



Cisco Unified Provisioning Manager Tutorial

Cisco's Unified Communications Management Solution



About This Tutorial

- Explore the Unified Communications environment and tools for provisioning phone services
- Highlight the key features of Cisco's Solution - Provisioning Manager
- Follow along with various scenarios detailing how to use Provisioning Manager
- Provide system administration guidelines for Provisioning Manager
- Provide links to additional information on Provisioning Manager



Provisioning Manager Tutorial

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Introduction 1-2

About This Tutorial

This tutorial on Cisco Unified Provisioning Manager (PM) provides self-paced training focused on using the key features of the PM application.

The tutorial is structured as a series of self-paced chapters that explore the architecture, key features, common usage, and system administration guidelines for the product. Also included as part of the tutorial is a helpful reference section containing links to technical documents on component products, concepts, and terminology. The tutorial material is presented through text, illustrations, hypertext links, and typical scenarios.

This tutorial is an excellent resource to introduce you to using the many features found in the Cisco Unified Provisioning Manager product, as well as, its interaction with other related products.

How the Tutorial is Organized

Chapter 1 Introduction	Explore the Unified Communications' environment, the challenges, and the tools for managing Unified Communications
Chapter 2 Provisioning Manager (PM) Product Features	Learn about the key features of PM for provisioning IP phone services
Chapter 3 Provisioning Manager Scenarios	Using several examples, learn how to deploy PM and use many of its features for provisioning IP phone services
Chapter 4 System Administration Guidelines	Review important system requirements, installation guidelines, and system administrative functions
Chapter 5 Helpful Links to Reference Material	A comprehensive set of links to more information on Provisioning Manager and related topics

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How This Tutorial Is Organized

The tutorial is divided into five chapters:

Chapter 1: Introduction

This chapter describes Unified Communications and highlights both the need for management and the challenges often encountered in the provisioning of IP phone services.

Chapter 2: Provisioning Manager Product Features

This chapter discusses the key features of the Cisco Unified Provisioning Manager (PM) application. The product is presented through both discussions of the major functional components and screen shots of many key product features.

Chapter 3: Provisioning Manager Scenarios

This chapter walks you through step-by-step examples to provide hands-on experience using the PM application. The case studies begin with steps on how to get started, followed by using various features to provision IP phone services in both existing and new deployments.

Chapter 4: System Administration Guidelines

This chapter provides information about the PM client and server requirements, software installation guidelines, security administration, periodic maintenance, and troubleshooting tips.

Chapter 5: References

This chapter contains a list of additional product information, such as links to related white papers and documentation.

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Cisco Unified Provisioning Manager

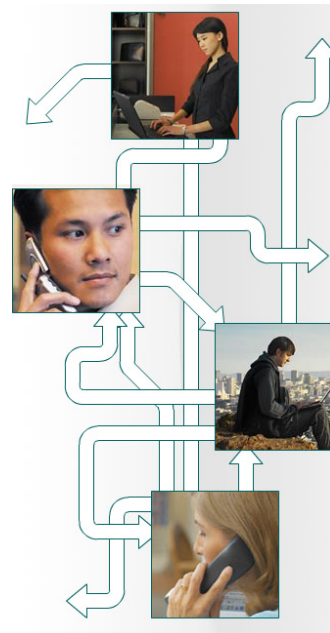
Introduction

Chapter 1



Chapter 1 Outline

- Managing Unified Communications
 - Environment
 - Need
 - Provisioning Challenges
- Cisco's Solution
 - Cisco Unified Provisioning Manager
 - Unified Communications Management Suite



Chapter 1 Outline

It's no secret that companies can enjoy many benefits by converging their voice and data networks. With converged networks becoming more and more the norm, the industry has seen a rapid introduction of new media-rich applications providing end-users with more and more communications flexibility to achieve even greater levels of convenience and productivity. As in all network related fields, Cisco continues to be a leader offering a vast integrated portfolio of communications related products and services.

As with data networks, the main goal is to provide the end-user with a high-level service that is consistent on a day-to-day basis. Because communication networks differ in operation, the network manager needs a whole new set of tools to help simplify and expedite his day-to-day duties.

This chapter first presents the Unified Communications' environment and associated management tasks. Since this tutorial is focusing on the provisioning of voice services, the challenges associated with provisioning tasks are presented next, followed by the introduction of Cisco's management tool for performing these tasks, Provisioning Manager, and a brief discussion on Cisco's entire Unified Communications Management suite of tools.



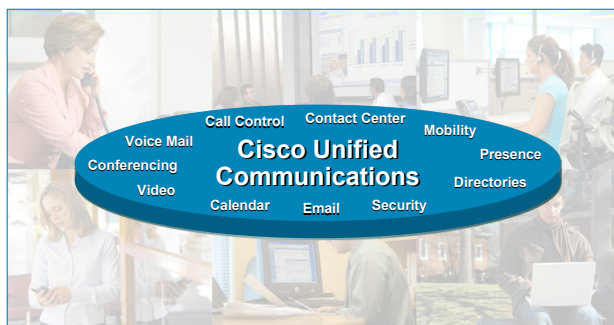
Managing Unified Communications

- **Managing Unified Communications**
- Cisco's Solution



Unified Communications Defined

Cisco Unified Communications is an integrated and open portfolio of products and applications that unify and simplify all forms of communications, independent of location, time, or device



Communications that...

- Eliminate Chaos
- Improve Processes
- Enhance Productivity
- Control Costs
- Increase Satisfaction
- Improve Competitive Advantage

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Unified Communications Defined

Today's organizations must contend with increasingly complex communication environments featuring a wide array of communication methods. Employees, business partners, and customers communicate with one another through infinite combinations of phones, voice messaging, e-mail, fax, mobile clients, and rich-media conferencing. Too often, however, these tools are not used as effectively as they could be. The result is information overload and misdirected communications that delay decisions, slow down processes, and reduce productivity.

IP communications solutions have proven their ability to help organizations solve such problems, enabling them to streamline business processes and reduce costs. For years, companies of all sizes have been realizing the benefits that carrying voice, data, and video communications across a common, IP infrastructure can bring.

Today, with the Cisco Unified Communications system of voice and IP communications products, those benefits are greater than ever. Instead of simply connecting products, the Cisco Unified Communications system provides structure and intelligence that helps organizations integrate their communications more closely with business processes, and ensure information reaches recipients quickly, through the most appropriate medium.

Businesses can collaborate in real time using advanced applications such as videoconferencing; integrated voice and Web conferencing; mobile IP soft phones; voicemail; and more—from an integrated, easy-to-use interface. The solution saves time and helps control costs, while improving productivity and competitiveness. In a 2005 Sage Research study, 86 percent of companies using Unified Communications reported that productivity benefits have grown. More than 60 percent reported savings of three or more hours per week for each mobile worker. Such studies confirm that migrating to a Unified Communications system provides a substantial return on investment (ROI) and a reduced total cost of ownership (TCO).

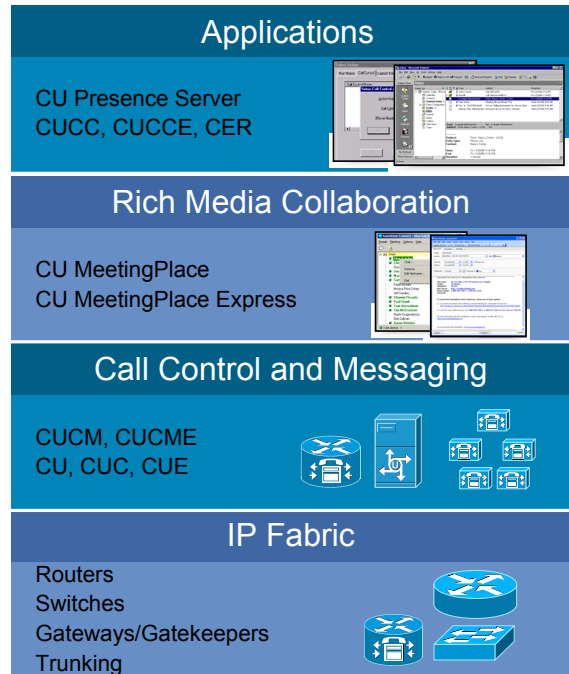
The Cisco Unified Communications portfolio is an integral part of the Cisco Business Communications Solution—an integrated solution for organizations of all sizes that also includes network infrastructure, security, network management products, wireless connectivity, and a lifecycle services approach, along with flexible deployment and management options, financing packages, and third-party communications applications.

Managing Unified Communications Environment

The broad range of Cisco Unified Communications products provides enormous flexibility

What provides value in terms of flexibility makes the need for unified management more critical than ever before

Effective management of Unified Communications systems requires management of all components



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Managing Unified Communications

Most companies have spent a considerable amount of resources to design and implement a network management strategy for the data network. Surely the addition of voice and voice services to the network won't change the management strategy? Unfortunately, with the introduction of any new technology or service to the network, the network management plan must be revised to meet the special management requirements of the new technology or service.

The network management plan may have been originally created to manage data, which by nature is bursty and tolerant of delay and jitter. This is in direct contrast with voice and video transmission, which is highly susceptible to delay and jitter. Therefore, new management techniques must be implemented to ensure proper operation of both types of traffic. Further with the IP-enabling of voice services, a network manager must now ensure these services will be available across the network at all times, this includes the availability and proper operation of the IP infrastructure, as well as, the proper configuration and availability of the communication related call control services and communication applications.

Each of these components is essential to a successful Unified Communications deployment and therefore should be managed accordingly in order to provide the end-user with complete spectrum of their offered advantages.

Managing Unified Communications Customer Management Needs

Plan and Design	Implementation	Operation / Maintenance
Assess / Prepare Network for IP Communications <ul style="list-style-type: none"> Hardware/software compliance Predict overall call quality Best practice analysis 	Deploy and Provision <ul style="list-style-type: none"> Voice infrastructure provisioning Dial plans & partitioning Batch provisioning Gateway/Gatekeeper Configuration <ul style="list-style-type: none"> Voice port configuration GW/GK dial plans 	Manage Moves, Adds, Changes <ul style="list-style-type: none"> Endpoint devices Users, services Phones, lines, voicemail, etc Analysis <ul style="list-style-type: none"> Executive & Operations reports Capacity planning reports Track and Report on User Experience <ul style="list-style-type: none"> Voice quality using sensors Monitor and Diagnose <ul style="list-style-type: none"> Service-level views Proactive testing including SCCP & SIP phones Track inventory changes Video endpoint support Phone-to-phone testing

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Unified Communications Management Needs

Network management is often incorrectly cited as being just the ability to detect faults and ascertain network performance. Although these are certainly major functions of network management, in reality, network management is much more. The broader definition of network management is the ongoing process of observing the network to ensure proper operation, and the controlling of the network to provide the services offered by the various technologies employed. Network management is performed throughout the entire network lifecycle.

The life cycle of a network deployment can be broken down into three major phases: Planning and Design, Implementation, and Operation and Maintenance. The slide above lists many of the management tasks for each phase of a Unified Communications deployment and are also summarized below:

Planning and Design: the need to ensure hardware compliance (readiness) for voice applications. This includes proper IOS versions, and availability of QoS.

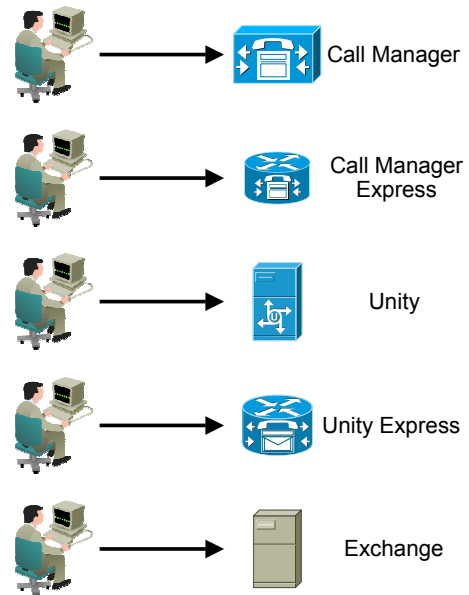
Implementation: the need to configure call processors, gateways, and gatekeepers to implement the desired voice structure.

Operation / Maintenance: the need to add and change subscriber services, analyze usage trends, ensure availability, detail performance, and detect, isolate, and diagnose faults.

This tutorial focuses on the two areas highlighted in the figure above.

Managing Unified Communications Provisioning Challenges

- When provisioning IP telephony services, there are separate interfaces for each component to be configured
 - “Simple” provisioning tasks often require highly skilled personnel
- The provisioning workflow process is typically not well defined or difficult to control and monitor
- The inventory is not integrated with provisioning workflow, making tasks more difficult



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Provisioning Challenges

This tutorial will focus on provisioning tasks, so let's take a look at some of the challenges associated with provisioning related tasks.

Perhaps the biggest challenge is the fact that to provision a new service for a subscriber may require the configuration of several applications. This means not only having expertise on each of these systems, but also knowing each separate interface. This requires time (to perform and learn), which is often a precious commodity in the day of a network administrator (who more often than not is wearing many different hats), and is prone to operator error. Hence, simple day-to-day provisioning tasks are often being handled by the highly skilled staff member, which keeps them from performing tasks better suited to their talents.

Further, the actual provisioning of a new phone, requires many intermediate physical steps such as retrieving the phone from the inventory (if there is one, and the phone requested actually physical exists in the inventory), shipping the phone, and even possibly getting someone to first approve the request. With all these steps, the possibility of an order getting “lost” or “delayed” is very real.

Though this is a common task, it requires expertise, consumes time, and is prone to errors. A good network management tool will directly address these problems by simplifying the task (concealing configuration steps, thus reducing the dependency on expertise), reducing or eliminating mistakes, and saving time.

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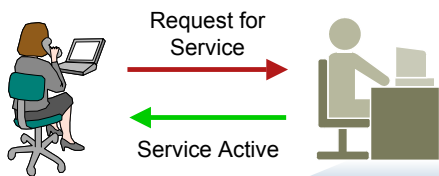
Cisco's Solution

- Managing Unified Communications
- **Cisco's Solution**



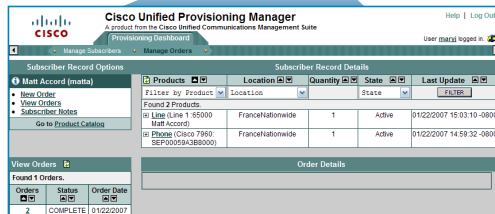
Cisco's Solution

Cisco Unified Provisioning Manager

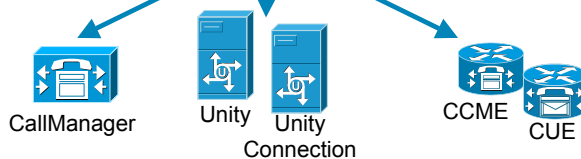


A web-based, integrated provisioning solution used to manage IP telephony and related unified messaging services

- **Unified:** single interface
- **Simplified:** business-process & user-oriented
- **Rapid:** <1 minute for activation
- **Accurate:** Reduce manual & duplicate entry errors
- **User-friendly:** template-based interface & business abstraction



Automated Activation



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Cisco Unified Provisioning Manager

Cisco Unified Provisioning Manager (PM) is a user-friendly web-based, integrated provisioning solution used to provision Cisco Unified Communications initial deployments and implementations, as well as, providing ongoing operational provisioning and activation for individual subscriber service requests.

PM answers the biggest provisioning challenge by simplifying and expediting the provisioning process through a single unified interface eliminating the need to learn multiple application interfaces, as well as, any command level configuration. With PM, day-to-day provisioning tasks no longer require the expertise of highly skilled staff member, thus saving money and freeing their time. Further, PM can be used across the enterprise to provide provisioning services for many calling domains.

Cisco's Solution

Cisco Unified Provisioning Manager

Day 1 Tasks	Day 2 Tasks
<ul style="list-style-type: none">▪ Pre-configure and push Dial-Plan components and other 'common' constructs to end systems<ul style="list-style-type: none">– Templates provide consistency▪ Batch processing of total 'services' for subscribers	<ul style="list-style-type: none">▪ Managing subscribers and ordering subscriber services<ul style="list-style-type: none">– Can use provisioning workflow with optional checkpoints for each task (authorization, asset assignment, shipping, and receiving)– Provisioning policy can be set at several levels– Administration can be delegated by domain▪ Tracking and reporting of subscriber assets

- Auditing and tracking of all configuration changes on the underlying applications
- Auto population and periodic synchronization of data from Cisco Unified Communications Manager, Cisco Unified Communications Manager Express, Unity, Unity Express, and Unity Connection for system configuration and subscriber information

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Cisco Unified Provisioning Manager

Cisco Unified Provisioning Manager can be used for both Day 1 and Day 2 provisioning tasks driving down the costs of both the initial deployment and on-going day-to-day operations.

Day 1 – Using a powerful template capability, a network administrator can define and configure common constructs for provisioning call and messaging systems. These templates can be reused for new sites or location deployments. A batch provisioning capability allows for the rollout of a large number of subscribers at once.

Day 2 – After Day 1, PM provides the mechanism to quickly and accurately provision and activate subscriber services. Policies can be defined at various levels that dictates who can manage that level, how the business level services map onto the Cisco Unified set of call and messaging applications, and which types of subscribers are permitted to order which standard services.

