor names as well as software suites and usage frequency data for software applications.

Partition navigation

- The **Open Drilldown** action opens the asset hierarchy.
- If the computer has partitions, they are listed.
- You can click the partition to go to the partition record.



5-11

Under More Actions in the navigation bar in the Computers application, you can select **Open Drilldown** to view the complete hierarchy of partitions that are associated with the computer that you are viewing.

Authorized asset promotion



Authorized asset promotion

- You can promote computers, network printers, and network devices to authorized assets.
- With the Promote To Asset action, you can manually promote a single deployed asset or multiple deployed assets.
- You can set the Promotion Defaults action to enable a large number of automated promotions by using escalations.
- Reconciliation links are established between the deployed asset and new authorized asset when the authorized assets are promoted.

5-12

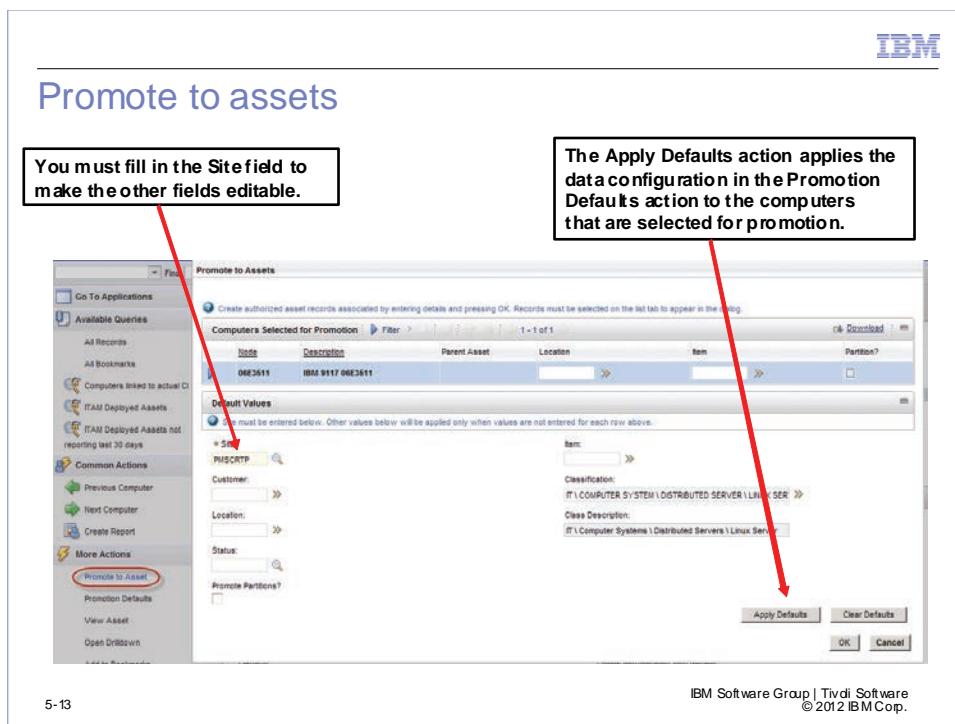
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With IBM SmartCloud Control Desk, you can promote assets automatically through scheduled escalations or manually through an action in the Computers application. You can define promotion default values to use for scheduled escalations or for manual promotions in the Computers application. When you promote automatically through scheduled escalations, you must provide default values for site ID and asset class. If a default site is not set, promotion fails. A classification must be provided so that the asset generated is classified as an IT asset.



Note: When assets are promoted from discovered information instead of creating authorized IT asset records directly through procurement processes, there is no verification that the data in discovered records actually matches the data in the procurement records. You must have a business process that reconciles procurement records with discovered data to ensure that your authorized IT asset data is complete and accurate.

Promote to assets



You can open a computer and promote it individually or promote multiple computers by selecting them in the asset list. The Default Values section lists any defaults that were set in the **Promotion Defaults** select action. You can overwrite these values in the Promote to Assets window.

Select the site first in the promotion defaults because the promote assets action works only within a site. Defaults can then be added and applied to escalations and manual promotes.

After the computers are selected in the Promote to Assets window, click **OK** to start the promotion routine. The promotion creates the authorized asset and a reconciliation link record with the link rule PROMOTED. When the authorized IT asset is created, a record is automatically created in Asset Move History with the transaction type CREATED. The promotion routine updates the message for that record to “Promoted from node [NODEID] with nodename [NAME].”



Note: If both the parent computer and child partitions are promoted at the same time, the item and classification values that are specified for the parent are assigned to the children. The item and classification for child partitions might not be identical to the item and classification of the parent computer or parent partition. In some cases partitions can be parents. To avoid this problem, consider promoting partitions separately from computers.

Lesson 2: Reconciliation

IBM

Lesson 2: Reconciliation



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Reconciliation



Reconciliation

- Use the Reconciliation module to compare and reconcile data in the Assets and Deployed Assets applications.
- Reconciliation identifies successful matches, variances, and discrepancies between authorized assets and deployed assets.
- Use this comparison to determine whether the IT assets deployed at your company match the record of authorized assets.
- Reconciliation results can be viewed in the Asset Link Results and Asset Reconciliation Results applications.

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When authorized assets and deployed assets are compared, you can find discrepancies between what was authorized and what was deployed. Discrepancies can be caused by various factors, including incorrect data entry or reconfigured hardware or software that was not reflected in the IBM SmartCloud Control Desk system.

Reconciliation components

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Reconciliation components

- Reconciliation tasks include task filters, link rules, and comparison rules.
- **Task filters** define a subset of either assets or deployed assets to reconcile.
- **Link rules** establish a relation between a top-level IT asset and a deployed asset.
- **Comparison rules** identify objects or attributes of a child or parent IT asset to compare with objects or attributes of a child or parent deployed asset.

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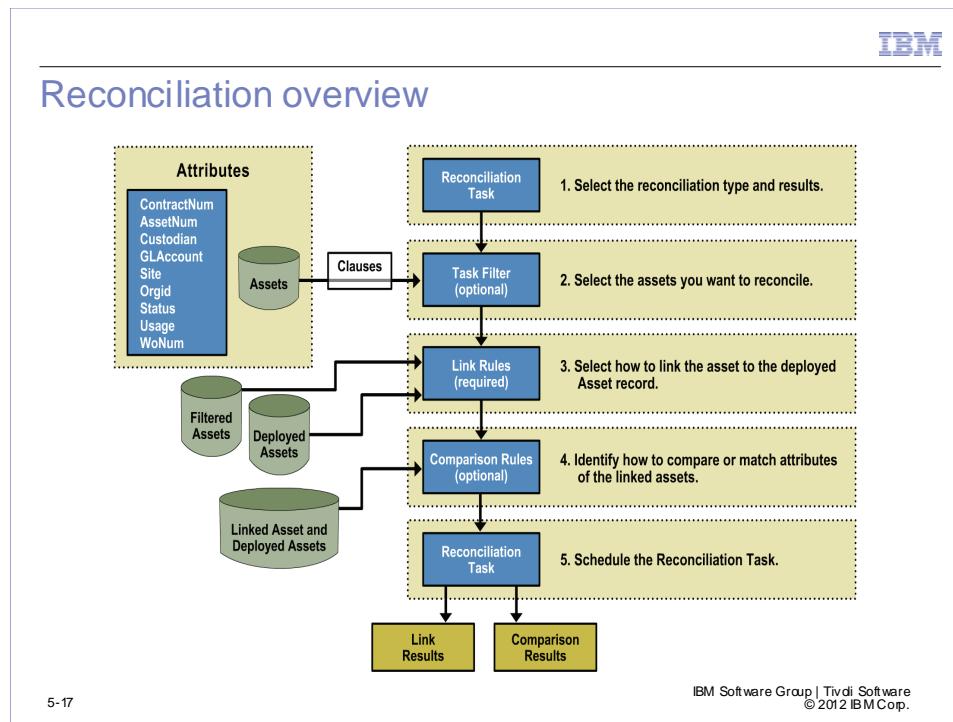
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The following table briefly describes the **Reconciliation** module applications.

Application	Description
Reconciliation Tasks	Combines one or more link rules and, if necessary, a task filter and one or more comparison rules into a reconciliation task. You can specify how the system reports results for comparison rule evaluations: all results, failed reconciliations, or successful reconciliations.
Task Filters	Defines a subset of assets or deployed assets to reconcile. Without a reconciliation task defined, the system compares all top-level assets with all deployed assets.
Link Rules	Establishes a relation between a top-level IT asset and a computer, network printer, or network device in deployed assets. The rule establishes the object and attribute in IT assets to link to a specific attribute in deployed assets.
Comparison Rules	Identifies objects or attributes to compare with deployed asset when the system runs a reconciliation task.

Application	Description
Asset Link Results	Lists successful one-to-one links that are established between a top-level IT asset and a computer, network printer, or network device in deployed assets.
Asset Reconciliation Results	Lists link failures that occur when the system does not find a one-to-one link between an IT asset and a deployed asset. Failures occur when the reconciliation process finds no link or finds multiple links. The application also lists results of comparison rule evaluations.

Reconciliation overview



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This diagram provides an example of a step-by-step process for setting up a reconciliation task. Before you perform reconciliation tasks, you must understand the reconciliation module applications and the attributes and specifications for assets and deployed assets.

1. Select the reconciliation type to identify what data sets to reconcile.

For IBM SmartCloud Control Desk, you select ASSET and DEPLOYED ASSET. You can also select the type of reconciliation results that you want to see in the Comparison Results application.

2. Select a task filter that is defined, or use the Task Filters application to create a new one.

The Task Filter defines a subset of the ASSET (Data Set 1) data or a subset of the DEPLOYED ASSET (Data Set 2) to use in the following link step. Based on whether you choose to filter on ASSET or DEPLOYED ASSET, this filtered data becomes the leading set of data that the link rules are applied to. In the example on the slide, the task filter is based on asset and the results are the leading set of data.

A task filter is not required. If a task filter is not created, then ASSET (Data Set 1), which specifies all authorized IT assets, becomes the leading set of data.

3. Select a link rule or create a new one that links the filtered assets to the full set of deployed assets. Successful links are displayed in the Link Results application. Failed links are displayed in the Comparison Results application.

4. Optionally, select a Comparison rule. The linked assets and deployed asset can be compared by using a comparison clause or matches found clause. An existing Comparison rule can be selected or a new one can be created.
5. Schedule and activate the reconciliation task. After the reconciliation task runs, you can view the results in the Link Results and Comparison Results applications.

You must configure the IT Asset Top Level Class in the System Settings for the Organization before running reconciliation.

Reconciliation tasks

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Reconciliation tasks

- Task filters, link rules, and comparison rules must be created before choosing them in the reconciliation task.
- Schedule the task and then use the **Activate/Deactivate Reconciliation Task** action to activate the task.

View Record List > ITAMHardwareReconTask

Reconciliation Task

A reconciliation task contains a task filter (optional), one or more link rules, and one or more comparison rules (optional) into a task. Specify a schedule for running the task in the Schedule field, and the schedule from the Select Action menu. The task filter specifies a subset of objects to reconcile. The value in the Comparison Results field specifies how the system reports results for compare evaluations: All reconciliations, or successful reconciliations.

Reconciliation Task: ITAMHardwareReconTask

Filter Type:

Task Filter:

Comparison Results: All

Active: Enabled

Last Completion Date: 02/01/12 10:49:01

Is Case Sensitive?

Customer:

Type of Reconciliation

Data Set 1: ASSET will be reconciled to Data Set 2: DEPLOYED ASSET

Link Rules

Sequence 1: Link

Description: ITAM Hardware Link Rule

Data Set 1: ASSET Data Set 2: DEPLOYED ASSET

Comparison Rules

Comparison 1: ITAMComparisonRule

Description: ITAM Comparison Rule

Data Set 1: ASSET Data Set 2: DEPLOYED ASSET

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To define the parameters for a reconciliation, create a reconciliation task that combines the elements that are required for a reconciliation into a specific task. A reconciliation task consists of three possible components:

- A task filter (optional)
- One or more link rules (required)
- One or more comparison rules (optional)

This reconciliation task is a product-provided task to link authorized assets to deployed assets.

Task filters

The screenshot shows the 'Task Filter' configuration screen. At the top, there's a header with the IBM logo and the title 'Task filters'. Below the header, there are two main sections: 'Task Filter' and 'Task Filter Clauses'.
Task Filter: This section contains fields for 'Filter' (set to 'PMSC RTP') and 'Filter Type' (set to 'ASSET'). It also includes a 'Customer:' field and a 'Limit list to assets in the PMSC RTP site' checkbox.
Task Filter Clauses: This section displays a table titled 'Task Filter Clauses' with one row. The table has columns for 'Attribute' and 'Value'. The single row shows 'SITEID' as the attribute and 'PMSC RTP' as the value.

At the bottom left of the interface, there's a page number '5-19'. At the bottom right, there's a copyright notice: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The Task Filters application defines a subset of either Data Set 1 or Data Set 2 to reconcile. If you do not define a task filter for a reconciliation task, the system compares all top-level authorized IT asset objects with all deployed asset objects when it processes the reconciliation task.

The task filter also identifies the leading set based on the Filter Type of Asset or Deployed Asset and the Task Filter Clauses. If no task filter is selected, then Data Set 1 (ASSET) becomes the leading set for which links are created. In the example on the slide, all of the IT assets that are found in the PMSC RTP site become the leading set that the Deployed Assets are linked to.

You can add more than one task filter clause to the Task Filter. If you create multiple clauses that specify different attributes, the system processes the clauses by using logical AND between the clauses.

For example, if you define a task filter for deployed assets based on the Site and System Role attributes, the system selects only deployed assets for the specified site and the specified system role; both criteria must be met. If you create multiple clauses for the same attribute, the system processes the clauses by using logical OR between clauses. For example, if you create a task filter for authorized assets with two filter clauses for Site, one for Boston and one for New York, the system selects records that have either Boston or New York as a site.

Link rules

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Link rules

- At least one link rule is required in a reconciliation task.
- You are matching values in one table to values in another table to establish a link.
- There are many attributes that can be used to link the deployed assets and assets. Serial number is a common choice.

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The Link Rules application establishes a link between a top-level object in Data Set 1 and a top-level object in Data Set 2. A link rule is a required component of a reconciliation task and establishes the basis of the comparison by identifying the object and attribute in Data Set 1 to link to a specific attribute of the object in Data Set 2. A link rule can be applied to more than one reconciliation task.

The system evaluates link rules in a reconciliation task in a cascading sequence, based on the sequence numbers, until it finds a match or until it reaches the end of the cascading rule list. If the system finds a match, it displays the link result in the Asset Link Results application. If the system does not find a match or finds multiple matches, it displays a link rule failure result in the Asset Reconciliation Results application.

Comparison rules

The screenshot shows the 'Comparison rules' section of the application. It includes a list of comparison rules, a configuration interface for setting up reconciliation tasks, and a detailed view of a specific comparison rule. The interface is titled 'Comparison rules' and includes sections for 'Type of Reconciliation' (Data Set 1: ASSET vs Data Set 2: DEPLOYED ASSET), 'Full CI Comparison' (checkbox), and 'Attributes Equality Clauses' (a table with columns: Sequence #, Data Set 1 Attribute, Operator, Data Set 2 Attribute). A note at the top states: 'Comparison rules identify object(s) or attribute(s) of child or parent Data Sets which are compared when a reconciliation task is executed. To create a comparison rule, you must specify at least one Attributes Equality, but not both. Use the Data Set 1 Filter and Data Set 2 Filter to limit or focus your comparison.' The bottom right corner shows the IBM logo and copyright information: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The Comparison Rules application defines how to compare objects or attributes of a child or parent object in Data Set 1 with a child or parent in Data Set 2 when the system runs a reconciliation task.



Note: Unlike the link phase, which processes only top-level objects, the comparison phase evaluates hierarchies. Using the clauses that are defined in the comparison rule, the system evaluates each of the linked pairs that are collected by a link rule, one pair at a time, processing children and parents.

Comparison rules are optional components of a reconciliation task, and a task can include more than one comparison rule. The system applies comparison rules only after a link rule establishes a successful link between an object from Data Set 1 and an object from Data Set 2. The system lists results for comparison rule reconciliations in the Asset Reconciliation Results application. Data set filters can be used to further filter what data is compared.

There are two basic types of comparison rules:

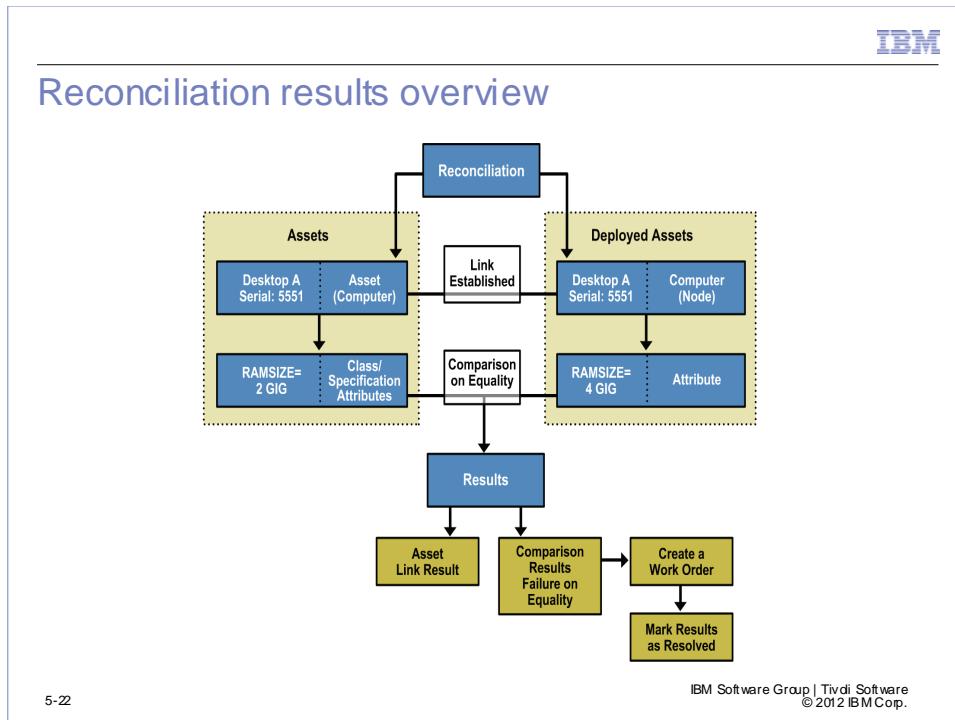
- Attributes equality compares an attribute or attributes of a child or parent object in Data Set 1 with a specific attribute or attributes of a child or parent object in Data Set 2.
- Matches found specifies the ratio of object instances in Data Set 1 to object instances in Data Set 2 to look for in the comparison.

Matches that are found use the following operators:

- At least 1 to at least 1
- At least 1 to exactly 1
- Exactly 1 to at least 1
- Exactly 1 to exactly 1
- Exactly N to exactly N

For example, you can configure a data filter to only find servers. Then, use the match clause to find logical drives with a size greater than 2 GB.

Reconciliation results overview



This diagram provides a simple overview of a reconciliation task that includes a link rule and uses a comparison rule that is based on equality. You can view and act upon the results from reconciliation tasks in the Assets Reconciliation Results application. An inventory administrator can review the results of the reconciliations, search on failed results, and create work orders as needed to synchronize the information or correct problems. After the reconciliation failure is investigated, the administrator can mark the record as resolved.

Asset link results



Asset link results

- All successfully linked assets by link rule name are displayed with their link date and time.
- The linked node, or deployed asset, is displayed with the linked asset.

Site	Rule Name	Link Date	Asset	Node	
	PMSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM8001	dmgr
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	TUSC2001	hostname29.example.com
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM8009	esx36-s1-fx
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	2098	ITAM588190
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM4002	hostname15.example.com
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	2078	med6-3
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM4005	hostname14.example.com
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	PUL52079	CS9
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM4008	6588180
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM1001	ITAMCIMELOWSKI
	PUSCRTP	ITAMHardwareLink	8/26/12 19:29:00	ITAM3003	Mobile03

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When the system processes a reconciliation task, link rules sometimes successfully identify a link between objects, and sometimes they do not. The Asset Link Results application lists the successful links.

The Asset Link Results application has the following tabs.

Tab	Function
List	Search for link results.
Asset Link Result	View and delete asset link results.



Note: The promotion routine creates a reconciliation link record with the link rule PROMOTED. To find records of nodes that were promoted, search by the link rule and the appropriate combinations of node name, site, and date.

Asset reconciliation results

IBM

Asset reconciliation results

- Reconciliation results are displayed for each reconciliation task based on the comparison results field.
- All results have a Resolved flag that you can use to search for unresolved comparison or link failures.
- A work order or ticket can be created to resolve any issues.

Reconciliation ID	Reconciliation Task	Message	Asset	Deployed Asset	Created Date	Resolved?
42	ITAMHardwareReconTask	This ASSET has no matching DEPLOYED ASSET.	ITAM2091		8/23/12 23:46:58	<input type="checkbox"/>
1	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1010		8/23/12 23:46:57	<input type="checkbox"/>
2	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1009		8/23/12 23:46:57	<input type="checkbox"/>
3	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1008		8/23/12 23:46:57	<input type="checkbox"/>
4	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1007		8/23/12 23:46:57	<input type="checkbox"/>
5	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1006		8/23/12 23:46:57	<input type="checkbox"/>
6	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1005		8/23/12 23:46:58	<input type="checkbox"/>
7	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1004		8/23/12 23:46:58	<input type="checkbox"/>
8	ITAMHardwareReconTask	The ASSET has no matching DEPLOYED ASSET.	ITAM1003		8/23/12 23:46:58	<input type="checkbox"/>

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Use the Asset Reconciliation Results application view and manage result records that are produced when the system runs a reconciliation task. In this application, you can view and manage two kinds of results:

- Link Rule Failures:** Link failures occur when a link rule does not find a successful one-to-one link between the object in DataSet1 and DataSet2. A failure can occur when the reconciliation process finds no links or finds multiple links.
- Comparison Rule Results:** The system produces comparison rule results when it processes a comparison rule. The specific kind of comparison rule data depends on a parameter set in the Reconciliation Tasks application.

The Asset Reconciliation results application also allows an administrator to search on failures and create the appropriate ticket or work order to investigate and resolve the failure. When the failure is resolved, the record can be marked as resolved.

Other reconciliation results



Other reconciliation results

- Reconciliation Failure flags are displayed in these areas:
 - Detail section of the Assets application.
 - Asset lookup for Work Orders and Contracts.
- Reconciliation Results are displayed in the Reconciliation Results section of the Asset IT Details tab.
- Reconciliation Differences are displayed in the View Asset action of the Deployed Asset.
- The Linked Computer Asset section identifies the corresponding authorized asset in the Deployed Software Authorized Asset tab.

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Linking assets and CIs



Linking assets and CIs

- Assets are IT objects that are managed from the financial perspective.
- CIs are IT objects that are managed from the operational perspective.
- Assets and CIs often point to the same resource.
- Linking the assets and CIs creates a connected representation of the IT resource.
- A product-provided reconciliation task can be used to link assets and CIs.

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IBM SmartCloud Control Desk can manage both assets and configurations item. Assets and CIs can point to the same IT object, but highlight different aspects of it. Assets are IT objects that are managed from the financial perspective. CIs are IT objects that are managed from the operational perspective. Assets are typically created before the CIs and live longer than the CIs.

When you manage an IT object from the aspect of financial value, you typically apply asset management functions on it. Therefore, you refer to the IT object as an asset. More specifically, it is an IT asset because there are other financial assets in an enterprise. When you use or need to control an IT object in a more operational management manner, you refer to and maintain it as a Configuration Item (CI).

Although these disciplines have different focuses, they are often referring to the same asset. Understanding this relationship is key. It is important to know where an asset is in the financial lifecycle when managing it operationally. For example, if you know that an asset is near retirement, that aspect can affect the changes that you make on it from an operational perspective. When you use IBM SmartCloud Control Desk for IT asset management and configuration management, you can link these asset records (assets and configuration items) to create a connected representation of the IT resource.

You can use the product-provided reconciliation task CCILinkAssetsAndCIs to link assets and CIs. Without customization, this task links assets and CIs based on serial number. It can also link assets to CIs if a deployed asset is linked to the asset and that deployed asset is linked to an actual CI. Deployed assets and actual CIs are linked by IBM Tivoli Integration Composer if the adapter

detects that they are connecting to the same IT asset. IBM Tivoli Integration Composer uses rules to determine when multiple discovery tools are scanning the same system. It creates global IDs (GUIDs) to identify the asset and create the linkage.

Student exercise

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Student exercise



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Open the *Student Exercise* book and complete the exercises for this unit.

Review questions

1. True or False. IBM Tivoli Integration Composer is the required tool to import discovered data to deployed assets in IBM SmartCloud Control Desk.
2. What action is used to create an authorized asset from a deployed asset record?
 - a. Create asset
 - b. Promote computer
 - c. Promote to Asset
 - d. Create authorized asset
3. True or False. Task Filters and Comparison Rules are required components of a Reconciliation Task.
4. What entity represents an IT object from a financial perspective?
 - a. CI
 - b. Computer
 - c. Item
 - d. Asset

Review answers

1. True or False. IBM Tivoli Integration Composer is the required tool to import discovered data to deployed assets in IBM SmartCloud Control Desk.

True. IBM Tivoli Integration Composer is used to import discovered data to IBM SmartCloud Control Desk by using adapters that map the source data to the target data.

2. What action is used to create an authorized asset from a deployed asset record?

C. The Promote to Asset action is used to create authorized assets from a deployed asset record.

3. True or False. Task Filters and Comparison Rules are required components of a Reconciliation Task.

False. Link Rules are a required component of a Reconciliation Task. Task Filters and Comparison Rules are optional components.

4. What entity represents an IT object from a financial perspective?

D. An asset is a financial representation of an IT object.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- List the required components for managing assets.
- Update and run reconciliation tasks to link authorized and deployed assets.
- View and interpret reconciliation results by using the Deployed Assets and Reconciliation module.

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Unit 6: Disposal

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Unit 6 Disposal



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Introduction

In the Disposal stage, decisions regarding asset retirement and decommissioning are made and the business processes that are needed to support those business functions are implemented. In this unit, you learn how the system supports the retirement or disposal of IT assets.

Objectives

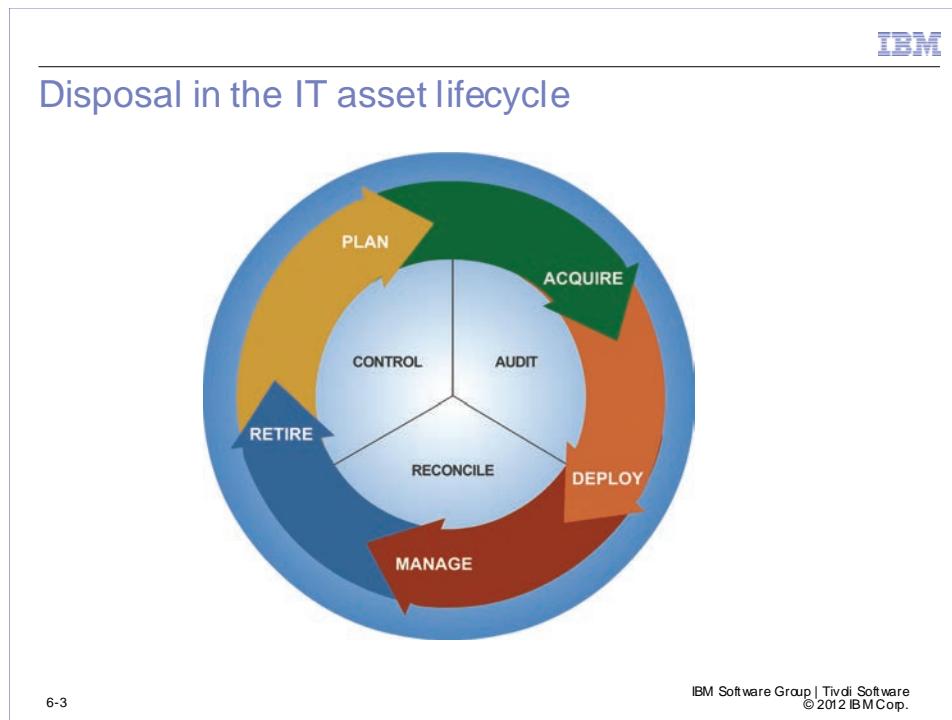


Objectives

When you complete this unit, you can perform the following tasks:

- Process an asset disposal request.
- Update end-of-life information for an asset.
- Disassociate a user from a retired asset.

Disposal in the IT asset lifecycle



When assets are outdated, are broken beyond repair, or have expired leases, they need to be decommissioned. This unit focuses on how the system supports the retirement or disposal of IT assets.

Lesson 1: Returns and decommissions

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Lesson 1: Returns and decommissions



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Returns and decommissions



Returns and decommissions

- Decommissioning IT assets refers to uninstalling, decommissioning, and disposing of an IT asset.
- Decommissioning can occur in the following situations:
 - The end of a lease or rental.
 - Replacement or retirement of an IT asset because it is technologically obsolete or a technology refresh is planned.

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Decommissioning tasks



Decommissioning tasks

Decommissioning IT assets can include one or more of the following tasks:

- Locating the asset
- Reconfiguring an asset
- Reconciling leased assets
- Shipping a leased asset back to a vendor
- Canceling an existing lease or rental agreement
- Moving an asset to an end-of-life location
- Ordering a replacement
- Reviewing and reallocating any software licenses
- Changing the status of an asset record to decommissioned or disposed

6-6

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You can use the Job Plans application to create a job plan that lists all of the tasks that are related to decommissioning an asset.

Decommissioning requirements



Decommissioning requirements

Before an asset can be decommissioned, the following conditions must exist:

- The asset cannot be referenced on any open work orders.
- The asset cannot be referenced on any open desktop requisitions, purchase requisitions, requests for quotations, or purchase orders.
- The asset cannot be referenced on any job plans.

6-7

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If the asset has a not ready, disposed, or decommissioned status, the asset is not displayed when a ticket or work order is generated. At the end of lifecycle of an asset, you must determine whether it is necessary to disassociate the owner and custodian.

End-of-life assets



End-of-life assets

- When you retire an asset, you can move it to an end-of-life location and then set the status to decommissioned or disposed.
- You can create an operating or a storeroom location to represent a virtual end-of-life location for assets.

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End-of-life location examples

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End-of-life location examples

- You can create an end-of-lease location for each major vendor from whom you lease assets.
- You can create a salvage location for each external vendor that handles the disposal of your assets.
- You can create a location for donated hardware.

View Record List > RETURNDELEAS

Location: RETURNDELEAS Assets returned to vendor after end of lease

Type: VENDOR

Rating Item:

Mater Group:

Calendar:

Shift:

Site: PUSCITP

Priority:

Failure Class:

GL Account:

Internal Ledger Account:

Attachments:

Status: OPERATING

Service Address:

Bill to Address:

Ship to Address:

Systems: 0 - 0 of 0

Parents in the system: 0 - 0 of 0

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Asset statuses

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Asset statuses

- **Pending Disposal:** The asset was flagged for disposal, but does not yet have the decommissioned status applied. This status can be used when waiting for vendor confirmation of the asset return or disposal.
- **Decommissioned:** Asset was retired from service.
- **Disposed:** Similar to decommissioned. The system treats decommissioned and disposed assets in the same manner. An organization can choose to differentiate between disposed and decommissioned status.