Additionally, PM creates an audit trail of all configuration changes, and synchronizes on-demand with any defined CallManager and Unity system for configuration and subscriber information.

PM greatly simplifies the provisioning and activating of subscriber services, while retaining the overall ability to manage and provide services that leverage the underlying Cisco Unified applications. Costs are reduced; time to dial tone is reduced; errors are practically eliminated. Subscribers are more satisfied, and the company's voice administrators are freer to focus on higher value activities rather than repetitive operational issues.

Cisco's Solution

Unified Communications Management Suite

Plan and Design	Implementation	Operation / Maintenance
Assess / Prepare Network for Unified Communications <ul style="list-style-type: none"> Hardware / software compliance Predict overall call quality Best practice analysis 	Cisco Unified Provisioning Manager	
	Deploy and Provision <ul style="list-style-type: none"> Voice infrastructure provisioning Dial plans & partitioning Batch provisioning 	Manage Moves, Adds, Changes <ul style="list-style-type: none"> Endpoint devices Users, services Phones, lines, voicemail, etc
	CiscoWorks Voice Manager	
	Gateway/Gatekeeper Configuration <ul style="list-style-type: none"> Voice port configuration GW/GK dial plans 	Service Statistics Manager Analysis <ul style="list-style-type: none"> Executive & Operations reports Capacity planning reports
		Cisco Unified Service Monitor
		Track and Report on User Experience <ul style="list-style-type: none"> Voice quality using sensors
		Cisco Unified Operations Manager
		Monitor and Diagnose <ul style="list-style-type: none"> Service-level views Proactive testing including SCCP & SIP phones Track inventory changes Video endpoint support Phone-to-phone testing

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Unified Communications Management Suite

The Cisco Unified Communications Management Suite is a comprehensive portfolio of tools that provide management capabilities for all tasks associated with the Unified Communications lifecycle.

Readiness Assessment Manager – Assists the network designer to ensure the network is ready to support communication traffic.

Cisco Unified Provisioning Manager – As previously described, provides the ability to configure voice constructs on Cisco CallManager, CallManager Express, Unity, Unity Express, and Unity Connection systems, as well as, provision and activate subscriber services.

CiscoWorks Voice Manager - Provides enhanced capabilities to configure and provision voice ports, create and modify dial plans, and collect call history data on Cisco IOS routers with Gatekeeper and Gateway capabilities.

Cisco Unified Service Statistics Manager – Provides trending information to assist in planning upgrades and monitoring performance.

Cisco Unified Service Monitor - Continuously monitors active calls supported by the Cisco Unified Communications system and provides near-real-time notification when the voice quality of a call fails to meet a user-defined quality threshold.

Cisco Unified Operations Manager - Provides comprehensive monitoring and diagnostics for the entire Unified Communications system, including the multiple applications as well as the underlying transport infrastructure.

Cisco's Solution

Unified Communications Management Suite

Empowering Customers to be More Efficient While
Operating the Unified Communication System

Productivity



Simplification



Automation



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Unified Communications Management Suite

The Cisco Unified Communications Management Suite is designed to work with the Cisco Unified Communication portfolio of products to improve productivity and reduce total cost of ownership through automation, integration, and simplification.



Thank You!

Continue on to Chapter 2 to discover the many features of Cisco Unified Provisioning Manager.

Cisco Systems



Cisco Unified Provisioning Manager

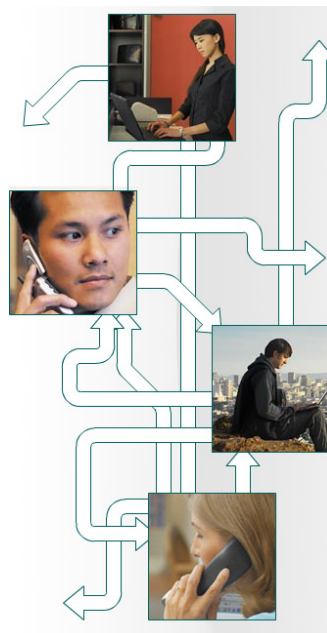
Product Features

Chapter 2



Chapter 2 Outline

- Overview
- Functional Architecture
- Features
- Benefits



Chapter 2 Outline

As outlined in Chapter 1, provisioning voice services for subscribers has traditionally required expertise on numerous systems, is time consuming, and can be prone to human error. Further, with no easy way to quickly and concisely view the voice infrastructure configuration, consistency issues could easily arise, and subscribers may inadvertently be configured with more or less privileges than intended.

To mitigate, and in many cases completely eliminate, these inherent issues with manual provisioning, Chapter 1 introduced Cisco Unified Provisioning Manager (PM). This chapter will further explore the many features and benefits of PM.

Chapter 3 will then provide a jump start guide to simplifying voice services, by provisioning and activating services using PM through a series of real world scenarios.



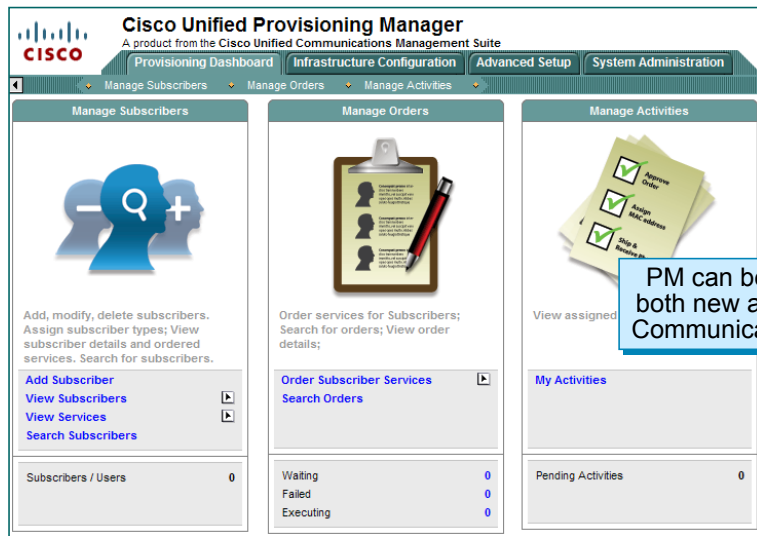
Overview

- **Overview**
- Functional Architecture
- Features
- Benefits



Overview

Cisco Unified Provisioning Manager (PM) is a GUI web-based product used to simplify IP telephony management tasks, such as provisioning and activating call services



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Features 2-4

Overview

Cisco Unified Provisioning Manager (PM) is a web-based GUI application that provides voice administrators with an easy to use management application for managing IP communications services in an integrated IP telephony, voicemail, and unified messaging environment.

PM acts as a single interface to voice application servers allowing for simple voice infrastructure configuration and subscriber services' provisioning and activation. Using an infrastructure import feature, PM is just as effective managing existing deployments, as it is managing new ones.

Overview

Multi-Dimensional Policy

Provisioning Manager provides a set of business-level management abstractions, which are policy driven through the use of automation, for managing subscriber services across the Cisco Unified Communications infrastructure

Domains

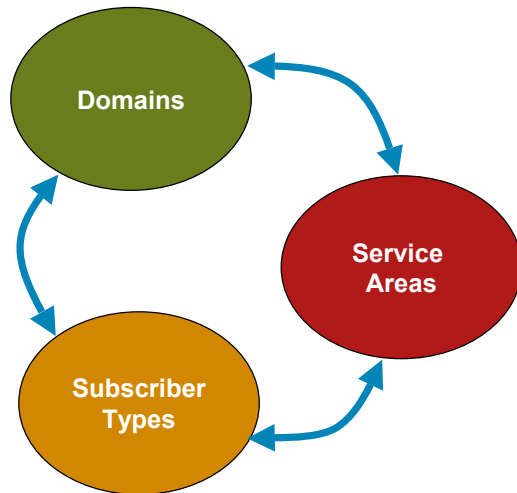
- A secure locally administered sub-division of the enterprise, which defines operational capabilities for a group of subscribers

Service Areas

- Subscriber services are mapped to the devices and applications in the voice network

Subscriber Types

- Policies define the types of products and services that can be ordered



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Features 2-5

Multi-Dimensional Policy

The goal of any management platform is to simplify tasks. PM simplifies provisioning tasks by providing a set of business-level management abstractions. Policies are assigned to these abstractions, which then facilitates automation and reduces the daily reliance on experts.

We will briefly described these abstractions here; and in Chapter 3, they will be used in the scenarios.

Domains: The concept of domains allows the enterprise to be sub-divided into secure, separately administered partitions for a set of subscribers. Each domain has a set of policies that define the operational capabilities for the subscriber services ordered within the domain.

Service Areas: Abstractions defined within domains that basically define IP telephony and message services (i.e. dial plan) for a subset of subscribers (based on Subscriber Type – see below) within the domain. For example, one service area may allow the assigned Subscriber Types to make long distance calls, where another service area would restrict the subscribers of the assigned Subscriber Types to local calls only.

Subscriber Types: Subscribers are assigned a Subscriber Type whose policies define products and services that they can order.

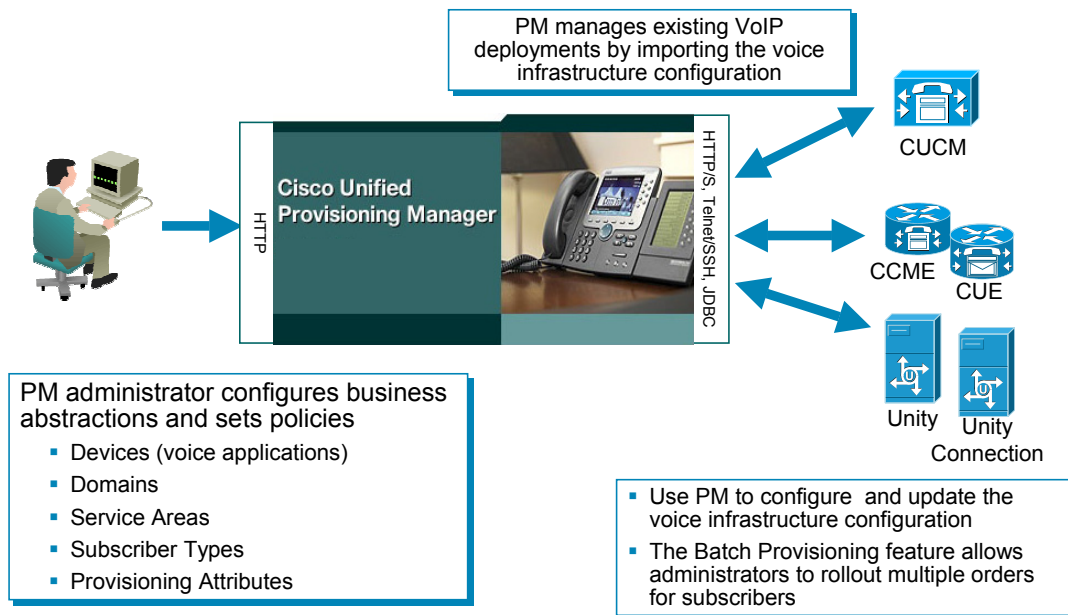


Functional Architecture

- Overview
- **Functional Architecture**
- Features
- Benefits



Functional Architecture Administration



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Features 2-7

Functional Architecture - Administration

PM can be broken down into two basic functions:

- Administration
- Ordering

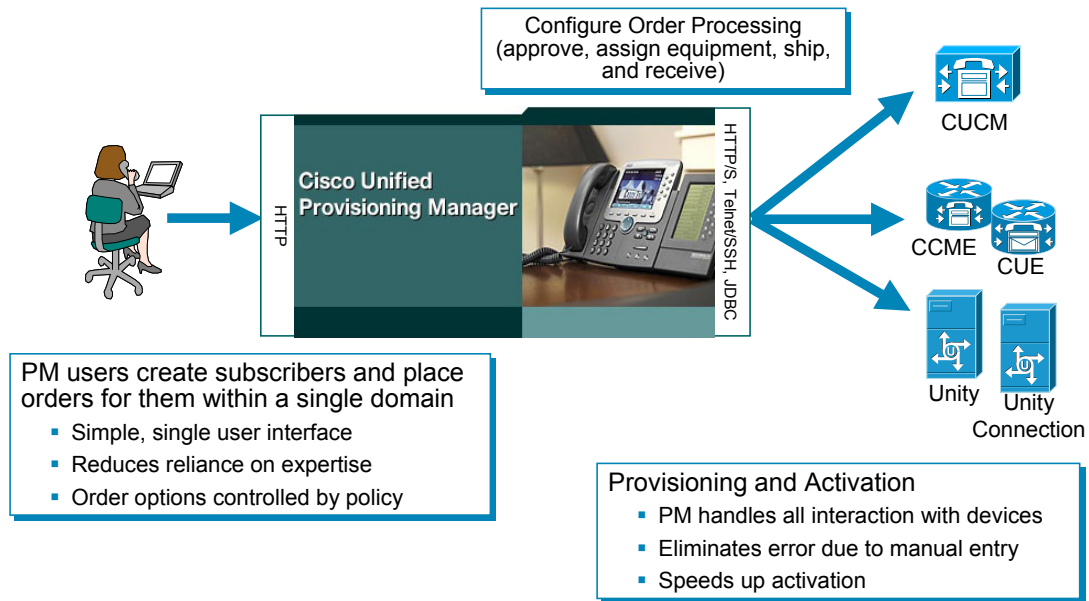
Administrators use a standard web browser to access PM to add and configure voice applications, and to configure and set policies on the various business abstractions. When either pushing or pulling voice infrastructure configurations, PM will contact the appropriate voice application using its preferred access protocol (HTTP/S, Telnet/SSH, or JDBC(Java Database Connectivity)).

Note(s):

- *The Java Database Connectivity (JDBC) API is the industry standard for database-independent connectivity between the Java programming language and a wide range of databases – SQL databases and other tabular data sources, such as spreadsheets or flat files. The JDBC API provides a call-level API for SQL-based database access.*
- *Microsoft Windows using the MS-SQL database and Linux based versions use an Informix database.*

Functional Architecture

Ordering



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Features 2-8

Functional Architecture - Ordering

When using PM to create subscribers and order subscriber services, the PM user launches a standard web browser to access PM. Once the order has been processed through the configurable ordering workflow, PM will 'activate' it by configuring the appropriate processors using their preferred access protocol (HTTP/S, Telnet/SSH, or JDBC). This single web-based interface simplifies the ordering process and alleviates the necessity of expertise on multiple systems to provision and activate.



Features

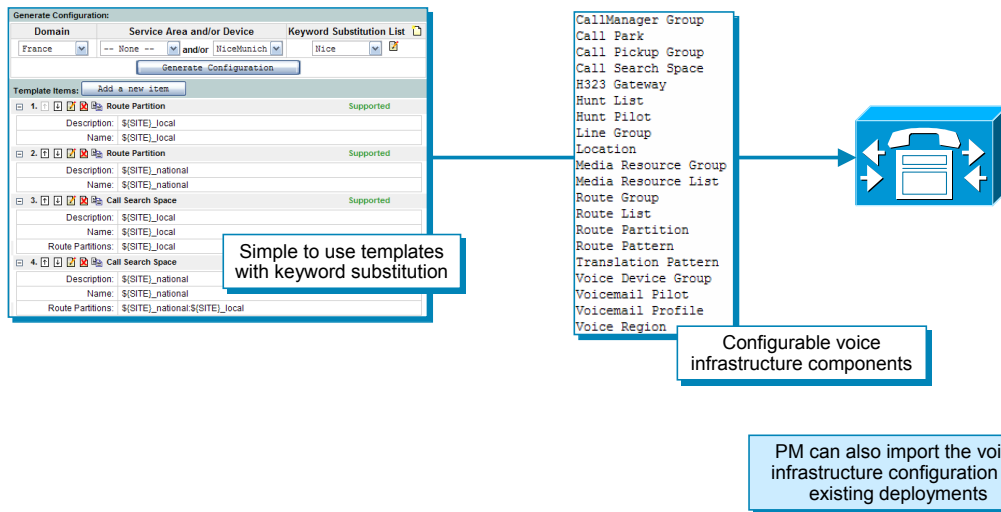
- Overview
- Functional Architecture
- **Features**
- Benefits



Features

Day 1 Activities – Voice Infrastructure Configuration

Create, extend, and push voice infrastructure components of call and messaging systems



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Features 2-10

Day 1 Activities – Voice Infrastructure Configuration

In this section, we will take a look at the key features of PM. As noted in Chapter 1, PM can be used for both Day 1 and Day 2 provisioning tasks, driving down the cost of both the initial deployment and on-going day-to-day operations.

On Day 1 of voice deployments, the main activity is the configuration of the voice infrastructure. Using a powerful template capability, a network administrator can define and configure common constructs for provisioning call and messaging systems. These templates can be created using keyword substitutions to facilitate reuse for additional new site or location deployments. As PM configures the voice processors and applications, it records the settings, which will be needed when configuring PM business abstractions to simplify the ordering and provisioning of subscriber services.

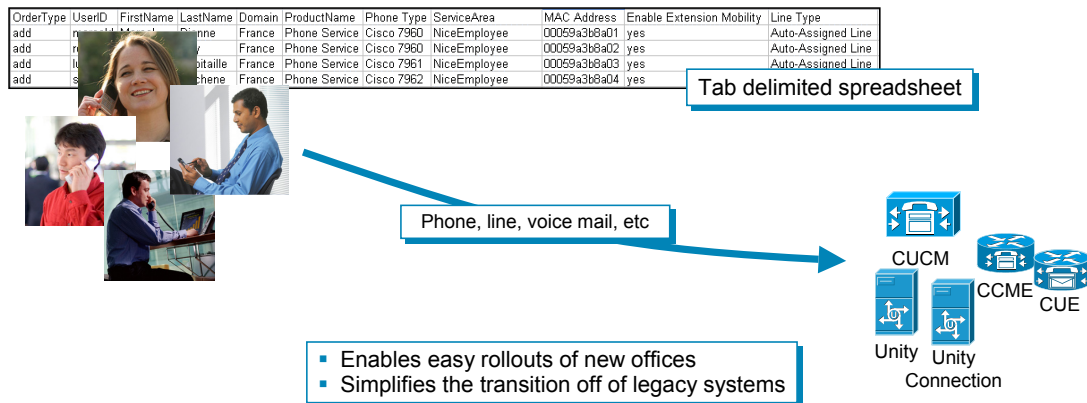
Provisioning Manager is not limited to new deployments, but can also manage existing deployments by importing the existing voice infrastructure configuration. These settings will again be used to configure PM business abstractions, which simplify the ordering and provisioning of subscriber services.

The template feature can also be used to extend any voice deployment.

Features

Day 1 Activities – Batch Service Processing

Batch processing of total 'services' for subscribers



Day 1 Activities – Batch Service Processing

Typically, any new rollout of IP voice capabilities will also require the provisioning of a large number of subscriber services on Day 1. Subscriber services may be ordered using the Web interface on an individual basis for a single subscriber. However, when deploying a large number of services, it is often desirable to combine these together into a single batch, which can be scheduled to run at a later time. PM includes an easy to use batch provisioning capability, which permits a single batch to contain multiple types of orders: add, change, or cancel (i.e a batch can contain a combination of phone and voicemail additions or changes).

Features

Day 2 Activities – Subscriber Services

Single view of a subscriber and their services

Subscriber Record Options

- John Freeman (john)
- New Order
- View Orders
- Subscriber Notes
- Go to Product Catalog

Subscriber Record Details

Filter by Product Location Quantity State Last Update

Found 5 Products

Product	Location	Quantity	State	Last Update
Email (john_2)	San Jose	1	Active	01/11/2007 17:48:09 -0800
Line (4086000 John Freeman)	San Jose	1	Active	01/11/2007 17:48:09 -0800
Phone (Cisco 7971: SEP234AD3456FCD)	San Jose	1	Active	01/11/2007 17:48:09 -0800
UnifiedMessaging (john_2)	San Jose	1	Active	01/11/2007 17:48:09 -0800
Voicemail (4086000)	San Jose	1	Active	01/11/2007 17:48:09 -0800

Order History

View Orders

Found 3 Orders.

Orders	Status	Order Date
7	COMPLETE	01/11/2007
8	COMPLETE	01/11/2007
9	COMPLETE	01/11/2007

Active Services

Order Details

View Order #9

John Freeman (john)

Order Date: Thursday, January 11, 2007 17:46:36 -0800

Requested Delivery Date: -

Actual Delivery Date: Thursday, January 11, 2007 17:46:58 -0800

Location: Multiple

Status: COMPLETE

Extended Status: -

NOTES

Order Details

Cancel Product - Cancels a product that the Subscriber already has.

Product	Location	Quantity
Email (john_3)	San Jose	1
Line (4086001 John Freeman)	San Jose	1
Phone (Cisco 7970: SEP34566568DFCA)	San Jose	1
Unified Messaging (john_3)	San Jose	1
Voicemail (4086001)	San Jose	1

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Features 2-12

Day 2 Activities – Subscriber Services

In order to reduce the costs related to on-going day-to-day subscriber service management, the provisioning process needs to be simplified and automated without losing administrative control. PM greatly simplifies this process by removing the complexities associated with the mapping of subscribers to voice constructs (i.e. dial plans) and the configuration of multiple voice applications.

PM provides a single, easy to use GUI interface that allows total management of subscribers and their services. From this GUI, an administrator can view the subscribers active services, view the history and details of services ordered for the subscriber, and order, change, or upgrade services for the subscriber.

Features

Day 2 Activities – Ordering Services

Simple to use wizard-based ordering

The screenshot displays the Provisioning Manager interface. On the left, the 'Product Catalog Options' section shows the user 'Ricky Carmichael (rcarmich)' and a search bar. The main area is titled 'Product Catalog: Category "Telephony and Messaging"' and lists several services: 'Enable SoftPhone Support', 'Line on a shared Phone', 'Messaging Service', 'Phone', 'Phone Service', 'Phone Service with extra line', and 'Unified Messaging Service'. A blue box with an arrow points to this list, containing the text 'List of orderable products & services associated with subscriber'. Below the catalog is the 'Order Entry' section, which is 'Step 4 of 5' and titled 'Configure Product'. It shows 'You are Ordering: Phone Service with extra line' and 'Configure Product: Phone'. A dropdown menu for 'Phone Type' is set to 'Cisco 7985', with a note that selecting a phone type will refresh the display with a photo and attributes. A photo of the Cisco 7985 phone is shown. Below the photo is a 'MAC Address' field. At the bottom are 'Continue', 'Previous', and 'Cancel' buttons.

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Features 2-13

Day 2 Activities – Ordering Services

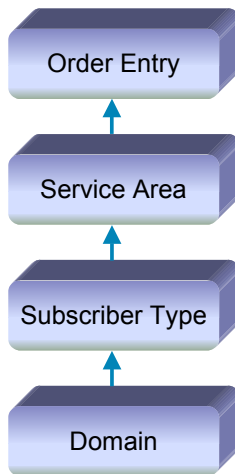
Provisioning Manager permits standard voice services (phone, line, and voicemail, for example) to be ordered for subscribers (the owner of the individual phone, voicemail, etc). The available products and services available to a specific subscriber depend on the policy associated with the subscriber's Subscriber Type.

An ordering wizard guides the order administrator quickly and accurately through the provisioning of the product or service without requiring them to have an underlying knowledge of the voice applications that are delivering those services or the interfaces required to configure them.

Features

Day 2 Activities – Provisioning Attributes

Product and service attributes can be configured at various policy levels and applied during activation



Provisioning Manager Tutorial

PM Domain Configuration	
Provisioning Attribute Management	
Domain: Cisco	
1. Extension Mobility Access	
2. Extension Mobility Line	
3. Line	
Auto Answer:	Auto Answer with Headset
Busy Trigger:	2
CME Line Configuration Template:	click to view
External Phone Number Mask:	33
Forwarded Call Information - Caller Name:	False
Forwarded Call Information - Caller Number:	False
Forwarded Call Information - Dialed Number:	False
Forwarded Call Information - Redirected Number:	True
Line Text Label:	not set
MLPP No Answer Ring Duration:	not set
MLPP Target:	not set
Maximum Number of Calls:	3
Message Waiting Policy:	Light Only
No Answer Ring Duration:	2
4. Phone	
5. Voicemail	
CUE User Configuration Template:	click to view
CUE Voicemail Configuration Template:	click to view
Done	

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Features 2-14

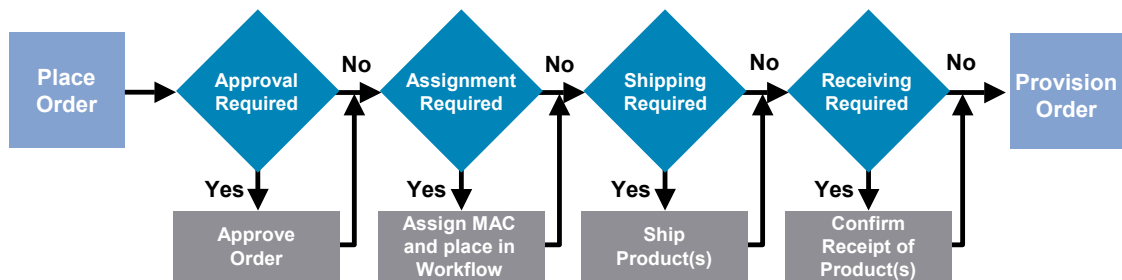
Day 2 Activities – Provisioning Attribute

Provisioning Manager can be configured by a system administrator at several policy levels (domain, subscriber type, service area, or on an individual order basis) with service attributes that will be applied to the services of an order during activation. This allows flexibility and again relieves the ordering administrator from having to fully understand voice provisioning.

Features

Day 2 Activities – Order Processing

Flexible coordination of activities within the ordering process
(approve order, assign equipment, ship equipment, and receive equipment)



Individual workflow activities can be enabled or disabled and assigned to different PM administrative users resulting in many possible workflow arrangements on a per domain basis

Day 2 Activities – Order Processing

Though PM allows for the automation of provisioning, control can be maintained using a workflow, which provides administrative activities acting as checkpoints (approval, assignment, shipping, and receiving).

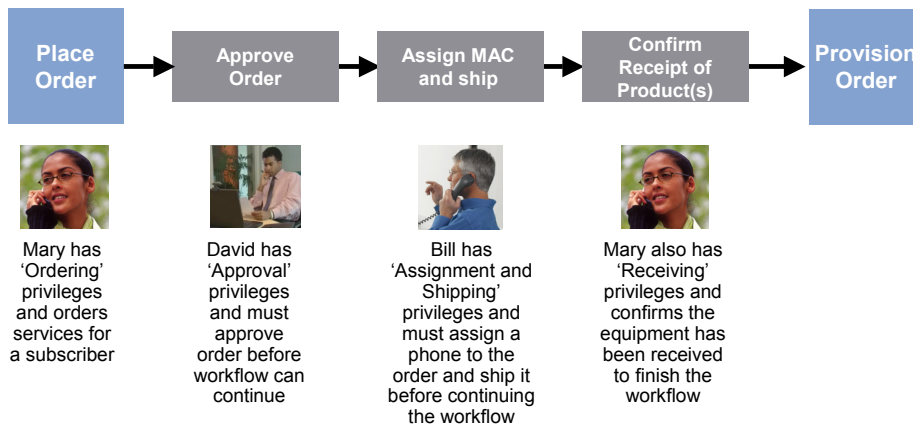
Individual workflow activities can be enabled or disabled and assigned to different PM administrators on a per domain basis, resulting in many possible workflow arrangements. If enabled, processing will stop until the assigned PM user accepts the order and takes the appropriate action. Once the action is acknowledged, the processing will continue. Any disabled steps will be automatically acknowledged by PM.

Features

Role-based Provisioning

PM user roles are associated with the steps of the provisioning tasks

- User can be assigned more than one role
- Access scope limited to a single domain



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Features 2-16

Role Based Provisioning

Provisioning Manager users are assigned various user roles, which define the user's access to certain functions exposed via the web interface.

The system or global administrator user role allows the user total access to PM. This user is typically an IP telephony expert and configures PM's business abstractions with the appropriate configurations to reflect the provisioning to take place on the underlying voice applications.

Other users are assigned to a specific domain and their user roles are based on the activity steps of the ordering workflow. A domain user can be assigned more than one user role. In the example above, the workflow in a specific domain has been configured to wait for approval, assignment, and receiving. Different domain users have been assigned to perform the different activities. For example,

- Mary is responsible for placing the order.
- David must then approve the order before order processing can continue.
- Once approved, Bill selects a phone and assigns a MAC address to the order.
- Since shipping is not enabled, PM automatically acknowledges that step and the order waits at the receiving step.
- Mary, who is also assigned to receiving, waits to acknowledge the order until she is sure the phone is in place on the subscriber's desk. Once Mary acknowledges the receiving step, the order is provisioned and activated on the underlying voice applications.

Inventory Management

PM keeps a searchable inventory of phones and Directory Numbers (DN). Phones and DNs can also be added and reserved for a specific subscriber.

Phone Inventory Management
Add a Phone or Choose a Phone to Update

Phone:

Domain:

Model:

MAC Address:

Status:

Reserved For:

Reserved On:

Reservation Timeout:

or for domain

Directory Number Inventory Management
Add or Update a Directory Number

Directory Number:

Search Call Processor:

[Add New Directory Number](#)
[Update Current Directory Number](#)
[Clear Expired Reservations](#)

Directory Number:

Call Processor/Route Partition:

Status:

Reserved For:

Reserved On:

Reserved DNs expire after 7 days.

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Features 2-17

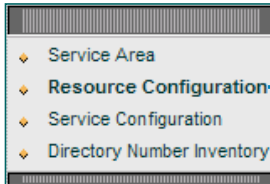
Inventory Management

PM keeps an inventory of both phones and Directory Numbers (DN). The phone database includes in-use and also available phones. Available phones can be reserved for specific subscribers. If the assignment step in the ordering workflow is disabled, PM will select an available phone from the inventory and assign its MAC address to the order prior to acknowledging the step.

The Directory Number database tracks in-use numbers, but also allows available numbers to be reserved for specific subscribers.

Reports

PM has a set of pre-configured reports allowing the PM administrator to view various system configurations



IP Telephony & Messaging	
Resource Configuration Report	
Produced by: Cisco Unified Provisioning Manager	
Date: Tuesday, January 30, 2007 15:20:05 -0800	
Call Processors	
D: NiceMunich	
Domains:	• Germany
	• France
Voice Device Group:	DP_Munich
Service Areas:	
Voice Device Group:	DP_Nice
Service Areas:	• NiceEmployee
Voice Device Group:	Default
Service Areas:	
D: ParisHQ	
Domains:	• France
Voice Device Group:	DP_Paris
Service Areas:	• ChambersExecutive
	• FranceNationwide
	• ParisLobby
Voice Device Group:	Default
Service Areas:	
Unified Message Processors	

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Features 2-18

Reports

PM provides a number of pre-configured standard reports that allows the global administrator to quickly view various configurations and assignments.

Global PM administrators can also create custom reports by searching for any object in the PM inventory.

Features

Application Support

- Cisco Unified CallManager
 - 4.0(2), 4.1(3), 4.2(1)
- Cisco Unified CallManager Express
 - 3.3, 3.4
- Cisco Unified Communications Manager
 - 5.0(4), 5.1(1), 6.0
- Cisco Unified Communications Manager Express
 - 4.0, 4.1
- Cisco Unity
 - 4.0, 4.1, 4.2, 5.0
- Cisco Unity Express
 - 2.1, 2.2, 2.3, 3.0
- Cisco Unity Connection
 - 1.1.1, 2.0
- Cisco Unified IP Phones.

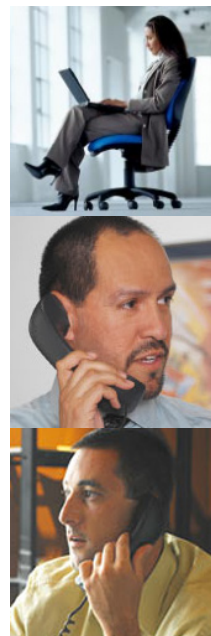
Refer to the Cisco Unified Provisioning Manager Compatibility Information for specific versions that have been certified in testing

http://www.cisco.com/en/US/products/ps7125/products_device_support_tables_list.html

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Features 2-19



Application Support

The underlying voice applications supported by Provisioning Manager v1.1 are:

Cisco Unified CallManager

4.0(2), 4.1(3), 4.2(1)

Cisco Unified CallManager Express

3.3, 3.4

Cisco Unified Communications Manager

5.0(4), 5.1(1), 6.0

Cisco Unified Communications Manager Express

4.0, 4.1

Cisco Unity

4.0, 4.1, 4.2, 5.0

Cisco Unity Express

2.1, 2.2, 2.3, 3.0

Cisco Unity Connection

1.1.1, 2.0

Cisco Unified IP Phones.

Note(s):

- Consult the Cisco Unified Provisioning Manager Compatibility Information for specific versions that have been certified in testing:
http://www.cisco.com/en/US/products/ps7125/products_device_support_tables_list.html



Benefits

- Overview
- Functional Architecture
- Features
- **Benefits**



Benefits

- Manage existing or new Unified Communications deployments
- Greatly simplifies the process of provisioning and activating subscriber services
 - Errors are practically eliminated
 - Reduced time to dial-tone
 - Permits defining standard configurations, which can be reused for new sites or location deployments
 - Batch provisioning permits the rollout of large numbers of subscribers at once
- Lower operational costs through automation
- IP communications professionals are free to focus on higher value activities than repetitive operational issues

Benefits

Cisco Unified Provisioning Manager provides a reliable and scalable web-based solution to manage a company's new or existing Unified Communications deployment. PM greatly simplifies the process of provisioning and activating subscriber services through use of business abstractions and automation. The result is quicker time to dial tone and reduced costs by eliminating configuration errors and reliance on IP voice experts for routine day-to-day operations.



Thank You!

Continue on to Chapter 3 to use the many features of Cisco Unified Provisioning Manager.