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When an asset record has had its status changed to decommissioned or disposed, you cannot perform the following actions:

- Adding children, subassemblies, or spare parts
- Modifying the rotating item or applying an item assembly structure
- Associating specifications or specification values
- Referencing the asset on new desktop requisitions, purchase requisitions, requests for quotation, or purchase order lines
- Issuing items that are charged to the asset
- Creating work orders for the asset
- Adding the asset to job plans or preventive maintenance records

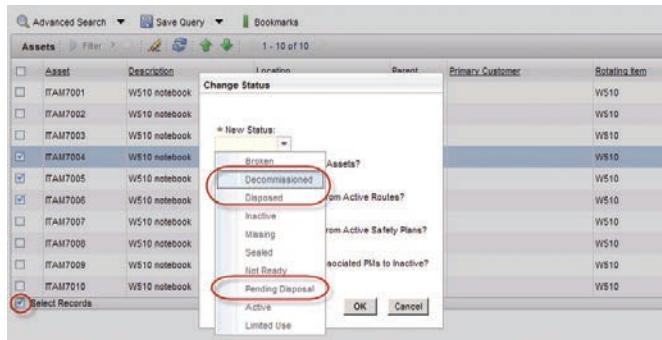
You can still perform the following actions on a decommissioned or disposed asset:

- Returning items issued or charged to the asset
- Moving or modifying the asset record by using the Move/Modify Assets action
- Setting the year-to-date costs for the asset to zero

Mass decommission

Mass decommission

- Find the assets to decommission in the Assets application.
- Use the **Advanced Search** to find Pending Disposal status or other appropriate attributes.
- All assets in the search result are selected unless you use the **Select Records** function.



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If many assets are at the end of their lease, you can select the assets by using their location. You can then use the **Change Status** action on all of the selected assets.

Mass move to end-of-life location

Mass move to end-of-life location

- Use the filters or **Advanced Search** to find the assets to move.
- Use the **Mass Move** section to apply the **To Location** to all the assets.

Move/Modify Assets

To make changes to an asset's location, parent/child relationship, users and custodians, and attributes, select the appropriate tab below.

Asset	Description	Parent	Location	GL Account	To Parent	To Location	To GL Account
ITAM7004	WS10 notebook		NORTHERN			RETURNEDLEA >>	
ITAM7005	WS10 notebook		NORTHERN			RETURNEDLEA >>	
ITAM7006	WS10 notebook		SOUTHERN			RETURNEDLEA >>	

Mass Move

Use the fields listed below to specify a new location, parent, or bin for all the assets listed above.

To Site: PHS-CRTP

To Location: RETURNEDLEA >> (This field is circled in red)

To GL Account:

To Parent:

To Bin:

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Multiple assets can be selected in the Assets application. The Move/Modify action can be used to move all selected assets to the location that is specified in the To Location field. In this case, all of the assets are being moved to a RETURNEDLEASE virtual location.

Disassociate the asset user and custodian

Disassociate the asset user and custodian

- You can disassociate the user and custodian from the asset.
- In the Assets application, you perform these tasks:
 - Use the **Move/Modify Assets** action for all the assets selected.
 - Use the **Associate Users and Custodians** action for each asset.

The screenshot shows the IBM SmartCloud Control Desk interface. At the top right is the IBM logo. Below it, the title "Disassociate the asset user and custodian" is displayed. The main area contains two dialog boxes: "Move/Modify Assets" and "Associate Users and Custodians".

Move/Modify Assets dialog:

Asset	Description	Created Date	Location	By	From	To
FAUT004	W510 notebook		NORTHERN			
FAUT005	W510 notebook		SOUTHERN			
FAUT006	W510 notebook					

Associate Users and Custodians dialog:

Person	Name	Primary? Custodian? User?
STEVE	Steve Requester	

Associate Group dialog:

Group	Description	Primary?
	No rows to display...	

At the bottom right of the interface, the text "IBM Software Group | Tivoli Software © 2012 IBM Corp." is visible.

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Asset end-of-life details

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Asset end-of-life details

- The **IT Details** tab in the Assets application includes a section to help manage the end-of-life process.
- You can update the **End of Life** details section manually or by using an imported file from a vendor.

The screenshot shows a window titled "End of Life". It contains the following fields:

- Type of Disposal: Returned (with a magnifying glass icon)
- Date Disposed: 8/24/12 (with a calendar icon)
- Recipient: CLERK
- Charge: 0.00
- Price/Value: 1,100.00
- Disposal Request ID: (empty input field)
- Disposal Remarks: (empty input field)

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The Assets application has an End of Life section that you can use to maintain information about how the asset was disposed. For example, you might donate notebooks to a charitable organization, or you return them to the vendor at the end of a lease. The End of Life section is on the IT Details tab of an asset record. In that section, you can specify this information:

- How you disposed of the asset
 - The date on which it was disposed
 - Any costs that you incurred when disposing the asset
 - The amount of any payment received for the asset

Use the following information to track end-of-life details:

- **Date Disposed:** The date that the asset was disposed.
 - **Recipient:** Person or organization that received the IT asset.
 - **Charge:** Amount of any costs incurred in the disposal of the asset.
 - **Price/Value:** Amount of any payment received as a result of the disposal of the asset.
 - **Disposal Remarks:** Additional information related to the disposal of the asset.
 - **Type of Disposal:** How the IT asset was decommissioned or disposed (Destroyed, Donated, Lost, Retired, Returned to Lessor, Sold, Stolen, Take Home)

Search on disposal details

The screenshot shows a search interface titled "Search on disposal details". At the top right is the IBM logo. Below the title, a message says: "Use the **End of Life** section in Advanced Search to find assets that are based on several fields." The interface features a "More Search Fields" button and a "Current Query:" button. The search criteria are organized into sections: "Asset-OLINK Date", "Technology Refresh", and "End of Life". The "End of Life" section contains fields for "Date Deposited" (From and To), "Disposal Request ID", "Type of Disposal", and "Recipient". At the bottom of the search panel are buttons for "Find", "Restore Application Defaults", "Revert", and "Cancel". In the bottom right corner of the search panel, there is a copyright notice: "IBM Software Group | Tivoli Software © 2012 IBM Corp.". At the bottom left of the entire page, there is a small number "6- 15".

Modify disposal details

The screenshot shows the 'Modify disposal details' dialog box overlaid on the main application interface. The dialog box has a title bar 'Modify disposal details' and a message: 'Use the **Modify Disposal Details** action in the Assets application to add or update disposal details for one to many assets.' The dialog contains fields for 'Disposal Request ID', 'Date Disposed' (set to 8/28/12), 'Type of Disposal' (set to 'Returned'), 'Recipient' (set to 'CLERK'), 'Charge' (set to 0.00), and 'Price/Value'. A note at the bottom states: 'The following IT detail attributes for end of life will be updated for each of the selected assets. Any existing end of life values for the selected assets will be overwritten with the values specified below.' Below the dialog, the main application shows a list of assets with columns 'Asset' and 'Class'. An asset named 'ITAM7004' is selected. At the bottom of the dialog, there are 'OK' and 'Cancel' buttons, and the footer of the application says 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The Disposal Details for a single asset can also be updated directly within the End of Life section in the IT Details tab for that asset.



Note: The result set in the list tab must be less than 200 rows. To limit the result set, use the filter fields or the Advanced Search.

Additional application features



Additional application features

- You can set escalations to remind administrators when leases or rentals are due to prepare for asset return.
- You can set up a reconciliation task to audit all assets for a particular contract before returning to the vendor.
- You can use the Work Orders application and Service Request application to initiate the work to handle asset returns, donations, and disposal.
- Work orders and contracts show a reconciliation failure flag to help manage the return process or decommission process.

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Student exercise

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Student exercise



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Open your *Student Exercises* book and complete the exercises for this unit.

Review questions

1. True or False. The decommissioned status identifies an asset that was retired in the system, and the disposed status identifies an asset that was scrapped.
2. Before an asset can be decommissioned, what must occur?
 - a. Any work order referencing the asset must be closed.
 - b. The asset must be added to a job plan.
 - c. A service request must be opened.
 - d. The associated user must be removed.
3. True or False. The Modify Disposal Details action in the Assets application is used to update the data in the End of Life section of the IT Details tab.

Review answers

1. True or False. The decommissioned status identifies an asset that was retired in the system, and the disposed status identifies an asset that was scrapped.

False. The decommissioned and disposed statuses are synonyms with the same meaning within the system.

2. Before an asset can be decommissioned, what must occur?

A. Any work order referencing the asset must be closed.

3. True or False. The Modify Disposal Details action in the Assets application is used to update the data in the End of Life section of the IT Details tab.

True. The Modify Disposal Detail is a select action in the Assets application and can be used to modify one or many disposal details of the asset.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Process an asset disposal request.
- Update end-of-life information for an asset.
- Disassociate a user from a retired asset.

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Unit 7: Managing software licenses

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Unit 7 Managing software licenses



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Introduction

Customers need greater visibility on their purchased software contracts, agreements, and license entitlements. They need to compare what they purchased to their deployed software inventory, software usage, and associated hardware environment. This unit covers how to manage software licenses in IBM SmartCloud Control Desk.

Objectives



Objectives

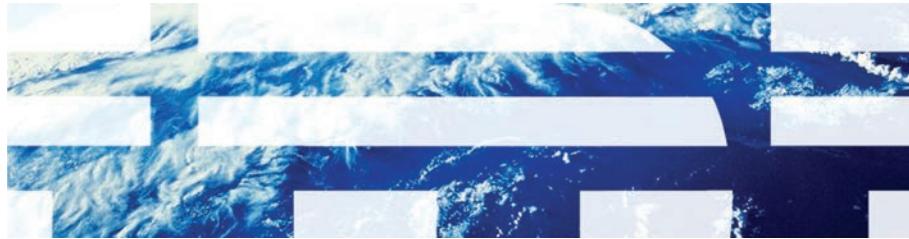
When you complete this unit, you can perform the following tasks:

- Navigate and manage the software catalog.
- Create software items.
- Create a license.
- Create a software contract.
- Receive software.
- Run audit reports.
- Reallocate software after disposing an asset.

Lesson 1: Software license management overview

IBM

Lesson 1: Software license management overview



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License definition



License definition

- Customers do not own software. They license it from software vendors who own the software.
- A **license** is a document that tells software customers what they can and cannot do with the software that they use.
- License entitlement defines how you can use or access the software that is associated with the license.

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When a customer purchases a hardware device, they own that device and can do what they want with it. However, software is different. When you buy software, you are typically licensing the software. You do not own the code and cannot modify it. You also must agree to the license terms and conditions, which detail what you can and cannot do with the software. If the software is open source, the license is a community license, and there are applied terms and conditions that must be adhered to.

License entitlements



License entitlements

- How much can be used
- Where can it be used
- Who can use it
- How it can be used

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There are four basic questions that need to be answered regarding software:

- How much can be used?
- Where can it be used?
- Who can use it?
- How can it be used?

The license entitlement details the license capacity. Vendors use many different capacity types when licensing such as installed instances, points, processor values, processor cores, and concurrent users. The amount that you can use depends on this capacity type. For example, if the capacity type is installed instances, you might be licensed to use 100 installed instances.

Licenses often specify the scope of where you can use it. Scope defines the breadth or span of a license in terms of computer, enterprise, site, logical partition, or user.

Licenses define the terms and conditions that define how the software can be used. For example, many Tivoli products ship with a limited license version of DB2. This instance of DB2 can be used for no charge when it is used for the purchased Tivoli product.

You can find answers to those questions in the software license agreement that is supplied by the vendor. This information can then be entered in a license record in IBM SmartCloud Control Desk.

In the scope section of the application, you can define where your organization is entitled to use the software. In the allocations section, you can define how much capacity is allocated to various entities within IBM SmartCloud Control Desk.

The allocations are defined by the user. They are a way to administratively keep track of where you authorized the use of the software. However, they might not correspond to actual usage. It is possible for users to install software without permission. Therefore, you must use software discovery information and audit reports to reconcile the information that is defined in the license with the actual product use.

License example



License example

Usage Restriction - Use As Program Bundle Only

This Program is comprised of various components and the components are licensed for use solely in combination with the packaged components. None of the included components may be used, transferred, sublicensed or redistributed individually or in any combination of components other than as a complete package consisting of each and all of the components listed above.

Use-based Charges - Resources

Charges for this Program are based on the number of processors that are attached or available to the DB2 Server on which it is licensed. A DB2 Server is defined as a single database image across a single SMP or multiple server configuration. The total number of processors attached or available may not exceed the number authorized by the applicable Proof(s) of Entitlement or authorized by each Program authorization acquired under Passport Advantage. If the total number exceeds the quantity in your Proof(s) of Entitlement or exceeds your product authorizations acquired under Passport Advantage, you must notify IBM or its reseller as stated in the IPLA.

Resource and Use Restriction

- Single Server Only

All components provided with the Program can only be installed and used on the DB2 Server for which this Program is licensed, unless otherwise authorized in the license for the individual components.

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License management



License management

- Compare what you bought to what you deployed.
- Ensure that you use the license as prescribed in the license entitlements.
- Monitor the software inventory and use for over- or under-licensed situations.
- Procure more software for under-licensed situations.
- Renegotiate contracts for over-licensed situations.
- Prepare for software budgeting cycle.
- Be audit ready.

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Software license management is a key point of focus for many companies that want to limit their legal exposure because of noncompliance. In addition, by tracking the software that is actually in use, companies can negotiate improved contracts for the software that they use. They can also eliminate or reduce the number of licenses for software that is not being used. They can make software support more efficient by ensuring consistency in software and software versions that are used across the enterprise.

Customer pain points



Customer pain points

- Software licenses are complex and difficult to manage.
You cannot determine whether you are over-licensed or if you can reallocate licenses rather than purchase them.
- Software vendors are auditing for compliance, and customers struggle with audit readiness and ensuring compliance.
You might fail an audit or incur unexpected software cost because of being under-licensed.

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Benefits of IBM SmartCloud Control Desk



Benefits of IBM SmartCloud Control Desk

- Full lifecycle support for licenses from procurement to disposal.
- Reduced business risk and cost of audits by maintaining an audit-ready posture.
- Ability to compare the software that is deployed to the authorized entitlements for that software
- Avoidance of unplanned software cost because of license compliance violation.
- Identification of no- or low-use software that results in lower software cost.
- Improved leverage in vendor contract negotiations.
- Accurate view of license entitlements.
- Ability to use new technologies to reduce software costs.

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IBM SmartCloud Control Desk provides these benefits:

- Full asset lifecycle management support.
- Support for software asset management including full support for software license management.
- A list of underused or overused software to reduce costs from overpurchasing and to reduce risk to underpurchasing.

Tight integration with discovery tools such as IBM Tivoli Asset Discovery for Distributed and z/OS provides complete software license management. With this integration, you can compare what you bought (tracked as licenses within IBM SmartCloud Control Desk) to what you deployed (discovered by the discovery tools). The Software Knowledge Base Toolkit enhances this portfolio by providing an authoritative catalog of software products, relationships, and signatures.

Required components of license management



Required components of license management

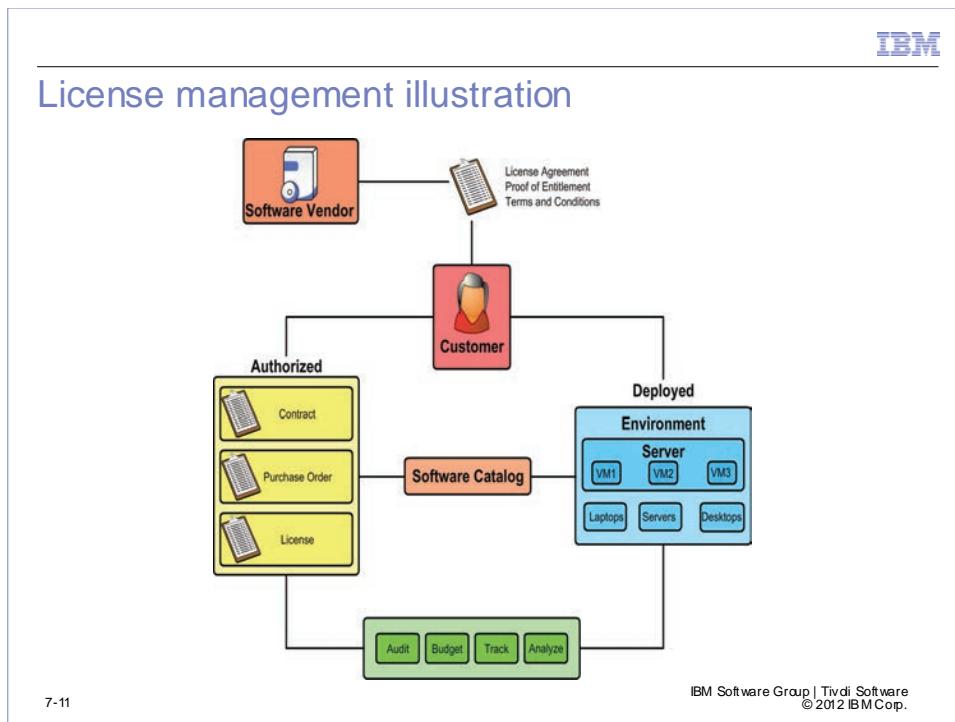
- A license record that includes the authorized entitlements for software products.
- An asset discovery tool that can discover hardware and software.
- An IBM Tivoli Integration Composer adapter that imports the hardware and software data to deployed software records.
- An accurate, up-to-date software catalog that links the licensed software products to the deployed software.
- A license audit report that can compare the entitled capacity to the discovered capacity.

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The license audit reports that are available in the system require specific fields from discovery to be supplied, such as processor count, partition identifier, and PVU unit. IBM Tivoli Asset Discovery for Distributed and IBM Tivoli Asset Discovery for z/OS can supply that information. If your enterprise uses a different discovery tool, the data that is supplied must be evaluated.

License management illustration



The requirement for license management begins when the customer purchases software from a vendor. When you buy software, you are more accurately purchasing a license. That license includes a license agreement which details what you can and cannot do with the software.

A software asset manager must track what was purchased from an authorized perspective and compare that to what was deployed into the environment. They must ensure that the deployed count does not exceed the authorized capacity. On the authorized side, they can record information about the acquisition of the software such as contract term, purchase order information, and license details.

On the deployed side, they must have a discovery tool that can discover all instances of the software. With the increase in use of virtual technologies, the discovery tool must be able to work in virtual environments.

Finally, there must be a mechanism to compare the authorized side and deployed side. This comparison is called a *license audit*. To do this comparison, there must be an attribute to match the software that is defined in the license record to the software that is discovered on the computer assets. Unlike hardware, there is not a unique identifier such as a serial number. Therefore, license management requires a software catalog to link the authorized software products to the discovered software products. The link is established based on the software name. Before you create license records, you must ensure that your software catalog includes entries for all of the software products that you plan to purchase and deploy.

Lesson 2: Software planning

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Lesson 2: Software planning



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Terms and definitions

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Terms and definitions

- Software catalog
- Software hierarchy
- Conversion variant
- Software item
- License
- License entitlement
- License capacity
- Deployed software

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Key terms that are used in this lesson are defined in the following table.

Term	Definition
Software Catalog	A software catalog is a document that is used to store knowledge base data and share it between different applications or between different instances of the knowledge base. The software catalog can be imported into IBM SmartCloud Control Desk from Software Knowledge Base Toolkit or IBM Tivoli Asset Discovery for z/OS®, where it is saved in the database. The software catalog records are then viewed and managed from the Software Catalog application.
Software Hierarchy	Software can be classified into two software types: software products and components. For both software types, you can define software hierarchies in the Software Knowledge Base Toolkit that consist of the parent product level, versions, releases, and variations. The available software types and hierarchies are different for mainframe and distributed software.

Term	Definition
Conversion Variant	A conversion variant is a software catalog record that is designated as an alias of the currently displayed record on the Software tab of the Software Catalog application.
License	A license, often referred to as a license agreement, is a legal agreement that authorizes the use of proprietary information including, but not limited to, copyrighted or patented information.
License Entitlement	In software licensing, entitlement refers to the allocation of license capacity as determined by a license agreement. Entitlement defines how you are allowed to use or access the software that is associated with the license.
License Capacity	License capacity is the amount of software usage that is allowed by the license.
Deployed Software	Deployed software refers to software assets that are installed on computers in an enterprise and available for use.

Software catalog overview

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Software catalog overview

- A list of all software that can be discovered and licensed in the environment.
- A link between licensed software and discovered software.
- A catalog that is populated by the following methods:
 - Import IBM published catalog
 - Import Software Knowledge Base Toolkit published catalog
 - Manually add entries
 - Import discovery data

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The software catalog provides a list of all software that can be discovered and licensed in the environment. It can be made up of software definitions from Software Knowledge Base Toolkit or software titles that are identified by third-party discovery adapters.

You use the Software Catalog application to locate and review the catalog data for software bundles, products, and components. In addition to viewing details about the software, you can find related license and software deployment information, and learn about related versions, releases, and parent-child relationships.

The software catalog is a key component in software license management. The software product that is selected for software records (software items and licenses) must be defined in the software catalog. Therefore, it is critical that the software catalog is as complete as possible before you begin adding software records.

Most records are added to the software catalog as a result of importing software data into the IBM SmartCloud Control Desk database from the following sources:

- IBM published catalog
- Software Knowledge Base Toolkit
- IBM Tivoli Asset Discovery for z/OS, or other discovery tool databases.

However, you can manually add a software catalog record whenever you want to assign a preferred (or target) name to software that is already discovered, not in the knowledge base, and not Asset

Discovery for z/OS software. Then, you can make each instance of the discovered software a conversion variant to the software that is named in the newly added software catalog record.



Note: If you use the Software Knowledge Base Toolkit, names of knowledge base software must be managed in Software Knowledge Base Toolkit. Names of software from IBM Tivoli Asset Discovery for z/OS must be managed there.

If you work with a software whose catalog record originated with externally discovered data (with a discovery tool database or with the knowledge base), you cannot rename the record in the Software Catalog application. You can edit other parts of the record, but not the name.

The Software Knowledge Base Toolkit is covered in Unit 8: Discovery.

Software catalog

The screenshot shows a software catalog interface with the following details:

Software catalog

Advanced Search | Save Query | Bookmarks

Software Filter | Download | 1 - 20 of 103726

Software Name	Version	Release	Role	Platform	Managed As	Reviewed?	Deleted?	Total Deployed
IBM PE Runtime Edition for Linux on x86 Architecture				SOFTWAREPRODUCT DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
LoadL			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Virtual I/O Server			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
V/Control Express			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Systems Director Active Energy Manager			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Systems Director V/Control			SOFTWAREPRODUCT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Systems Director Network Control			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Systems Director Network Control			SOFTWAREPRODUCT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM LoadLeveler for Linux on x86 Architecture			SOFTWAREPRODUCT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM InfoSphere Discovery for Information Integration Workgroup edition - Discovery Server			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Systems Director server			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM Cognos TM1 Client			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0
IBM InfoSphere Discovery for Information Integration Workgroup edition -			COMPONENT	DISTRIBUTED		<input checked="" type="checkbox"/>	<input type="checkbox"/>	0

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The software catalog is accessed in the Administration > Deployed Assets module. Entries in the catalog can be one of three roles:

- Software product
- Component
- Feature

Software is typically licensed at the software product level. Therefore, when selecting software for software records, you typically select software with a role of software product. More specifically, software is typically licensed at the top-level software product. The top-level software product is the software name with no version or release specified. The product hierarchy is covered in more detail later in this lesson.

The Managed As field is an optional feature that can be used to flag entries in the software catalog that you specifically want to manage. As a software asset manager, you can edit the records for software products that you manage and indicate how they are managed. It provides a way to improve reporting. You can create filters to specifically target software that you flagged as managed.

There are four product-provided managed-as values:

- Authorized
- Ignored
- Managed
- Prohibited

Unreviewed software is software that was added to the software catalog by an external discovery tool that was not validated. If the software names conform and are consistent for each variant of the same product, you can mark them as reviewed Y (for Yes). If they do not conform with your naming conventions, you can create a record that specifies the appropriate name for the software and associate variants with it. The primary goal is to have software entries that can be used to link licenses to discovered software. You want to make sure that the reviewed entries are valid so that this link occurs. Entries that are imported by using the IBM software catalog or Software Knowledge Base Toolkit are marked as reviewed automatically.

Software

The screenshot shows the 'Software' tab of a software entry in the IBM SmartCloud Control Desk. The top navigation bar includes 'View Record List > 34,890,001', 'Software', 'Product Hierarchy', 'Product Relationships', 'Licenses', and 'Deployed Software'. The main form contains the following fields:

- Software Name:** IBM WebSphere Portal Server
- Role:** SOFTWAREPR
- Manufacturer:** IBM
- Version:** (empty)
- Type:** PRODUCT
- Delete Date:** (empty)
- Release:** (empty)
- Platform:** DISTRIBUTED
- Deleted?** (checkbox)

Details section:

- Catalog Name:** an SwKBT instance
- Managed As:** (empty)
- Points:** (empty)
- Reviewed?** (checkbox)

Product Details section:

- Product Id:** (empty)
- Description:** IBM WebSphere Portal Server
- S&S PID:** (empty)
- URL:** (empty)
- S&S EID:** (empty)
- Function:** (empty)

Licensing Options section:

- Is IPLA?** (checkbox) checked
- Uses PVU?** (checkbox) checked
- Subcapacity Eligible?** (checkbox) checked
- Value Unit Exhibit:** (empty)

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When you open a software entry, the Software tab contains the basic details for the software:

- **Software name:** Name of the software
- **Role:** Software product, component, or feature
- **Type:** Product, release, or version
- **Platform:** Distributed or mainframe
- **Catalog name:** How the entry was added to the catalog
- **Points:** Points value that is assigned for software that is sold, which is based on the points capacity unit
- **Managed as:** The managed status of the product
- **Licensing options:** Indication of whether the product is an International Program License (IPLA) or uses PVU or subcapacity licensing

Product hierarchy

The screenshot shows the 'Product hierarchy' view in the IBM SmartCloud Control Desk. At the top, there's a navigation bar with tabs: 'View Record List > 34,890,001', 'Software', 'Product Hierarchy' (which is selected and highlighted in blue), 'Product Relationships', 'Licenses', and 'Deployed Software'. Below the navigation bar, there are several search and filter fields: 'Software Name' (set to 'IBM WebSphere Portal Serv'), 'Role' (set to 'SOFTWAREPR'), 'Manufacturer' (set to 'IBM'), 'Version' (empty), 'Type' (set to 'PRODUCT'), 'Release' (empty), and 'Platform' (set to 'DISTRIBUTED'). A large table titled 'Higher Level Software' lists software products. The first row in the table is highlighted in blue and shows 'WebSphere Portal Server' as the 'Software Name', '6' as the 'Version', '6' as the 'Release', 'SOFTWAREPRODUCT' as the 'Role', and 'VERSION' as the 'Type'. Below this table is another table titled 'Related Versions' with columns: 'Software Name', 'Version', 'Release', 'Role', and 'Type'. It lists five versions of 'IBM WebSphere Portal Server' with versions 6, 5, 6, 4, and 7 respectively. At the bottom left of the interface is a page number '7-17', and at the bottom right is a copyright notice: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

The software catalog can store product hierarchy information for software. The IBM published software catalog and the Software Knowledge Base Toolkit automatically define the product hierarchy for software products when they are imported.

As mentioned earlier, software is often licensed at the product top level. For example, when you buy IBM WebSphere® Portal Server, the license is independent of the version or release. You might have version 6, 7, and 8 installed, and all of those versions are under the license agreement for IBM WebSphere Portal Server. When you create the license in IBM SmartCloud Control Desk, you select the top-level product for IBM WebSphere Portal Server. Because the software catalog maintains the product hierarchy, the discovered versions that are related versions to the top level are included in audit reports for the license.

Conversion variants

The screenshot shows the 'Conversion variants' page in the IBM SmartCloud Control Desk. At the top, there's a navigation bar with tabs: Software, Product Hierarchy, Product Relationships, Licenses, and Deployed Software. The 'Software' tab is selected. Below the navigation bar, there are input fields for Software Name (IBM WebSphere Portal Server), Role (SOFTWAREPR), Manufacturer (IBM), Version, Type (PRODUCT), Delete Date, Release, Platform (DISTRIBUTED), and Deleted?. On the left, there's a sidebar with 'Details' and 'Licensing Options' sections. The main area contains three tables: 'Product Part Numbers', 'Associated Items', and 'Conversion Variants'. The 'Conversion Variants' table has columns: Name Variant, Version, Release, Role, Type, and Deleted?. A red circle highlights the 'Conversion Variants' table header. A red box highlights the 'Select Software' button at the bottom right of the table. The bottom right corner of the screen displays the IBM logo.

The link between software in a license and discovered software is made by finding exact matches in the software names. When you use IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed together, this link is automatic because they use the same software knowledge base. The link is also automatic when using IBM Tivoli Asset Discovery for z/OS.

However, when you use any other discovery tool, the discovery tool might use a different software name. For example, in the software catalog, the software product name might be Microsoft Office, but discovered as MS Office. Because the name does not match, the discovered software is not counted against the license when an audit report is run.

To address this issue, you can define *conversion variants*. A conversion variant is simply an alias of the preferred software name. In the software catalog, you add conversion variants to software entries. You can then use the preferred software name in the license, and any discovered variants are counted against the license.

Software item

The screenshot shows the 'Software item' record for 'IBM WebSphere Portal Server'. The record includes fields for Item Name (IBMWebPS), Item Set (PMSCS1), Commodity Group, Commodity Code, Meter Group, Meter, Lot Type (NOLOT), Maximum Quantity Issued, Order Unit (PVU), Issue Unit (PVU), MSDS, Receipt Tolerance %, and Software Name (IBM WebSphere Portal Server). The 'Software' checkbox is selected under 'Item Type'. The 'Software Name' field is highlighted with a red oval.

A software item is a template for orderable software products. To denote an item as software, you select the software option in the item record. When the software option is selected, you can access additional fields for software such as the software name field. Software items can be used in contracts, purchase requests, and purchase orders.

Software item versus software catalog



Software item versus software catalog

- Software item
 - Contains unique authorized items that are used in financial lifecycle management for request and procurement.
 - Describes an **orderable** entity, which can be associated with one or more vendors.
 - Includes only the software that an organization has or wants to purchase.
- Software catalog
 - Describes the unique software products that can be discovered.
 - Defines and maintains the relationships between associated products and components to facilitate license management.
 - Includes all software that can be discovered.

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Licenses

The screenshot shows the 'View Record List' screen for license record number 1004. The record details are as follows:

License	PVU Full Capacity Based License: WebSphere Portal Server	Type	IPLA	Status	ACTIVE
License Name		Platform	DISTRIBUTED	Organizer	PUSCBM
Serial Number		GL Account	1234-567-890	Attachments	
Vendor	IBM	Responsible Party			
Customer		Customer Charge Account			
		Customer Cost Center			

Scope

Associated Products	Filter	1 - 1 of 1	Download	Print			
Software	Version	Release	Role	Platform	Deleted?	Manufacturer	Part Number
IBM WebSphere Portal Server			SOFTWAREPRODUCT	DISTRIBUTED	<input type="checkbox"/>	IBM	

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A license is the equivalent of an asset, except that a license is applied to software entitlement as opposed to hardware entitlement. Like an asset, a license is an individual entity that is managed throughout a lifecycle. A license has value and cost and can be associated with various other entities in IBM SmartCloud Control Desk.

You can use the License application to manage records in the IBM SmartCloud Control Desk database for each of your International Program License Agreement (IPLA), IBM® Customer Agreement (ICA), or generic license types. You can define the scope of the licenses. You can allocate the licenses to locations, computer assets, partition assets, or application users, and to general ledger accounts. You can also add a license key for a new license and associate the license with one or more software products being licensed.

License parameters

IBM

License parameters

- To track and manage licenses, you must identify the appropriate license parameters for each license that you enter in IBM SmartCloud Control Desk.
- The combination of these parameters equates to the license entitlements.
- These parameters are included in the license agreement, addenda, and other licensing documents that are provided by the vendor.
- These key parameters are included:
 - Type
 - Term
 - Scope
 - Subcapacity
 - Capacity
 - Capacity Unit

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Key terms that are used in this lesson are defined in the following table.

Term	Definition
Type	<p>The license type is the category of license that you have, according to the agreement between your organization and the vendor that issues the product license.</p> <p>The Licenses application organizes license agreements into three categories, or types.</p> <p>A license agreement can be an IBM® Customer Agreement (ICA), an International Program License Agreement (IPLA), or a generic, agreement, which means any license type other than ICA or IPLA.</p>
Term	License term refers to the term that is agreed to between your organization and the vendor that the software was licensed from.

Term	Definition
Scope	Scope defines the breadth or span of a license in terms of computer, enterprise, site, logical partition, or user. A license is assigned a scope that reflects the license entitlement. If discovered software is found within the scope of a license, then the software is counted against the entitlement for that license.
Subcapacity	<p>Subcapacity licensing is a software licensing scheme that bases charges on the capacity of the partition where the licensed program is used, instead of the total capacity of the server. Subcapacity is limited to servers only.</p> <p>IBM uses two distinctly different types of subcapacity pricing, one type for IBM mainframe products and another type for IBM distributed products.</p> <p>By default, capacity-based charges for a computer are based on its full, available, capacity. However, IBM also supports, in many cases, capacity-based charges based on a measure of actual used capacity. Subcapacity licensing can be applied to IPLA or ICA mainframe software, and IBM distributed software.</p>
Capacity	License capacity is the amount of software usage that is allowed by the license.
Capacity Unit	Capacity units are a pricing metric that defines how capacity is counted and applied against your entitlement.

Choosing the correct values for these fields affects capacity calculations for both allocated software and software audits. The IBM SmartCloud Control Desk 7.5 documentation provides several tables that provide detailed information about many of the reasonable permutations. For general guidance on specifying license parameters, visit the following website:

http://pic.dhe.ibm.com/infocenter/tivihelp/v51r1/topic/com.ibm.tusc.doc/administering_tamit/r_valid_field_values_license_type.html

License type

IBM

License type

- Various license types exist in the market, and they vary by vendor.
- IBM has two license types:
 - International Program License Agreement (IPLA)
 - IBM Customer Agreement (ICA)
- Independent software vendors (ISVs) have numerous license types, which are covered in the Generic license type in the License application.
 - Description text can be used to identify the ISV unique license types.
 - You can update the License Type synonym domain to reflect the license types that are common to software vendors.

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IBM International Program License Agreement (IPLA) is a family of license agreements that apply to certain IBM software that was announced after May 1999. It is a complete agreement between a single person or a single legal entity regarding the use of a program. The program documents contain details that are related to the International Program License Agreement. These documents are typically provided with IBM software in hardcopy form, or are embedded in the software in softcopy form for acceptance before installation of the software, or both.

- The agreement includes the following information:
 - General terms of using and licensing of any program that is supplied by IBM (including program transfer, charges, warranties)
 - Country-unique terms specifying the application of the Agreement in particular countries
 - License information
 - Proof of entitlement (PoE)

- The document defines a program as the following items:
 - Machine-readable instructions and data
 - Components
 - Audio-visual content (such as images, text, recordings, or pictures)
 - Related licensed materials
 - License use documents or keys, and documentation

Under the IBM Customer Agreement (ICA) agreement (used for hardware, software, and services), software is licensed on a monthly charge basis. The charge includes technical support. Version upgrades are also included, but separate versions of a product cannot be run concurrently. Multi-version use can be granted only for a limited time. The used capacity can often vary from month to month.

Be sure to define all your licenses in some way, if only to maintain a single, complete electronic license repository. If your license is not the ICA or IPLA type, specify the Generic license type and provide additional qualifying remarks in the license description field. You can also use the Description field to explain any deviations from the ICA or IPLA base licenses.

You can add license types by defining alternate values for the **TLOAMLICTYPE** synonym domain. Modifying synonym domains is covered in the *IBM Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Scope

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Scope

- The **scope** is an integral part of the license agreement between a customer and a vendor.
- The scope of the license defines the breadth of the license in terms of enterprise, computer, location, logical partition, and user.
- The scope is where the software is entitled to be installed or used.

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There are five scope options:

- **Computer:** A computer that is identified by manufacturer, manufacturing plant, computer type, and serial number. When it is a blade server, each blade is considered a separate computer.
- **Enterprise:** The location for each discovered computer must be within the enterprise that is specified in the license.
- **Site:** The location for each discovered computer must be within the location that is specified in the license.
- **LPAR:** Logical partition (LPAR) scope requires that a computer serial number is also specified. This scope limits where the licensed product can be run. The discovered LPAR identifiers should be equal to the specified LPAR identifiers in the license. In addition, the discovered computer serial number of the computer containing the LPAR should be equal to a specified serial number in the license.
- **User:** A user is a named individual or role.

License term



License term

- Each scope in a license is covered under a license term.
- This license term determines whether the discovered software is counted against the license entitlement in license-use reports.
 - Executed
 - Installed
 - Licensed

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License term refers to the term that is agreed to between your organization and the vendor from whom the software was licensed. The following license terms indicate when and if software use is counted against the license entitlement:

- **Executed:** The software is counted only if it is installed and run. An example is the IBM distributed IPLA execution-based subcapacity license. All usage-related capacity metrics fall under this category such as number of users and terabytes of managed storage. The ability to determine usage under this term is limited by the type of discovery tool that is used to collect software data. Certain non-IBM discovery tools cannot collect use data, but IBM Tivoli Asset Discovery for Distributed and IBM Tivoli Asset Discovery for z/OS® can.
- **Installed:** The software is counted only if it is installed. That is, the software is counted only if it is found during the discovery process. An example is the distributed ISV seat or installed-instance license. All of the distributed license audit reports support licenses with an installed license term.
- **Licensed:** The software is counted, even if it is not installed or run. This term is used with mainframe licenses. If the software is licensed to a computer, it is counted. An example is the IBM mainframe Variable Workload License Charge (VWLC) license. If the licensable capacity of the computer is upgraded, the licensed capacity (for a full-capacity license, other than Flat Workload License Charge) must be increased. This increase is to accommodate the new computer capacity (regardless of whether the software is installed) to be compliant.

Capacity

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Capacity

- **Capacity** describes the amount of this software to which the customer is entitled.
- **License capacity** is the amount of software use that is allowed by the license.
- The **scope** of the license determines what the capacity can be allocated to.
- License capacity is measured in **capacity units**.

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To determine whether you have enough available license capacity to fulfill a user request, the Licenses application provides field information about the license capacity that is currently allocated and the capacity that remains available. This information summarizes, for each license, how the current capacity assignments affect the available capacity of the license.

The allocations are defined by the user. They are a way to administratively keep track of where you authorized the use of the software. However, they might not correspond to actual usage. It is possible for users to install software without permission. Therefore, you must use software discovery information and audit reports to reconcile the information that is defined in the license with the actual product use.

Allocated and available license capacity are provided as values in the following two read-only fields in the Scope section of the License tab:

- **Allocated Capacity:** This field displays how much of the license capacity is currently distributed. The field displays a numeric value that is an aggregate of all the individual allocation capacities for the license, multiplied by the multi-core value in the Core Multiplier field. The allocation capacities are specified on the Locations, Computer Assets, Partition Assets, Application Users, and GL Accounts tabs in the Allocations section of the License tab. Each tab represents an allocation type that might be applicable to the current license.

- **Available Capacity:** This field displays how much of the license capacity remains to be allocated. The field displays a numeric value that is the allocated capacity subtracted from the overall license capacity.

Also, provided in the Scope section are the overall license capacity, the capacity metric for the license, and the multi-core value. These values are displayed in the Capacity, Capacity Unit, and Core Multiplier fields.

Capacity units

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Capacity units

- **Capacity units** are the particular quantity or metric that is measured to determine whether a software product is used in compliance with its license.
- The capacity unit is also referred to as the pricing metric for the license. You pay for software based on this metric.
- These capacity units are available in IBM SmartCloud Control Desk 7.5:
 - Concurrent user
 - Concurrent node lock
 - Concurrent user session
 - Installed instances *
 - MIPS
 - MSUs *
 - Points *
 - Processors *
 - Processor cores *
 - Value units *
 - Authorized User
 - Floating User
 - Resource Value Unit

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The following list shows the capacity units that are available in IBM SmartCloud Control Desk 7.5.

- **Concurrent user** is only one individual inside or outside an enterprise. The licensed capacity is the highest number of users who are allowed to simultaneously access the program or any program components.
- **Concurrent user session** is based on the maximum number of concurrent-use instances, where multiple uses by the same user on the same computer are counted as one use.
- **Concurrent node lock** is based on the maximum number of concurrent-use instances, where multiple uses on the same computer (regardless of how many users) are counted as one use.



Note: Concurrent user, concurrent user session, and concurrent node lock capacity units are different only in the way that they count (or ignore) duplicate connections and sessions.

- **Installed instances** are based on a specified number of installed instances, or seats, across the scope of the license.
- **MIPS**, formerly meaning millions of instructions per second, now simply represents a calculated value, published for each computer type and model. IBM charges are based on MSU values only, but ISVs often license and charge against a specific MIPS value from a

specific MIPS publisher. The MIPS publisher can vary from vendor to vendor, and possibly from product to product, from the same ISV.

- **MSUs** (millions of service units) are based on millions of central processing units (CPU) service units per hour. MSUs are the measure of capacity that is used to describe the computing power of the hardware processors on which the System z® software runs.
- **Points** means that each product is assigned a specific points value, as documented in the license agreement for the product. The total of all the product points (mainframe and distributed) cannot exceed the product total points entitlement in the license.
- **Processor cores** are based on the number of integrated processor cores on a single chip. With multi-core technology, each processor core is considered a processor. IBM, in particular, counts processor cores (as opposed to processors) as the basic measure of capacity.
- **Processors** are based on the number of server processors, or independent processing units.



Note: Advancements in processor technology now allow multiple cores on a single chip. As a result, software vendors and manufacturers license products based on the number of cores that are used to run their licensed software. To support this licenses scheme, you can use core multiplier groups to assign core multipliers for the processor cores and processors capacity units.

- **Value units** (PVU) are the number of value unit entitlements that are required for a program. This value depends on how the program is deployed in the business environment and must be obtained from an IBM-defined value unit table. This table is called a value unit exhibit. Each IPLA product is associated with a specific value unit exhibit.
- **Authorized user** charges are based on a specific user who is given access to the program.
- **Floating user** charges are based on the number of floating users who are accessing the program at any point in time.
- **Resource Value Unit** (RVU) charges are based on the number of units of a specific resource.



Note: IBM SmartCloud Control Desk provides audit reports for the capacity units that are denoted with an asterisk.

Core multiplier groups

The screenshot shows the 'Manage Core Multiplier Groups' screen in the IBM SmartCloud Control Desk. On the left, a sidebar displays various actions like 'New License', 'Save', and 'More Actions'. The 'More Actions' section includes 'Manage Core Multiplier Groups', which is circled in red. The main content area shows two tables: 'Core Multiplier Groups' and 'Core Multiplier Assignments'. The 'Core Multiplier Groups' table has one row for 'MICROSOFT' with the description 'Example Core Multipliers for Microsoft'. The 'Core Multiplier Assignments' table lists processor types and their assigned core multipliers:

Target Processor	Core Multiplier
Intel(R) Xeon(TM)	25.00
Pentium 4	0.50
Quad-Core Xeon	1.00
Power PC Family	1.00
Core Duo	0.25
Opteron QuadCore	0.25
POWER4	0.75
POWER3	0.25
POWER	1.00

At the bottom right of the main panel, there are buttons for 'Select Processors' and 'New Row'.

When creating a license with the Processor Core or Processor capacity types, you can define a core multiplier group. This feature allows you to define different core multipliers for different processor types. Vendors that use this pricing scheme typically publish a core multiplier table. Therefore, a common practice is to name the core multiplier group after the vendor. Then, you use the core multiplier table to populate the group values. The multi-core value is used to calculate the discovered capacity for software on specific processors or partitions.

Points

The screenshot shows a software catalog entry for 'Microsoft Office Project Port'. The 'Points' field is highlighted with a red circle. The 'Licensing Options' section includes checkboxes for 'Is PLAT?', 'Uses PVU?', 'Subcapacity Eligible?', and 'Value Unit Exhibit'.

Some vendors use a points capacity type. In this licensing scheme, you purchase several points. Products within the suite are worth specific point values. You can deploy any combination of products in the suite on the condition that you do not exceed the total points that are purchased.

To use this capacity type, you must define the points value of the software products. The points value is configured in the software catalog in the points field for the software entry. This value is used to calculate discovered capacity when running the Points Based audit report.

Subcapacity and full capacity licensing



Subcapacity and full capacity licensing

- **Subcapacity licensing** is a software licensing scheme that bases charges on the capacity of the partition where the licensed program is used, rather than on the total capacity of the server.
- **Full-capacity licensing** is a software licensing scheme that bases charges on the capacity of the entire machine or cluster of machines that is available to the licensed program, rather than on just one or more partitions.

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IBM uses two types of subcapacity pricing. One type is for IBM mainframe products and the other type is for IBM distributed products.

By default, capacity-based charges for a computer are based on its full, available capacity. However, IBM also supports, in many cases, capacity-based charges based on a measure of actual used capacity.

To obtain subcapacity pricing for ICA and IPLA programs, the following conditions must be met:

- The computer, a server, must be designated as a subcapacity server.
- The customer must sign a subcapacity addendum.
- The customer must create usage reports.
- The software program must allow subcapacity pricing.

For IBM distributed products, customers must adhere to the following terms:

- Accept the terms of the IBM International Passport Advantage® Agreement Attachment for subcapacity Licensing Terms.
- Obtain PVU proof of entitlement (PoE) for the maximum processor core capacity that is available to an Eligible subcapacity Product when deployed in an Eligible Virtualization Environment.

License statuses

License statuses

- Every license has a status.
- These six statuses are provided with the product:
 - Active
 - Canceled
 - Expired
 - Not Ready
 - Requested
 - Draft



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The status of a license indicates its state in the license procurement process. A license can be in Active, Canceled, Expired, Not Ready, Requested, and Draft status.



Note: The Draft status is not shown in the screen capture because that is the current status for the license.

In the following list is a description of the supported license statuses:

- **Active:** Indicates that the license is currently in use and that the license record is included in any future license audit.
- **Canceled:** Indicates that the license record was canceled. You can delete only a license that is in Draft or Canceled status.
- **Expired:** Indicates that the license is past its termination date and is included in any future license audit.
- **Not Ready:** Indicates that the license record is drafted, but it is not ready to be included in a license audit.
- **Requested:** Indicates that a requisition exists for this license record, and that the license is in the procurement process.
- **Draft:** Indicates a new license record that is still under construction. As such, it was not approved for license management. Therefore, it is not included in any future license audit. You can delete only a license that is in Draft or Canceled status.

Creating licenses



Creating licenses

- You can create them manually in the License application or automatically during the receiving process.
- You must specify the correct license parameters.
- Using the templates simplifies the process.

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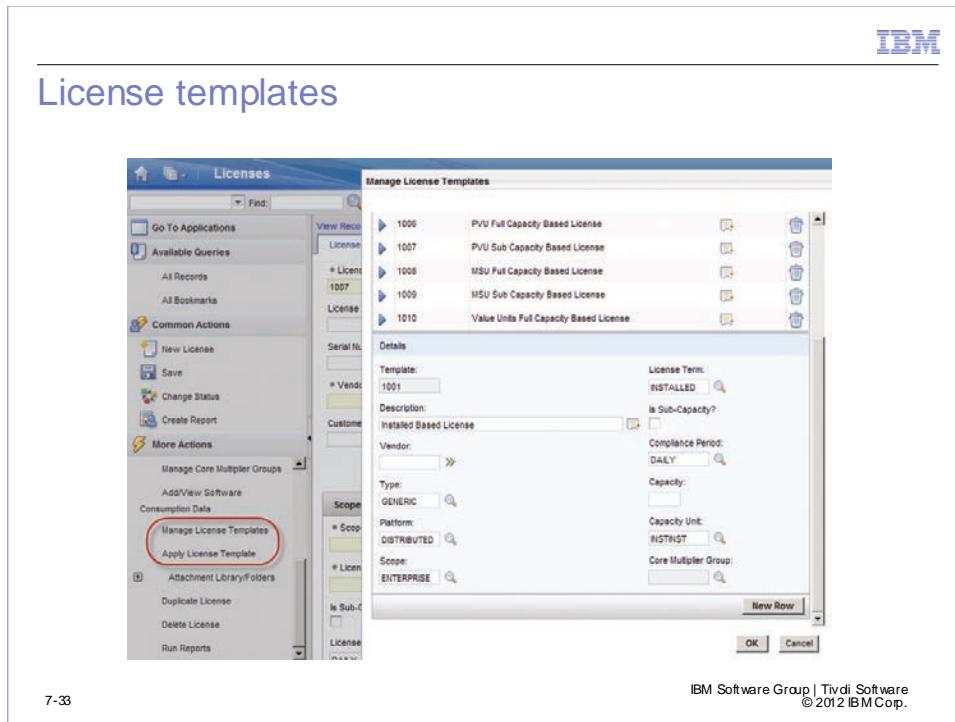
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Licenses can be created in two ways:

- Manually by clicking the **New License** icon in the License application.
- Automatically by clicking **Create Licenses** in the receiving application.

There are a few downsides to creating the licenses automatically during the receiving process. When the license is created automatically, the license parameters are always configured for a generic install-based instance. Therefore, if you create a license for a different capacity type, you must edit the license after it is created automatically. This process is demonstrated in the exercises for this unit. To avoid this problem, you can create a draft license with the correct license parameters before receiving the software. Then, during the receiving process, you select the draft license. The capacity is added to the draft license, and the license is changed to an active status. When defining the license parameters, you can use license templates to populate the basic parameters such as type, scope, term, and capacity type.

License templates



The ability to use license templates to create license records was first introduced in IBM SmartCloud Control Desk 7.5. License templates provide a way to populate key license parameters. IBM SmartCloud Control Desk ships with 13 license templates. You can modify these templates or create your own in the License application by clicking **Manage License Templates** under More Actions in the navigation bar.

To apply the template settings to a license, click **Apply License Template** under More Actions in the navigation bar. The license must be in the Draft status to apply the changes.

Software contracts

A software contract specifies the terms of the license agreement for computer software. It can specify users, license keys, maintenance fees, and whether the software can be transferred.

Use the Software Contracts application to create, view, and modify software contracts. On the contract, you can specify items or services that are provided, costs, shipping, and handling, expected delivery times, financial terms, and vendor information. You can associate contract line items with a software license. You can also associate people or specific assets with a software contract.

The Software Contracts application has the following tabs.

Tab	Function
Contract	Create, view, or modify contract records.
Properties	Enable or disable properties for the contract.
Contract Line Items	Create, view, modify, or delete line items that are listed on a contract.
Associated Licenses Summary	View licenses that are associated with contract line items.
Associated Assets and People	Associate users or specific assets with a software contract and view users and assets that are associated with a contract.

Tab	Function
Terms and Conditions	Add, view, or delete terms and conditions that were associated with the contract.

Lesson 3: Software acquisition

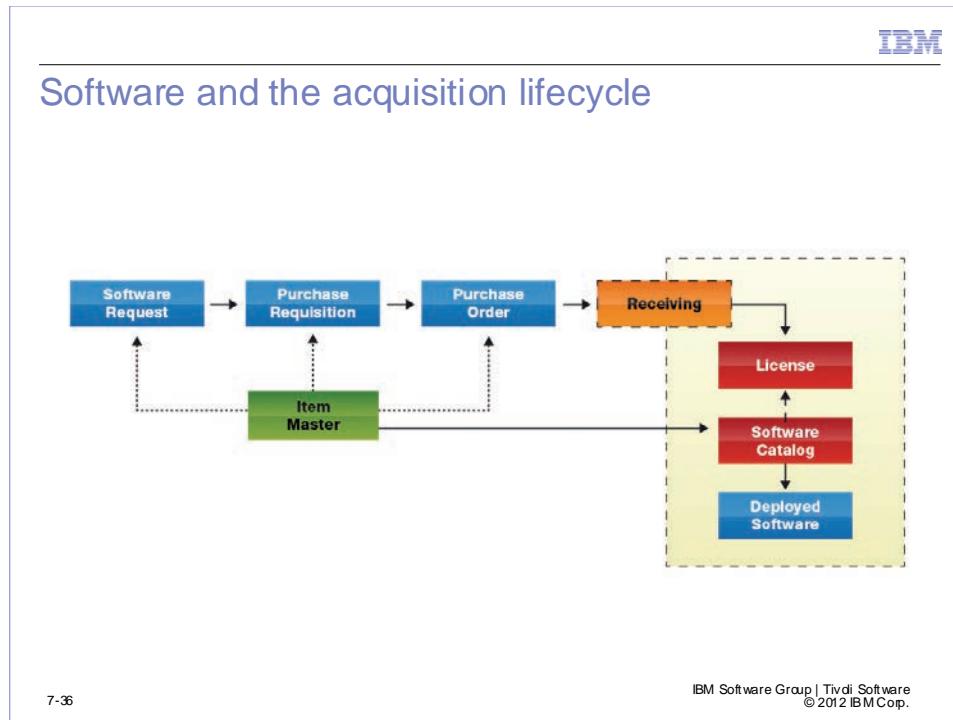
IBM

Lesson 3: Software acquisition



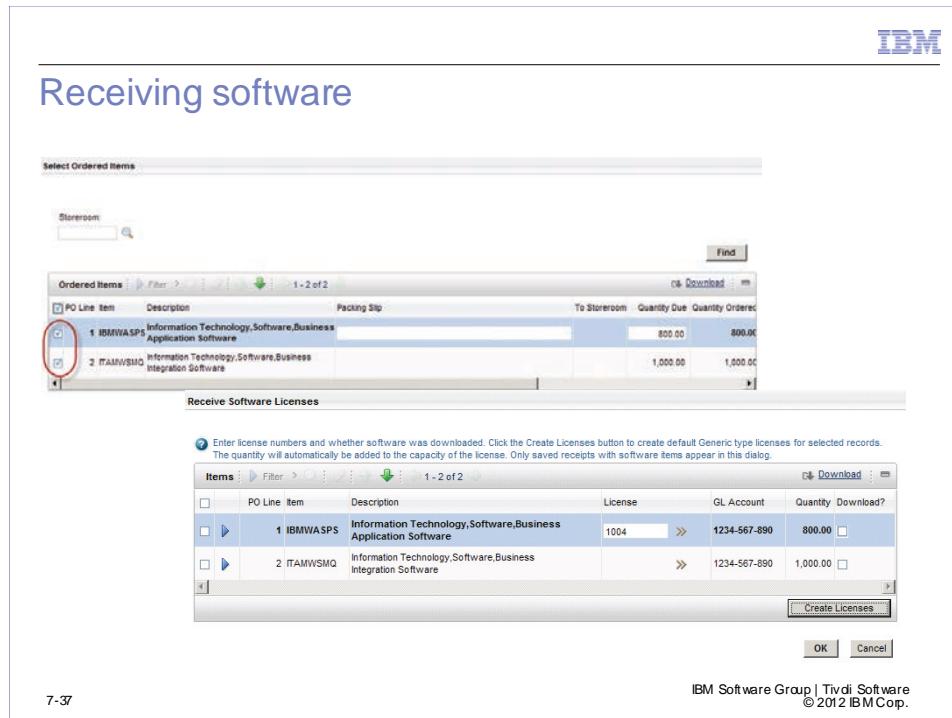
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Software and the acquisition lifecycle



The item master plays a similar role in software as with hardware. An Item Master that is marked as software can be used to feed purchasing records. It eventually generates a license, which functions in a similar capacity to an asset. The license record then can be linked to the software catalog that facilitates auditing.

Receiving software

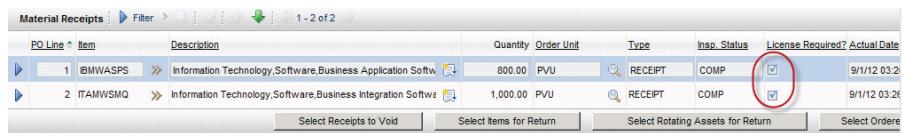


The process to receive software is similar to what you learned for rotating assets. You first open the PO in the Receiving application and select the ordered items. However, software does not require inspection. Therefore, the next step is to use the **Receive Software Items** action to either add capacity to an existing license or create a license if one does not exist.

License Required flag

License Required flag

- Use the License Required flag in the Receiving application to find receipts that must be associated with a license.
- The flag is set automatically for every software material receipt at these times:
 - Inspection status becomes COMP.
 - Line points to a software item.
 - Line is not associated with a license.



Material Receipts | Filter > 1 - 2 of 2

PO Line	Item	Description	Quantity	Order Unit	Type	Insp. Status	License Required?	Actual Date
1	IBMWASPS	Information Technology,Software,Business Application Softw	800.00	PVU	RECEIPT	COMP	<input checked="" type="checkbox"/>	9/1/12 03:2
2	ITAMWSMQ	Information Technology,Software,Business Integration Softwz	1,000.00	PVU	RECEIPT	COMP	<input checked="" type="checkbox"/>	9/1/12 03:2f

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The License Required flag functions similarly to the WASSET status. This flag indicates that a software item was purchased and a license record needs to be created to reflect that the software is licensed.

Lesson 4: Software deployment

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Lesson 4: Software deployment



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Allocating licenses

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Allocating licenses

- License capacity can be allocated to:
 - Locations
 - Application users
 - Computers
 - Partitions
 - GL accounts
- The license entitlement indicates the acceptable allocation types and maximum capacity allowed.
- The available capacity is calculated in the License application.

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Allocation is an administrative way to track the license capacity. Use the Licenses application to allocate or distribute license capacity among one or more computers, partitions, locations, or users. You can also allocate the cost of a license to one or more general ledger (GL) accounts.

Review the license terms to identify the most appropriate combinations. License scope, such as computer, LPAR, site, and user can also contribute to the allocation type that is assigned for a license. For example, to allocate a generic license whose scope is COMPUTER, and capacity unit is PROCS, allocate the license to one or more computer assets. For more information about allocating licenses, see the following website:

http://pic.dhe.ibm.com/infocenter/tivihelp/v51r1/topic/com.ibm.tusc.doc/administering_tamit/r_valid_field_values_license_type.html.

You can also allocate a capacity of zero in the License application for tracking purposes. For example, if a license has a scope of site and a capacity unit of concurrent user, you can allocate capacity to a location and track the users with a zero capacity.

Allocated capacity calculation

The screenshot shows the 'Allocated capacity calculation' screen in the License application. At the top, there's a 'Scope' section with fields for Scope (ENTERPRISE), Capacity Unit (VALUITS), Capacity (2,500), and Allocated Capacity (100.00, highlighted with a red box). Below this is an 'Associated Products' table with one row for 'IBM WebSphere MQ'. The 'Allocations' section contains five tabs: Locations, Computer Assets, Partition Assets, Application Users, and GL Accounts. The 'Computer Assets' tab is selected and shows a table with one row for 'IBM 6142 Server' with a capacity of 100.00. The bottom right corner of the interface displays the text 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

To allocate capacity, use the five subtabs in the Allocations section of the License application: Location, Computer Assets, Partition Assets, Application Users, and GL Accounts. A numeric capacity value is added for each location, computer, partition, user, and GL account that capacity is allocated to. After capacity is allocated, the License application uses the capacity values in the Allocations section to calculate the allocated capacity.

Available capacity calculation

IBM

Available capacity calculation

- Review the available capacity in the license application before allocating additional capacity.
- The license application subtracts **Allocated Capacity** from **Capacity** to determine **Available Capacity**.

The screenshot shows the 'Scope' section of the application. It includes fields for Scope (ENTERPRISE), Capacity Unit (VALUANTS), Start Date (12/19/11), End Date (12/19/11), and Core Multiplier Group. A red box highlights the capacity summary area which shows:

- = Capacity: 2,500
- Allocated Capacity: 100.00
- Reserved Capacity: 0.00
- Available Capacity: 2,400.00

Below this, there are two tables: 'Associated Products' and 'Allocations'. The 'Associated Products' table lists 'IBM WebSphere MQ' with a status of 'DISTRIBUTED' and manufacturer 'IBM'. The 'Allocations' table lists 'Computer Assets' with a single entry for 'TAM4000' with a capacity of 100.00.

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To determine whether you have enough available license capacity to fulfill a user request, the Licenses application provides field information about the license capacity that is currently allocated and the capacity that remains available. This information summarizes, for each license, how the current capacity assignments affect the available capacity of the license.



Note: The allocated capacity does not necessarily equal the discovered capacity. Allocation is an administrative feature. You must run license audit reports to compare the capacity in the license to the discovered capacity. Allocation is not included in the license reports.

Transfer a license



Transfer a license

- Go to **Assets > Licenses** > and select the **Transfer License** action.
- Licenses can be transferred from one organization to another.
- The copied license is canceled and the new license is set to draft mode.
- Allocations must be updated to reflect the assets, locations, partitions, and GL accounts of the new organization.
- The organization clearing accounts are used in the transfer.

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A license transfer copies the active license into the target organization and assigns the license a status of Draft. The current, copied license is set to Canceled. A license transfer is between organizations. It is not possible to transfer a license to an asset, partition, location, or GL account, because these entities are specific to the organizations in which they are configured. If a license is transferred to a new organization, its allocations then need to refer to records for assets, partitions, locations, and GL accounts for the new organization.

This task cannot be used to divide capacity for a single license between organizations. Division of capacity for a single license between organizations must be done by manually creating a license record in each organization and then assigning the appropriate charges. The licenses can be related by using the Related Licenses tab of the Licenses application.

You must enter the following information in the **Transfer to** section of the Transfer window:

- Organization
- Credit GL
- Debit GL
- New license number

The license number is automatically generated.



Note: Before transferring a license, the license must be active and associated with a product.

Transferred licenses are automatically displayed in the Related Licenses tab. If the current license record is the new license, the original license that is associated with the transfer is displayed on the tab. If the current license record is the original, transferred license, the new license resulting from the transfer is displayed on the tab.

Generate license costs



Generate license costs

- Go to **Assets > Licenses** and select the **Generate Costs** action or use the **Costs** tab in Licenses application.
- Generate license costs for these purposes:
 - Chargebacks to internal departments.
 - No cost transactions, such as issuing a license to a work order.
 - License receipts without a purchase order.
 - License transfers.