Cisco Systems



Cisco Unified Provisioning Manager

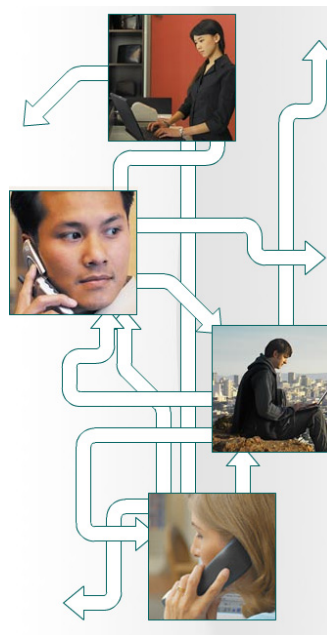
Usage Scenarios

Chapter 3



Chapter 3 Outline

- Network Description
- Getting Started
- Using PM with an Existing VoIP Deployment
- Advanced Policy & Management
- Managing Orders
- Adding Sites
- Batch Provisioning



Chapter 3 Outline

To facilitate your learning, this chapter follows the exploits of a fictitious company as they deploy Cisco Unified Provisioning Manager to simplify their IP telephony provisioning.

The presented scenarios detail the actual steps that the fictitious company will use to meet their IP telephony management goals for subscriber services. The scenarios cover all the major features of Provisioning Manager including: managing existing VoIP deployments, bringing new deployments on-line, and of course the ordering and provisioning of subscriber services.

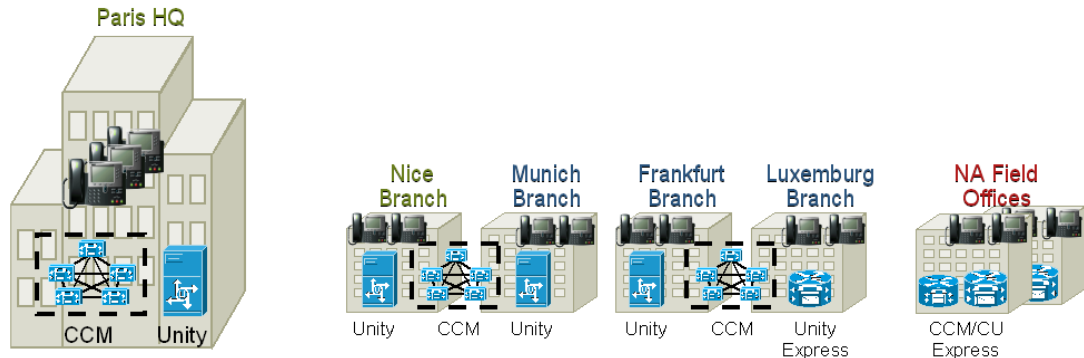


Network Description

- **Network Description**
- Getting Started
- Existing VoIP Deployment Setup
- Advanced Policy & Management
- Managing Orders
- Adding Sites
- Batch Provisioning



Chambers Engineering



Current

- Deployed Servers
 - CCM
 - CU
- Deployed IP Phones
 - Employees
 - Contractors
 - Facilities
- Management Responsibilities
 - Overall
 - France

Future

- Branch Offices
 - CCM, CU or CUE (maybe shared resource)
 - Employees, Contractors, Facilities
- Field Offices
 - CCME, CUE per field office
 - Employees, Contractors
- Management Responsibilities
 - European (except France)
 - North America

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Scenarios 3-4

Chambers Engineering

Chambers Engineering, a fictional French-based engineering firm with operations in multiple countries, is in the progress of migrating its voice services to IP telephony. This migration began with an initial deployment of Cisco CallManager and Unity at their Paris headquarters, and is being rolled out to other company locations over the next 24 months. The current deployment provides different voice services depending on the subscriber's role within the company (employee, contractor, executive, etc.)

As Chambers Engineering readies to broaden the deployment, they have run into several hurdles. The most pressing is the fact that their voice experts are spending large portions of their time provisioning subscriber services instead of the more critical tasks of designing and configuring the voice infrastructure at the branch locations. A number of employees in different regions have been tasked with taking over day-to-day operations for subscriber services within their assigned regions, but the daunting task of learning multiple interfaces, and training time with the voice experts, has delayed the turn over.

Chambers Engineering has decided to deploy Cisco Unified Provisioning Manager to allow the assigned employees to easily administer subscriber services without having to learn details about Cisco CallManager and Unity systems. Further, Provisioning Manager will be used to help the voice experts to more quickly and consistently bring new deployments on-line.

Using Provisioning Manager, Chambers Engineering will be able to drive down the initial cost of deployment, and set policies on how they can delegate management of ongoing adds, changes, and deletions of services to staff who are not IP voice experts.



Getting Started

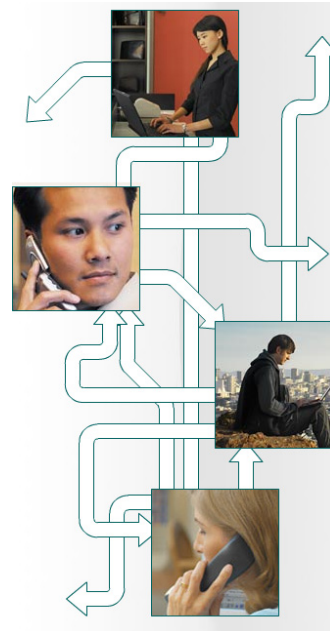
- Network Description
- **Getting Started**
- Existing VoIP Deployment Setup
- Advanced Policy & Management
- Managing Orders
- Adding Sites
- Batch Provisioning



Scenario 1 Outline

Getting Started

- PM Concepts
 - Domains
 - Service Areas
 - Users vs. Subscribers
 - Ordering Workflow
 - Business Rules
 - Provisioning Attributes
 - Basic Task Flow
- Login
- Navigation
- Create Subscriber Type



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Scenarios 3-6

Scenario 1 Outline

Prior to using Cisco Unified Provisioning Manager (PM), users must first understand several concepts that will help dictate how to set-up and use PM. After covering these concepts, and how they apply to Chambers Engineering's IP voice deployment, the lead voice engineer, Phil, will log into PM and begin using PM to create a new Subscriber Type, which will define the policies for calling and ordering.

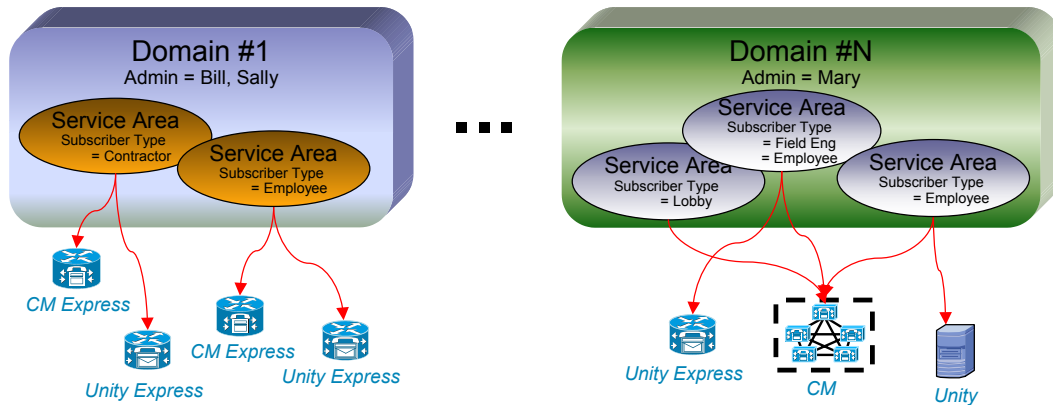
Note(s):

- Creating a new Subscriber Type is not necessary for all PM deployments. The example is provided in this chapter to highlight how the Subscriber Type business abstraction can be used to control provisioning policy for a class of subscribers.

PM Concepts

Domains and Service Areas

Domains allow you to sub-divide a shared environment creating separate secure locally administrated partitions that contain **Service Areas** which determine the dial plans and other voice related configuration settings available for Subscriber Types in the Domain



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Scenarios 3-7

Domains and Service Areas

Chapter 2 introduced the fact that PM uses business abstractions to help set and control policy. The first was the concept of a Domain. PM allows the enterprise to be sub-divided into separate partitions, Domains, that can be configured with policies and can be locally administered.

Perhaps the easiest way to best understand a Domain is in an example of PM being used in a multi-departmental enterprise with business units in different areas. A Domain could be created for each business unit or geographical area. In turn, each business unit or geographical area would then be provided with one or more administrator accounts for their Domain. These administrators could then log into PM, but will only be able to order and provision services for subscribers in their Domain, and will have no knowledge of any other Domains or subscribers within PM.

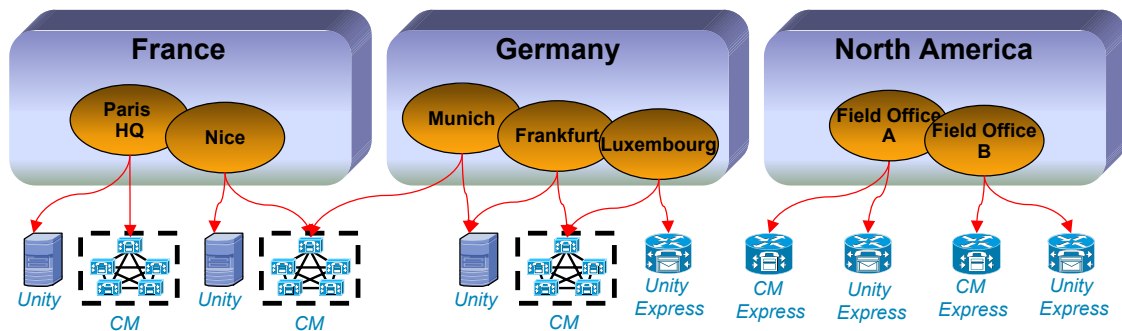
Each Domain has one or more Service Areas defined within them. Each Service Area basically defines the dial plan for one or more types of subscribers, and is typically associated with a site or location of the enterprise. Simple examples of Service Areas might include: one that allows local calls only that is assigned to contractors and lobby phones, and another that allows all calls including international ones that is available to executive subscribers only. This abstraction greatly simplifies the provisioning process as the Domain administrator does not need to understand which call processor, route partition, call search space or any other voice provisioning related attribute to use. These attributes would have been previously associated with the Service Area by an overall PM administrator who is more than likely a IP voice expert. In the simple example above, a Domain administrator who is ordering services for a lobby phone subscriber, will only be allowed to provision the subscriber in the "local calls only" Service Area.

The following provides some basic configuration details about Domains and services areas:

- One or more call processors are associated with each Domain, one or more message processors can optionally be associated with each Domain
- A call or message processor can be a member of more than one Domain
- Domain Users (administrators) are assigned task privileges within a single Domain
- Subscribers are assigned a Subscriber Type and are members of a single Domain
- A single call processor and optionally a single message processor are assigned to each Service Area
- Service Areas are typically associated to geographical locations, and include dial plan constructs (location, route partition, calling search spaces, etc.)
- One or more Subscriber Types can be assigned to each Service Area

PM Concepts

Chambers Engineering Domain Plan



- Chambers Engineering has chosen to administer their VoIP deployment in a geographical manner and create Domains accordingly
- Service Areas (SAs), shown above, represent offices
 - In reality, each office may have multiple SAs (i.e. Paris HQ Employee, Paris HQ Executive, Paris HQ Facilities)
- Call processing components can be associated with more than one Domain
- Service Area is assigned to single call processor and optional message processor

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Scenarios 3-8

Chambers Engineering Domain Plan

Let's take a look at how Chambers Engineering plans to use the Domain concept for their PM deployment. They want administrative duties based on regions, all offices in France to be administered as an entity, all offices in and around Germany to be administered as an entity, and all North America Field offices to be administered as an entity. Hence they will create three Domains: France, Germany, and North America.

Notice that the Domains have nothing to do with the location or use of the processors. The Nice office will host a CallManager, but Munich subscribers will also be provisioned on it. At the same time, the Munich offices will share a Unity processor hosted in the Frankfurt offices.

Note(s):

- The Service Areas in the diagram above have been simplified to show office locations. In reality each location will have multiple Service Areas (i.e. In Paris HQ there may be a local, national, and international Service Area)

PM Concepts

Users vs. Subscribers

A **PM User** is a person with authorization to perform various tasks in Provisioning Manager

- Task authorization is based on assigned user roles
- User Types:
 - Global
 - Complete authorization to perform all tasks in PM
 - PM Admin (created at install) has global administrative rights
 - Domain Specific
 - Authorization limited to tasks within a specific Domain
 - Individual user roles are related to either policy or workflow tasks
 - Can be assigned more than one user role
- Users can also have services themselves; thus a user can also be a subscriber (discussed shortly)

Users vs. Subscribers

The next concept to discuss is the difference between a PM user and a subscriber. They are two different entities, but unfortunately a subscriber often times gets called a user, which can lead to some confusion.

A PM user is personnel with authorization to perform various tasks within PM (i.e. set policy, order services, etc). The PM tasks the user can perform depend on their assigned user roles, which will be discussed shortly.

There are two basic types of PM users: a Global user which has complete authorization to perform any task in PM. The user created at install, padmin, has global administrative rights. The other basic user type is a Domain Specific user. Users of this type only have privilege to perform tasks within their assigned Domain. Their roles are related to steps of the ordering workflow (discussed later in this section).

What causes some of the confusion is that subscriber services can also be ordered for PM users, thus making them subscribers (discussed shortly).

PM Concepts

User Roles

User Type	User Roles	Rights
Global	<ul style="list-style-type: none">• Administration• Maintenance	<ul style="list-style-type: none">• Full rights• Configure system cleanup activities
Domain Specific (Users with these roles can only perform authorized tasks within their assigned Domain)	<ul style="list-style-type: none">• Policy• Ordering<ul style="list-style-type: none">– Advanced Ordering– Advanced Assignment• Approval• Assignment• Shipping• Receiving	<ul style="list-style-type: none">• Manage phone inventory, create new Subscriber Types, and set phone button templates• Subscriber management and product ordering<ul style="list-style-type: none">– All Ordering privileges plus set provisioning attributes at time of order– All Ordering privileges plus assign MAC address at time of order• Approves or rejects provisioning requests• Assigns phone (MAC address) to an order• Ensures equipment sent before order processing continues• Ensures equipment received before order processing continues

- User roles determines level of access within Provisioning Manager
- Some Domain specific roles are only applicable, if workflow is enabled

User Roles

Before defining subscribers in detail, let's look at the different user roles available. Besides the all encompassing global administrative role, a Global type user can be created that only has the right to modify if and when system cleanup activities will take place (see Chapter 4 for details on this function).

As previously mentioned, Domain specific users can only perform tasks within their assigned Domain and those tasks are basically associated with steps of the ordering workflow. The possible Domain specific user roles are shown in the chart above. For example, a Domain specific user with the 'Approval' user role can only perform the PM task of approving orders for subscriber services within his assigned Domain. More than one user role can be assigned to a Domain specific user.

Note(s):

- The user roles and the listed rights will be easier to understand after the ordering workflow is discussed later in this chapter.

PM Concepts

Users vs. Subscribers

A **Subscriber** is an entity, which uses IP telephony services provided by the underlying voice applications

- Subscriber Type defines the products that can be provisioned for subscribers of this type
 - Default Subscriber Types:
 - Employee
 - Contractor
 - Manager
 - Senior Manager
 - Executive
 - Operator
 - Default Subscriber Role Types can be modified in a global template or a per Domain basis
 - Default Domain Subscriber Role Types take on values of global template Subscriber Types at time of Domain creation only
- If Provisioning Manager **Self-Care mode** is enabled, a subscriber can order services for themselves; thus a Subscriber can also be a PM User

Users vs. Subscribers

As discussed, a PM user is someone who has privilege within PM to perform some tasks. On the other hand, a subscriber is an entity, which uses IP telephony services provided by the underlying voice applications.

Subscribers created within PM are assigned to a specific Domain and one or more Subscriber Types. A Subscriber Type is a PM business abstraction that defines the products and services that PM can provision for a subscriber of this type. By default, PM defines several Subscriber Types as listed in the chart above. The products and services available for each of these Subscriber Types can be modified globally providing a baseline for each new Domain created, or on a per Domain basis.

The difference between subscriber and user can be confusing if PM is configured for Self-Care mode, which allows a Subscriber to view his history and even order services for themselves, thus becoming also a PM user.

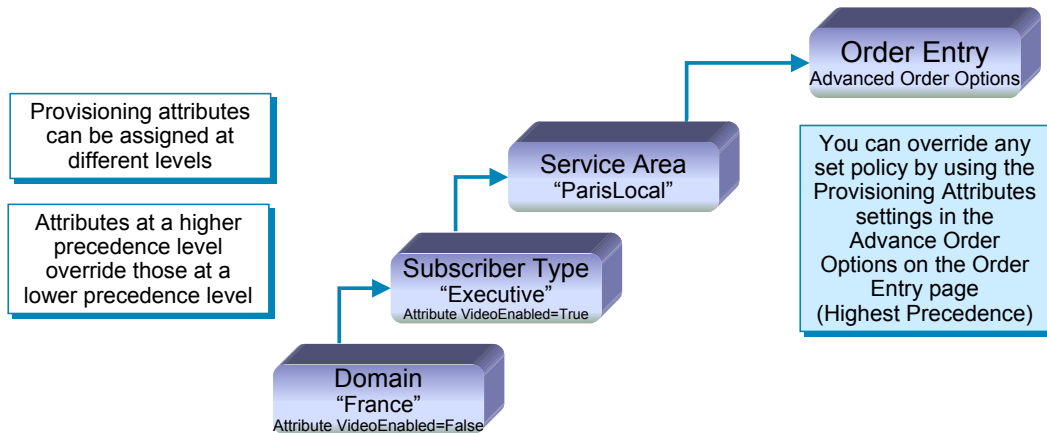
Best Practice:

- If Self-Care mode is enabled, the ordering workflow should at least require approval prior to provisioning.

PM Concepts

Provisioning Attributes

Provisioning Attributes are configuration settings that are applied to a product during activation



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Scenarios 3-12

Provisioning Attributes

Both call and messaging services have many attributes that can be assigned and further define and enhance the service provided to the subscriber. For example, one attribute that can be defined on a phone as an enhancement to its use, is the setting of speed dials. Within PM, these settings are known as Provisioning Attributes, and can be set at multiple levels within PM to enforce policy; again simplifying the overall provisioning of subscriber services.

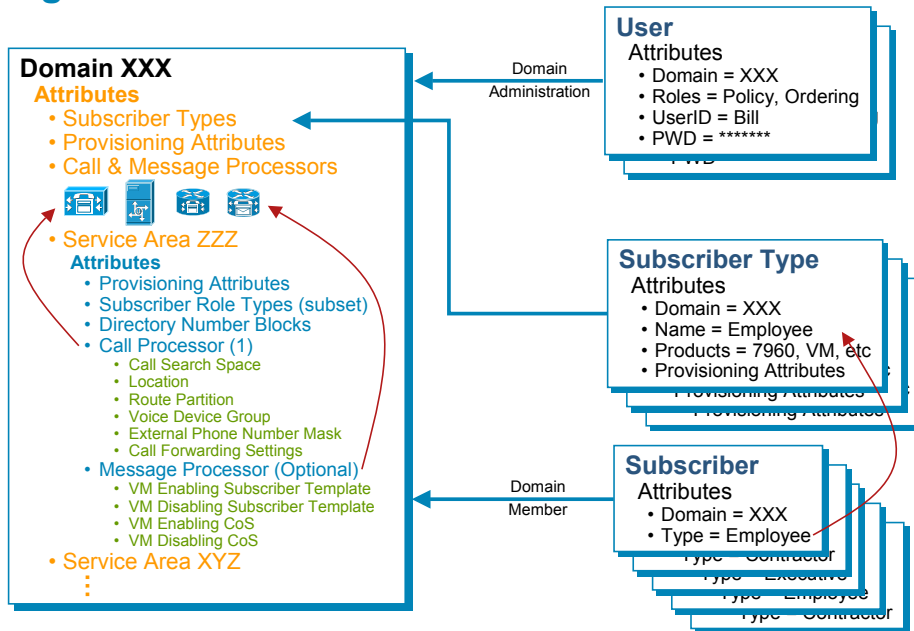
Provisioning attributes can be set for Domains, Subscriber Types, Service Areas, and during order entry. This order also defines the order of precedence in the event that the same attribute is set at multiple levels.

Let's look at a brief example to help clarify this.

- A policy at Chambers Engineering states that no subscribers in any of the offices in France are to have video capabilities on their phones except the executives.
- One way to implement this would be to set the phone attribute VideoEnable to "false" at the Domain level, and "true" for the Executive Subscriber Type.
- Now, all orders for phones in the France Domain will set VideoEnabled to "false", but for subscribers of type Executive, this will be overridden with a value of "true".
- If an individual employee has also given clearance for video privileges, his "false" setting can be overridden during order entry.

PM Concepts

Big Picture



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Scenarios 3-13

Big Picture

With the concepts discussed so far we can take a look at the overall PM structure with respect to order provisioning to give you an idea of the constructs that need to be created and/or defined within PM.

In the chart above, we see a concept of the Domain and its attributes. Associated with each Domain are the types of subscribers that can be assigned to this Domain, the Provisioning Attributes set at this level, the associated call and message processors, and the defined Service Areas.

The attributes associated with a Service Area include:

- The Provisioning Attributes set at this level
- The subset of Domain Subscriber Types that will be provisioned according to the dial plan defined by this Service Area
- A block of directory numbers
- A single call processor pf those assigned to the Domain, and optionally a single message processor of those assigned to the Domain. Once the processors are assigned for the Service Area, the appropriate dial plan constructs can be selected based on those available on the selected processor.

Subscribers are created as members of a Domain, and are given a Subscriber Type, which defines the products and services that can be ordered for them. Associated with each Subscriber Type is also a set of Provisioning Attributes.

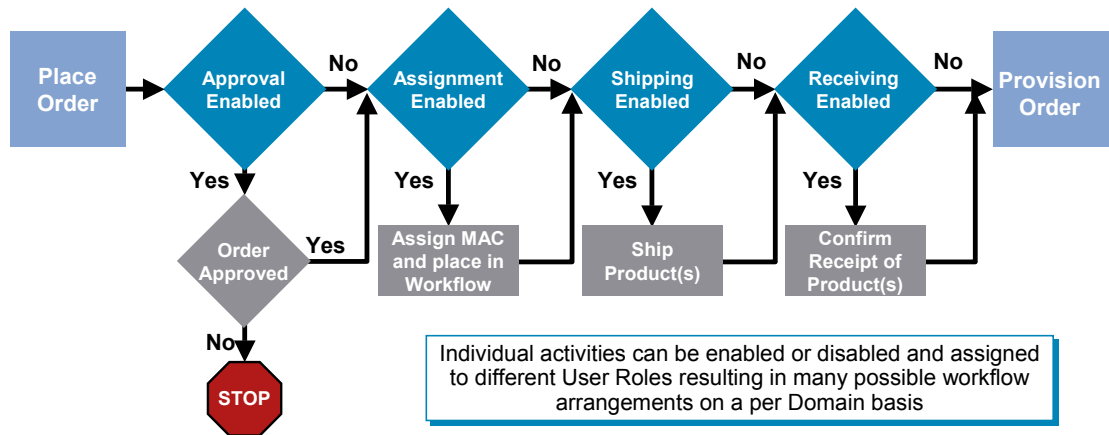
Finally, a number of PM users are defined as administrators to the Domain, each with a set of user roles defining the tasks they can perform using PM.

We can now start to see how once properly configured, PM simplifies the ordering and provisioning of subscriber services for the less experienced administrator. An experienced voice engineer first configures the appropriate Service Areas to reflect different dial plans, and then a Domain administrator will create a subscriber within the Domain and assign a Subscriber Type. When ordering services for that subscriber, they will be given a list of products and services to choose from as defined by the Subscriber Type attributes. Once selected and configured (i.e. type of phone), the Domain administrator then selects from a list of a Service Areas that the Subscriber Type has been assigned to. PM then handles the rest; the Domain administrator did not have to know about dial plan constructs or any of the interfaces to the various voice applications – simple and basically immune to errors!

PM Concepts

Ordering Workflow

Workflow coordinates activities of the ordering process (approve, phone assignment, shipping, and receiving)



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Scenarios 3-14

Ordering Workflow

Once the order has been placed, what exactly does PM do with it? PM has a built-in ordering workflow to coordinate activities in the ordering process. The activities include approving the order, assigning a phone to the order, shipping the product, and receiving the product. This workflow can be customized to fit the customer's exact needs by enabling or disabling each step, and assigning the enabled steps to a PM user role. By default, all steps are disabled.

If any step of the workflow is enabled, the order processing will wait at that point in the workflow for a user, with the user role assigned to the workflow step, to take appropriate action. Once the action has been completed, that user would inform PM, and the order processing will continue.

PM Concepts

Business Rules

```
AssignSoftPhoneName
AssociateAllUsersInCallProcessor
AssociateAllUsersInUMFProcessor
AssociateUsersByDeptCode
ChoosePhoneButtonTemplates
CreateSelfCareAccounts
DNAutoReservation
DNReservationTimeout
DefaultCallManagerPIN
DefaultCallManagerPassword
DefaultDeviceProfile
DefaultServiceName1
DefaultServiceName2
DefaultServiceName3
DefaultServiceName4
DefaultServiceName5
DefaultServiceURL1
DefaultServiceURL2
DefaultServiceURL3
DefaultServiceURL4
DefaultServiceURL5
DefaultUnitySubscriberPassword
DefaultUserType
DescriptionString
EmailSender
ExternalNumberMasks
IsAuthorizationRequiredForAddOrder
IsAuthorizationRequiredForCancelOrder
IsAuthorizationRequiredForChangeOrder
LineDisplayString
MailHost
MonitorPhoneReturnEnabled
NameDialingInfo
OrderProvisionedEmailTemplate
OrderRejectedEmailTemplate
PhoneAssignmentDoneBy
PhoneReceiptDoneBy
PhoneReservationTimeout
PhoneShippingDoneBy
PurgeUponUnRemoval
SelfCareAccountsDefaultPassword
TakePrimaryUserInfoFromUMFProcessor
```

Provisioning Manager contains a pre-defined set of **Business Rules** that control:

- Processing of orders
- Behavior of synchronization process
- Default values for various objects

Control steps of the ordering workflow

IsAuthorizationRequiredForAddOrder	=	False
PhoneAssignmentDoneBy	=	Assignment
PhoneShippingDoneBy	=	Shipping
PhoneReceiptDoneBy	=	OrderOwner

Rules can be set per Domain or in a global template assigned to all new Domains

Business Rules

We have mentioned several times that some PM concepts are configurable. This is achieved by configuring Business Rules. The Business Rules are used to control the processing of orders, the behavior of synchronizing with call and message processors, and to set default values for various objects used repeatedly within PM.

Business Rules can be applied to a global template which provides the starting set of rules when a Domain is created, and can also be modified on a per Domain basis. Business Rules can only be configured by a global PM administrator.

PM Concepts

Basic Task Flow

1. Setup Devices
 - Add Call & Message Processors to PM
2. Setup Deployment
 - Create Domains and assign Call and Message Processors
3. Provision Voice Network
 - Create and push Template(s) to configure CCMs
 - Or import current voice infrastructure configurations from existing deployment
4. Setup Deployment
 - Create Service Areas for each Domain (typically one per dial plan)
 - Assign Subscriber Types to each Service Area
5. Admin
 - Create Administrative users for each Domain
6. Order, Update, or Change Subscriber Services

Optional/Advanced Configuration

- Add new Subscriber Types
- Modify products available to Subscriber Types
- Configure Business Rules
 - Can use to set ordering workflow
- Set Provisioning Attributes

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Scenarios 3-16

Basic Task Flow

Before we actually follow Chamber Engineering's PM deployment, let's briefly look at a high level PM task flow.

The first step should be fairly obvious – adding of devices to PM. Since PM will be actually configuring call and message processors, you must not only inform PM about them, but also how to communicate with them.

After adding the devices to PM, the PM administrator could optionally attend to some global configurations including the modifying of the global templates which define Subscriber Types and Business Rules. These modifications would then be applied to new Domains as they are created.

The next step is to create one or more Domains and assign the appropriate call and message processors to them. Next, PM needs to know the voice infrastructure components of each processor in the Domain. This may entail either the creation of the configurations using templates and pushing them out to the processors, or import of any existing configurations.

Once PM is aware of the configured voice infrastructure, the Service Areas mapping dial plans to Subscriber Types can be created and configured.

Finally, PM users for each Domain should be created and assigned the appropriate user roles according to the ordering workflow to be utilized.

At this point the 'experts' hand-over PM to the Domain administrators to order, update, and change subscriber services.

Note(s):

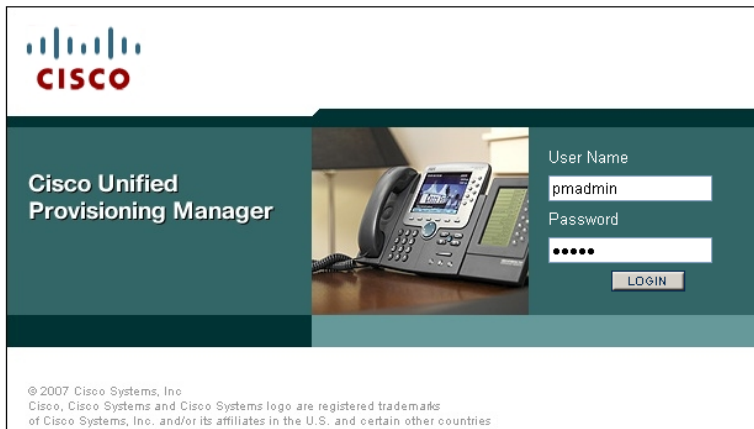
- At any time after the Domain has been created, the Subscriber Types, Business Rules, and/or Provisioning Attributes specific to it may be modified. This also holds true for the configuration of Provisioning Attributes for Subscriber Types and Service Areas.

Getting Started

Logging In

<http://<server-name or IP address>> will redirect the link to:

<http://<server-name or IP address>/cupm/Login>



'pmadmin'
account created
during install
and has global
access to PM

Logging In

Chambers Engineering has installed PM and they are ready to get started. All the initial setup of PM is typically done by a IP voice expert, so one of Chambers best, (we will call him Phil) is ready to get started. Let's follow Phil and his peers as they configure and use PM.

1. Phil opens a standard web browser on his PC (see Chapter 4 for supported versions) and enters the hostname or IP address of the PM server as a URL and is then redirected to the URL for login.

<http://<server-name or IP address>>

This will redirect you to the following URL for login:

<http://<server-name or IP address>/cupm/Login>

2. The PM login screen is displayed. During installation a global administrator account is created with the default login of **pmadmin**. Phil enters this and the password, also assigned at installation, and clicks the **Login** button.

Getting Started

Navigation – Administrator

Function Tabs

Available options for the selected tab

Tabs and options displayed depend on logged in user's access rights (assigned user roles)

Task Area

Dashboards provide 'at a glance' status and also provide quick links

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Scenarios 3-18

Navigation - Administrator

Once the user is authenticated, the PM desktop is loaded. The desktop will vary depending on the user roles associated with the user logging in. Only the tasks associated with the user's roles will be displayed. In Phil's case, all task are displayed since he is logged in as the global administrator.

Before starting, let's take a moment to understand the desktop layout.

The main features of Provisioning Manager are organized as tabs across the top of the desktop. The currently selected tab is identifiable by the different color of the tab. These tabs are the various categories of tasks in Provisioning Manager:

Provisioning Dashboard – Allows for the creation of subscribers, viewing of there current services and ordering history, ordering of services, and activities related to the ordering workflow

Infrastructure Configuration – Allows the management of processors, Domains, and service areas. Also used for the creation of templates to configure processors with voice infrastructure components, and the bulk provisioning of subscribers and their services

Advanced Setup – Allows for the creation of policy (Provisioning Attributes, Subscriber Types, and Business Rules), and the maintenance of phones and directory number inventories

System Administration – Allows for the creation of PM users, system maintenance, and reporting

Immediately under the tabs are the options associated with the selected major task category. To select one of these options, simply click on it. The selected option will be in black bold text. At this point, the selected option may have a dialog box associated with it, which will be displayed in the task area. The selected option may also have sub-tasks associated with it. These will be listed in a task menu on the left-hand side of the desktop. Again, to select one of the sub-tasks, simply click it and its text will become bold to identify it as the selected task.

Getting Started

Navigation – Ordering

The screenshot shows the Cisco Unified Provisioning Manager interface. The top navigation bar includes the Cisco logo, the title "Cisco Unified Provisioning Manager", a subtitle "A product from the Cisco Unified Communications Management Suite", and links for "Help" and "Log Out". Below this is a "Provisioning Dashboard" with tabs for "Manage Subscribers" and "Manage Orders". The "Manage Subscribers" tab is active, showing a sub-menu with "Add Subscribers" and "Search Subscribers". The main content area is titled "Manage Subscriber" and contains a form for "Create Subscriber or Select Subscriber to Update". The form includes fields for "Subscriber ID", "First Name", "Last Name", "Contact Phone Number", "Contact Email", and "Department". Below these fields is a "Roles" section with two columns: "Available" (listing Contractor, Executive, Manager, Operator, Senior Manager) and "Assigned" (listing Employee). Buttons for "Add", "Remove", "Create", "Clear", and "Exit" are at the bottom. Annotations with arrows point to specific elements: one points to the "Manage Subscribers" tab, another to the "Add Subscribers" option in the sub-menu, and a third to the "Roles" section. A "Task Dialog" box is also present over the "Contact Email" field.

A user with only the 'Ordering' User Role will see fewer tabs and options

Some options have tasks found in a menu

Tasks are performed on elements specific to user's assigned Domain

Task Dialog

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Scenarios 3-19

Navigation - Ordering

The screen shot above depicts the PM desktop presented to a PM user who only has the 'Ordering' user role. Notice that they only have a single tab - Provisioning Dashboard. The options available to this user are also limited. A third possible option would be displayed if the User had any of the user roles associated with workflow activities (approval, assignment, shipping, receiving).

This screen shot also shows a sub- menu that was mentioned on the previous page.

Getting Started

New Subscriber Type

All office locations will need to provision phones for their lobbies. PM must:

- Limit types of calls lobby phones can make
- Limit types of phones to be ordered
- Limit services that can be ordered

Create a new Subscriber Type to cover this situation:

- Create new Subscriber Type in Global Template (available to all new Domains)
- Limit products and services



New Subscriber Type

Phil is now ready to begin using PM. Reviewing the Chambers Engineering's VoIP deployment plan, Phil notices a policy for lobby phones that limits not only the calling area, but also the types of products and services that can be ordered for them.