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Use the Licenses application to create a charge-back transaction for the currently displayed license. The transaction can be a cost adjustment, a no-cost transaction, an internal license usage or access charge, a receipt of software charge, or a license transfer charge. If recurring charges are applied to the current license on a regular basis (for example, monthly), this task helps you generate the appropriate transactions more efficiently.

After you select the Allocation Type and Transaction Type in the Generate Costs dialog box, you can use the Generate License Costs button. Create a row for each allocation record from the Allocations section that matches the Allocation Type in the Generate Costs dialog box. A Charge value can then be assigned to each row.

For example, two GL Accounts are in the License Allocation section. You want to split the license costs among them. In the Generate Costs dialog box, select Allocation Type **GL Account** and Transaction Type, **Internal Charge**. Click **Generate Costs**. A row is created for each GL Account in the License Costs section and a charge amount can be entered for each account.

In addition to using the Generate License Costs window, you can use the Costs tab in the License application to create a license cost row manually. Click **New Row** in the License Costs section to add costs manually.

Lesson 5: Software management



Lesson 5: Software management



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Discovery



Discovery

- Is a required component of software management.
- Indicates what was physically deployed.
- Has results that are imported into IBM SmartCloud Control Desk by using an IBM Tivoli Integration Composer adapter.
- Has results that are viewable in the Deployed Software application.
- Is covered in more detail in unit 8.

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Additional content and exercises on how to import discovery data by using IBM Tivoli Integration Composer are included in Appendix A.

Deployed Software application

Deployed Software application

- Lists all software instances that were discovered.
 - Where is it installed?
 - When is it being used?
 - How is it being used?
 - How much is being used?
- Is associated with virtual resource or hardware by the Computers application.

Software Product Name	Version	Release	Manufacturer	Computer	Partition	Last Used Date
IBM WebSphere MQ	6	6.0	IBM	hostname2k.example.com		
IBM WebSphere MQ	6	6.0	IBM	hostname35.example.com		
IBM WebSphere MQ	6	6.0	IBM	654564885-KDBH70B	hostname22.example.com	
IBM WebSphere MQ	6	6.0	IBM			
IBM WebSphere MQ	6	6.0	IBM	658519Q	hostname20.example.com	
IBM WebSphere MQ	6	6.2	IBM	654564885-KDBH70B	hostname22.example.com	
IBM WebSphere MQ	7	7.0	IBM	6883611	hostname25.example.com	
IBM WebSphere MQ	7	7.0	IBM	hostname5.example.com		
IBM WebSphere MQ	7	7.0	IBM	nd044157.itslab.pt.ibm.com	hostname37.example.com	
IBM WebSphere MQ	7	7.0	IBM	rd042174.kraslab.pt.ibm.com	hostname6.example.com	
IBM WebSphere MQ	7	7.0	IBM	257164805	hostname31.example.com	
IBM WebSphere MQ	7	7.0	IBM			
IBM WebSphere MQ	7	7.0	IBM	esx26-s1-fk	appv11	

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After importing discovered data with IBM Tivoli Integration Composer, you can view the discovered software in the Deployed Software application. Deployed Software lists all software instances that were discovered. Each instance indicates where it is installed (the deployed computer asset).

In addition, the computer asset that the software is installed on might be linked to an authorized asset by using the IBM SmartCloud Control Desk reconciliation features. If so, you can view the authorized asset that is associated with this software. This feature is a good way of identifying what software is installed on the authorized assets in your network.



Important: Deployed software records that originate from IBM Tivoli Asset Discovery for Distributed and IBM Tivoli Asset Discovery for z/OS are not deleted. Instead, an uninstall date is populated.

Deployed software

The partition and computer that the software discovered can be linked to the computers application.

The Software Product Name is linked to the Software Catalog. This link is required for license audit reports.

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The Deployed Software application provides a read-only view of the deployed software records in the database, organized by software title. You can use the Deployed Software application to perform the following tasks:

- View information that a discovery tool collected about software and the computer or partition on which it is installed.
- Correlate information about deployed software with the corresponding information about the authorized computer or partition that is linked to the deployed computer or partition through the reconciliation process.
- Exempt selected software from being included in software audit reports. For example, you might not want backup, beta, or trial software that is counted when you perform software audits. If you use IBM Tivoli Asset Discovery for Distributed, do not modify the exemption in IBM SmartCloud Control Desk. You manage the exemption in the IBM Tivoli Asset Discovery for Distributed console. The exemption is imported with IBM Tivoli Integration Composer.
- Verify that deployed software was removed from a partition or computer.



Note: In this instance of the deployed software, there is an Authorized Asset tab. The Authorized Asset tab is displayed only when the computer or partition that the software is

discovered on was linked to an authorized asset by using Reconciliation. If this tab is not visible, the deployed computer is not linked to an asset record.



Note: If you display the computer that the software is installed on in the Computers application, you might not see the installed software on the **Filters Application View** tab. To display the installed software in this tab, the software must be identified as managed software in the Software Catalog application. This topic was covered in Lesson 1, “Software license management overview,” on page 7-3.

Software product name



Software product name

- The software catalog provides the linkage of licensed software to deployed software based on the software product name in the catalog.
- If discovery tools other than IBM Tivoli Asset Discovery for Distributed or IBM Tivoli Asset Discovery for z/OS are used, variants must be used appropriately for accurate linkages based on software product name.

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Software catalog and licenses

The screenshot shows the IBM SmartCloud Control Desk interface for managing software licenses and deployed software. At the top, there's a navigation bar with tabs: Software, Product Hierarchy, Product Relationships, Licenses (which is selected), and Deployed Software. Below the navigation bar, there are search fields for Software Name (IBM WebSphere MQ), Role (SOFTWARE), Type (PRODUCT), and Platform (DISTRIBUTED). A license record is displayed: ITAM1010, PVU License for IBM WebSphere MQ. This record has its own sub-table with columns: License, Description, Software Name, Role, Type, and Platform. Below this, a table titled 'Deployed Software' lists 13 entries for IBM WebSphere MQ across various versions (7.0, 8.0, 8.5) and releases (apparv11, hostname10.example.com, hostname20.example.com). The table includes columns for Software Item, Version, Release, Partition, Computer, and Customer. The bottom right corner of the interface displays the copyright information: IBM Software Group | Tivoli Software © 2012 IBM Corp.

In the Software Catalog, you can view all licenses and all of the discovered software for a software product name. This linkage between software catalog, deployed software, and licenses is needed for the License Audit reports to compare the capacity of the license to the discovered capacity that is collected from the deployed software.

Notice that there are various versions of the discovered software. This software product is a top-level product. Therefore, all discovered versions and releases that are defined in the product hierarchy are also associated with it.

Authorized allocation versus audit results



Authorized allocation versus audit results

- The allocation values for license capacity, available capacity, and allocated capacity are based on authorized numbers in the License application.
- License audit reports provide discovered capacity compared to authorized license capacity.
- Allocation values are available immediately based on procurement and user entry.
- License audit report results must be coordinated with discovery tools and IBM Tivoli Integration Composer, which occur on a less frequent basis.

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License audit reports

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License audit reports

- License Audit reports are available from the License application.
- These reports compare discovered capacity to license capacity to identify discrepancies.
- There are six product-provided distributed audit reports:
 - Install Based Audit
 - PVU Based Audit
 - PVU Sub Capacity Based
 - Points Based Audit
 - Processor Based Audit
 - Processor Core Based Audit
- There are three product-provided mainframe audit reports:
 - MLC Flat Based
 - MSU Based
 - Mainframe Value Unit Based

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License application audit reports compare license record information to deployed asset data that is obtained through discovery. The comparison data that is provided in the reports indicate areas for corrective action and help clarify the state of audit-readiness for the organization. The License Audit reports run against all of the deployed software that is collected.

The **Install Based Audit** report displays the total license capacity for specific products, the total discovered capacity for computers where the software is installed, and the variance. This report returns only data for products that are associated with licenses with a capacity unit of **INSTINST** (installed instances). Each of the returned totals is hyperlinked to a subreport, which displays details that are used to make up the total.

The **PVU Based Audit** report displays the total license capacity for specific products, the total discovered PVU for computers where the software is installed, and the variance. This report returns only data for products that are associated with licenses with a capacity unit of **VALUNITS** (value units). Each of the returned totals are hyperlinked to a subreport, which displays details that are used to make up the total. The **PVU Based License Details** and **PVU Based Deployed Software Details** are drilldown reports that show the license capacity details of the summarized license count and the deployed details of the summarized deployed count.

The **PVU Sub Capacity Based Audit** report is similar to the PVU Based Audit report, but it is reporting on licenses that have the Is Sub-Capacity option selected.



Note: The PVU numbers must be provided by the discovery tool. PVU tables are not maintained in the IBM SmartCloud Control Desk product. The Tivoli Asset Discovery for Distributed product maintains the PVU table, which is imported from the IBM website.

The **Points Based Audit** report displays the total license capacity for specific products, the total discovered capacity (a summary of the count of computers with the software that is installed multiplied by the points value that is specified for each product), and the variance. This report returns data only for products that are associated to licenses with a capacity unit of POINTS.



Note: The Software Catalog application must be maintained with the appropriate point values for each software product for this report to calculate the Deployed Count.

The **Processor Based Audit** report displays the total license capacity for specific products, the total discovered capacity (the number of processors that is identified on the computers where the software is installed multiplied by the core multiplier value that is specified in the license), and the variance. This report returns data only for products that are associated with licenses with a capacity unit of PROCS (processors) or PROCCORE (processor core).



Note: The discovery tool must provide the number of processors for this report to be used.

The **Processor Core Based Audit** report is similar to the Processor Based Audit report.

For more details on these reports and information about the mainframe audit reports, go to the following website:

http://pic.dhe.ibm.com/infocenter/tivihelp/v51r1/topic/com.ibm.tusc.doc/administering_tamit/c_report_templates_included_product.html

Audit report example

The screenshot displays two separate browser windows, both titled "Audit report example".

Top Window: This is a "PVU Based Audit Report". It shows a table with columns: Associated Product, Total License Capacity, Discovered Capacity, and Variance. The data includes:

Associated Product	Total License Capacity	Discovered Capacity	Variance
IBM WebSphere Application Server Network Deployment	700	800	+140
IBM DB2 Enterprise Server Edition CPU Option	400	300	-200
IBM DB2 Express-C CPU Option	400	200	-200
IBM WebSphere Portal Server	800	700	-100

Bottom Window: This is a "PVU Based Discovered Details" report. It shows a table with columns: Computer, Make/Model, Manufacturer, Serial Number, PVU, and Signed Date. The data includes:

Computer	Make/Model	Manufacturer	Serial Number	PVU	Signed Date
257164885	IBM xSeries 326m - (796975V)	-	257164885	200	
hostname1.example.com	IBM 7028-681	IBM	652CBDF	100	
hostname23.example.com	9000-800-782410	HP	DB914Q0189	100	

Both windows have a header bar with "Reporting", "Page 1 of 1", and "IBM" branding.

Audit reports are run in the Licenses application. You can run reports against one or more licenses. To run an audit report against a single license, open the license and click **Run Reports** under More Actions in the navigation bar. To run an audit report against multiple licenses, search for the licenses and click **Run Reports** under More Actions in the navigation bar.

In the Reports window, find and click the audit report that you want to run it. If the search results return licenses with different capacity units, the report evaluates only the licenses with the capacity unit or units that are allowed by the report. For example, if you run the PVU Based audit report, only licenses with VALUNITS as the capacity unit are evaluated in the report.

The report opens in a separate browser window. You might have to click the window to switch focus to it. Each report type displays the result of the comparison between the license capacity and the discovered capacity. The variance column indicates any discrepancies. Depending on the report, there might be subreports that you can view. In this example, you can view additional details on Total License Capacity and Discovered Capacity. Clicking the hyperlinks opens the more detailed reports.

Additional reports



Additional reports

- License application
 - License details
 - Software products by vendor and license
- Deployed Software application
 - Deployed Software details

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In addition to the audit reports, IBM SmartCloud Control Desk provides reports on license details, software products by vendor and license, and deployed software details. You can create additional ad hoc reports within the application or create more complex reports by using the BIRT designer.



Note: Creating reports is covered in the *Tivoli's Process Automation Engine 7.5 Fundamentals* course.

Lesson 6: Software disposal

IBM

Lesson 6: Software disposal



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Reallocating software licenses



Reallocating software licenses

- Some software licenses might be allocated to end-of-life hardware assets.
- The Assets application identifies licenses that were allocated to an asset or partition.
- You can use the License application to remove the computer or partition allocation.
- Available capacity is recalculated, freeing up that capacity to be reallocated.
- License audit reports can also be run to identify when licenses are no longer used.

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In the License application Allocations section, license capacity can be removed when an asset is decommissioned by deleting the allocation record in the Computers or Partitions tab. The allocated and available capacity is recalculated.

Student exercise

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Student exercise



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Open your *Student Exercises* book and perform the exercises for this unit.

Review questions

1. What component links licenses to discovered software?
 - a. Licenses
 - b. Deployed Software
 - c. Software Catalog
 - d. Audit reports
2. True or False: The Software Catalog is a list of all products that can be ordered in the organization.
3. The license parameter, _____, describes the amount of the software to which the customer is entitled.
 - a. Capacity
 - b. Capacity Unit
 - c. Scope
 - d. Term
4. True or False: The Allocated Capacity field displays how much license capacity is currently distributed.

Review answers

1. What component links licenses to discovered software?
c. The Software Catalog is the link between licenses and discovered software. Licenses are the authorized records. Deployed Software is the discovered software. The audit reports compare the licenses and deployed software, but the link is established by the Software Catalog entries.
2. True or False: The Software Catalog is a list of all products that can be ordered in the organization.
False. The Software Catalog is a list of all software that can be discovered. Software items are used to represent what can be ordered in the organization.
3. The license parameter, _____, describes the amount of the software to which the customer is entitled.
a. Capacity.
4. True or False: The Allocated Capacity field displays how much license capacity is currently distributed.
True. Allocation is an administrative function indicating how much capacity you have authorized.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Navigate and manage the software catalog.
- Create software items.
- Create a license.
- Create a software contract.
- Receive software.
- Run audit reports.
- Reallocate software after disposing an asset.

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Unit 8: Discovery

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Unit 8 Discovery



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Introduction

Software license management has two parts to it. First, you must track what you purchased. Unit 7: Managing software licenses focused on that aspect. Second, you must verify what was physically deployed. Often, there is a discrepancy between the two. This difference can be caused by many factors such as users installing software without permission or assets being removed from service without removing the software allocation. To verify what was deployed, you must implement a discovery tool. This unit covers the discovery process. It focuses on using IBM Tivoli Asset Discovery for Distributed as the primary discovery tool.

This course does not cover how to deploy IBM Tivoli Asset Discovery for Distributed. To learn more about deployment, consider taking the *IBM License Metric Tool 7.5 (SPVC)* course:

[http://www-304.ibm.com/jct03001c/services/learning/ites.wss/us/
en?pageType=course_description&courseCode=TOS27](http://www-304.ibm.com/jct03001c/services/learning/ites.wss/us/en?pageType=course_description&courseCode=TOS27)

The deployment steps for IBM License Metric Tool and IBM Tivoli Asset Discovery for Distributed are the same.

Objectives



Objectives

When you complete this unit, you can perform the following tasks:

- Explain the asset discovery process and integration with discovery tools.
- List the strengths of the IBM discovery tools.
- Explain the concept of a software hierarchy.
- Describe software bundling.
- Manage software in the Software Knowledge Base Toolkit.
- Manage software inventory in IBM Tivoli Asset Discovery for Distributed.
- Generate and sign PVU audit reports.

Lesson 1: Discovery overview

IBM

Lesson 1: Discovery overview



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Discovery tools



Discovery tools

- Discovery tools perform the audit operation to harvest asset details:
 - Asset location and current configuration
 - Changes to the asset that take place over time
 - Software that is installed on the assets
- Scheduled and on-demand discoveries can collect asset data.
- The discovered assets can be reviewed before importing them into IBM SmartCloud Control Desk deployed assets.
- After the discovered assets are loaded into the system as deployed assets and software, they can be compared to authorized assets and licenses.

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IBM Tivoli Asset Discovery for Distributed



IBM Tivoli Asset Discovery for Distributed

- Agents scan IBM and non-IBM hardware and software on distributed and virtual platforms.
- Software discovery is based on the Software Knowledge Base catalog.
- Usage data can be collected.
- Unrecognized software is identified.
- Reporting and administrative capabilities are included.
- Broad software identification support is useful in a data center environment.

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IBM Tivoli Asset Discovery for Distributed is a discovery tool that is tightly integrated with IBM SmartCloud Control Desk. Because of this tight integration, it is the preferred discovery tool for use with IBM SmartCloud Control Desk.

IBM Tivoli Asset Discovery for Distributed consists of agents for various platforms. These agents collect software inventory and software use data from distributed networks, and a database for storing the collected data. IBM Tivoli Asset Discovery for Distributed provides inventory validation and management of bundled products. It runs on the IBM Tivoli Asset Discovery Server and has a separate user interface.

Data is imported from the Asset Discovery for Distributed database into IBM SmartCloud Control Desk by using the Asset Discovery for Distributed integration adapter and IBM Tivoli Integration Composer. It uses the same software catalog as IBM SmartCloud Control Desk. By using the same catalog, it ensures that the discovered software is using the same software product names as the licenses. Therefore, the link between licenses and deployed software is established with minimal work.

If you agreed to IBM subcapacity pricing, you must use a discovery tool that supports the collection of PVU data. The only two tools that collect this data are IBM Tivoli Asset Discovery for Distributed and IBM License Metric Tool. These tools share the code base. Therefore, deployment steps and administration tasks are the same. IBM License Metric Tool is a free tool for customers

to monitor their subcapacity PVU usage. However, it only supports IBM software monitoring. IBM Tivoli Asset Discovery for Distributed is a charged product that includes more functions:

- ***Discovery of non-IBM software.*** IBM License Metric Tool can scan only for IBM software.
- ***Discovery of unmatched registry entries.*** IBM License Metric Tool can discover only software that is included in the software catalog. IBM Tivoli Asset Discovery for Distributed can scan the operating system registry for unknown software (not included in the software catalog). You can view the raw discovered data to identify software that you want to monitor. You can launch in context to the Software Knowledge Base Toolkit to add the missing software product and signature. Software must be added to the software catalog to be managed.
- ***Use data collection.*** IBM Tivoli Asset Discovery for Distributed can monitor when a software product is used. To be monitored, the software product must have a use signature defined in the software catalog.
- ***Integration with IBM SmartCloud Control Desk.*** IBM License Metric Tool data cannot be imported into IBM SmartCloud Control Desk. You must upgrade to IBM Tivoli Asset Discovery for Distributed to import discovery data.

IBM Tivoli Asset Discovery for z/OS



IBM Tivoli Asset Discovery for z/OS

- Monitoring jobs scan z/OS DASD and UNIX System Services.
- Discovered data is matched to a Global Knowledge Base (GKB) catalog that is provided by IBM and imported into a z/OS repository.
- Usage monitors collect usage data and load a DB2 z/OS repository that is associated with the discovered inventory data.
- Web reporting capabilities are provided.
- Administration is performed through ISPF panels and supplied JCL.

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IBM Tivoli Asset Discovery for z/OS is a discovery tool that you can purchase separately from IBM SmartCloud Control Desk. IBM Tivoli Asset Discovery for z/OS collects software inventory and use data from IBM z/OS mainframe computers. It has a separate user interface. Data is imported from the Asset Discovery for z/OS into IBM SmartCloud Control Desk by using the IBM Tivoli Asset Discovery for z/OS integration adapter and IBM Tivoli Integration Composer.

IBM Tivoli Asset Discovery for z/OS runs on z/Architecture mainframes that run the z/OS operating system. You can use IBM Tivoli Asset Discovery for z/OS for the following purposes:

- Discover and identify services for the z/OS platform.
- Monitor software usage and trends.
- Report on the MSU capacity of each LPAR under which the product runs.
- Provide reporting for assets and usage.

IBM Tivoli Endpoint Manager for Software Use Analysis



IBM Tivoli Endpoint Manager for Software Use Analysis

- Harvests software inventory and usage data from the endpoint inventory data that is available in Tivoli Endpoint Manager.
- Identifies licensed and unlicensed software with drill-down granularity.
- Includes an embedded software catalog for software identification.
- Has broad software identification support in an endpoint environment.

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IBM Tivoli Endpoint Manager for Software Use Analysis is a new product in the IBM portfolio. It uses the Tivoli Endpoint Manager platform to gather asset and software inventory information. This data can be used for software license compliance monitoring.

IBM Tivoli Endpoint Manager for Software Use Analysis includes similar features to IBM Tivoli Asset Discovery for Distributed. However, it is currently not as tightly integrated with IBM SmartCloud Control Desk because it does not use the same software catalog. The long-term goal is to improve this integration.

IBM Tivoli Application Dependency Discovery Manager



IBM Tivoli Application Dependency Discovery Manager

- Is the supported discovery tool for the actual configuration item discovery for IBM SmartCloud Control Desk.
- Focuses on configuration and relationship discovery for active products.
- Provides agent-less discovery.

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The strength of IBM Tivoli Application Dependency Discovery Manager is its ability to gather information about processes that are running during discovery and the relationship between those processes. With IBM Tivoli Application Dependency Discovery Manager, you can see exactly what services and applications are in use. You can also see how the applications and services are deployed in the network.

The IBM Tivoli Application Dependency Discovery Manager discovery process automatically determines the relationships among running applications or services. With this information, IT administrators can confirm what is running on their network. The discovery process does not operate under any assumptions about what it is supposed to find when it runs.

Based on what it discovers, it presents the applications that are running and how they are related. This process provides an accurate picture of the computing environment. After that information is known, IBM Tivoli Application Dependency Discovery Manager can begin tracking the changes to the environment over time.

These functions make IBM Tivoli Application Dependency Discovery Manager a key part of configuration management. Although, the IBM Tivoli Application Dependency Discovery Manager discovered data can be imported into the deployed assets table and used for IT asset management, it is not as strong as other tools for software license management. The basic discovery methods find only software that is running. Because of that fact, it does not always discover all software installed. It also does not support license capacities such as PVU.

IBM discovery product comparison

IBM discovery product comparison					IBM
Business goals	IT discipline	Discovery, inventory use	High-level capability	Products	
Software audit readiness Reduces software license costs Lower total cost of ownership	IT and Software Asset Management	Software audit readiness	Provides software inventory and use Provides license use to support license compliance especially virtualization environments. Hardware Asset Management Strong in the data center environment	Tivoli Asset Discovery for Distributed	
Software audit readiness Reduces software license costs	Software Asset Management	Software audit readiness	Provides software inventory and use Provides license use to support license compliance	Tivoli Asset Discovery for z/OS	
Software audit readiness Reduces software license costs Lower total cost of ownership	IT and Software Asset Management	Software audit readiness	Provides software inventory and use Strong in the endpoint environment	Tivoli Endpoint Manager Software Use Analysis	
Provide physical and virtual servers from OS to applications Base for Cloud computing Optimize test environments	Infrastructure Operations Management Provisioning Management Server configuration management	Hardware configuration	Provisioning Software distribution Patch Management Configuration Management	Tivoli Provisioning Manager	
Fill the visibility gap between infrastructure and the services provided. Proactively assess the potential impacts of problems and changes on the infrastructure	Infrastructure Configuration Discovery	Application relationship mapping	Discover what exists with agentless, credentialless capability Discover relationships between applications, middleware, servers, and network components Detailed operational configuration information	Tivoli Application Dependency Discovery Manager	

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Other discovery tools



Other discovery tools

- You can use various other IBM and non-IBM discovery tools to collect hardware and software data.
- Using IBM Tivoli Asset Discovery for Distributed and for z/OS provides partition, usage, catalog relationship data, and integration that other products do not.
- Before using a discovery tool, check the supported IBM Tivoli Integration Composer adapters for the tool.
- You can create new adapters, but they require specific database skill to create schema and mappings.

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Independent of the discovery tool, you must use IBM Tivoli Integration Composer to import the discovered data into IBM SmartCloud Control Desk. For a list of supported adapters, see the following website:

http://pic.dhe.ibm.com/infocenter/tivihelp/v51r1/topic/com.ibm.tusc.doc/int_comp/c_ic_adapters.html

Additional content and exercises on how to import discovery data by using IBM Tivoli Integration Composer is included in Appendix A.

Discovery requirements



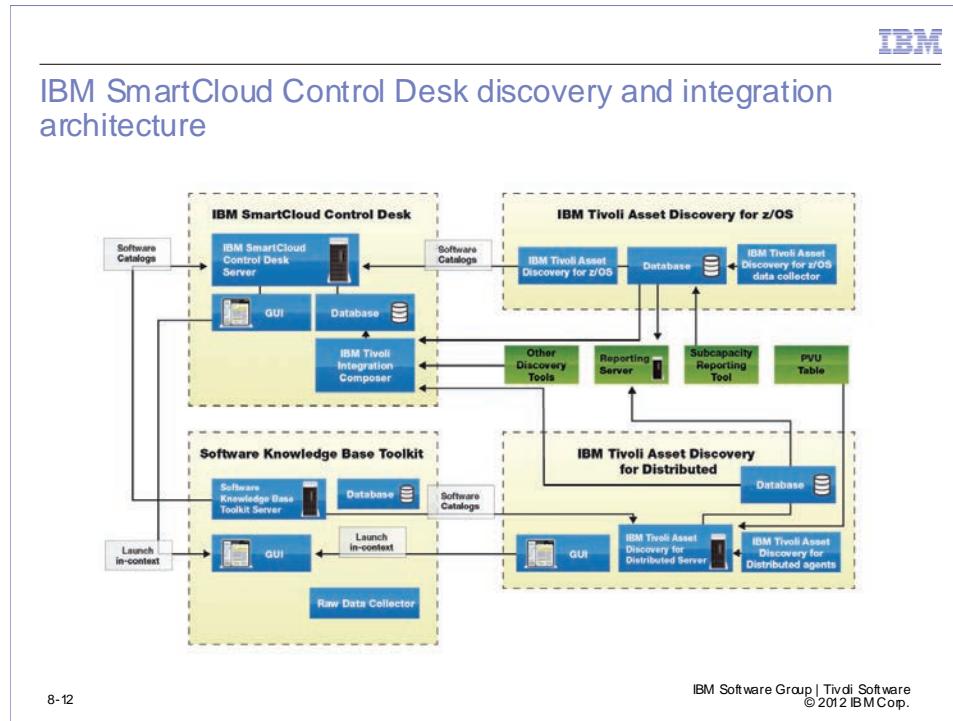
Discovery requirements

- You can run discovery on a schedule or on demand based on business requirements.
- For instance, corporate guidelines might require a quarterly audit and reconciliation for hardware assets and a monthly audit on software licenses.
- In addition, planning cycles and budget analysis can affect discovery schedules.
- Technology refreshes and contract end dates can also affect discovery schedules.

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IBM SmartCloud Control Desk discovery and integration architecture

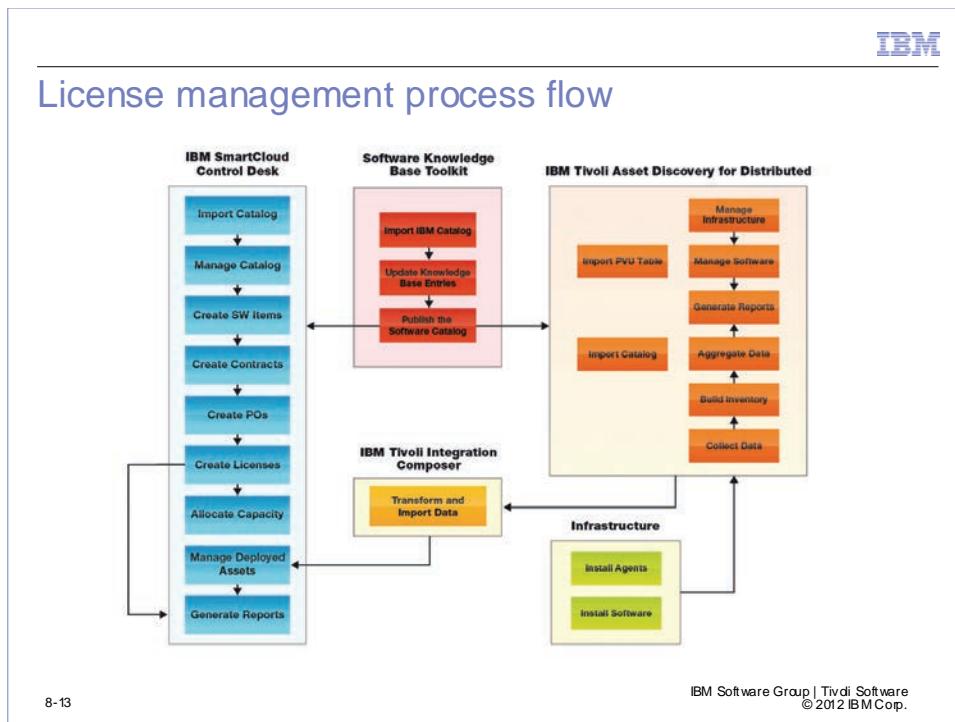


This architecture diagram focuses on the components of the IBM SmartCloud Control Desk family:

- **IBM SmartCloud Control Desk:** Provides IT asset management.
- **Software Knowledge Base Toolkit:** Provides software catalog customization capabilities.
- **IBM Tivoli Integration Composer:** Is used to import discovery data into IBM SmartCloud Control Desk.
- **IBM Tivoli Asset Discovery for Distributed:** Discovery tool that is focused on software in a distributed environment.
- **IBM Tivoli Asset Discovery for z/OS:** Discovery tool that is focused on software in a mainframe environment.

The family of products and tools together provide full software license management. The products are tightly integrated by product-provided adapters, launch-in-context capabilities, and a common software catalog.

License management process flow



This process flow describes, at a high level, how to manage software licenses as new software is acquired. During an initial implementation of software license management, the process can periodically diverge from this flow, but the overall concepts are represented, as follows:

1. Define software in Software Knowledge Base Toolkit. A key step in license management is ensuring that the software catalog is current and that it contains the definitions for the software packages that you manage. Perform the following steps:
 - On a monthly basis, import the latest IBM catalog to apply the software definition updates made by the Tivoli Software Knowledge Base Toolkit development team.
 - On an as-needed basis, define unknown software packages that are in your environment. This task can be done by importing a canonical knowledge base document, importing a custom data file, or collecting raw data from a sample computer with the software installed.
2. Publish the updated catalog in the Software Knowledge Base Toolkit.
3. Import the catalog into IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed. After the catalog is published in the Software Knowledge Base Toolkit, it can be picked up by IBM SmartCloud Control Desk and Tivoli Asset Discovery for Distributed. The published catalog is imported into IBM SmartCloud Control Desk by using a cron task. For IBM Tivoli Asset Discovery for Distributed, importing is a manual process within the Administrative console for Tivoli Asset Discovery for Distributed.

4. Create and allocate the license in IBM SmartCloud Control Desk. This process was covered in Unit 7: Managing software licenses.
5. Physically install the software.
6. Run a software discovery by using IBM Tivoli Asset Discovery for Distributed on the machine where the software is installed. If the machine where the software is installed does not have an IBM Tivoli Asset Discovery for Distributed agent, you must install an agent. IBM Tivoli Asset Discovery for Distributed uses scan groups to define which target machines are scanned for new software and hardware specifications. If you installed an agent, it must be added to a scan group. After the agent is configured, you must run a scan.
7. Import the discovered data into IBM SmartCloud Control Desk. The results of the scan in step 6 are imported into IBM SmartCloud Control Desk. This data represents the deployed software.
8. Generate a license audit report. To compare the authorized software to the deployed software, generate a license audit report within the License Application in IBM SmartCloud Control Desk:
 - a. Open the License application.
 - b. Choose the licenses that you want to include in the report.
 - c. Select **Run Reports**.
 - d. Choose what type of report to generate. Your choice is determined by the license type for the software that you are reporting on.

Lesson 2: Software



Lesson 2: Software



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Discovered software



Discovered software

- To manage licenses, you must discover the software that is installed and running in your environment.
 - This discovered software can then be compared to your license entitlements. These entitlements are stored in IBM SmartCloud Control Desk. The reports ensure audit readiness.
 - Discovering software can also help identify low-use software.
- To discover software and manage software licenses, you need a confirmed list of software products, components and signatures.
 - This confirmed list of software is called a software catalog.

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Knowledge base



Knowledge base

- A **knowledge base** is a collection of information about software products, their components, dependencies between them, and the means to discover them.
- The information can be obtained through software scans and human research. It can also be based on the documents and data that is published by software manufacturers.
- When you use IBM Tivoli Asset Discovery for Distributed and IBM SmartCloud Control Desk, the Software Knowledge Base Toolkit is the source for the software catalog.

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Software catalog



Software catalog

- The **software catalog** is a document that is used to store knowledge base data and to share it between applications or between separate instances of the software knowledge base.
- The software catalog contains various items:
 - Manufacturers
 - Software items
 - Aliases
 - Software relationships
 - Signatures
 - Licensing attributes

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Key concepts

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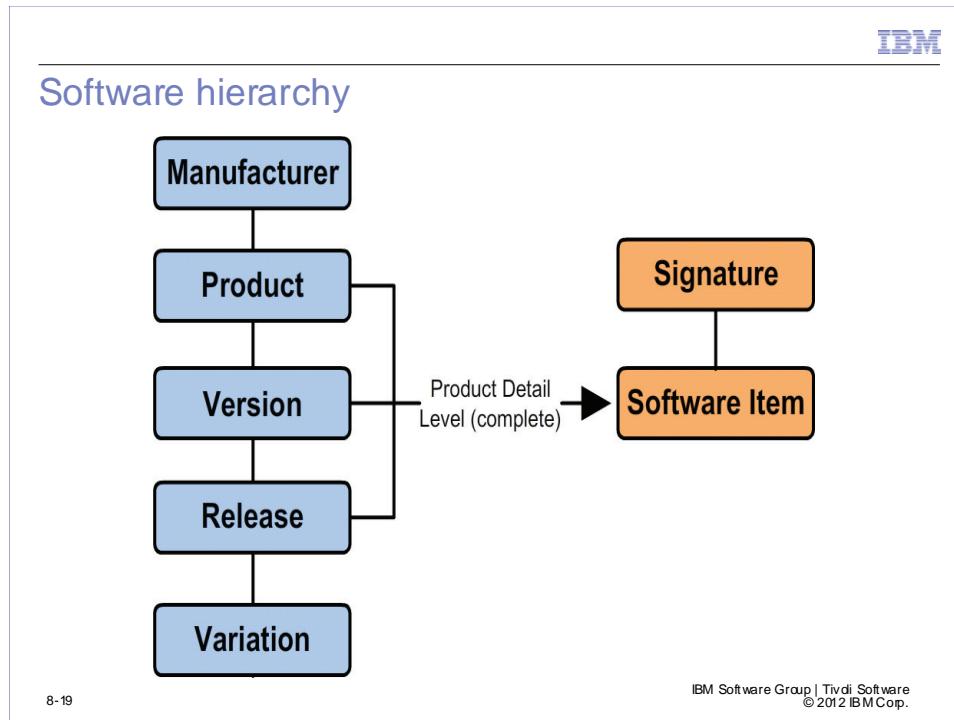
Key concepts

- **Software hierarchy**
Distributed software items can be classified into two software types: software products and components. For both types, software hierarchies that consist of the parent product level, versions, releases, and variations, can be defined.
- **Software product**
A software product is a logical unit of software packaging and sharing that has a managed development and maintenance lifecycle and customer-visible attributes. It can be a collection of components and other products whose licensing might be dependent on the licensing of the product as a whole.
- **Component**
A component is a unit of software that cannot be offered and licensed independently of other software items. It cannot be installed separately, but it can be detected as installed or running on computer systems with its own signatures. It can be assigned to products and shared between many different product definitions.
- **Distributed software signatures**
Signatures are file names, registry entries, and other types of information that are unique to a distributed software item and that can be used to identify it.

```
graph TD; SoftwareItem[Software Item] <-->|Vertical| Product[Product]; SoftwareItem <-->|Vertical| Component[Component]; Product --- Role[Role ---><<Dynamic>>--- Component]
```

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Software hierarchy



A software hierarchy is a set of parent-child relationships that define dependencies between products and components. In terms of licensing, the hierarchical relationships between software items are mapped onto a set of license dependencies.

Parent product is the root of the hierarchy. It groups all the versions of a software item. Certain attributes that are specified for the product are inherited by subordinate levels of the hierarchy. Every software hierarchy can contain only one parent product.

Version is a separately licensable software item that is immediately subordinate to the parent product. It can group one or more releases. Release is a separately licensable software item that is immediately subordinate to an item at the version level. It can be subordinate to only one version. Variation is a modification of a release (for example, a patch or a fix pack) which can be separately identified during software scans and influences the discovery of the release to which it is subordinate. It cannot be licensed individually.

Software hierarchy example

IBM

Software hierarchy example

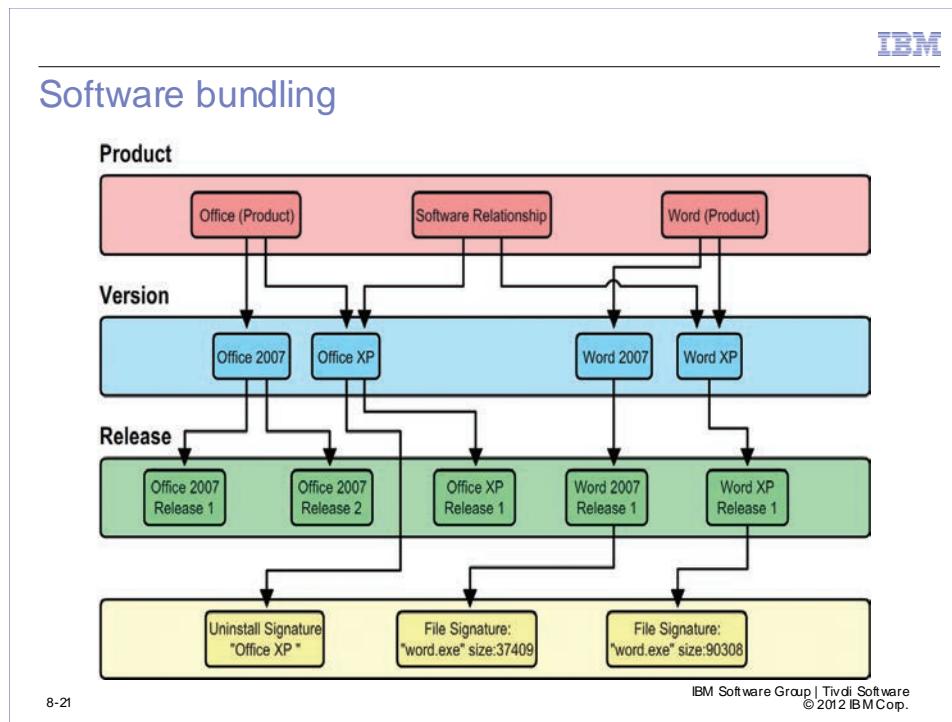
- Licensing attributes are associated with the product, for example:
 - Subcapacity
 - PVU
 - IPLA
- Signatures are associated with the release and variation, for example:
 - Platform
 - Signature scope

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The software hierarchy consists of the product, versions, releases, and variants. Typically, licensing attributes are associated with the product, while signatures are at the release and variation level. A signature is a unique identifier for a software product. It is what a discovery tool uses to identify that the product is installed.

Software bundling



A software bundle is a packaged collection of components or individually orderable products, often offered for promotional purposes. Software manufacturers typically offer a single license to cover all components of a bundled offering.

Software bundling example

The screenshot shows a software hierarchy on the left and a software tasks interface on the right.

Software Hierarchy:

- IBM Tivoli Monitoring
 - IBM Tivoli Monitoring 3.0
 - IBM Tivoli Monitoring 3.6
 - IBM Tivoli Monitoring 4.0
 - IBM Tivoli Monitoring 4.0.0
 - IBM Tivoli Monitoring 4.0.1
 - IBM Tivoli Monitoring 5.0
 - IBM Tivoli Monitoring 5.0.0
 - IBM Tivoli Monitoring 5.1
 - IBM Tivoli Monitoring 5.1.0
 - IBM Tivoli Monitoring 5.1.1
 - IBM Tivoli Monitoring 5.1.2
 - IBM Tivoli Monitoring 5.1.3
 - IBM Tivoli Monitoring 5.2
 - IBM Tivoli Monitoring 5.3
 - IBM Tivoli Monitoring 5.4
 - IBM Tivoli Monitoring 5.5
 - IBM Tivoli Monitoring 5.6
 - IBM Tivoli Monitoring 5.7
 - IBM Tivoli Monitoring 5.8
 - IBM Tivoli Monitoring 5.999
 - IBM Tivoli Monitoring 999.999

Software Tasks			
Select task:			
Manage bundled products			
Bundled product: Add Product Clear			
Select	Software	Relationship	Canonical XML Updates
C	IBM DB2 Enterprise Server Edition CPU Option 9	Free	Allowed
C	IBM DB2 Enterprise Server Edition CPU Option 9.1	Free	Allowed
C	IBM DB2 Enterprise Server OEM Unbundled Use 9.1	Free	Allowed
C	IBM DB2 Workgroup	Free	Allowed

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This example, from the Software Knowledge Base Toolkit, shows the software that is bundled with IBM Tivoli Monitoring. The pricing of a component depends on the product with which it is associated. The Relationship identifies whether the bundled software is free, charged, or managed. A component can be a charged component when bundled with one product and free when bundled with another.

Why a software catalog matters



Why a software catalog matters

- A **software catalog** tells the discovery tool what to discover and how to discover it based on signatures and identifies these items:
 - Products
 - Bundles
 - Components
- It identifies licensing attributes that are used for audit calculations.
- It is used as the link between license entitlements and discovered software.
- It is required for accurate audit report creation.

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Lesson 3: Software Knowledge Base Toolkit

IBM

Lesson 3: Software Knowledge Base Toolkit



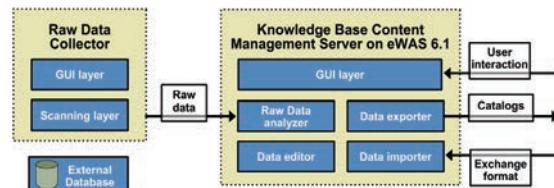
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Software Knowledge Base Toolkit components



Software Knowledge Base Toolkit components

- Knowledge Base Content Management Server:
 - Browse and manage the knowledge base.
 - Generate new definitions for products and signatures.
 - Import data.
 - Publish knowledge base content.
- Raw Data Collector:
 - Collect raw data from various distributed environments.
 - Process retrieved data to a format that is required by the knowledge base server.



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The Software Knowledge Base Toolkit has two primary components. The first component is the server. The server provides the ability to manage the knowledge base that is used by IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed. You can import the published IBM software catalog and add new entries for software that is not in the IBM catalog.

The second component is the raw data collector. This component is optional. It provides the ability to collect raw signature data from a distributed environment. This data can be used to add signatures to the knowledge base for unknown software.

Software Knowledge Base Toolkit features



Software Knowledge Base Toolkit features

- Manage imports (IBM catalog from IBM website).
- Manage software manufacturers.
- Manage distributed software.
- Manage knowledge base exports.
- Collect raw data to create knowledge base information.
- Manage raw data.

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The Software Knowledge Base Toolkit provides the ability to build and customize a software catalog to meet the needs of your organization. You can import the IBM catalog as a starting point. Then, you can manage the different software definitions in the knowledge base. After you finish the customization of the knowledge base, you can export it as a software catalog that can be used by other products.

Key steps



Key steps

- Import the IBM catalog into the Software Knowledge Base Toolkit.
- Add knowledge base information for in-house or unsupported software products and signatures.
- Publish the software catalog.
- Import the software catalog into IBM SmartCloud Control Desk.
The software product name is used in license procurement.
- Import the software catalog into IBM Tivoli Asset Discovery for Distributed.
It is downloaded to agents to identify software signatures and products.

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After installing the Software Knowledge Base Toolkit, the first step is to import the latest IBM catalog. This step ensures that you have the latest software signatures and details from IBM. If you have software in your environment that is not included in the IBM catalog, you can add that information in the toolkit. The goal is to populate the software catalog so that it supports all of the software that you want to monitor.

After you add all of the appropriate software, you publish the catalog. Publishing the catalog makes it available to products that use the catalog, such as IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed.

When the catalog publishing task is complete, you must import the catalog into IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed. IBM SmartCloud Control Desk uses the catalog to create software records (software items and license). IBM Tivoli Asset Discovery for Distributed uses the catalog to discover software instances and associate software bundles.

Import the IBM catalog



Import the IBM catalog

- The IBM catalog is in a canonical XML format.
- An update to the IBM catalog is published at the beginning of each month on the following IBM website:
ftp://ftp.software.ibm.com/software/tivoli_support/misc/CandO/TivoliCatalog/ibm/SwKBT/
- You download the XML file from the IBM website by selecting **Manage Imports > Canonical XML Document**.
- Import IBM catalog updates in overwrite mode.

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Before starting the new import task, the system creates a backup image of your current database so that you can restore it in case the import task fails. After the backup is completed, the new import task is added to the table in the Import Canonical XML Document window. To ensure that you have all of the current updates from IBM, the latest IBM catalog should be imported every month.

Import modes



Import modes

- Overwrite mode
 - When importing the IBM catalog, all previous entries are overwritten.
 - If manufacturers, products, or signatures are added manually, they remain intact unless a conflict arises. If a conflict occurs, the import can fail.
- Conflict analysis mode and merge
 - You can use this mode if you maintain your own catalog content and you want to merge it with the IBM catalog content.
 - All new and nonconflicting entries are imported.
 - All conflicts are listed for review and action.

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When importing a new catalog, you can control how the system handles conflicts. Typically, if you are using only the IBM catalog, you want to select the overwrite mode to ensure that updates from IBM are applied. If you made updates to the catalog, you might need to select the conflict analysis mode. A conflict occurs only if you modified an IBM entry or added an entry that exists in the catalog that you are importing. Most custom entries that you make are unaffected.

Import summary

The screenshot shows the 'Import summary' window from the IBM SmartCloud Control Desk. The window title is 'Import summaries > Browse IBMSoftwareCatalog_canonical_form_20100131.xml Import Summary'. It displays import details and a summary of changes made.

Import Details

- Import: IBMSoftwareCatalog_canonical_form_20100131.xml
- Import type: Canonical XML import
- Created: Feb 23, 2010
- Owner: KB_Manager

Summaries

General summary | Detailed summary | Failure summary

Action	Count
Manufacturers created	21
Manufacturers modified	2
Software items created	6981
Software items modified	9762
Signatures created	4009
Signatures modified	150
Skipped updates	0

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Manage manufacturers



Manage manufacturers

- Most manufacturers that you need for license management are included in the IBM catalog that is imported into the knowledge base.
- If you want to add or modify manufacturers, you perform the following tasks on the Knowledge Base Content Management Server:
 - Find existing manufacturers.
 - Add manufacturers.
 - Edit manufacturers.
 - Add manufacturer aliases.
 - Manage software.

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Manufacturer profiles contain knowledge base-specific attributes and user-defined attributes. The attributes that are supplied directly from the knowledge base cannot be modified.

However, aliases can be added to facilitate searches in the knowledge base. In addition, the IBM catalog keeps track of manufacturer names that might change over time. When the official name of a manufacturer is changed, the previous name is automatically defined as an alias so that it continues to be stored in the knowledge base.

You can also list all software for a manufacturer in the knowledge base. You can export this list of software by manufacturer to a file.

Manage software



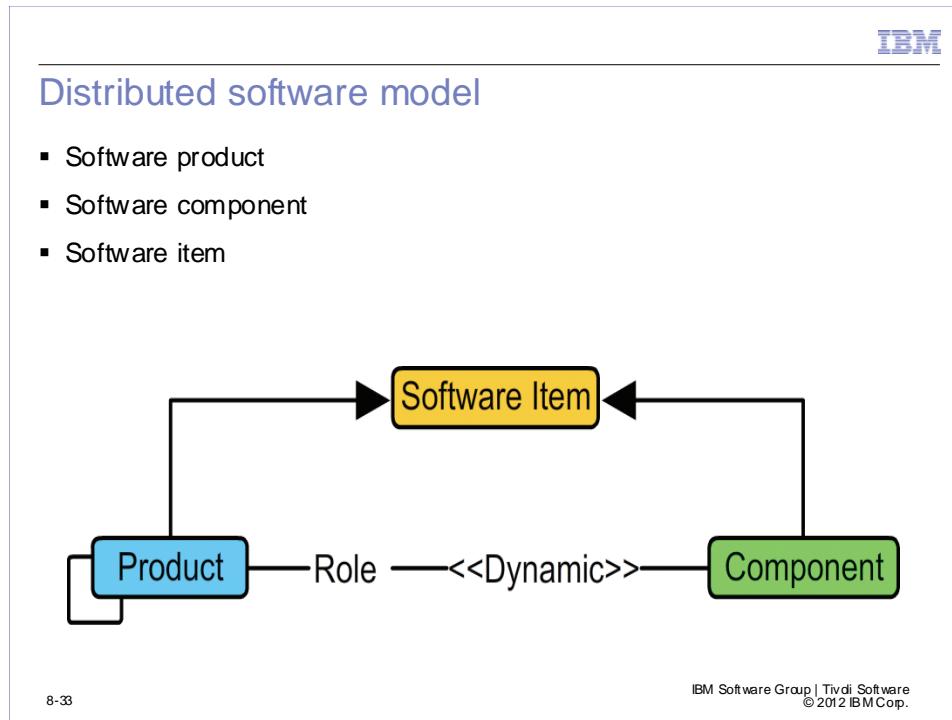
Manage software

- Most software that you need for license management is included in the IBM catalog and imported into the knowledge base.
- You can perform the following tasks on the Knowledge Base Content Management Server:
 - Find software entries.
 - Add software entries.
 - Delete software entries.
 - Edit software entries.
 - Create software aliases.

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Distributed software model



The structure of items in the knowledge base is hierarchical. Components can be assigned to software products, and products can be bundled into more complex products. A graphic representation of the structure is shown in this figure.

Many components can be assigned to one product, and that same component can be assigned to many products. Similarly, many products can be assigned to one product, and one product can be shared between many products. The software item to which one or more other items are assigned is referred to as the *enclosing software item*.

Software hierarchy

IBM

Software hierarchy

For every type of distributed software, you can define a four-level hierarchy:

- Parent product
- Versions
- Release
- Variation

Software Hierarchy

- └ IBM Maximo Asset Management for IT
 - └ IBM Maximo Asset Management for IT 6
 - └ IBM Maximo Asset Management for IT 6.2
 - └ IBM Maximo Asset Management for IT 7
 - └ IBM Maximo Asset Management for IT 7.1

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Software signatures that are used to discover and monitor software must be assigned to the release or variation level so that they can be used by IBM Tivoli Asset Discovery for Distributed.

Software relationship types



Software relationship types

License dependencies for software types:

- Managed (M)
- Charged (C)
- Free (F)

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Software items of various types can be assigned as subordinate to other items. Such relationships between software products and components can be mapped onto a set of license dependencies. These dependencies reflect the way those items are charged. In the knowledge base, three types of license dependencies are defined for software items:

- **Managed (M):** This type refers to software items that are assigned to another software item (for example, components assigned to a product) and contributing to its charge. The constitutive parts of the superordinate software item are not charged separately.
- **Charged (C):** This type refers to software items that are assigned to another software item and contributing to its charge. The constitutive parts of the superordinate software item are charged separately.
- **Free (F):** This type refers to software items that are assigned to another software item but not contributing to its charge.

Bundles

Bundles

- Identifying bundles is key to license management.
- A discovery tool must manage bundles that are based on its constituent products to identify the appropriate discovered capacity.

The screenshot shows the 'Software Hierarchy' and 'Software Tasks' panels. In the 'Software Hierarchy' panel, there is a tree view of software products under 'IBM Tivoli License Compliance Manager'. One node, 'IBM Tivoli License Compliance Manager 2.3', is highlighted with a red border. In the 'Software Tasks' panel, the 'Manage Bundled Products' task is selected. The 'Bundled product' dropdown is set to 'IBM Tivoli License Compliance Manager 2.3'. Below this, a table lists three bundled products: 'IBM WebSphere Application Server - Base S', 'IBM WebSphere Application Server - Base S', and 'IBM DB2 UDB Enterprise Server Edition 8'. Each row has columns for 'Software' (radio buttons), 'Relationship' (dropdowns set to 'Free'), and 'Canonical XML Updates' (checkboxes checked). The bottom right corner of the interface displays the text 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

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Licensing attributes



Licensing attributes

- Licensing attributes are assigned in the IBM catalog.
- The discovery tool uses these attributes to identify PVU and subcapacity eligible software, and performs PVU calculations that are based on core type and PVU table entries.
- Identifies the license models that the software is eligible for:
 - PVU
 - Subcapacity
 - IPLA

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These licensing attributes are also defined in the licenses in IBM SmartCloud Control Desk.

Distributed software signatures



Distributed software signatures

You can define the following types of signatures for distributed software items and use these definitions to detect those items on computer systems:

- File
- Installation registry
- Filter
- Common Inventory Technology (CIT) XML
- Application server
- XSLM ID
- Windows Registry
- J2EE application

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Various signature types can be defined in the Software Knowledge Base Toolkit. A description of each signature type can be found here:

http://publib.boulder.ibm.com/infocenter/tamit/v7r2m2/topic/com.ibm.swkbt_1.2.2.doc/com.ibm.ovr.doc/skb_ovr_c_signatures.html

Managing signatures



Managing signatures

- Signatures are file names, registry entries, and other types of information that are unique to a given distributed software item and can be used to identify it.
- Discovery tools use signatures to identify and monitor software.
- The IBM catalog includes signatures and is imported into the knowledge base.
- You can update, create, and delete signatures in the knowledge base manually, or by importing files that are created from the Raw Data Collector or other mining techniques.
- Signatures that are used for discovery must be added to at least the release level.

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Signatures must be assigned to at least the release level. Software recognition signatures that are assigned to software items, at the product or version level of the software hierarchy, are not exported to IBM Tivoli Asset Discovery for Distributed catalogs.

One of three scopes can be assigned to a signature, which tells the discovery tool how the software is detected and monitored:

- **Recognition:** Indicates that the signature is used to detect the software item as installed on a computer system.
- **Monitoring:** Indicates that the signature is used to detect the software item as running on a computer system.
- **Both:** Indicates that the signature is used both to detect the software item as installed on a computer system and to monitor the item usage on the system.

Publishing the software catalog



Publishing the software catalog

- The knowledge base must be published to a software catalog for it to be used by IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed.
- To publish, go to **Manage Knowledge Base Exports > Publish Catalog**
- After it is published, it is automatically available to both applications for import.

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Lesson 4: Tivoli Asset Discovery for Distributed

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Lesson 4: Tivoli Asset Discovery for Distributed



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Terminology review



Terminology review

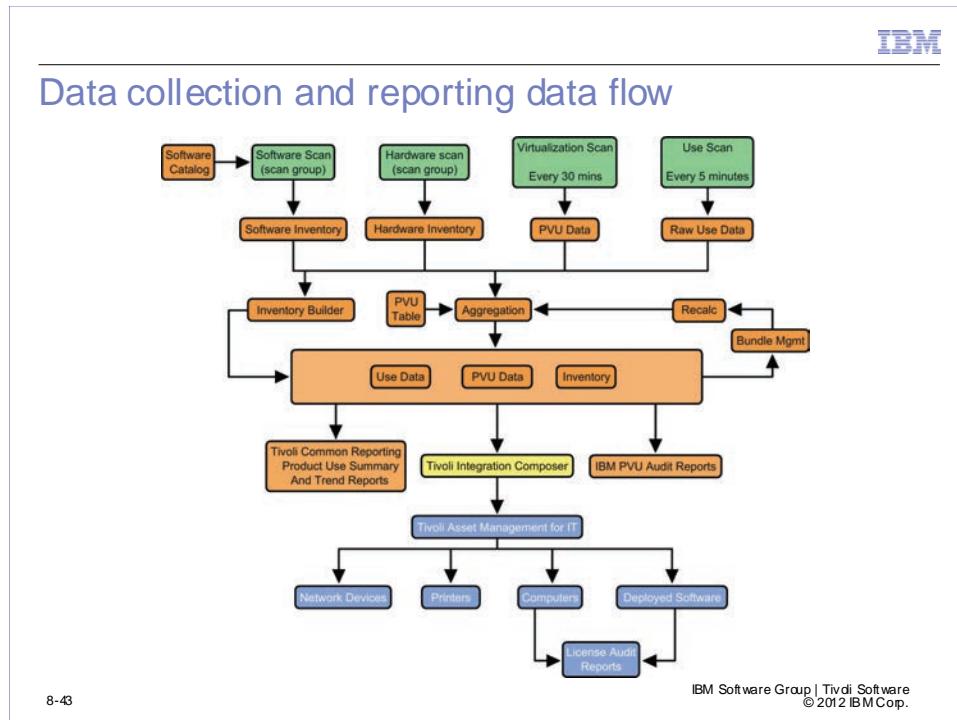
- A **software product** is a software item that is licensed independently of other software items on the same computer.
- A **component** is a software item that is part of a software product. A component might be separately identified, but is not individually licensed.
- An **instance** is a software product or component that is installed on a server, logical partition (LPAR), or a virtual machine.

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To understand how IBM Tivoli Asset Discovery discovers software, you must know the difference between a component, software product, and an instance. A component is a software item that is part of a product. IBM Tivoli Asset Discovery for Distributed discovers all software first as a component. It then uses information in the software catalog to determine which software product the component belongs to. The software product is the software item that is licensed independently. It is what you are monitoring for compliance. An instance is the confirmed installation of a software item (product or component).

Data collection and reporting data flow



Data collection in IBM Tivoli Asset Discovery for Distributed is a multi-step process:

Step 1: The product is added to the software catalog.

Step 2: The software catalog is imported into IBM Tivoli Asset Discovery for Distributed.

Step 3: The catalogBuilder tasks prepare the catalog in a format that is used by the agents.

Step 4: The agent downloads the catalog, which contains the software signatures and is platform-specific. A catalog that is downloaded to a Linux agent contains Linux-specific signatures.

Step 5: The agent runs the software scan.

Step 6: The agent uploads the inventory by component.

Step 7: The inventoryBuilder task transforms the inventory by component into inventory by product. Software inventory for a product is not viewable until the inventoryBuilder task runs against it.

Step 8: Once a day, aggregation runs to calculate PVU and use data. By default, collected PVU data must be at least two days old to be aggregated.

Step 9: Bundle management is performed to refine the associations that are determined by the inventoryBuilder. Bundle management is a manual process that is performed by a software asset manager.

Step 10: PVU audit report is reviewed for accuracy and signed.

Step 11: Discovered data is imported into IBM SmartCloud Control Desk by using IBM Tivoli Integration Composer.



Note: Only signed PVU data is imported into IBM SmartCloud Control Desk. Until a PVU report is signed, the data is not confirmed.

Agent data collection



Agent data collection

- Agents collect data by using software scans and hardware scans.
- Hardware scans collect hardware inventory.
- Software scans identify software in your infrastructure.
- Virtualization scans collect information about the virtual hierarchy.
- Use scans collect use data that is based on use data collection parameters.

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IBM Tivoli Asset Discovery for Distributed agents perform hardware, software, virtualization, and use scans. There are two types of hardware scans: capacity and full.

On a regular basis, the agent scans for changes in processor information. This scan is called a *capacity scan*. A capacity scan is required to ensure that PVU calculations are accurate. The agent can also perform a full hardware scan to gather details on the asset. By default, a capacity scan occurs every 30 minutes.

A full hardware scan collects information such as network adapter, monitor, video card, and printer. For a full list of hardware information that is collected, see the following website:

[http://pic.dhe.ibm.com/infocenter/tivihelp/v54r1/topic/com.ibm.tad4d75.doc/
com.ibm.license.mgmt.admin.doc/r_hardware_scan.html](http://pic.dhe.ibm.com/infocenter/tivihelp/v54r1/topic/com.ibm.tad4d75.doc/com.ibm.license.mgmt.admin.doc/r_hardware_scan.html)

Full hardware scans are scheduled by using scan groups. The default frequency for hardware scans is once a month. You can change this frequency at the scan group level. However, because hardware does not change frequently, once a month is typically sufficient.

Software scans use the software catalog to discover installed software instances. You must ensure that the agents have the latest catalog to make sure it can discover all software that you want to monitor. You can verify the catalog version for the agents in the IBM Tivoli Asset Discovery for Distributed console.

Software scans are also scheduled by using scan groups. The default frequency for software scans is once a week. You can change this frequency at the scan group level. You might consider increasing the frequency if you plan to install new software in your environment.

Virtualization scans are performed when an agent is installed on a guest system in a virtual environment such as VMware. To properly calculate PVU data, IBM Tivoli Asset Discovery for Distributed must have visibility into the underlying physical infrastructure. When an agent is installed in a virtual machine, it cannot access the physical system. Therefore, it must be able to communicate with the virtual machine manager of the virtual environment to gather that data. In a VMware environment, this manager is typically the vCenter. In a Microsoft environment, this manager is the Hyper-V server. A virtualization scan occurs every 30 minutes by default. It connects to the virtual machine manager and gathers data about the processor and processor count. The scan frequency can be changed by setting the **vmManagerPollingInterval** server setting.

A *use* scan is only performed if you enabled the use data collection option for a software product. A use scan collects use data at different levels. The default frequency is every 5 minutes. This frequency can be changed at the agent level.

For more information about scan management, see the following website:

http://pic.dhe.ibm.com/infocenter/tivihelp/v54r1/topic/com.ibm.tad4d75.doc/com.ibm.license.mgmt.admin.doc/c_software_scan_management.html.