Phil can control the calling area through appropriate configuration of a Service Area. Phil can also control the products and services available for ordering via a Subscriber Type. Since none of the default Subscriber Types (Employee, Contractor, Manager, Senior Manager, Executive, Operator) covers this type of subscriber, Phil needs to create a new one. He will create it in the Global Domain Template so it will be part of all new Domains. Once a Domain is created, the attributes Phil originally assigned to the new Subscriber Type can be modified for use within this Domain without affecting the Global Domain Template assignments.

Getting Started

Create New Subscriber Type

All office locations will need to provision phones for their lobbies

- Create a new Subscriber Type for Facilities
- Configure globally to be default for all Domains

The screenshot shows the Cisco Unified Provisioning Manager web interface. The top navigation bar includes tabs for Provisioning Dashboard, Infrastructure Configuration, Advanced Setup (highlighted with a red box and number 1), and System Administration. A left sidebar contains a tree view with 'Policies' (highlighted with a red box and number 2), 'Phone', and 'Directory Number'. Under 'Policies', 'Subscriber Roles' (highlighted with a red box and number 3) is selected. The main content area displays the 'Subscriber Role Configuration' dialog. The 'Options' section has 'New Subscriber Role' (highlighted with a red box and number 4) selected. Below it, a dropdown menu for 'View Subscriber Role in' shows '- Domain -'. A callout box points to this dropdown with the text: 'Subscriber Types can be modified on a per Domain basis'. The 'Subscriber Role Configuration - Configure a New Subscriber Role Type' dialog is open, showing 'Enter the following information'. The 'Subscriber Role Name' field contains 'Facilities' (highlighted with a red box and number 5). The 'Domain' dropdown shows '-- Customer Domain Template --' (highlighted with a red box and number 5). At the bottom, the 'Save' button is highlighted with a red box and number 6. A callout box points to the 'Save' button with the text: 'Create as a default for all Domains. Can also be created on a per Domain basis (Domain must first be created)'. The interface also shows a 'Help | Log Out' link in the top right and a 'User pmadmin logged in' status.

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Scenarios 3-21

Create New Subscriber Type

To create a new Subscriber Type in the Global Domain Template, Phil uses the following steps:

1. Phil selects the **Advanced Setup** tab.
2. The options bar displays three choices, Phil selects **Policies**
3. A sub-menu appears on the left-side of the desktop with possible policy tasks, Phil selects **Subscriber Roles**
4. The task area of the desktop displays the *Subscriber Role Configuration – Configure a Subscriber Role Type* dialog. It can be used to create new Subscriber Types or modify existing ones. Phil clicks on **New Subscriber Role**
5. The *Subscriber Role Configuration – Configure a New Subscriber Role Type* dialog is now displayed. Phil selects **Customer Domain Template** from the Domain pull-down menu (At this time it would be the only option since no Domains have been created yet). Phil also enters a name for this Subscriber Role – **Facilities**.
6. Phil clicks **Save** to create the new Subscriber Type.

Getting Started

Configure Subscriber Type

Dialog resulting from creating a new Subscriber Type
(Note: this is the dialog displayed if 'View Subscriber Role' was selected)

Subscriber Role Configuration

View Subscriber Role Type

Options:

- [New Subscriber Role](#)
- [View Subscriber Role in Domain](#)
-- Customer Domain Template --
- [Choose Role to View](#) [icon]
- [Update](#)
- **7** • [Associate Products](#)
- [Remove](#)

[Next Page](#)

Subscriber Role Type Facilities successfully configured
Subscriber Role: **Facilities**
Domain: **GLOBAL**
Orderable products for this role:

No products yet associated with this Subscriber Type

[Exit](#)

Configure Subscriber Type

Once PM has created the new Subscriber Type, the *Subscriber Role Configuration – View Subscriber Role Type* dialog shows its details. Since it was just created, no products or services are listed as being associated with this Subscriber Type.

7. Phil selects the **Associate Products** option (see next page)

Note(s):

- This result dialog is what would appear had you selected **View Subscriber Role** as opposed to a **New Subscriber Role**.

Getting Started

Configure Subscriber Role Type (Cont.)

Configure Facilities subscribers to only be able to order a Phone and Line bundle with the phone being either 7960 or 7961

Subscriber Role Configuration

Associate Products

Select orderable products for this subscriber role

Subscriber Role Type: Facilities

Phone Types: Select at least one type to enable the base product Phone or product bundles that include Phone

☐ Cisco 12 S
 ☐ Cisco 30 SP+
 ☐ Cisco IP Communicator
 ☐ Cisco 7902
 ☐ Cisco 7905
 ☐ Cisco 7961G-GE
 ☐ Cisco 30 VIP
 ☐ Cisco 7911
 ☐ Cisco 12 SP+
 ☐ Cisco 7941
 ☐ Cisco ATA 186
 ☐ Cisco 7910
 ☒ Cisco 7961
 ☒ Cisco 7960
 ☐ Cisco 7985
 ☐ Cisco 7971
 ☐ CTI Port
 ☐ Cisco 7935
 ☐ Cisco 7970
 ☐ Cisco 7936
 ☐ Cisco 7906
 ☐ Cisco 7912
 ☐ Cisco 12 SP
 ☐ Cisco 7940
 ☐ Cisco 7920
 ☐ Cisco 7941G-GE

Line Types: Select at least one type to enable base products related to Line or product bundles that include Line

☒ Auto-Assigned Line
 ☐ Chosen Line

Base Products:

☐ Line
 ☐ Email
 ☐ Unified Messaging
 ☐ Extension Mobility Line
 ☐ Line on a shared Phone
 ☐ Phone
 ☐ Voicemail
 ☐ Enable SoftPhone Support
 ☐ Extension Mobility Access

Product Bundles:

☐ Phone Service with extra line (includes Line and Phone)
 ☐ Messaging Service (includes Email, Line, Voicemail and Phone)
 ☐ Unified Messaging Service (includes Email, Line, Unified Messaging, Voicemail and Phone)
 ☐ Enhanced Phone Service (includes Line, Voicemail and Phone)
 ☐ Extension Mobility Access with Line (includes Extension Mobility Access and Line)
 ☐ Voicemail and Email Service (includes Email and Voicemail)
 ☒ Phone Service (includes Line and Phone)

Save
 Cancel

8 Select appropriate products. Limits products available when ordering services for this type of subscriber

This configuration for Subscriber Type Facilities will be the initial configuration for Subscriber Type Facilities in all new Domains.
Choices for this Subscriber Type can be changed on a per Domain basis

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Scenarios 3-23

Configure Subscriber Type

The *Subscriber Role Configuration – Associate Products* dialog is displayed listing all possible phones and services (that PM is aware of) that can be associated with the Subscriber Type. Phil can select phone and line types, base products like line, phone, voice mail, etc, and/or bundled products like phone service which includes base products phone and line.

- Phil selects two types of phones, that the line can only be auto-assigned, and that only the phone service bundle can be ordered.
- Click **Save** when finished configuring the products to be associated with the Subscriber Type, Facilities.

Phil has successfully created a new Subscriber Type and associated products and services in accordance with Chambers policy. The Subscriber Type, Facilities, will be available to all new Domains. If necessary, once the Domain is created, the Facilities Subscriber Type for the Domain can be modified using similar steps as just detailed except, using the **View Subscriber Role** option instead of the **New Subscriber Role** option and selecting the specific Domain instead of Customer Domain Template.

<Intentionally Left Blank>



Existing VoIP Deployment Setup

- Network Description
- Getting Started
- **Existing VoIP Deployment Setup**
- Advanced Policy & Management
- Managing Orders
- Adding Sites
- Batch Provisioning



Scenario 2 Outline

Existing VoIP Deployment Setup

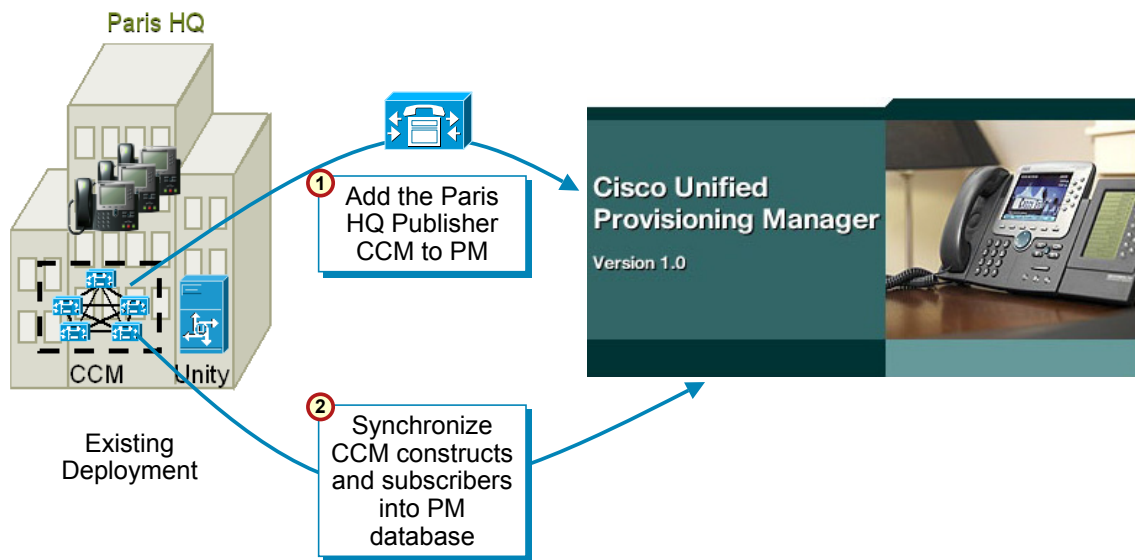
- Setup Devices
 - Add Call and Message Processors
 - Infrastructure Sync
 - Subscriber Sync
- Setup Deployment
 - Create Domain
 - Create Service Areas
 - Domain Sync
- User Administration



Scenario 2 Outline

Chambers Engineering had already deployed IP voice services in the Paris Headquarter prior to installing Cisco Unified Provisioning Manager. Moving forward, however, they wish to do all further voice infrastructure configuring and subscriber service provisioning using PM. To do so, Phil must make PM aware of the current voice infrastructure configuration and map it into PM business abstractions. This scenario will follow Phil as he configures PM to manage Chambers Engineering's existing VoIP deployment.

Setup Devices



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Scenarios 3-27

Setup Devices

Phil's first task will be to add the Paris HQ call and message processors to PM. After that he will synchronize the existing infrastructure components and subscriber data into the PM database.

Setup Devices

Add Call Processors

Add existing CCM at the Paris HQ

Set time zone

Click to change user password

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Scenarios 3-28

Add Call Processors

Phil uses the following steps to add the Paris HQ call and message processors to PM :

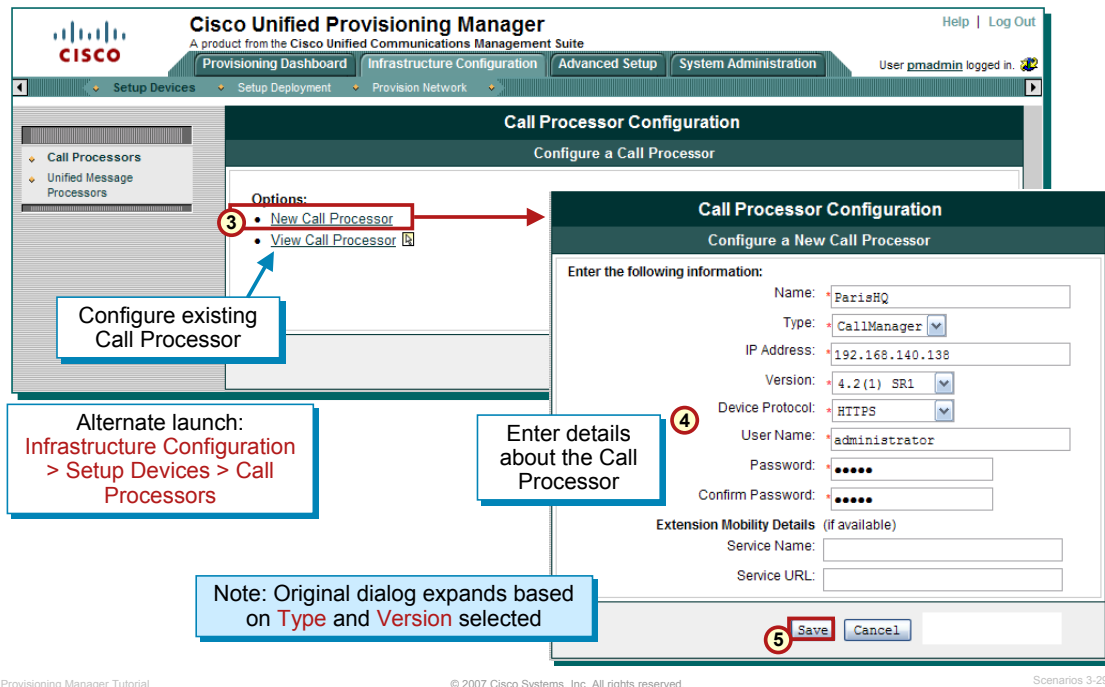
1. Phil selects the **Infrastructure Configuration** tab
2. A set of dashboards are displayed that provide shortcuts to the various tasks. So rather than selecting the Setup Devices option and then the Call Processors task that will be displayed in a sub-menu, Phil simply selects **Call Processors** in the displayed Setup Devices dashboard.

Note(s):

- The Setup Devices dashboard will indicate the number of call and message processors defined in PM. Clicking the small icon arrow next to the number will open a dialog listing the processors, their device type, and the time of their last synchronization with PM.
- Only the “Publisher” Call Processor is added to PM. PM only communicates with the Publisher and not the Subscriber.

Setup Devices

Add Call Processors (Cont.)



Add Call Processors (Cont.)

- The *Call Processor Configuration – Configure a Call Processor* dialog is displayed. Phil selects the **New Call Processor** option.
- The dialog changes to *Call Processor Configuration – Configure a New Call Processor* dialog which contains entry boxes for details about the call processor to add. Phil enters the following:

- Name: ParisHQ
- Type: CallManager
- IP Address: Address of Call Manager
- Version: Version of Call Manager

Once the version is entered additional fields will be displayed depending on the version selected, in this case:

- Device Protocol: HTTPS (how PM will talk to processor)
- User Name: Call Processor administrator login
(Used by PM to login to the Call Processor)
- Password: Password for Call Processor administrator account

Extension mobility details, service name and service URL, can also be added if available.
If EM details are not added, PM users will not be able to order EM related products.

- Phil clicks **Save** to add the call processor.

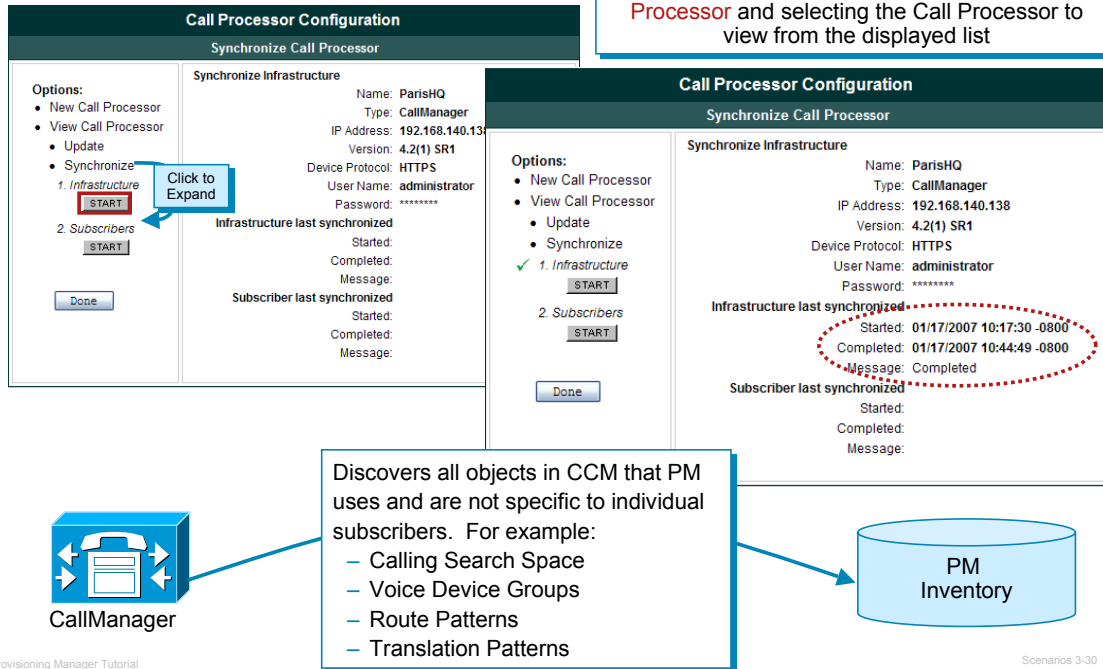
Phil would repeat these steps to add any additional call processors.

Note(s):

- To modify any of these settings at a later time, select **Infrastructure Configuration > Setup Devices > Call Processors** then **View Call Processors**, select appropriate one from the list, then click **Update**.
- Adding message processors is optional, but would follow steps similar to those for adding a call processor.