Hardware processors

Vendor	Brand	Type	Model	System Model	PVU per Core	Default PVU Value	Partition Cores	Partition Network Address
IBM	CP	Single-core		8236-E8C	100	Yes	6	Agent237
IBM	CP	Single-core		8238-E8C	100	Yes	12	Agent238
Intel(R)	Xeon(R), More than 4 Sock	Multi-core	6500-6599 or 7500-7599	7037-A50	120	No	6	Agent207
Intel(R)	Xeon(R), 1 or 2 Socket	Multi-core	E3-12xx, E7-28xx, E7-48xx	7047-185	70	No	6	Agent127
IBM(R)	POWER6 (550,560,570,57	Dual-core	All Existing	7047-185	120	No	6	Agent159
Intel(R)	Xeon(R) or Pentium(R)	Single-core	All Existing	7047-185	100	No	6	Agent197
Intel(R)	Xeon(R), 1 or 2 Socket	Multi-core	E3-12xx, E7-28xx, E7-48xx	7778-23x	70	No	6	Agent233
IBM(R)	POWER6 (520,512,522,	Dual-core	All Existing	7778-23x	80	No	6	Agent261
IBM(R)	POWER7 (750,755,775 se	Multi-core	All Existing	7778-23x	100	No	6	Agent77
Intel(R)	Xeon(R)	Multi-core	3400-3699 or 5500-5699	7891-71X	70	No	6	Agent165
Intel(R)	Xeon(R)	Multi-core	3400-3699 or 5500-5699	7891-71X	70	No	6	Agent219
Intel(R)	Xeon(R)	Multi-core	3400-3699 or 5500-5699	7891-71X	70	No	6	Agent249

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Processor information is gathered during the capacity scan. You can view the processor information in the IBM Tivoli Asset Discovery for Distributed console under **Tivoli Asset Discovery > Hardware > Processors**. Processor information must be accurate to ensure that the PVU calculations are correct.

The IBM Tivoli Asset Discovery for Distributed administrator must periodically review the processor results. The processor information is updated during the aggregation process. By default, the aggregation process requires that data be at least two days old to be aggregated. Therefore, when a new server is scanned, it can take up to two days before you can view the processor information.

When reviewing the processors, pay specific attention to the **Default PVU Value** column. When this field is set to **Yes**, it means that the processor was not recognized by the agent or present in the PVU table. PVU products that are discovered on those servers are calculated by using the default value of 100. This calculation might not be correct. If this condition occurs, verify whether there are PVU products installed on that server. If there are PVU products on the server, verify that the processor is listed in the supported processor list for IBM License Metric Tool and IBM Tivoli Discovery for Distributed. You can find the list at this location:

http://www-01.ibm.com/software/lotus/passportadvantage/pvu_licensing_for_customers.html

Hardware scans



Hardware scans

- The hardware inventory collection feature is used to supply hardware inventory data to IBM SmartCloud Control Desk.
- The scan runs monthly by default and is configured per scan group.
- The scan collects memory, hard disks, processors, partitions, printers, modems, mouse devices, monitors, video cards, network adapters, USB devices, SMBIOS data, IPX addresses, IP addresses, PCI devices, and storage devices.

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Hardware scans are not viewable in the IBM Tivoli Asset Discovery for Distributed console. They are stored in the database and can be imported into IBM SmartCloud Control Desk. The imported hardware data is viewable in the Deployed Assets application.



Note: Full hardware scans are not supported on IBM i. However, the capacity scan is run for generating audit reports.

Software scans



Software scans

- Software scans discover software by using the agents and the software catalog.
- The agents report the discovered software data to the server.
- Software scans are scheduled per scan group.
- The default schedule is once a week.

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Virtualization scan



Virtualization scan

- Scans occur automatically every 30 minutes.
- The scan collects processor and operating system types that are required for PVU calculations.
- Frequency can be configured by using the command-line interface.
- Results are displayed in **Hardware > Processors**.

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The virtualization scan is performed when agents are running in a virtual environment. For VMware and Microsoft environments, you must configure a VM manager connection so that IBM Tivoli Asset Discovery for Distributed can collect this information. This configuration is covered in the *IBM License Metric Tool 7.5 (SPVC)* course.

Use scans



Use scans

- The scans run every 5 minutes by default.
- Only products with a software signature of type **use** can have use data collected.
- You can set data collection parameters in **Tivoli Asset Discovery > Software Monitoring Configuration**.
- The default collection level is None.
- The use data is sent to IBM SmartCloud Control Desk and used in Product Use Trend Reports. (You must change the Collection Level.)

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Use data collection can be enabled on a product-by-product basis to collect use statistics. The default collection is **none**. You must configure the data collection level for software products that you want to monitor when it is used.

Collecting use information increases processor demands to the system. To minimize the impact, you can enable it for a short time to gather statistics and then disable it.

Use data collection parameters

IBM

Use data collection parameters

- You set use data levels per product.
 - None (Default)
 - Date and time when the product was last used. (Sent to IBM SmartCloud Control Desk)
 - Summary and trend of product use, plus the date and time. (Required for Tivoli Common Reporting)
 - Full use information for custom reporting.
- You can also set identification for multiple instances.

Software Monitoring Configuration

Products List

The table shows all software products in your IT infrastructure, and the number of instances on all servers. Click a product to view its instances.

Software catalog version: Oct 24, 2011 8:44:55 AM

Select	Manufacturer	Product	Instances	Use Data Collection	Multiple Instance Identification
<input type="checkbox"/>	IBM	IBM Tivoli Guardium - Enterprise Integrator 8.0	4	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Tivoli Guardium - Enterprise Integrator Add-	1	<input type="checkbox"/> None	<input type="checkbox"/> Disabled
<input type="checkbox"/>	IBM	IBM Web Business Process Manager 4.5	5	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Rational Social Interaction Adapter 1.0	4	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM SPSS Content Server 19.0	4	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Tivoli Monitoring for Messaging & Collaboration 6.1	10	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Tivoli Identity and Access Manager Unfinished User	1	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM TivoliSphere Charge Data Delivery for Information	1	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Cognos 8 Financial Performance General Ledger	0	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Tivoli Guardium D9 Act Mon Data Warehouse	1	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Tivoli Federation Server 9.5	5	<input type="checkbox"/> None	<input type="checkbox"/> Enabled
<input type="checkbox"/>	IBM	IBM Tivoli Security Policy Manager for SOA 7.0	6	<input type="checkbox"/> None	<input type="checkbox"/> Enabled

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Software inventory



Software inventory

- Software that is discovered by software scans composes the software inventory of the IT infrastructure.
- Licenses are obtained per software product.
- A product can be composed of one or more components.
- Each component can have multiple instances in your environments.
- To be license-compliant, you must track and analyze the software to ensure that all products are accounted for.

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Software inventory must be managed. IBM Tivoli Asset Discovery for Distributed uses rules to try to programmatically determine which product a component belongs to. This process is imperfect and must be verified. Managing software inventory is covered later in this unit.

PVU audit reports



PVU audit reports

Calculations are based on the following information:

- Results of software scans.
- All activated server processor cores or server partitions that are available to a product or component of a product.
- The PVU table, which assigns value units based on core type.
- Information that you specify about the products that must be excluded from calculation of required capacity; for example, an evaluation license or instances on a cold backup server.

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One of the key differentiators for IBM Tivoli Asset Discovery for Distributed is its ability to create audit reports for IBM PVU licensing. The reports in IBM Tivoli Asset Discovery for Distributed are a summary of the discovered capacity. They are not a comparison to what you bought. The license audit reports in IBM SmartCloud Control Desk provide that function.

You must analyze the PVU reports in IBM Tivoli Asset Discovery for Distributed before signing the report. By signing the report, you are confirming that the PVU calculations are correct.

Generating PVU audit reports



Generating PVU audit reports

- The reports are automatically generated based on the report schedule.
 - Frequency is monthly by default.
 - Frequency can be changed, but it must be every three months or less.
 - Use **Tivoli Asset Discovery > IBM Audit Reports > Reporting Options** to change the frequency.
- You can create the reports on demand by using the **Add Report** action in **Tivoli Asset Discovery > IBM Audit Reports > View Reports**.
- Report continuity is required.
- Audit reports have a lifecycle and a status.
 - Running
 - Pending
 - Waiting
 - Ready
 - Signing
 - Signed

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PVU reports are automatically generated based on a report schedule. You can manage this report schedule under **Tivoli Asset Discovery > IBM Audit Reports > Reporting Options**. You must generate a report at least every three months.



Note: Configuring report schedules is covered in the *IBM License Metric Tool 7.5 (SPVC)* course.

You can manually generate a report under **Tivoli Asset Discovery > IBM Audit Reports > View Reports**. You might want to create on-demand reports for the following reasons:

- Create an audit report for a shorter period than your normal reporting period (thus the automated frequency does not need to be changed).
- Analyze a specific period (retrospective analysis can be done only if the report data for that period was not deleted).

When creating on-demand reports, choose dates that are in the past and that are not covered by a report that was already signed.

You must have a continuity of data before signing a report. For example, if the last report was signed on September 1, 2012. The following report must include the data from September 2, 2012 before you can sign it.

Audit reports have a lifecycle. Each lifecycle stage has a status as follows:

- **Ready:** The report is ready to be signed. Review and sign the report if it matches the processor core capacity, as measured in PVUs, available to the licensed products.
- **Signing:** The report is being signed. It is not possible to make any changes that might affect the PVU values in the report. If the signing process fails, the audit report status is changed to Ready. You can check the reason why it was not signed in the log files.
- **Signed:** The report is signed. You cannot remove it for two years.
- **Pending:** You must sign the reports in chronological order. There is a Ready report that must be signed before you can sign this one.
- **Waiting:** You can view this report but cannot sign it until the finalization period is over. The finalization period defines the number of days during which agents can report on the period that is covered by this report. The content of this report might still change if the agents that have not sent their data to the server earlier are reporting the data now.
- **Running:** Data for the report is not available at the moment because it is being collected or recalculated. This condition occurs when the data for PVU licensing is not processed yet or when you performed one of the following actions:
 - New manual or scheduled report generation (if the report covers the period when data was not aggregated)
 - Software bundle management
 - Product instance classification
- **View only:** You cannot sign this report because its reporting period overlaps with the period of a signed report.
- **Non-continuous:** There is a gap between the end date of the last signed report or the server installation date and the start date of this one. To sign this report, you must first create and sign a report that covers the gap because reports must be signed in chronological order. Use the **info** command to view the server installation date and the date of the next report.



Note: Report data is generated during the aggregation process.

Viewing audit reports

The screenshot shows the 'View Reports' page within the IBM SmartCloud Control Desk. The left sidebar navigation includes 'Settings', 'Tivoli Asset Discovery' (with 'Home' and 'IBM Audit Reports' sub-options), 'Reporting Options', 'Software' (with 'Manage Software Inventory', 'Software Monitoring Config', 'Software Components', 'Unmatched Registry Entries'), 'Hardware' (with 'Processors'), 'Infrastructure' (with 'Agents', 'Scan Groups', 'Systems without Agents', 'Shared File Systems', 'Software Catalog Versions', 'VM Managers'), and 'Administration' (with 'Import Software Catalog', 'Import PVU Table', 'Import Systems Tier Table', 'Import Stand-alone Scan F...'). The 'IBM Audit Reports' section is expanded, and 'View Reports' is highlighted with a red oval. The main content area displays a message: 'CODU00051 Many reports are ready to be signed.' Below this is a table titled 'Audit Reports' with the following data:

Select	Status	Start Date	End Date	Comments
<input type="radio"/>	Ready	Oct 18, 2011	Nov 15, 2011	Report is ready to be signed.
<input type="radio"/>	Ready	Oct 18, 2011	Nov 8, 2011	Report is ready to be signed.
<input type="radio"/>	Ready	Oct 18, 2011	Nov 1, 2011	Report is ready to be signed.
<input type="radio"/>	Ready	Oct 18, 2011	Oct 25, 2011	Report is ready to be signed.

At the bottom of the page, it says: 'The next scheduled report will cover the period from: Nov 18, 2011 to Dec 17, 2011'. The bottom right corner of the interface features the IBM logo.

Audit reports can be viewed under **Tivoli Asset Discovery > IBM Audit Reports > View Reports**. To view the report details, click the **Ready** link.

Verifying PVU audit reports



Verifying PVU audit reports

- When reports are generated, you must analyze the reports to ensure that the information is correct and to verify license compliance.
- Confirm the following information:
 - All PVU products are listed in the audit report.
 - All computer systems or LPARs with PVU products are connected to the server by using agents.
 - The PVU table is up-to-date.
 - The processors in the PVU table were correctly discovered.
 - Partitions are reassigned.
 - Product instances are classified correctly.
 - Shared file systems are scanning correctly.
 - Agents are performing scans and sending results to the server.
 - All PVU-based products are discovered.
 - Bundle Management is confirmed and set up correctly.
 - The number of reported PVUs matches the number of PVUs that you are entitled to use.

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Analyze report results



Analyze report results

- PVU capacity is calculated at the product level because Passport Advantage licensing is version- and release-neutral.
- You can view the following details to diagnose unexpected results in the PVU audit reports:
 - Software products included in or excluded from PVU calculations.
 - Servers where a selected product is installed.
 - Software instances on a selected server.
- You can use the Manage Software Inventory view to analyze the data before signing the report.

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The values calculated and reported in the IBM Tivoli Asset Discovery for Distributed become available in an audit report. The audit report must be analyzed, signed, and kept for two years. A software asset manager can analyze the audit report that is generated by the IBM Tivoli Asset Discovery for Distributed and use the reporting options in Passport Advantage to compare it to the entitled value units for each product.

Manage collected data overview



Manage collected data overview

- You must verify this data on an ongoing basis.
- Bundled software, classified instances, processor information, unrecognized software, software inventory, and shared file systems affect the results that are displayed in the following products:
 - IBM PVU Audit Reports (IBM Tivoli Asset Discovery for Distributed)
 - License Audit Reports (IBM SmartCloud Control Desk)
 - Product Use Trend and Summary Reports (Tivoli Common Reporting)

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Confirming instance assignment



Confirming instance assignment

- IBM Tivoli Asset Discovery for Distributed uses the software catalog and bundling rules to build the software product inventory
- You must confirm or verify this software product inventory by using information and resources:
 - Passport Advantage entitlement reports.
 - License Information documents for your products.
 - Asset management system information.
 - System Management specialists, DBAs, Application Administrators, and local IBM account team.

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License information documents can help identify appropriate bundling terms for a product and can be useful to Software Asset Managers when managing and verifying software before signing reports. License information documents for IBM products are available at the following location:

<http://www-03.ibm.com/software/sla/sladb.nsf>

Unconfirmed instances

IBM

Unconfirmed instances

- After the discovery of new components, the server associates component instances with products automatically by using bundling rules.
- There are five automatic bundling methods:
 - Part numbers
 - Software network connections
 - Partition collocation
 - Infrastructure collocation
 - Stand-alone product discovery
- The component is associated with the product with the highest confidence.
- A component with a confidence less than 100% is called an **unconfirmed** instance
- You can confirm instances in **Tivoli Asset Discovery > Manage Software Inventory**.

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The confidence level is assigned when the automatic bundling rules run. There are five automatic bundling methods:

- **Part number:** You can import a list of part numbers that you purchased. This list is used in the part number rule. The number of possible target products for the discovered instance is limited based on the purchased part number list.
- **Software network connections:** This method evaluates information in the Common Inventory Technology scan reports to identify component instances that communicate. If the possibility that the instances belong to the same product is above the threshold, they are automatically assigned to the product.
- **Partition collocation:** This method discovers component instances that are on the same partition and are related to the same product in the software catalog. If any of the discovered component instances has a confirmed, one-to-one, or auto-bundled relationship to the product, the other instances are automatically bundled with the same product.
- **Infrastructure collocation:** This method discovers component instances that are installed in the same infrastructure and that are related to a product in the software catalog. The search does not include the agent on which the product is installed. If any of the discovered component instances has a confirmed, one-to-one, or auto-bundled relationship with the product, the other instances are automatically bundled with the same product.
- **Stand-alone product discovery:** This method identifies the component instances of particular products, and indicates the product that contains the lowest number of

components. If the possibility that the instances belong to a product is above the threshold, they are bundled automatically.

Automated bundling is based on a combination of these product-component linking rules. A rule-based scoring system is used. The closer the normalized score is to 100%, the higher the confidence in the bundling assignment. If there is more than one possible assignment of a component, the maximum scoring by the automatic engine is 99%. A confidence of 100% is reserved for simple assignments and bundles that are confirmed or reassigned by a user. Any confidence less than 100% indicates that there are other possible assignments. Therefore, you must confirm that the bundling rules made the correct assignment or reassign the instance to the correct product. IBM Tivoli Asset Discovery for Distributed uses the software hierarchy and relationships in the software catalog to determine the possible assignments. To ensure accurate bundling, you must keep the software catalog up to date. IBM publishes a new version of the software catalog once a month.

Reviewing unconfirmed instance summary

The screenshot shows the 'Software Product Status' page. On the left, there's a table titled 'Recent Audit Reports' with three entries, all marked as 'Ready'. On the right, there's a section titled 'Software Bundle Management' containing a progress bar from 0% to 100%, with a note that 534 products are unconfirmed (22.9%). Below this, it says there are 2,162 unconfirmed instances. At the bottom, there are 'Related tasks' links for 'View reports' and 'Manage notifications'.

By clicking the **Manage Software Inventory** link, you can see the Manage Software Inventory view in which you can confirm the instances or reassign them to the correct products.

Reviewing unconfirmed instances in an audit report

The screenshot shows a web-based audit report interface. At the top right is the IBM logo. Below it, the title "Reviewing unconfirmed instances in an audit report" is displayed. The main content area has a header "View Reports" and a breadcrumb "Audit Reports > Oct 18, 2011 - Nov 8, 2011". Under "Audit Report Summary", it says "Reporting period: Oct 18, 2011 - Nov 8, 2011". Below this are links for "sign it.", "Manage Software Inventory", and "download the CSV file". A "Details" link is also present. The main table is titled "PVU Report" and "PVU table version: Nov 16, 2011". It has columns for "Product", "CPU Core Full Capacity", and "CPU Core Subcapacity". The table lists several products, including Advanced Copy Services Hdw/Oracle, Advanced Copy Services Hdw/IvySAP, Business Service Manager Tier 1 (with a warning icon), Candle Intelliview, DB2 Encryption Expe, DB2 Enterprise Edition, and DB2 UDB Query Patroller. A tooltip over the Business Service Manager row states: "This product contains some unconfirmed instances. Go to the Manage Software Inventory panel where you can confirm or assign instances." At the bottom left is page number "8-61" and at the bottom right is copyright information "IBM Software Group | Tivoli Software © 2012 IBM Corp."

Product	CPU Core Full Capacity	CPU Core Subcapacity
Advanced Copy Services Hdw/Oracle	40	18
Advanced Copy Services Hdw/IvySAP	140	60
Business Service Manager Tier 1	140	72
Candle Intelliview	60	18
DB2 Encryption Expe	100	42
DB2 Enterprise Edition	120	48
DB2 UDB Query Patroller	480	238

Unconfirmed instances are flagged in PVU audit reports. When reviewing an audit report in a ready state, look for the warning icon next to instances. The warning message directs you to the Manage Software Inventory panel.

Reviewing unconfirmed instances in software inventory

The screenshot shows the 'Manage Software Inventory' page. At the top, there's a search bar with 'Show: PVU products' and date ranges 'Discovery start: 2011-11-09' and 'Discovery end: 2011-11-16'. Below it, a table lists various software products with columns for Product/Release/Component, Confidence, Part Numbers, PVU Full Capacity, and PVU Subcapacity. A tooltip is overlaid on the 'Confidence' column for the 'Business Service Manager Tier 1' row, which has a yellow progress bar at 79%. The tooltip reads: 'The average confidence level of all currently assigned instances. Check if there are any other instances to be assigned.' The entire tooltip is enclosed in a red rounded rectangle.

Product/Release/Component	Confidence	Part Numbers	PVU Full Capacity	PVU Subcapacity
Advanced Copy Services Hdw/Oracle	100%		3,800	1,860
Advanced Copy Services Hdw/mySAP	100%		10,600	4,620
Business Service Manager Tier 1	79%		12,400	6,120
Candle Intellivatch	100%			
DB2 Encryption Expert for Multiplatforms	100%		8,600	3,240
DB2 Enterprise Edition	100%		10,200	3,780
DB2 UDB Query Patroller	55%		40,600	20,200
DB2 UDB Workgroup Server Edition	100%		30,800	14,820
Gift Center for WebSphere Commerce Enterprise for the store - 25 Stores	96%	D57P4LL	8,800	4,140
Gift Center for WebSphere Commerce Professional for the store - 25 Stores	83%	E02G1LL	15,000	5,700

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Unconfirmed instances in the Manage Software Inventory view have a confidence level that is below 100%. If you place your cursor over a product with unconfirmed instances, you see a message to check the instance assignments. Unconfirmed instances are managed in the software inventory view.

Verifying software inventory

The screenshot shows the 'Manage Software Inventory' interface. At the top, there are filters for 'PVU products', 'Discovery start: 2011-11-09', 'Discovery end: 2011-11-18', and an 'Update' button. Below this, it says 'Displayed products: 951'. The main area is a grid with columns: Confidence, Part Numbers, PVU Full Capacity, and PVU. The data is as follows:

Product/Release/Component	Confidence	Part Numbers	PVU Full Capacity	PVU
Gift Center for WebSphere Commerce Enterprise for the store - 25 Stores	100%	D57P4LL	8,800	8,800
Gift Center for WebSphere Commerce Professional for the store - 25 Stores	100%	E02G1LL	4,400	4,400
IBM Alphablox Add-in	66%		1,000	660
IBM Alphablox for Linux, UNIX and Windows	55%	E01ZTLL	28,600	15,530
IBM Application Workload Modeler for Linux on zSeries	100%	E0200LL	6,800	6,800
IBM Asset Inventory Management Services for WSE Enterprise Edition	76%	E07D4LL	19,000	14,560
IBM Asset Inventory Management for WebSphere Sensor Events	56%		19,200	10,896
IBM Balanced Optimization FCT	100%		14,800	14,800

At the bottom left is a 'Download as CSV' link, which is circled in red. The bottom right corner shows 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

To be IBM license-compliant, you must ensure that your discovered capacity is according to your license agreement. You must track and analyze your software to make sure that all IBM software products are accounted for so that your PVU and processor core capacity is calculated for all necessary software products. The affirmation is the audit report. You can view and manage the discovered software inventory in the Manage Software Inventory view. You can download the results as a comma-separated values (CSV) file to evaluate the accuracy with application owners.

Viewing releases

The screenshot shows the 'Manage Software Inventory' interface. At the top, there are filters for 'PVU products', 'Discovery start: 2011-10-18', 'Discovery end: 2011-11-16', and an 'Update' button. Below this, it says 'Displayed products: 957'. The main area is a table with columns: Product/Release/Component, Confidence, Part Numbers, PVU Full Capacity, and PVU Subcapacity. The table lists several software products, including Advanced Copy Services Hdw/Oracle, Advanced Copy Services Hdw/mySAP, Business Service Manager Tier 1 (with two entries circled in red), Candle Intelliwatch, DB2 Encryption Expert for Multiplatforms, DB2 Enterprise Edition, DB2 UDB Query Patroller, DB2 UDB Workgroup Server Edition, and Gift Center for WebSphere Commerce Enterprise for the store 2E Stereo. The 'Business Service Manager Tier 1' row has a dashed border and contains two entries: 'Business Service Manager Tier 1 4.1 (6)' and 'Business Service Manager Tier 1 4.1 (1)'. The 'Business Service Manager Tier 1 4.1 (6)' entry is circled in red. The 'Confidence' column uses color-coded bars: green for 100%, yellow for 79%, orange for 88%, red for 28%, and blue for 55%. The 'PVU Full Capacity' and 'PVU Subcapacity' columns show numerical values for each product.

The software inventory is displayed in a hierarchical manner. You can expand a product to view the discovered releases. Each release indicates the number of instances that are discovered.

Viewing instances

Product/Release/Component	Host Name	Confidence	Explanation of Confidence	Current Server ID
Advanced Copy Services (now Tivoli SAP)		100%		
<input type="checkbox"/> Business Service Manager Tier 1		79%		
<input type="checkbox"/> <input type="checkbox"/> Business Service Manager Tier 1 4.1 (6)		88%		
Business Service Manager Tier 1 (SP) 4.1	Agent297	100%	No other bundling options available.	TAG 149
Business Service Manager Tier 1 (SP) 4.1	Agent246	100%	No other bundling options available.	TAG 123
Business Service Manager Tier 1 (SP) 4.1	Agent198	100%	No other bundling options available.	TAG 99
Business Service Manager Tier 1 (SP) 4.1	Agent90	100%	No other bundling options available.	TAG 45
Business Service Manager Tier 1 (SP) 4.1	Agent2	100%	No other bundling options available.	TAG 1
Tivoli Business Service Manager - Service Manager 4.1	Agent278	30%	Based on: the relation in the software catalog, the infrastructure co-location, the	TAG 139

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When you expand a release, you can see the individual instances that are assigned to that product release. Each instance includes an explanation of confidence. This explanation details the reason for the confidence. The reason can be a combination of automatic bundling rule calculations or user-bundled when a user confirms or reassigns the instance. The confidence of the top-level product is a combination of the confidence of all the associated instances below it.

Filtering a software inventory list

The screenshot shows the 'Manage Software Inventory' page. At the top, there is a search bar with 'Show: PVU products', 'Discovery start: 2011-10-18', 'Discovery end: 2011-11-16', and an 'Update' button. Below the search bar, it says 'Displayed products: 951'. There is a 'Confidence scope: 0 - 100' dropdown, a 'Actions' menu, and a 'Product/Release/Component' filter field with a 'Filter' button. The main table has columns for 'Product/Release/Component', 'Confidence', 'Part Numbers', 'PVU Full Capacity', and 'PVU'. The bottom right corner of the interface displays the IBM logo.

Managing software inventory can be a challenge when you have hundreds or thousands of unconfirmed instances. You can use several filtering options to focus on groups of instances at a time. For example, you can use the filtering options to display all unconfirmed DB2 instances. You can export the filtered list to a comma-separated values (CSV) file. You can give this report to your DB2 administrator so that they can confirm the purpose of each installed instance.

Using the show products filter

The screenshot shows the 'Manage Software Inventory' interface. At the top, there is a navigation bar with the IBM logo. Below it, a section titled 'Using the show products filter' is displayed. The main area is a software interface with a title 'Manage Software Inventory'. It features a 'Show:' dropdown set to 'PVU products', a 'Discovery start:' field with the value '2011-10-18', a 'Discovery end:' field with the value '2011-11-16', and a 'Update' button. A dropdown menu is open over the 'Show:' field, listing 'All products', 'PVU products' (which is highlighted in blue), and 'Systems products'. To the right of the dropdown are icons for 'Actions', 'Product/Release/Component', 'Filter', and a search bar. Below these controls are tabs for 'Product/Release/Component', 'Confidence', 'Part Numbers', 'PVU Full Capacity', and 'PVU'. At the bottom left of the interface is a page number '8-67', and at the bottom right is copyright information: 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

You can use the **show products** filter to control which set of products appear in the software inventory list. You can select All products, PVU products, or Systems products. The default filter is PVU products. You can also select the date range for the data. After selecting the set of products to show and the date range, click **Update** to apply the filter. You can select only a date range that is not covered by a signed audit report. If you select a start date that is covered by a signed report, an error is displayed indicating that the date range is invalid. The filter automatically adjusts to the earliest possible start date.

Using the confidence scope filter

The screenshot shows the 'Manage Software Inventory' interface. At the top, there are filters for 'Show: PVU products', 'Discovery start: 2011-10-18', 'Discovery end: 2011-11-16', and an 'Update' button. Below these, it says 'Displayed products: 951'. A navigation bar includes 'Confidence scope: 0 - 100' with arrows, a search bar for 'Product/Release/Component' and 'Filter', and buttons for 'Change the instance confidence filter settings' (highlighted in blue), 'Clear the instance confidence filter', and tabs for 'Confidence', 'Part Numbers', 'PVU Full Capacity', and 'PVU'. At the bottom right, it says 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'.

You can use the **Confidence scope** filter to control which instances you see, based on the assigned confidence percentage. You can use this filter to focus on the instances with the lowest confidence and work up from there.

Using the quick filter

The screenshot shows the 'Manage Software Inventory' interface. At the top, there's a navigation bar with 'IBM' branding. Below it, a title 'Using the quick filter' is displayed. The main area is a grid titled 'Product/Release/Component'. The columns are 'Product/Release/Component', 'Host Name', 'PVU Full Capacity', and 'PVU'. A 'Filter' input field is located at the top right of the grid. To the left of the grid, there's a sidebar with various actions and a list of products. The products listed include 'Advanced Copy Services Hdw/Oracle', 'Advanced Copy Services Hdw/mySAP', 'Business Service Manager Tier 1', 'Candle Intelliwatch', and others. The bottom right corner of the interface contains copyright information: 'IBM Software Group | Tivoli Software' and '© 2012 IBM Corp.'

The quick filter is a convenient way to search for specific text in fields. You can search the following fields:

- Product/Release/Component
- Host Name
- Current Server ID
- Operating System
- Scan Group
- Processor Type
- Part Numbers

Software bundle management



Software bundle management

- The default association that is done by the product-provided bundling rules might not match your infrastructure.
- Bundle management is used to assign the discovered component to the correct product.
- To perform bundle management, click **Tivoli Asset Discovery > Software > Manage Software Inventory**.
 - Confirm the assignment of instances.
 - Reassign instances to another product.
 - Reassign instances to this product.
 - Include instances from pricing calculations.
 - Exclude instances from pricing calculations.
 - Share instance.

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Checking the automatic bundling association, confirming it, or reassigning instances is a key task because the automatic assignment can be the most expensive for PVU and processor core capacity calculation. It might not reflect the software that was officially purchased. Regardless of whether the status of these instances is confirmed or unconfirmed, you can select any instance to reassign it to a different product.

Confirming the assignment of instances

The screenshot shows two tables of product instances in the IBM SmartCloud Control Desk.

Top Table:

Product/Release/Component	Host Name	Confidence	Description of Confidence	Current Server ID	Processor Type
Business Service Manager Tier 1 (SP) 4.1	Agent198	100%	No other bundling options available.	TAG 99	
Business Service Manager Tier 1 (SP) 4.1	Agent90	100%	No other bundling options available.	TAG 45	
Business Service Manager Tier 1 (SP) 4.1	Agent2	100%	No other bundling options available.	TAG 1	
Tivoli Business Service Manager - Service Manager 4.1	Agent278	30%	Based on the relation in the software catalog, the infrastructure co-location, the stand-alone product.	TAG 139	

Bottom Table:

Product/Release/Component	Confidence	Part Numbers	PVU Full Capacity	PVU Subcapacity
Advanced Copy Services Hdw/Oracle	100%		3,800	1,860
Advanced Copy Services Hdw/mySAP	100%		10,600	4,620
Business Service Manager Tier 1	89%			
Business Service Manager Tier 1.4.1 (6)	100%			
Business Service Manager Tier 1.4.2 (1)	99%			
Candle Intellivatch				
DB2 Encryption Expert for Multiplatforms				
DB2 Enterprise Edition				
DB2 UDB Query Patroller				
DB2 UDB Workgroup Server Edition				
Gift Center for WebSphere Commerce Enterprise for	96%	D57P4LL	8,800	4,140

In both tables, a context menu is open over the last row, with the "Confirm the assignment of instances" option highlighted and circled in red.

If the automatic bundling rules correctly assigned the instance, you can use the Confirm the assignment of instances option. You can perform this task on individual instances or at the product release level. When you confirm instances at the product release level, all instances that are currently assigned to that release are confirmed.

Reassigning instances to another product

The screenshot shows a software interface titled "Reassigning instances to another product". At the top, there's a toolbar with icons for confidence scope (0-100%), search, and actions. Below the toolbar is a table header for "Product/Release/Component" with columns for Host Name, Confidence, Explanation of Confidence, Current Server ID, and Processor Type.

Product/Release/Component	Host Name	Confidence	Explanation of Confidence	Current Server ID	Processor Type
Business Service Manager Tier 1 (SP) 4.1	Agent90	100%	No other bundling options available.	TAG 45	
Business Service Manager Tier 1 (SP) 4.1	Agent2	100%	No other bundling options available.	TAG 1	
Tivoli Business Service Manager - Service Manager 4.1	Agent278	100%	User selected this instance. Based on the relation in the software catalog, the infrastructure co-location, the stand-alone product	TAG 139	

Below the table, a context menu is open over the selected row (Agent278). The menu items are: "Reassign instances to this product...", "Reassign instances to another product...", "Confirm the assignment of instances", "Include instances in pricing & calculation...", "Exclude...", and "Share...".

A modal dialog box titled "Reassigning Instances" is displayed at the bottom. It contains a table with three rows:

Product Name	Confidence Level	Applied Rules
<input checked="" type="radio"/> IBM Integrated Information Core Manage Server Edition 1.4	22%	the relation in the software catalog, the infrastructure co-location
<input type="radio"/> Tivoli Business Service Manager 4.1	20%	the relation in the software catalog
<input type="radio"/> Business Service Manager Base 4.1	20%	the relation in the software catalog

At the bottom right of the modal is a red-outlined "Reassign" button. The footer of the interface includes the text "IBM Software Group | Tivoli Software © 2012 IBM Corp." and the page number "8-72".

Repurposing can be done when a component like DB2 is initially assigned to one product like IBM Tivoli Directory Server. That product is uninstalled, and you install IBM Tivoli Workload Scheduler. You can reassign the DB2 instance from one product to another. In some cases, you might have made a mistake in bundling and assigning the component to the wrong product. For instance, you assigned an instance of DB2 to IBM WebSphere Message Broker and you meant to assign it to IBM WebSphere Message Broker Retail Store edition. As with confirming instances, you can perform the reassigning instances to another product at the instance or product release level.

Reassigning instances to this product

The screenshot shows a user interface for managing IT assets. At the top, there's a navigation bar with icons for search, refresh, and actions, followed by tabs for 'Confidence' and 'Part Numbers'. Below this is a table header with columns for 'Product/Release/Component', 'Confidence', and 'Part Numbers'. The main content area displays a list of products and their confidence levels:

Product/Release/Component	Confidence	Part Numbers
IBM ITCAM for Microsoft Applications Advance	45%	
IBM ITCAM for Microsoft Applications Advance 6.1 (3)	89%	
IBM ITCAM for Microsoft Applications Advance 6.2 (25)	99%	
IBM Tivoli Composite Application Platform		

A context menu is open over the row for 'IBM ITCAM for Microsoft Applications Advance 6.2'. The menu items are: 'Reassign instances to this product...', 'Reassign instances to another product...', 'Confirm the assignment of instances', 'Include instances in pricing calculation...', and 'Exclude instances'. The first item, 'Reassign instances to this product...', is highlighted with a red circle.

Below the table, a message says 'Select instances to reassign to the selected product' and 'Target product: IBM ITCAM for Microsoft Applications Advance 6.2'. A 'Filter' button is also present.

At the bottom of the interface, there's a table showing details for selected instances:

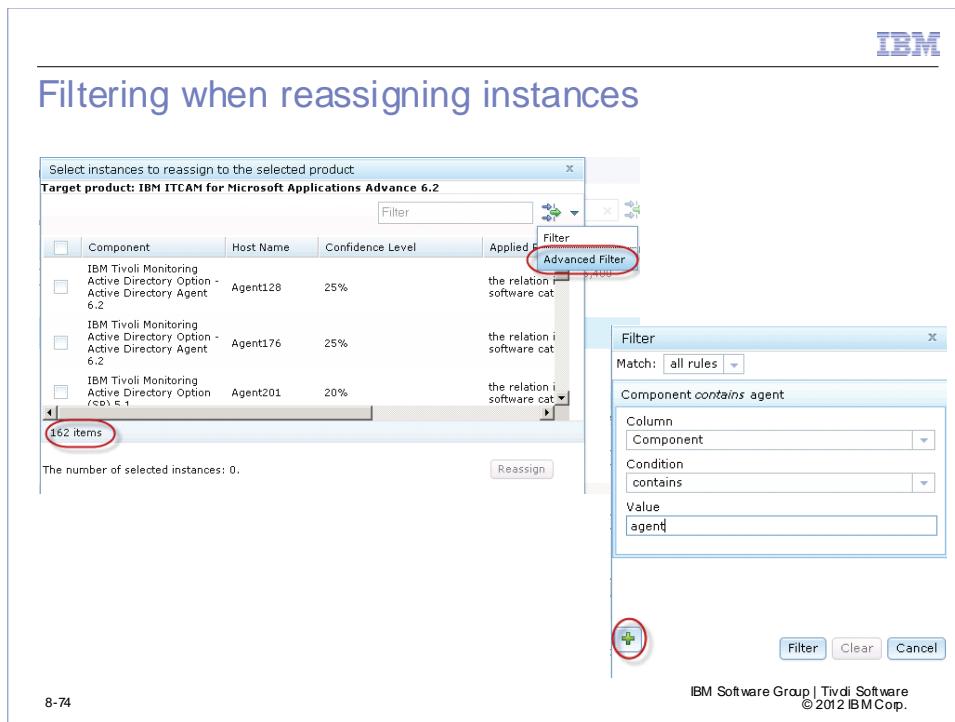
Component	Host Name	Confidence Level	Applied Rules	Current Product
No filter applied				
IBM Tivoli Monitoring Active Directory Option	Agent128	25%	the relation in the software catalog	IBM Tivoli Monitoring Active Directory Option 6.2
IBM Tivoli Monitoring Active Directory Option	Agent176	25%	the relation in the software catalog	IBM Tivoli Monitoring Active Directory Option 6.2
IBM Tivoli Monitoring Active Directory Option (SP) 5.1	Agent201	20%	the relation in the software catalog	IBM Tivoli Foundations Application Manager 1.2

The total count of selected items is 162, indicated by a red circle.

At the bottom right, it says 'IBM Software Group | Tivoli Software © 2012 IBM Corp.'

Another approach that you can use to assign instances is the reassigning instance to a selected product. This approach is useful when you confirm that a set of instances belongs to a specific product. You select the product at the release level and then choose Reassign instances to this product. A list of possible instances is displayed. You can select one or more instances to assign.

Filtering when reassigning instances



In addition to the software inventory filter features discussed earlier, you can use advanced filtering features when reassigning instances. The advanced feature allows you to define rules. You specify the column to search, the condition that you want met, and the value. You can add multiple rules to the filter by clicking the plus (+) icon.

Including or excluding instances from pricing calculations

The screenshot shows a user interface for managing software instances. At the top, there's a navigation bar with icons for search, refresh, and actions, followed by a title 'Including and excluding instances from pricing calculations'. Below this is a table of products and their confidence levels:

Product/Release/Component	Host Name	Confidence	Explanation of Confidence	Current Server ID
IBM DB2 Express Edition CPU Option		17%		
IBM DB2 Express Edition CPU Option 9.5 (1)		18%		
IBM DB2 Express Edition CPU Option (SP) 9.5	Agent75	18%	Based on: the relation in the software catalog, the stand-alone product discovery.	TAG 38
IBM DB2 Performance Optimization Feature for Enterprise Server Edition		18%	<input checked="" type="checkbox"/> Resign instances to another product...	
IBM FileNet Content Manager Authorized		17%	<input checked="" type="checkbox"/> Confirm the assignment of instances	
IBM ILOG JViews Enterprise		18%	<input checked="" type="checkbox"/> Include instances in pricing calculation...	
IBM InfoSphere Replication Server		18%	<input checked="" type="checkbox"/> Exclude instances from pricing calculation...	

A context menu is open over the last row, specifically for the 'Exclude instances from pricing calculation...' option. The menu items are:

- Resign instances to this product...
- Resign instances to another product...
- Confirm the assignment of instances
- Include instances in pricing calculation...
- Exclude instances from pricing calculation...** (highlighted with a red circle)
- Share instance...

Below this, another table shows the result of the exclusion:

Product/Release/Component	Host Name	Confidence	Explanation of Confidence	Host
IBM Business Process Manager Process Center (Advanced)		53%		
IBM Collaboration Accelerator		78%		
IBM DB2 Express Edition CPU Option		17%		
IBM DB2 Express Edition CPU Option 9.5 (1)		18%		
IBM DB2 Express Edition CPU Option (SP) 9.5	Agent75	18%	Excluded: Backup, disaster recovery...	TAG 38
IBM DB2 Performance Optimization Feature for Enterprise Server Edition		11%		
IBM FileNet Content Manager Authorized		22%		

At the bottom right of the interface, there are buttons for '< Back' and 'Exclude' (also circled in red). The footer of the interface includes the text 'IBM Software Group | Tivdi Software © 2012 IBM Corp.'

You can include and exclude instances from pricing calculations. When excluding an instance, you must provide an explanation for the exclusion. After excluding an instance, an icon is added to the instance indicating that it was excluded and the reason for exclusion.

Sharing an instance

The screenshot shows a software interface titled "Sharing an instance". At the top, there's a search bar with "Host Name" set to "agent75". Below the search bar is a table with columns: "Product/Release/Component", "Host Name", "Confidence", and "Explanation of Confidence". The table lists several products with their confidence levels: IBM Business Process Manager Process Center (Advanced) at 53%, IBM Cognos Data Manager Runtime at 100%, IBM Cognos Enterprise Planning TM1 f Non-Production Environment, IBM Collaboration Accelerator, IBM DB2 Express Edition CPU Option, and IBM DB2 Express Edition CPU Option (SP) 9.5. The last row for IBM DB2 Express Edition CPU Option (SP) 9.5 has a "Share instance..." option highlighted with a tooltip: "Based on: the relation is the software catalog, this stand-alone product discovery". The bottom right corner of the interface displays the IBM logo and copyright information: "IBM Software Group | Tivoli Software © 2012 IBM Corp."

In some cases, instances are shared by multiple products. For example, you might have a DB2 instance that is shared by IBM Tivoli Monitoring and IBM ITCAM for Microsoft Applications Advance. You can use the Share instance option to indicate that both products use this instance.

Bundling effects



Bundling effects

- The audit reports are recalculated.
 - Value units change based on IBM software catalog licensing relationships.
 - Products can be added or removed from the report.
- The Software product list changes.
 - Products can be removed.
 - Products can be added.

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When you reassign instances, add instances, or remove instances, you have the following results:

- The audit reports are recalculated.
- Value units change, based on IBM software catalog licensing relationships.
- Products can be added or removed from the report.
- The Software product list changes.
- Products can be removed. For example, only one DB2ESE Release 9.1 instance is in the product list. If you reassign it to IBM License Metric Tool, the Product list no longer shows DB2ESE Release 9.1.
- Products can be added. Using the example on the previous slide, you might uninstall IBM License Metric Tool. That instance of DB2ESE Release 9.1 is displayed in the product list because that bundle no longer exists.

Signing audit reports

IBM

Signing audit reports

- Only reports in Ready status can be signed.
- You must have the Software Asset Manager security role to sign audit reports.
- You use **Tivoli Asset Discovery > IBM Audit Reports > View Reports** to find the reports in Ready status to be signed.
- You click the **Sign** link to sign the report.
- The three-step background process is as follows:
 - XML generation
 - Signature generation
 - Compressing XML with signature to database
- Signed reports cannot be changed and cannot be deleted until they are two years old.
- Only PVU values from signed reports are imported into IBM SmartCloud Control Desk by using IBM Tivoli Integration Composer.

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After verifying the software inventory, you can sign the PVU reports. To sign a report, log in as a user with the Software Asset manager, open the report, and click **Sign**.

If you close the window, the signing process runs in the background, and the report is in Signing status until it is signed. To see whether the process of signing a report runs successfully, click the link above the table in the Audit Report Summary window. If it fails, the audit report status changes to Ready again. You can check the reason why it was not signed in the log files.

It can take time before the system processes your electronic signature and the audit report appears as Signed. It can take from a couple of minutes up to one hour, depending on the amount of PVU-based products that are in your infrastructure.

Signing a report certifies PVU data, which creates a history for auditing purposes. The date of signing a report is in the server time. After it is signed, a report cannot be modified and can be deleted only after it is two years old.

Report finalization period



Report finalization period

- A **finalization period** is the number of days after the audit report end date, during which agents can continue to gather and report information that is relevant to the report.
- A report for this period provides a buffer for agents that cannot contact the server to report results.
- Reports cannot be signed until the finalization period is complete.
- You can set the Finalization Period by using **IBM Audit Report > Reporting Options > Set Advanced Configuration Options**.

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Grace period



Grace period

- A **grace period** is the specified number of calendar days after the audit report end date.
- The report must be signed after the end of the finalization period and before the end of the grace period.
- If the report is not signed in this period, email notifications are sent to email subscribers that were previously set up in the system.
- You can set the grace period by using **IBM Audit Reports > Reporting Options > Set Advanced Configuration Options**.

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Delta report generations



Delta report generations

- Use these reports to view differences between the last signed report and the selected audit report.
- Use Generate Delta Report in the View Reports window.
- The delta report is not generated immediately. The default time is 2:00.
- You can change the time by using the **deltaReportGenerationTime** parameter in the **systems.properties** file.

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The delta report feature allows you to compare new and old PVU audit reports. To generate a delta report, open a report in ready mode and click **Generate Delta Report**. Delta reports are generated on a schedule basis. The default generation time is 2:00.

Software asset management



Software asset management

- When you install IBM Tivoli Asset Discovery for Distributed server and its agents, you confirm default instances, create the appropriate bundling, and exclude instances.
- You must continue to manage the software in IBM Tivoli Asset Discovery for Distributed as you acquire and install new software and uninstall software.
- For software on new computers, partitions, and images to be accounted for, agents must be installed.
- The IBM Tivoli Asset Discovery for Distributed administrator, software asset manager, and systems administrators must communicate these changes so that they can be reflected in IBM Tivoli Asset Discovery for Distributed.

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The IBM Tivoli Asset Discovery for Distributed agent should be part of your standard server build with IBM products on it. The Tivoli Asset Discovery for Distributed administrator should be integrated into the change and control process.

Student exercise

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Student exercise



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Open your *Student Exercises* book and perform the exercises for this unit.

Review questions

1. Which discovery tool supports PVU data?
 - a. IBM Tivoli Application Dependency Discovery Manager
 - b. IBM Tivoli Endpoint Manager for Software Use Analysis
 - c. IBM Tivoli Asset Discovery for Distributed
 - d. IBM Tivoli Provisioning Manager
2. True or False: The software catalog is an optional component for license management.
3. Signatures are associated with which level in the software hierarchy?
 - a. Release
 - b. Version
 - c. Product
 - d. Any level
4. True or False. The software catalog must be published in the Software Knowledge Base Toolkit for it to be imported into IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed.
5. What level does IBM Tivoli Asset Discovery for Distributed discover software?
 - a. Product
 - b. Component
 - c. Bundle
 - d. All of the above

Review answers

1. Which discovery tool supports PVU data?
c. IBM Tivoli Asset Discovery for Distributed and IBM License Metric Tool are the only discovery tools that support discovery of PVU data.
2. True or False: The software catalog is an optional component for license management.
False. The software catalog is a required component. It provides the link between authorized software and discovered software.
3. Signatures are associated with which level in the software hierarchy?
a. Release. Signatures are associated at the release or variant level.
4. True or False. The software catalog must be published in the Software Knowledge Base Toolkit for it to be imported into IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed.
True. The software catalog must be published in the Software Knowledge Base Toolkit. Processes in IBM SmartCloud Control Desk and IBM Tivoli Asset Discovery for Distributed connect to the Software Knowledge Base Toolkit to import the catalog.
5. What level does IBM Tivoli Asset Discovery for Distributed discover software?
b. IBM Tivoli Asset Discovery for Distributed discovers software at the component level. The discovery results are uploaded to the server where the inventoryBuilder task builds the software inventory and bundling assignments.

Summary



Summary

Now that you have completed this unit, you can perform the following tasks:

- Explain the asset discovery process and integration with discovery tools.
- List the strengths of the IBM discovery tools.
- Explain the concept of a software hierarchy.
- Describe software bundling.
- Manage software in the Software Knowledge Base Toolkit.
- Manage software inventory in IBM Tivoli Asset Discovery for Distributed.
- Generate and sign PVU audit reports.

Appendix A: Additional topics

IBM

Appendix A: Additional topics



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Introduction

This appendix includes additional information about the IBM tools and products that contribute to an integrated asset management architecture:

- Integration Framework
- IBM Tivoli Integration Composer
- Tivoli Common Reporting

Integration Framework is a built-in interface in IBM SmartCloud Control Desk that provides import and export capabilities. It is a base service of Tivoli's Process Automation Engine. IBM Tivoli Integration Composer is used to import discovery data into IBM SmartCloud Control Desk. Tivoli Common Reporting provides a centralized report infrastructure for multiple Tivoli products. IBM Tivoli Asset Discovery for Distributed includes product use and summary reports that can be loaded into Tivoli Common Reporting.

Integration framework



The slide features the IBM logo at the top right. The main title "Integration framework" is centered above a large, stylized graphic of a globe with white rectangular overlays forming a grid pattern. At the bottom right, there is a copyright notice: "© 2012 IBM Corp."

Integration framework overview



Integration framework overview

- Integration Framework is a set of applications that facilitates two-way data exchange between IBM SmartCloud Control Desk and external applications in real time or batch mode.
- IBM SmartCloud Control Desk provides predefined content for importing and exporting data:
 - Object structures
 - Enterprise services
 - External systems
- A system administrator is responsible for the configuration required for any data exchange.

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Flat file or XML format



Flat file or XML format

- A predefined XML and flat file format is provided in the Integration Framework content.
- This file format can be exported or imported.
- IT asset disposal example:

```

EXTSYS1| ITASSETDISPOSALInterface||EN
ASSETNUM| SITEID| STATUS| TLOAMDISPCHARGE| TLOAMDISPDATE| TLOAMDISPRECIPIENT| TLOAMDIS
PREMARK| TLOAMDISPREQ| TLOAMDISPTYPE| TLOAMDISPVALUE
7120|BEDFORD|DISPOSED|0.0|2009-06-15T00:00:00-05:00|DATACHIP|Returned to
Datachip at end of lease.|W1080|Returned|550.0
7121|BEDFORD|DISPOSED|0.0|2009-06-15T00:00:00-05:00|DATACHIP|Returned to
Datachip at end of lease.|W1080|Returned|550.0
7122|BEDFORD|DISPOSED|0.0|2009-06-15T00:00:00-05:00|DATACHIP|Returned to
Datachip at end of lease.|W1080|Returned|550.0
7123|BEDFORD|DISPOSED|0.0|2009-06-15T00:00:00-05:00|DATACHIP|Returned to
Datachip at end of lease.|W1080|Returned|550.0
7124|BEDFORD|DISPOSED|0.0|2009-06-15T00:00:00-05:00|DATACHIP|Returned to
Datachip at end of lease.|W1080|Returned|550.0
7125|BEDFORD|DISPOSED|0.0|2009-06-15T00:00:00-05:00|DATACHIP|Returned to
Datachip at end of lease.|W1080|Returned|550.0
SQLRet

```

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Integration framework high-level steps



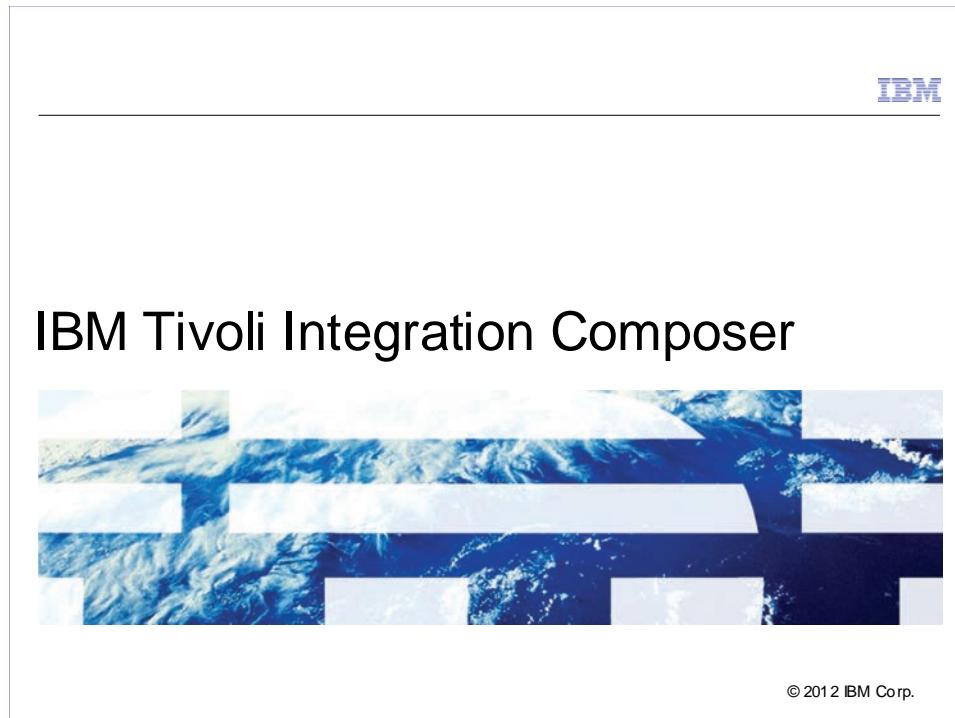
Integration framework high-level steps

1. Configure the object structure.
2. Determine queue type, sequential or continuous, and configure the system and application server.
3. Review the file format and data that you plan to import or export.
4. Import or export the detail file.

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IBM Tivoli Integration Composer



Integration



Integration

- After asset data has been discovered, the data must be migrated into the IBM SmartCloud Control Desk database.
- IBM Tivoli Integration Composer is used to migrate this data.
- This data must be refreshed each time a discovery is successfully completed.
- After the data is migrated into the system, you can view it in the Deployed Assets module through the Computers, Network Devices, Network Printers, and Deployed Software applications.

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IBM Tivoli Integration Composer overview

IBM

IBM Tivoli Integration Composer overview

- Tivoli Integration Composer is an integration tool used to migrate data from discovery tool repositories into the system's deployed assets.
- It has a variety of adapters to facilitate data migration from source discovery repositories to the target system database.
- The adapters are used to transform the collected asset data and import it into the target's database, IBM SmartCloud Control Desk.
- **Adapters** consist of schemas and mappings for the source-to-target data.

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Enterprises can aggregate data that is collected by disparate asset discovery tools and integrate it into IBM SmartCloud Control Desk. This integration provides a central repository for enterprise IT asset management, reporting, and decision support.

The following terms describe features of the Tivoli Integration Composer:

- A **data schema** is a structure for organizing and classifying data in a database. It defines both the data contents and the relationships. Integration Composer interprets data and changes it to the format that is required for the target database. This format is based on the structures that are defined in the data schemas, which are stored in the Integration Composer repository.
- A **data source** is the actual data in a database. The data is organized in the structure that is defined by a data schema.
- In Integration Composer, data schemas organize data into classes. A **class** is a group of data that has the same characteristics or properties. For example, you can define a class called *Computer* because computers share many characteristics or properties.
- A **property** is an attribute or feature that characterizes a class. The collection of properties that are assigned to a class defines the class. A class can have multiple properties. For

example, objects classified as computers have the following properties: Hardware ID, Manufacturer, Model, and Serial Number.

- An ***instance*** is a specific object that belongs to a class. For example, the class *Computer* is characterized by the properties *Hardware ID*, *Manufacturer*, *Model*, and *Serial Number*. In this case, a specific instance of the class, the computer *HQLz2310*, is characterized by the properties 0399483 (*Hardware ID*), IBM (*Manufacturer*), Pentium® 4 (*Model*), and 938348393 (*Serial Number*).
- A ***mapping*** is a set of expressions that transform data when Integration Composer imports it from an external source into a target.
- The ***Expression*** field contains the instruction that Integration Composer uses to transform data from the source format to the target format.

IBM Tivoli Integration Composer adapters

IBM

IBM Tivoli Integration Composer adapters

- A set of files, including mapping expressions that facilitate data migration from specific discovery tools.
- Many adapters are provided with Tivoli Integration Composer 7.5.
- You can create adapters for additional discovery products.
- You can find additional adapters in the Tivoli Open Process Automation Library, an open source repository.

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SmartCloud Control Desk provides an integration adapter for each of the following discovery tool databases:

- Centennial Discovery 2006 and 2007
- Microsoft System Center Configuration Manager 2007
- IBM® Tivoli® Application Dependency Discovery Manager 7.2 and 7.2.1
- IBM Tivoli Asset Discovery for Distributed 7.2 and 7.5
- IBM Tivoli Asset Discovery for z/OS® 7.2 and 7.5
- IBM Tivoli Provisioning Manager 7.1.1 and 7.2
- IBM Tivoli Monitoring 6.1
- IBM Tivoli Network Manager IP Edition 3.8 and 3.9



Note: The IBM Tivoli Monitoring 6.1 adapter is for use only by licensees of IBM Maximo® Asset Management for Energy Optimization.

You can find other adapters in the IBM Integrated Services Management Library:

<https://www-304.ibm.com/software/brandcatalog/ismlibrary/>

IBM Tivoli Integration Composer components

IBM

IBM Tivoli Integration Composer components

- Integration Composer user interface
- Command-line interface
- Integration Composer engine
- Connection methods
- Integration Composer repository
- Naming Reconciliation Services (NRS)

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The Integration Composer user interface is used for these purposes:

- Define data sources
- Browse the source data
- Define data schemas
- Create mappings to transform
- Import data

The Integration Composer command-line interface is used to start Integration Composer and execute mappings that transform source data and import it from the source to the target (Maximo) database. The Integration Composer engine processes mapping expressions that transform data from the source data and integrate it into a target database.

Integration Composer Connection Methods uses a JDBC driver or an API to establish connections to the source data location and target database. Integration Composer includes the following JDBC drivers:

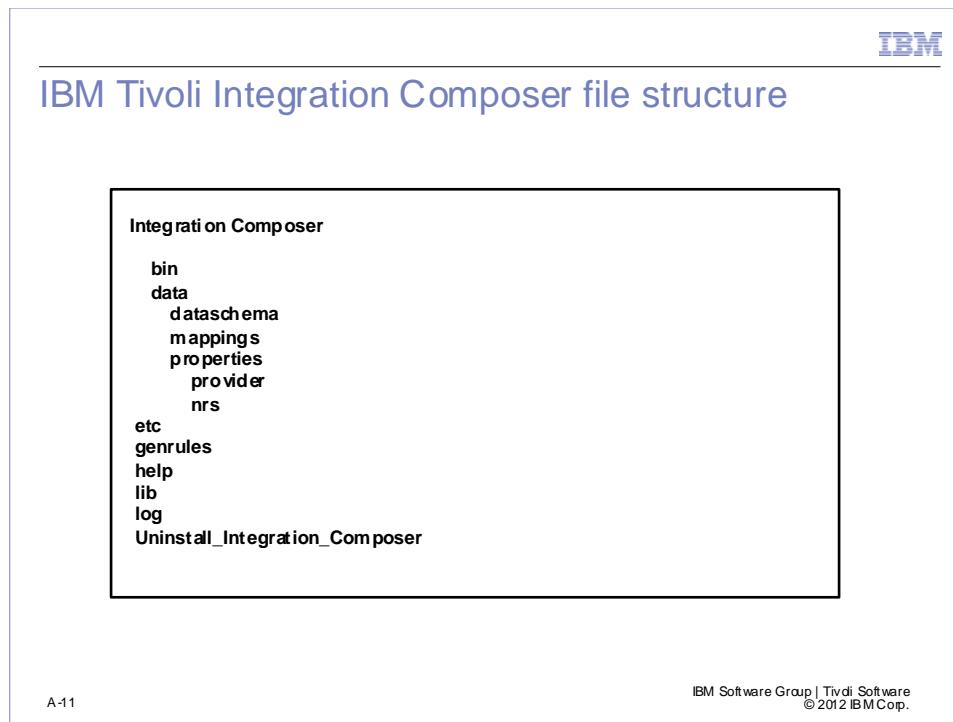
- IBM DB2 JDBC Driver for IBM DB2 database users
- Microsoft SQL Driver for Microsoft SQL Server users
- i-net OPTA JDBC Driver for Microsoft SQL Server users
- Oracle JDBC Thin Driver for Oracle database users

The Integration Composer repository contains the following Integration Composer data:

- Metadata for read-only data schemas that are delivered with Integration Composer. This metadata defines the structure of the data.
- Metadata for data schemas that you create in Integration Composer.
- Data source definitions that provide data connection parameters.
- Mappings that define how to transform data instances and import them from a source to a target.

The time stamp of the most recent scan for top-level objects in the source data of the Integration Composer repository, if such a last-scan time stamp exists.

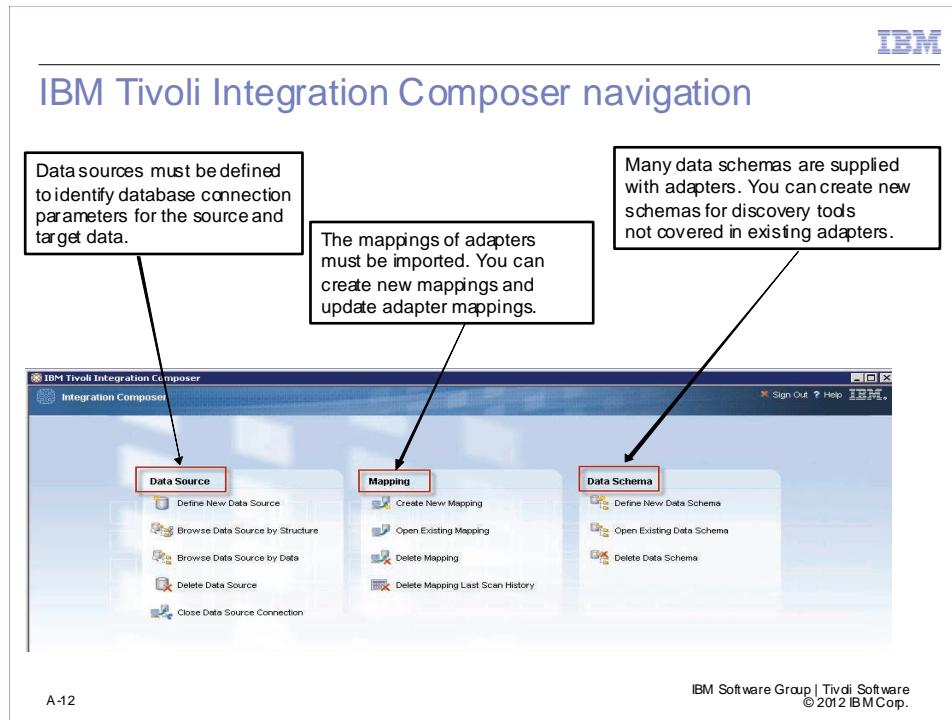
IBM Tivoli Integration Composer file structure



If you accept the default installation path when installing Integration Composer, the installer creates an Integration Composer installation directory and installs Integration Composer by using the following file structure:

- **etc**: Stores files that are used by the Tivoli Application Dependency Discovery Manager Software Development Kit. *Do not modify any files in this subdirectory.*
- **genrules**: Stores Java source files that Integration Composer creates when you run a mapping. *Do not modify any files in this subdirectory.*
- **help**: Stores the Integration Composer online help files. *Do not modify any files in this subdirectory.*
- **lib**: Stores JDBC drivers and application programming interfaces (APIs) that Integration Composer uses. *Do not modify any files in this subdirectory.*
- **log**: Stores Integration Composer log files.
- **Uninstall_Integration_Composer**: Stores the files that remove Integration Composer from your computer. *Do not modify any files in this subdirectory.*

IBM Tivoli Integration Composer navigation



This slide shows the IBM Tivoli Integration Composer main menu. Adapter setup and definition of data sources, schema, and mappings must be completed before importing the data into IBM SmartCloud Control Desk. A system administrator performs the initial setup of IBM Tivoli Integration Composer. The following Data Source options are available:

- **Define New Data Source:** Define a data source and set the database connectivity information.
- **Browse Data Source by Structure:** Navigate the data schema by using a tree and associated table view. If data exists, Tivoli Integration Composer displays property or instance data in the table view.
- **Delete Data Source:** Delete a data source if it is no longer needed and if no mapping currently uses it.
- **Close Data Source Connection:** Close a data source connection if it is no longer needed in the current session.
- **Create New Mapping:** Associate a source data source and target data source with a mapping.