Setup Devices Infrastructure Sync

Screen displayed after New Call Processor **Save** or by selecting **Infrastructure Configuration > Setup Devices > Call Processors > View Call Processor** and selecting the Call Processor to view from the displayed list



Infrastructure Sync

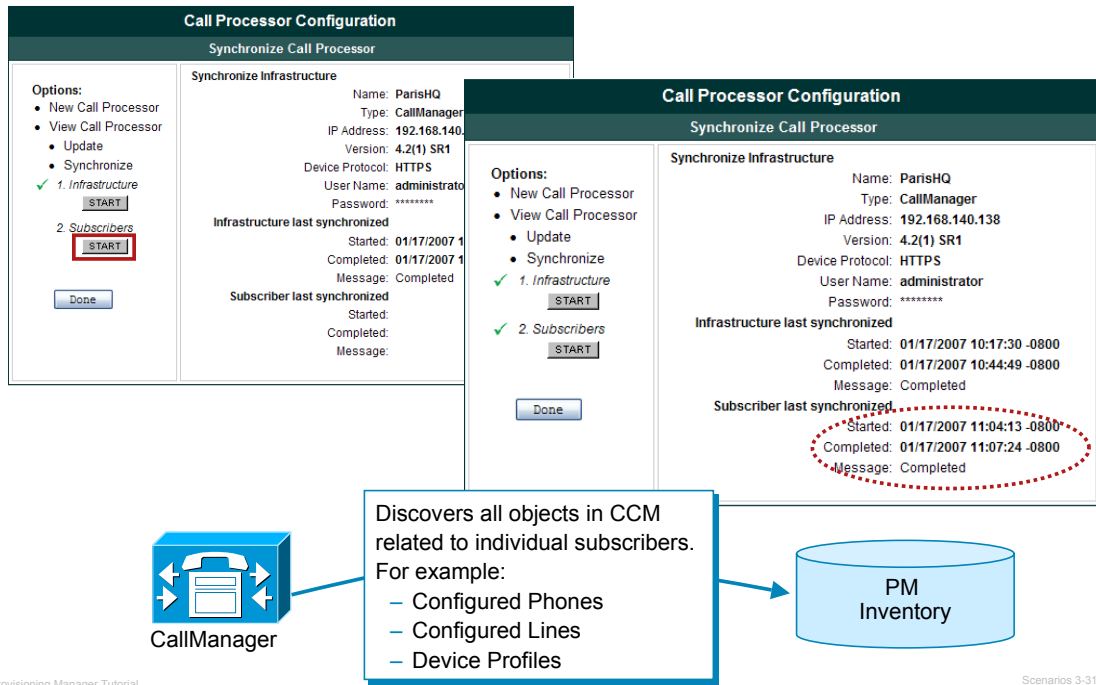
The next task is for Phil to have PM query the call processor to retrieve its current infrastructure configurations (i.e. route partitions, calling search spaces, translation patterns, etc.) After clicking **Save** to add the call processor to PM, the *Call Processor Configuration – View a Call Processor* dialog displays details about the processor.

1. From this dialog, Phil clicks the **Synchronize** option, which causes two options for synchronization to appear. Phil clicks **Start** for the Infrastructure option.

The sync process begins and a percentage complete bar is displayed. This step can take a bit of time to complete. Phil could go on to other aspects of the setup or just wait. To get back to this screen, select **Infrastructure Configuration > Setup Devices > Call Processors**, next select **View Call Processors**, and then select the call processor from the list. The display will show the status of the Synchronization task. When finished, the details for the Call Processor will indicate the start and completion times and a status message.

Setup Devices

Subscriber Sync



Subscriber Sync

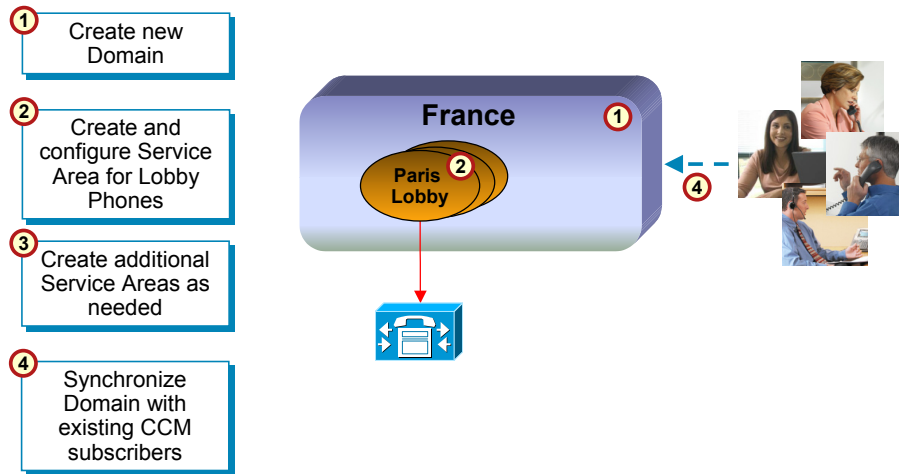
The next step is for PM to retrieve the current subscriber data (i.e. subscriber, configured phones, configured lines, etc.). Phil selects the **Start** button for the Subscribers Synchronization. Again a percentage complete bar will be displayed and when finished the details for the Call Processor will indicate the start and completion times and a status message.

At this point, PM is aware of the Chamber Engineering's current VoIP deployment.

Note(s):

- The process for synchronizing a message processor's configuration and subscriber information is identical.

Setup Deployment



Setup Deployment

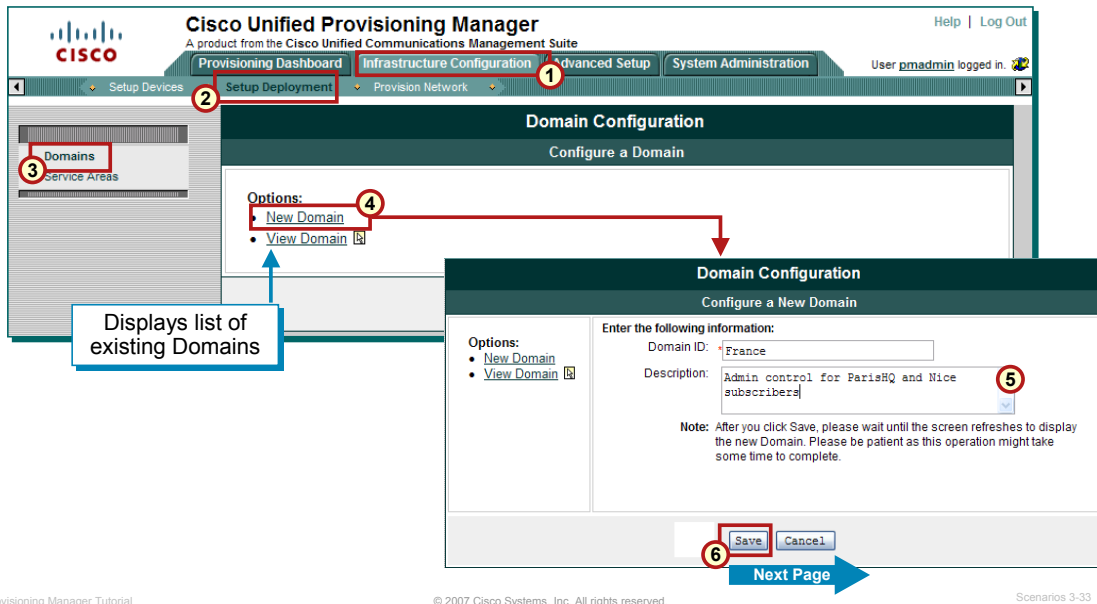
With PM now aware of the current voice infrastructure deployed at Chambers Engineering, Phil needs to map it into PM's business abstractions so future provisioning can be done using PM.

According to Chambers Engineering's management plan, all offices in France will be managed as a single entity. Therefore, Phil will create a Domain and appropriate Service Areas to support the Paris Headquarter offices. One such Service Area will be created for provisioning of Lobby phones. As their voice deployment efforts continue, Phil can add Service Areas for the Nice office.

Setup Deployment

Create Domain

Create a Domain for administering all locations in France



Create Domain

To create a Domain for administering services to all subscribers at office locations in France, Phil uses the following steps:

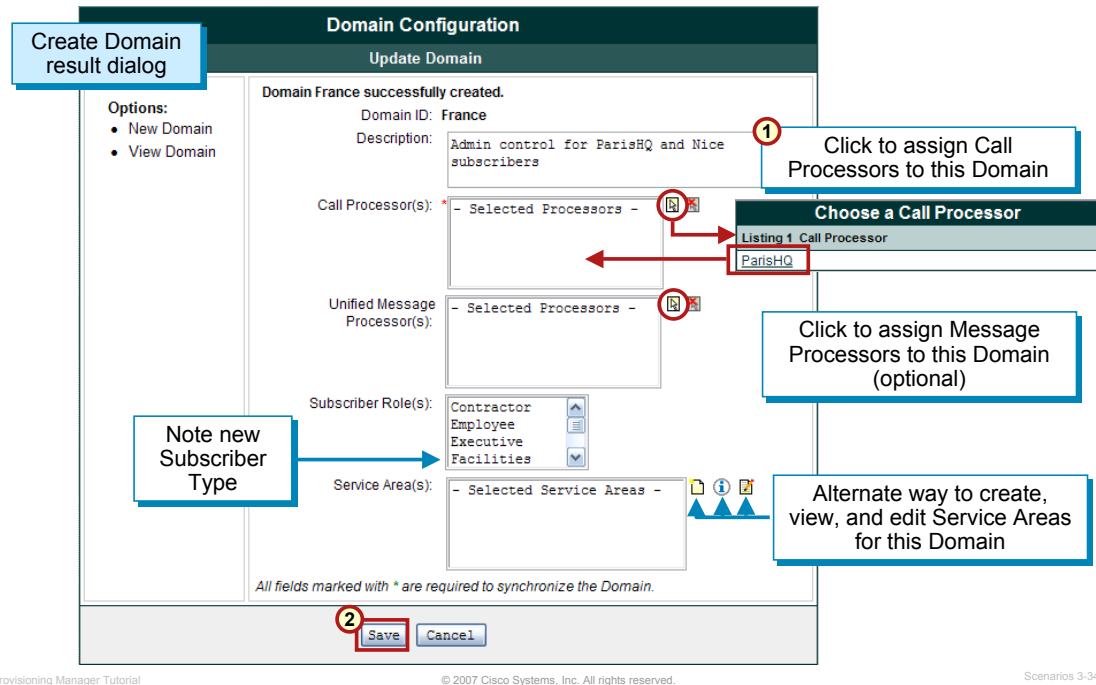
1. Phil selects the **Infrastructure Configuration** tab.
2. Next Phil selects the **Setup Deployment** option.
3. A sub-menu appears on the left-side of the desktop and Phil selects **Domains**. Alternatively, Phil could have selected the Domains option in the Setup Deployment dashboard displayed after selecting the Infrastructure Configuration tab.
4. The *Domain Configuration – Configure a Domain* dialog is displayed. Phil selects the **New Domain** option.
5. The dialog changes to display 2 entry boxes. Phil enters the Domain Name as **France**, and provides a brief description.
6. Phil clicks the **Save** button to create the Domain. (see next page)

Note(s):

- To view or modify the configuration of an existing Domain, use the **View Domain** option.

Setup Deployment

Configure Domain



Configure Domain

After creating the Domain the *Domain Configuration – Update Domain* dialog is displayed. It is primarily used to associate processors with the Domain, but can also be used as a launch point for creating, viewing, and modifying Service Areas within the Domain. Phil uses the following steps to configure the France Domain he just created:

1. Phil clicks the **small arrow icon** to the right of the Call Processor(s) entry box which opens a dialog listing all call processors that have been added to PM. Phil selects the ParisHQ call processor to associate it with the France Domain. Phil would follow a similar procedure to associate message processors.
2. Click **Save** to update the France Domain's configuration.

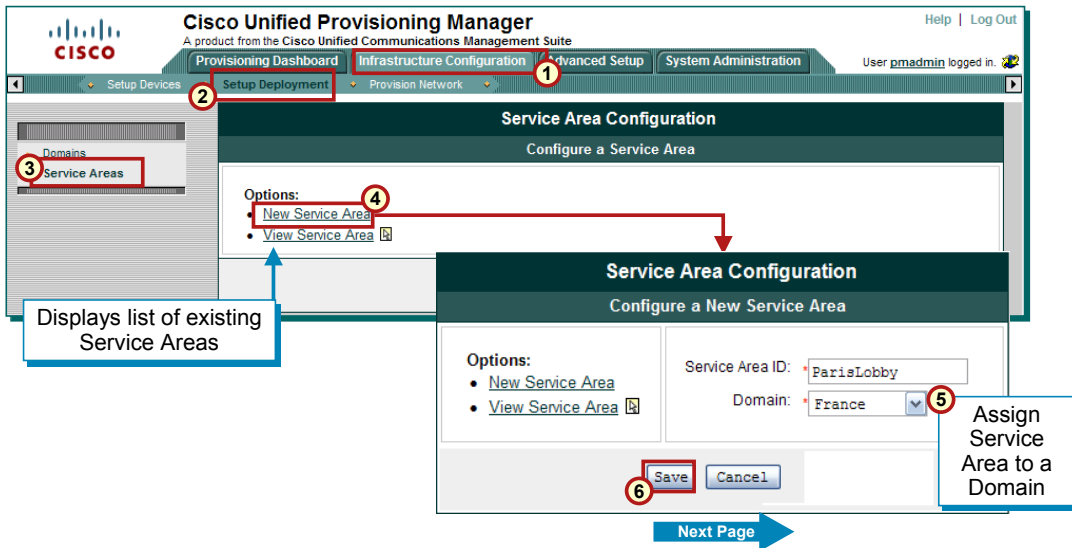
Note(s):

- One or more call processor can be associated with a Domain. Message processors are optional, but multiple ones can be associated.

Setup Deployment

Create Service Areas

Create a Service Area to be used when provisioning 'Lobby' Phones



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Scenarios 3-35

Create Service Areas

The next step is perhaps one of the most critical as Phil must create Service Areas for the France Domain to reflect dial plans for different types of subscribers according to the Chambers Engineering deployment plan. The Service Area business abstraction greatly simplifies subscriber provisioning because the Domain Administrator only needs to assign a Service Area to a subscriber and not the individual components such as Calling Search Space and Route Partition.

Earlier Phil created a new Subscriber Type to cover lobby phones. Using the following steps, Phil will create a Service Area specifically for lobby phones:

1. Phil selects the **Infrastructure Configuration** tab.
2. Next Phil selects the **Setup Deployment** option.
3. A sub-menu appears on the left-side of the desktop and Phil selects **Service Areas**. Alternatively, Phil could have selected the Service Areas option in the Setup Deployment dashboard displayed after selecting the Infrastructure Configuration tab.
4. The **Service Area Configuration – Configure a Service Area** dialog is displayed. Phil selects the **New Service Area** option.
5. The dialog changes to display 2 entry boxes. Phil enters the Service Area ID as **ParisLobby**, and uses the pull-down Domain menu to select the France Domain. Use a descriptive name to facilitate the understanding of the dial plan the Service Area represents.
6. Phil clicks the **Save** button to create the Service Area. (see next page)

Note(s):

- To view or modify the configuration of an existing Service Area, use the **View Service Area** option.

Setup Deployment

Configure Service Areas

Service Area Configuration
Edit Service Area

Options:

- New Service Area
- View Service Area
- Update

Service Area ID: ParisLobby

Domain: France

Call Processor Settings

Name: ParisHQ

Call Search Space (Phone): Paris_Internal

Call Search Space (Line): - Select -

Location: Paris

Route Partition: ParisBldg1

Voice Device Group: DP_Paris

External Phone Number Mask:

Default Call Forwarding Settings: Update Default Settings

Unified Message Processor Settings

Name: No Unified Message Processors assigned to this Domain

Subscriber Role(s)

☐ Contractor

☐ Employee

☐ Executive

☒ Facilities

Directory Number Block(s)

Assigned (to this Service Area)

Assigned (to the same Call Processor)

Service Area Configuration
Add New Directory Number Block

Enter the following information:

Prefix: 2

First Number: 1

Last Number: 100

Minimum Length: 4

Add Cancel

Save Cancel

Configure Service Area

After creating the Service Area the *Service Area Configuration – Edit Service Area* dialog is displayed. It is used to define the parameters of a dial plan. Phil uses the following steps to configure the “ParisLobby” Service Area he just created:

- Phil uses the pull-down menus to select the appropriate values.

Call Processor Settings:

Name: Select the ParisHQ call processor.

Once this field is set, the remain options will be populated based on the values retrieved from the selected call processor during the infrastructure synchronization task. Phil uses the appropriate values to create a dial plan for lobby phones according to the Chambers Engineering IP voice deployment plan.

Unified Message Processor Settings:

Identical procedure to the call processor settings. Defining a message processor in a service area is optional. For the ParisLobby Service Area a message processor is not needed because the IP voice deployment plan does not allow voice mail on the lobby phones.

Subscriber Roles:

Phil selects **Facilities** – The Facilities Subscriber Role was specifically created for lobby phones. It limits the type of phones and services that can be ordered. More than one Subscriber type can be chosen.