- **Open Existing Mapping:** View or modify an existing mapping. Create mapping expressions.
- **Delete Mapping:** Delete a mapping if it is no longer needed.
- **Delete Mapping Last Scan History:** Delete the last scan dates for each system in the selected data source. If a mapping is modified, the last scan history must be deleted for changes to take effect.
- **Define New Data Schema:** Define a new data schema and specify its data source connection parameters. Add classes, properties, and relationships to a data schema. Import and export data schemas.
- **Open Existing Data Schemas:** View or modify an existing data schema. Export a data schema file.

Mapping

Mapping

- After you define the data source, schema, and mapping in the tool, run the mapping from a command line or batch file.
- The .bat file and .sh file are located in the Integration Composer **bin** directory.
- Tivoli Integration Composer transforms the data and migrates it into the target system. It can be viewed in the Deployed Assets module.
- To update data in the target database, such as importing data about new computer equipment, run an existing mapping as often as needed.

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Whenever IBM Tivoli Integration Composer runs a mapping, it provides information about mapping executions, data transactions, and errors in the file. The **fusion.log** file is stored in **installation_dir\log** (where **installation_dir** is the directory where Integration Composer was installed).

In the following example, the windows .bat file is used to run a mapping. The file is in the .bin directory. You can modify the file with the parameters required, or the parameters can be provided when you run the file.

```

REM =====
REM CHECK FOR DELETE LAST SCAN HISTORY FLAG
REM =====
set DELETE=
if not {%1} == {-delete} goto setMappingParams
set DELETE=%1
shift

:setMappingParams
set MAPPINGNAME=%1
set REPOSITORYUSER=%2
set REPOSITORYPWD=%3
set SOURCEUSER=%4
set SOURCEPWD=%5
set TARGETUSER=%6
set TARGETPWD=%7

REM =====
REM CHECK THE COMMAND LINE OPTIONS
REM =====
if "%MAPPINGNAME%" == "" goto error1
if "%REPOSITORYUSER%" == "" goto error2
if "%REPOSITORYPWD%" == "" goto error3
if "%SOURCEUSER%" == "" goto error4
if "%SOURCEPWD%" == "" goto error5
if "%TARGETUSER%" == "" goto error6
if "%TARGETPWD%" == "" goto error7

REM =====
REM INVOKE INTEGRATION COMPOSER
REM =====
cd /D %WORKAREA%
REM change 1536M to the amount of virtual RAM you would like to allocate to the application
java -Xmx1536M -Xms16M -Xss1M -Dcom.collation.home="%COLLATION_HOME%" -Dinstall.root="%FSNDAPIII"
goto exit

```

The parameters have the following sources:

- **Mapping Name:** The mapping is created within the Tivoli Integration Composer tool. If an adapter is used, then you import the adapter and modify the mapping expressions if needed.
- **Repository user and password:** This user and password is for the Maximo database, which is used to store all the adapter, data source, and last scan information.
- **Source user and password:** This user and password is for the source discovery tool database.
- **Target user and password:** This user and password is for the Maximo database that has the deployed assets.

In addition, you can set the Delete Last Scan History flag to refresh all the data. Otherwise, the IBM Tivoli Integration Composer process compares the last scan date that is stored in the repository against the data from the source discovery tool and decide whether to skip, update, or insert records.

Naming Reconciliation Services (NRS)

Naming Reconciliation Services (NRS)



- An optional IBM Tivoli Integration Composer component used to centralize asset identification and resolve asset duplication.
- Helps avoid duplication of deployed asset records in the Maximo database when multiple discovery tools are used.
- A NRS Globally Unique Identifier (GUID) is assigned to each asset based on a set of naming rules.
- The data source map provides its own GUID, and IBM Tivoli Integration Composer generates a NRS GUID.

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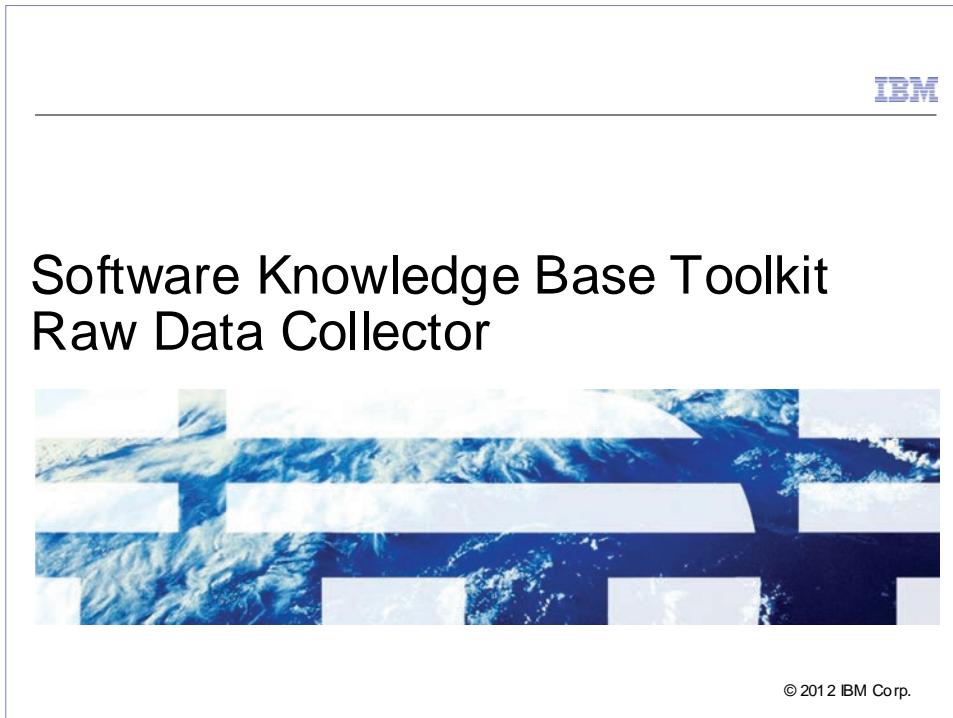
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Naming and Reconciliation Service (NRS) is an optional component that is implemented with IBM Tivoli Integration Composer 7.2 and higher. You can use NRS to uniquely identify deployed assets and avoid duplication of asset records in your database. By default, Integration Composer is configured to use this component, which assigns a globally unique identifier, the NRS GUID, to a deployed asset that is based on defined naming rules. Each naming rule consists of one or more attributes that are required to identify the asset. For example, there is a naming rule based on manufacturer, model, and serial number.

NRS provides a way to centralize asset identification across multiple products that share the Maximo database. Additional information can be found here:

http://pic.dhe.ibm.com/infocenter/tivihelp/v51r1/topic/com.ibm.tusc.doc/int_comp_c_intro_nrs.html

Software Knowledge Base Toolkit Raw Data Collector



Raw data collection



Raw data collection

- The Raw Data Collector tool is an optional component that gathers data about installed and registered software.
- Use the Raw Data Collector if you plan to mine for software and signatures to update the knowledge base.
- The data collected in CSV format from the Raw Data Collector can be imported into the knowledge base.
- Collected data can be used by the Knowledge Base Content Management application to create new signatures for that software.
- The following types of information are retrieved:
 - Files found in scanned directories
 - A list of installed and registered products
 - Data retrieved from file headers (Windows only)
 - Registry data from keys: Services and Run (Windows only)
 - Data from Start menu shortcuts (Windows only)

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Key concepts

IBM

Key concepts

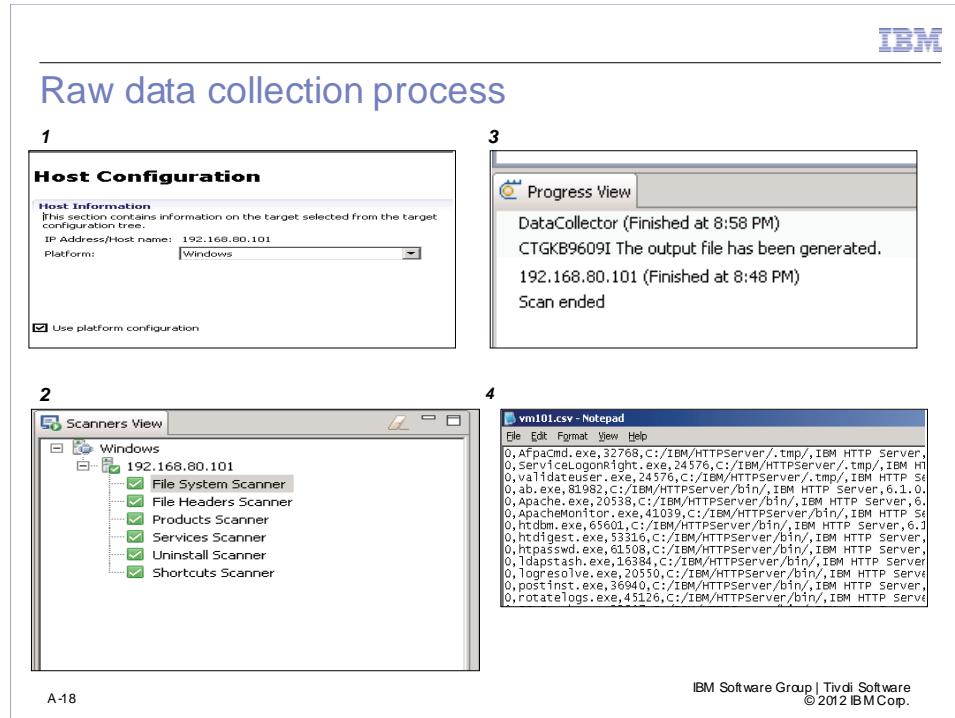
- **Distributed software signatures**
Signatures are file names, registry entries, and other types of information that are unique to a given distributed software item and can be used to identify it.
- **Raw data**
Raw data is unprocessed data that can be used to generate new signatures for distributed software items in the software catalog. The data is obtained through scans performed on computer systems in a distributed software environment.

The diagram illustrates the process of collecting raw data. It shows a 'Target computer' icon connected to a 'Raw data collector instance' icon. An arrow labeled 'Raw data file' points from the collector instance to a 'Content management server' icon, which is represented by a cylinder symbol.

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Raw data collection process



There are four basic steps in the raw data collection process:

1. Enter target host IP addresses and credentials.
2. Test connections to hosts.
3. Run a scan immediately or in disconnected mode.
4. Review the scan progress that is displayed in the data collector.

The scan modes are as follows:

- ***Connected mode***: The application remains connected to a target throughout the whole scan.
- ***Disconnected mode***: The application connects to a target only for short periods of time to start a scan and monitor its progress.

Collecting scan data



Collecting scan data

- After scans have been completed, you collect the data from the targets and export it to a raw data format.
- A comma-separated value (CSV) file is created that includes the list of software, and file and registry entries found.
- You can then import the CSV file into the knowledge base and compare it to existing software and signature entries, using the Analyze Raw Data function.

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Analyzing raw data

Analyzing raw data

You can use the Analyze Raw Data feature to perform the following tasks:

- Manage expectation lists.
- Set up filters.
- Manage raw data sets.
- Mine raw data.



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An asset manager can use expectation lists to verify the content of the knowledge base against the expected list of software. You can use the Raw Data Collector to create raw data sets to verify and add signatures in the knowledge base. You can match expectation lists with knowledge base entries and then compare them with raw data sets to identify signature candidates.

An *expectation list* is a list of manufacturers and software items in the form of comma-separated values (CSV) files. You can import the list into the application and analyze it against the information in the knowledge base to verify whether its content is already stored in the database. You can then use the list as a filter in the analysis of raw data that is collected in your environment.

Expectation lists are focused on the software items that are produced by one manufacturer, and they are used to verify the software inventory for license compliance or audit purposes. Alternatively, the lists can contain software items that cannot be accurately detected in a given distributed software environment. After the content of an expectation list is matched with the software entries that are stored in the knowledge base, the list can be used to facilitate the analysis of raw data that is collected in the environment. Inventory verification can be performed, and valid signatures for the software items that are specified in the list can be generated.

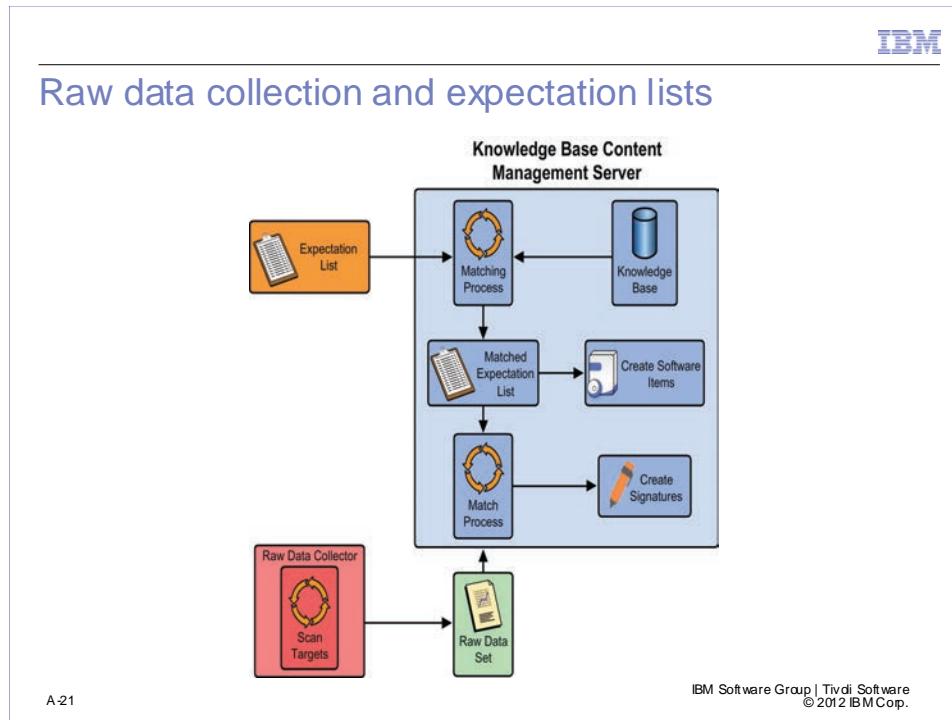
Examples of an expectation list are as follows:

- IBM Lotus Notes/Domino,8.0,IBM
- DB2 DB2 Universal Database Enterprise Server,8.1,IBM

You can use filters to limit the amount of data to be analyzed and omit data that is not important from a business perspective.

You can use raw data mining to match the raw data set against all the distributed software items in the knowledge base or only against knowledge base items that were matched with items in an expectation list.

Raw data collection and expectation lists



Expectation lists can be created by Asset and Inventory managers, by using a text editor or spreadsheet. They include a list of software that they expect to be in the knowledge base.

Tivoli Common Reporting



The slide features a large central image of Earth from space, showing clouds and landmasses. Overlaid on this image is a grid of white rectangles of varying sizes, creating a sense of depth or data layers. At the top right, the IBM logo is visible. Below the image, the title "Tivoli Common Reporting" is displayed in a large, bold, black font. At the bottom right, there is a copyright notice: "© 2012 IBM Corp."

Features



Features

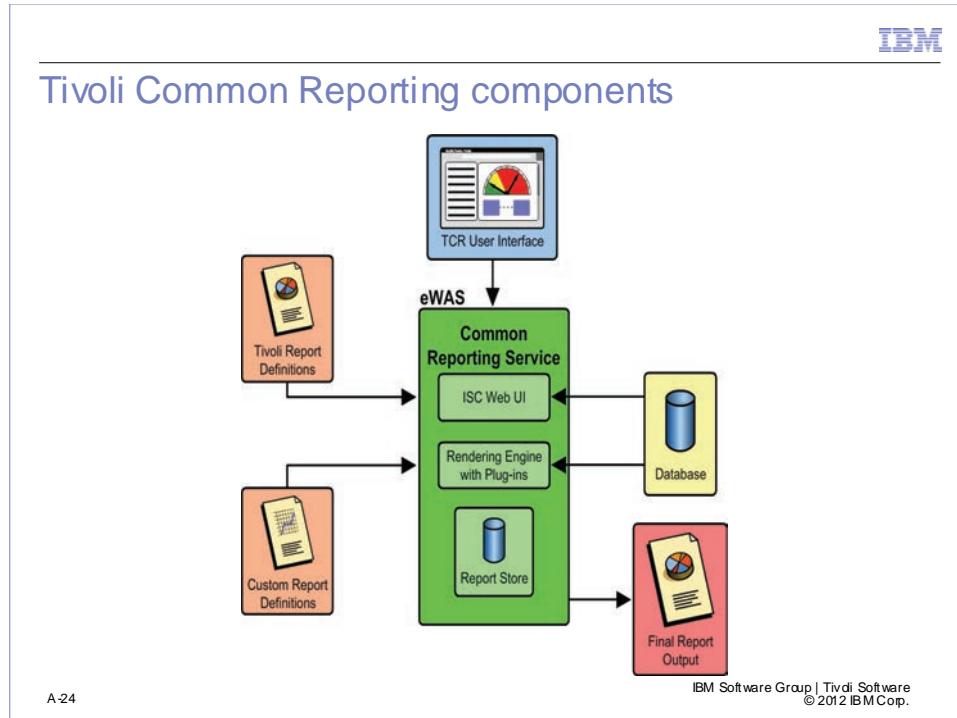
Tivoli Common Reporting has these features:

- Is completely self-contained, with embedded web server (eWAS v6.1.0.9) and data store
- Includes open source components with install package
- Multiple products can share single version
- Supports migration of reports, resources, data source definitions, jdbc drivers, users and groups
- Reports are embedded with products and are available on Open Process Automation Library (OPAL), or can be developed.

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Tivoli Common Reporting components



Considerations



Considerations

Use Tivoli Common Reporting to take advantage of a common infrastructure for running reports.

- The product uses trend and summary reports and is provided with IBM Tivoli Asset Discovery for Distributed.
- For planning purposes, it is also used for IBM Tivoli Asset Discovery for z/OS and other Tivoli products to render reports.

Note: IBM SmartCloud Control Desk has its own BIRT engine that is separate from Tivoli Common Reporting.

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Tivoli Common Reporting is included with the IBM Tivoli Asset Discovery for Distributed installation media.

Product use and trend reports

IBM

Product use and trend reports

- Use data is not available in the IBM Tivoli Asset Discovery for Distributed console.
- Tivoli Common Reporting is used to display this information.
- Use reports analyze the summary and trend information of the chosen products use.
- **Product Use Summary** shows the information about the average use, the maximum number of concurrent uses, and the time at which the maximum concurrent use of a given product occurred.
- **Product Use Trend** shows the data about the maximum concurrent uses of the selected product.

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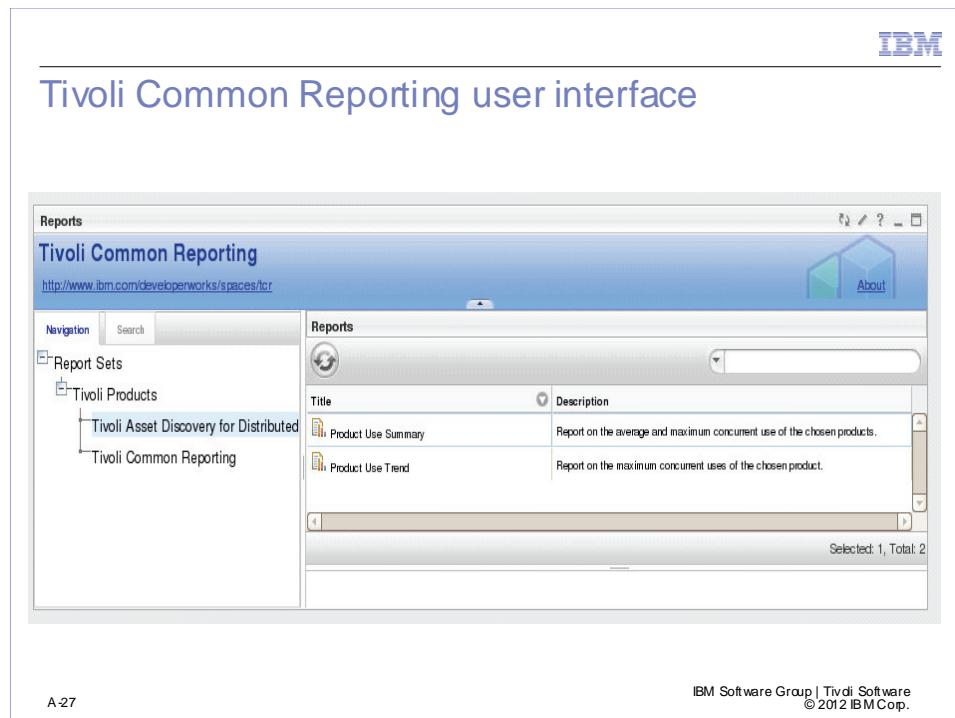
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You learned in Unit 8: Discovery how to enable use collection. However, this data is not viewable in the IBM Tivoli Asset Discovery for Distributed console. To view the results, you must run the Product Use Summary and Product Use Trend reports. These reports are BIRT reports that ship with IBM Tivoli Asset Discovery for Distributed.

The reports must be imported into Tivoli Common Reporting. For details on configuring IBM Tivoli Asset Discovery for Distributed to work with Tivoli Common reporting, go to this website:

[http://pic.dhe.ibm.com/infocenter/tivihelp/v54r1/topic/com.ibm.tad4d75.doc/
com.ibm.license.mgmt.config.doc/t_configuring_tad4d_tcr.html](http://pic.dhe.ibm.com/infocenter/tivihelp/v54r1/topic/com.ibm.tad4d75.doc/com.ibm.license.mgmt.config.doc/t_configuring_tad4d_tcr.html)

Tivoli Common Reporting user interface



To run a report, click the report icon in the reports list.

Product use summary

IBM

Product use summary

Tivoli

Product Use Summary

Start date:	Jan 1, 2010
End date:	Jan 31, 2010

Use Summary by Selected Products

Product	Release	Average Use	Maximum Use	Date of Maximum Use
PUTTY	999.999	0	11	Jan 28, 2010
PUTTY	0.58	N/A	N/A	N/A

Legend:
 Average use - refers to the mean of the concurrent uses of a given product during the selected time-frame.
 Maximum use - shows the number of maximum concurrent uses during the selected period of time.
 Date of maximum use - is the time at which the maximum concurrent use of a given product occurred.

Note: N/A shows up in the cell when the product was not used at all during the selected time-frame, or the summary and trend information is not being collected.

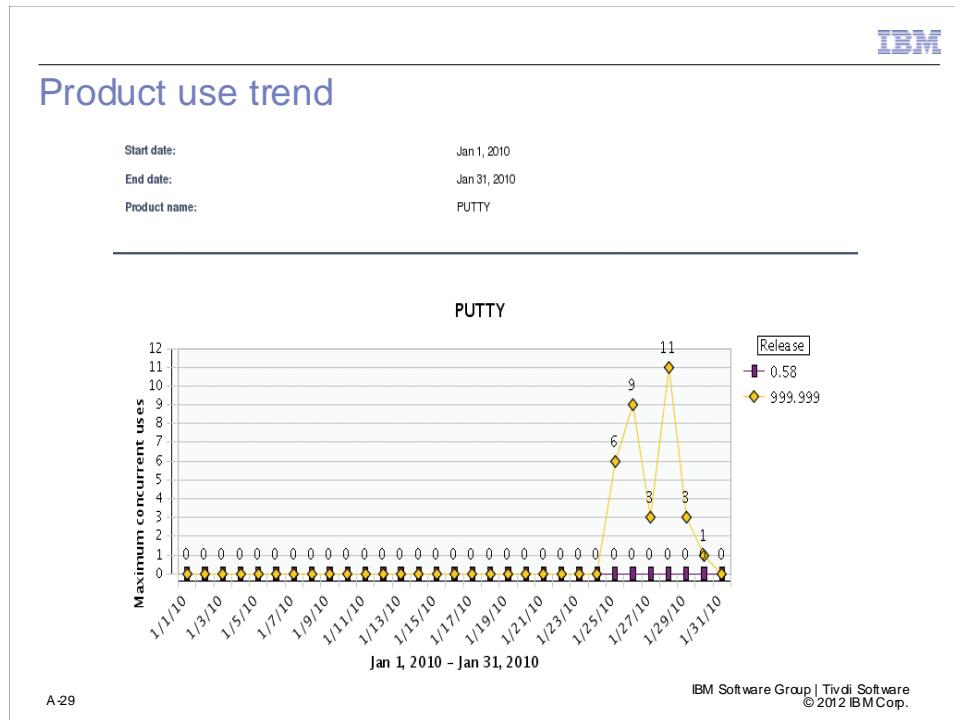
March 26, 2010 12:36:23 PM CDT

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The Product Use Summary report shows information about the average use, the maximum number of concurrent uses, and the time when the maximum concurrent use of a product occurred.

Product use trend



The Product Use Trend report shows the data about the maximum concurrent uses of a product.

Custom views for software use data

IBM

Custom views for software use data

Level	View name
Last use	CUSTOM.USAGE_AGGR_LAST_V
Summary and trend	CUSTOM.USAGE_AGGR_MAX_V
Full information	CUSTOM.USAGE_AGGR_V

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You can create custom reports in BIRT designer that can also be loaded into Tivoli Common Reporting. The views that are shown here pertain to use data. For more details on extracting data from the IBM Tivoli Asset Discovery for Distributed database, go to the Database dictionary reference:

http://pic.dhe.ibm.com/infocenter/tivihelp/v54r1/topic/com.ibm.tad4d75.doc/com.ibm.license.mgmt.reference.doc/c_dboverview.html

Additional resources

IBM

Additional resources



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Online resources

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Online resources

- Information center
 - <http://www.ibm.com/developerworks/wikis/display/tivolidoccentral/IBM+SmartCloud+Control+Desk>
 - <http://www.ibm.com/developerworks/wikis/display/tivolidoccentral/Tivoli+Asset+Discovery+for+Distributed>
- Wikis
 - <http://www.ibm.com/developerworks/wikis/display/tivoli/SmartCloud+Control+Desk>
 - <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/IBM%20License%20Metric%20Tool>
 - <https://www.ibm.com/developerworks/mydeveloperworks/wikis/home/wiki/Tivoli%20Asset%20Discovery%20for%20zOS/page/Welcome?lang=ene>
- Forums
 - <http://www.ibm.com/developerworks/forums/forum.jspa?forumID=1119>
 - <http://www.ibm.com/developerworks/forums/forum.jspa?forumID=2651>

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Additional courses



Additional courses

- IBM SmartCloud Control Desk 7.5 Foundations
http://www-304.ibm.com/ict03001c/services/learning/ites.wss/us/en?pageType=course_description&courseCode=8P350
- Tivoli's Process Automation Engine 7.5 Fundamentals
http://www-304.ibm.com/ict03001c/services/learning/ites.wss/us/en?pageType=course_description&courseCode=TR711
- IBM License Metric Tool 7.5 (SPVC)
http://www-304.ibm.com/ict03001c/services/learning/ites.wss/us/en?pageType=course_description&courseCode=TOS27

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IBM Tivoli certification and training

In today's global business world, enhancing and maintaining skills is essential to keeping pace with rapidly changing technologies. Businesses need to maximize technology potential and employees need to keep up to date with the latest information. Training and professional certification are two powerful solutions.

Certification

There are many reasons for certification:

- You demonstrate value to your customer through increased overall performance with shorter time cycles to deliver applications.
- Technical certifications assist technical professionals to obtain more visibility to potential customers.
- You differentiate your skills and knowledge from other professionals and stand out as the committed technical professional in today's competitive global world.

Online certification paths are available to guide you through the process for achieving certification in many IBM Tivoli areas. See ibm.com/tivoli/education for more information.

Special offer for having taken this course

Now through 31 December 2013: For having completed this course, you are entitled to a 15% discount on your next examination at any Thomson Prometric testing center worldwide. Use this special promotion code when registering online or by telephone to receive the discount: **15CSWR**. (This offer might be withdrawn. Check with the testing center as described later in this section.)

Role-based certification

All IBM certifications are based on job roles. They focus on a job a person must do with a product, not just the product's features and functions. Tivoli Professional Certification uses the following job roles used:

- IBM Certified Advanced Deployment Professional
- IBM Certified Deployment Professional
- IBM Certified Administrator
- IBM Certified Solution Advisor
- IBM Certified Specialist
- IBM Certified Operator

Training

A broad spectrum of courses, delivery options, and tools helps keep your employees up to date with the latest IBM Tivoli information:

- *Instructor-led training (ILT)*
Live interaction with an IBM instructor, hands-on lab exercises, and networking with your peers from other companies
ibm.com/tivoli/education
- *Instructor-led online (ILO)*
All the benefits of ILT, but savings on travel dollars and training costs
ibm.com/training/ilo
- *Self-paced virtual classes (SPVC)*
Interactive and hands-on exercises on your schedule
ibm.com/training/us/spvc
- *Web-based training (WBT)*
Training anywhere, any time, that saves you money and travel
ibm.com/training/us/tivoli/wbt
- *Multimedia library*
Modules supporting new and experienced learners with fully animated multimedia clips, step-by-step audio, and companion text
ibm.com/software/tivoli/education/multimedialibrary
- *IBM Education Assistant*
More specific, granular web-based training with individual presentations on specific topics
www-01.ibm.com/software/info/education/assistant/
- *Corporate Education Licensing Program (CELP)*
Solutions for large IBM customers who need to adopt IBM Tivoli's tools and technologies
ibm.com/training/us/tivoli/celp
- *Tivoli training paths*
Course maps with flow charts and course descriptions to help you find the right course
[ibm.com/training/us/tivoli\(paths](http://ibm.com/training/us/tivoli(paths)



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