Directory Number Block(s):

A feature of PM is the ability to assign a block of numbers to a Service Area. Use the notepad icon to configure a set of directory numbers to be assigned (auto-configured) when provisioning a subscriber in this Service Area.

- Click **Save** to update the ParisLobby Service Area’s configuration.

Setup Deployment

Domain Sync

Put existing subscribers discovered during Call Processor Subscriber Sync into the Domain and appropriate Service Area

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management

Domain Configuration
View Domain

Options:

- New Domain
- View Domain
- Update
- Synchronize
- Edit Provisioning Attributes

Domain ID: France
Description: Admin control for ParisHQ and Nice subscribers
Call Processor(s): - Selected Processors - ParisHQ
Unified Message Processor(s): - Selected Processors -
Subscriber Role(s): Contractor, Employee, Executive, Facilities
Service Area(s): - Selected Service Areas - ParisLobby
Last Synchronization
Started:
Completed:
Message:

Refresh Exit

Choose a Domain
Listing 1 Domain
France

Domain Sync behavior is controlled by the following business rules:

- AssociateAllUsersInCallProcessor
- AssociateUserByDeptCode

Details filled in on completion

Domain Sync

After creating all the necessary Service Areas within the France Domain, the next step is to associate existing subscribers (imported during subscriber synchronization) with the appropriate Domain and Service Area.

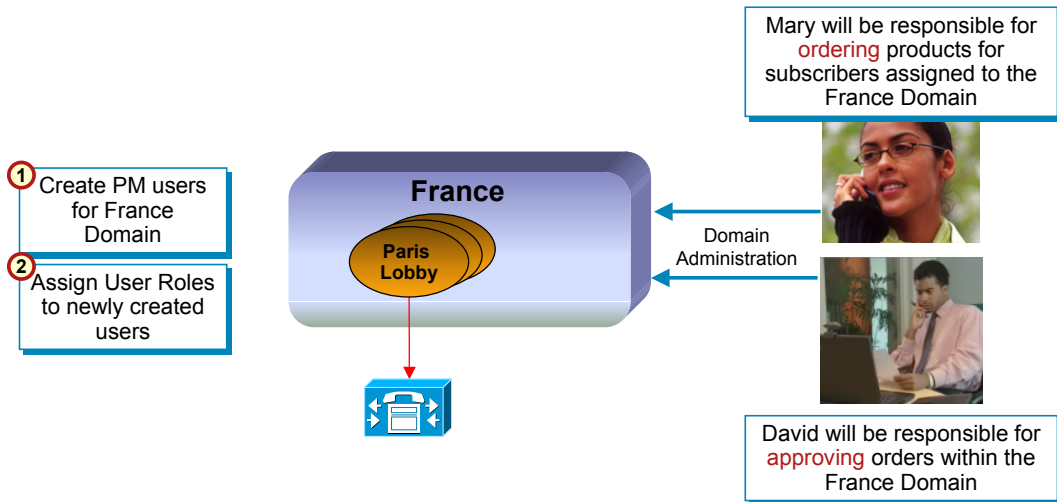
By performing a Domain synchronization, the imported subscribers will be placed into a Domain and then mapped into the appropriate PM Service Area within the Domain. This is done to not only allow PM users to view subscriber configurations, but to also modify and update them using PM.

The Domain synchronization behavior is controlled by a couple of Business Rules. One rule simply puts all subscribers imported into the Domain performing the sync. The other rule, only places subscribers with a Department name listed by the rule into the Domain. For our example, the first rule is enabled since at this time only a single Domain exists.

Phil uses the following steps to perform a Domain synchronization:

1. Phil selects the **Infrastructure Configuration** tab.
2. Next Phil selects the **Setup Deployment** option.
3. A sub-menu appears on the left-side of the desktop and Phil selects **Domains**.
4. The *Domain Configuration – Configure a Domain* dialog is displayed. Phil selects the **View Domain** option.
5. The *Choose a Domain* dialog changes to a listing of all Domains. Phil selects France. Alternatively, Phil could have selected the arrow icon next to the Domains option in the Setup Deployment dashboard displayed after selecting the Infrastructure Configuration tab and selected the France Domain from the list displayed.
6. The *Domain Configuration – View Domain* dialog is displayed showing the current configuration for the France Domain. Phil clicks the **Synchronize** option. A percentage completion bar will be displayed. When the synchronization is complete details about its start and completed time and a status message will be displayed under the configuration details.

User Administration



User Administration

The PM configuration that Phil has performed up to this point is enough for him to begin managing subscribers and their services. However, this is a task that he wants to hand-off to less experienced staff member. We'll finish this scenario by detailing how Phil would create the PM users assigned to handle provisioning tasks in the France Domain.

According to Chambers Engineering's IP voice deployment plans, Mary will be responsible for ordering, changing, and updating all subscriber services in the France Domain. David, Mary's boss wants to be informed about all subscriber provisioning, so he has asked to approve any order prior to it being provisioned.

To meet this requirement, Phil must create two new PM users to administer the France Domain, and assign them with the appropriate user privileges for their job responsibilities.

User Administration

Create User

Create a User responsible for ordering phones and managing subscribers in the France Domain

The screenshot shows the Cisco Unified Provisioning Manager interface. The top navigation bar includes tabs for Provisioning Dashboard, Infrastructure Configuration, Advanced Setup, and System Administration (highlighted with a red box and callout 1). Below this is a sub-navigation bar with options like Manage Users (highlighted with a red box and callout 2), License Information, Data Maintenance, Inventory, and Reports. The main content area is titled 'Manage User' and contains a form for creating or updating a user. The form fields are: User ID (maryj), Domain (France), First Name (Mary), Last Name (Jurupa), Contact Phone Number (x65233), Contact Email (maryj@chambers.com), and Department (IT). A blue box highlights the Domain dropdown menu with the text 'Limit responsibility to France Domain'. At the bottom of the form, there are buttons for Create, Clear, and Exit. The Create button is highlighted with a red box and a blue arrow pointing to 'Next Page' (callout 4). A callout 3 points to the User ID field.

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Scenarios 3-39

Create User

To recap, a PM user is staff member who should be allowed to perform tasks within PM. The following steps detail how Phil creates an account for Mary in the France Domain and assigns her ordering privileges:

1. Phil selects the **System Administration** tab.
2. Next Phil selects the **Manage Users** option.
3. The *Manage User – Create User or Select User to Update* dialog is displayed. Phil enters the appropriate information for user Mary, and uses the Domain pull-down menu to assign Mary to the France Domain.
4. Phil clicks **Create** to create Mary's account. (see next page)

Note(s):

- To update an existing user, click the arrow icon to the right of the User ID entry box. A dialog is displayed listing all existing users. Then, select the user to update.

User Administration

Set User Password

Create new User result dialog

The screenshot shows the Cisco Unified Provisioning Manager interface. The 'Manage User' dialog is open, displaying the 'Update or Remove User' tab. The user 'maryj' is created. The 'Manage Passwords' option is selected, leading to a password management dialog. The default password is 'Provisioning Manager Login'. The 'Set to New Value' button is highlighted, and the 'Done' button is also highlighted. A 'Next Page' arrow points to the 'Manage Authentication Roles' option.

Set User Password

5. Upon creation of the user, the *Manage User – Update or Remove User* dialog is displayed. To add a password for user Mary, Phil clicks the **Manage Passwords** option.
6. The dialog changes to Password Management. Phil selects **Provisioning Manager Login** from the “Select password to modify” pull-down menu, and adds and confirms the password.
7. To have this value take effect, Phil clicks **Set to New Value**.
8. Phil clicks **Done** to return to the *Update or Remove User* dialog.
9. Next, Phil needs to assign user roles to Mary. Phil can click either the **Manage Authentication Roles** option or the **Edit** button to the right of the Assigned Roles entry box (illustrated above).

Note(s):

- If a password is not set for a newly created user, the default is the same as the User ID.
- A user can change their password when logged in, by clicking their User ID, displayed as the logged in user in the upper right-hand corner of the PM desktop.

User Administration

Assign User Roles

The screenshot shows the 'Manage User' dialog in Cisco Unified Provisioning Manager. The 'Assign User Authorization Roles' section is active, showing roles for user 'maryj'. The roles are categorized into Global, Domain, Ordering Roles, and Activity Roles. The 'Ordering Roles' section is expanded, showing 'Ordering' (checked), 'Advanced Ordering' (checked), and 'Advanced Assignment' (checked). The 'Activity Roles' section is also expanded, showing 'Approval' (unchecked), 'Assignment' (unchecked), 'Shipping' (unchecked), and 'Receiving' (unchecked). A callout box points to the 'Ordering Roles' section, stating: 'Use same steps to create user David but only assigned the 'Approval' user role'. Another callout box states: 'Mary will be responsible for all aspects of ordering, including assigning phones and setting Provisioning Attributes'. At the bottom, there are 'Update' and 'Done' buttons, both circled with red numbers 11 and 12 respectively.

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management Suite

Help | Log Out

Provisioning Dashboard Infrastructure Configuration Advanced Setup System Administration

User pmadmin logged in.

Manage Users License Information Data Maintenance Inventory Reports

Manage User

Assign User Authorization Roles

Update Roles for User: maryj

Global

- ☐ Administration
- ☐ Maintenance

Domain

- ☐ Policy

Ordering Roles

- ☒ Ordering
 - ☒ Advanced Ordering
 - ☒ Advanced Assignment

Activity Roles

- ☐ Approval
- ☐ Assignment
- ☐ Shipping
- ☐ Receiving

Use same steps to create user David but only assigned the 'Approval' user role

Mary will be responsible for all aspects of ordering, including assigning phones and setting Provisioning Attributes

11 Update 12 Done

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Scenarios 3-41

Assign User Roles

10. The *Manage User – Assign User Authorization Roles* dialog is displayed. Phil selects the Ordering, Advanced Ordering, and Advanced Assignment user roles. This will allow Mary to order subscriber services, configure Provisioning Attributes, and assign the physical phone (MAC address) for the order.
11. Phil clicks **Update** to have the roles assigned.
12. Phil clicks **Done** to return to the *Update or Remove User* dialog where he can see the roles have been assigned to Mary.

Note(s):

- Phil follows the same steps to create a user account for David, but during User Authorization Role assignment, Phil only selects the Approval user role.

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Advanced Policy and Management

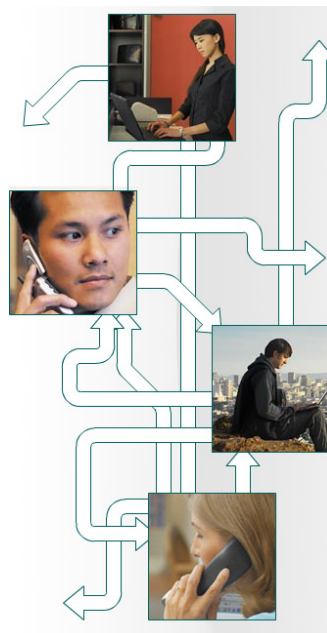
- Network Description
- Getting Started
- Existing VoIP Deployment Setup
- **Advanced Policy & Management**
- Managing Orders
- Adding Sites
- Batch Provisioning



Scenario 3 Outline

Advanced Policy & Management

- Business Rules Example
 - Configure Workflow
- Provisioning Attributes Example
 - Configure Speed Dial



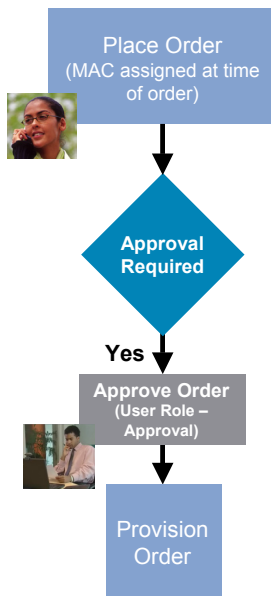
Scenario 3 Outline

At this point, Mary and David could begin using PM to manage subscribers and their services in the France Domain. However, PM allows for additional configurations to further control PM's execution and the provisioning itself.

In this scenario, we will explore the configuration of Business Rules and Provisioning Attributes as they relate to Chambers Engineering's IP voice deployment plan.

Advanced Policy and Management

Business Rules Example – Configure Workflow



Desired Order Workflow in France Domain

- Approval = True
 - User David has 'Approval' user role
- Assignment = Done at time of order
 - User Mary has 'Advanced Assignment' user role
- Shipping = Workflow automatic
- Receiving = Workflow automatic

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Scenarios 3-45

Business Rules Example – Workflow Configuration

The Chambers Engineering IP voice management plan for the offices in France states that Mary will be responsible for all subscriber ordering and phone assignment, and that David must first approve all orders before they are provisioned. Phil has already created the PM users Mary and David, and assigned them with the proper user roles to satisfy this requirement.

The next step is to configure PM so that the ordering workflow reflects this requirement. By default, all steps of the ordering workflow are set to automatic. If left in this state, any order Mary placed would be automatically provisioned without any approval.

In this example, Phil will modify the appropriate Business Rules to configure the ordering workflow in the France Domain to meet the stated requirement.

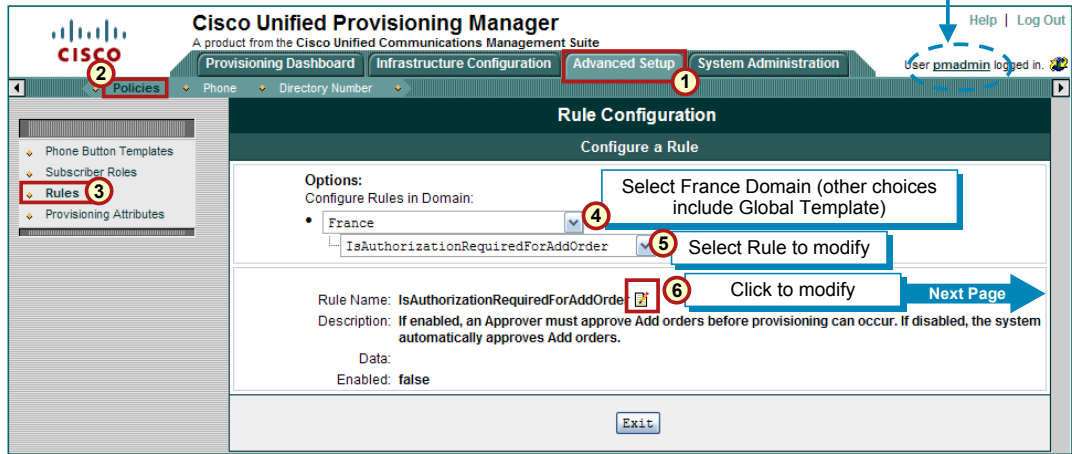
Business Rule Example

Configure Workflow

Configure workflow Business Rules so that all orders in the France Domain be approved by a user with the User Role - 'Approval'

Note - Default value for all workflow steps is 'workflow automatic'

Only user with the global user role 'Administration' can modify Business Rules



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Scenarios 3-46

Workflow Configuration

Phil uses the following steps to edit the appropriate Business Rules in the France Domain to configure the desired processing workflow:

1. Phil selects the **Advanced Setup** tab.
2. Next Phil selects the **Policies** option.
3. A sub-menu is displayed of the left side of the PM desktop. Phil selects the **Rules** task.
4. The *Rules Configuration – Configure a Rule* dialog is displayed. From the 'Configure Rules in Domain' pull-down menu, Phil selects **France**.
5. Phil then uses the 'Select a Rule' pull-down menu to select **IsAuthorizationRequiredForAddOrder**
6. The description and current setting of the rule is displayed. Phil clicks the **notepad icon** to the right of the rules name to modify it (see next page)

Note(s):

- To configure a rule to be applied to all new Domains, use the 'Configure Rules in Domain' pull-down and select **Customer Domain Template**

Business Rule Example

Configure Workflow (Cont.)

The screenshot shows the 'Rule Configuration' dialog box with the 'Edit Rule' tab selected. Under 'Options', 'Configure Rules in Domain' is set to 'France' and the rule 'IsAuthorizationRequiredForAddOrder' is selected. The 'Update the following information' section shows the rule name and description. The 'Data' field is empty, and the 'Enabled' checkbox is checked. A callout box points to the 'Enabled' checkbox with the text 'Rules are configured by enabling and entering a corresponding data value'. Another callout box points to the empty 'Data' field with the text 'No data for this rule'. A third callout box points to the 'Save' button with the text 'Click to enable'. The 'Save' button is circled with a red '8'.

Rule Configuration

Edit Rule

Options:
Configure Rules in Domain:

- France
- IsAuthorizationRequiredForAddOrder

Update the following information:
Rule Name: IsAuthorizationRequiredForAddOrder
Description: If enabled, an Approver must approve Add orders before provisioning can occur. If disabled, the system automatically approves Add orders.

Data:

Enabled: ☒ 7 Click to enable

8 Save Cancel

Rules are configured by enabling and entering a corresponding data value

No data for this rule

Workflow Configuration (Cont.)

7. The dialog changes to allow editing. For this particular rule there is no associated data (i.e. like user roles that can be set to perform this action), only enabled or disabled. When enabled a user in the France Domain with the Approver user role must approve all add orders. Phil clicks the **Enable** check box.
8. Phil clicks **Save** to have the new rule take effect.

Note(s):

- Phil uses the same steps to also enable rules to necessitate approval for change and cancel orders (**IsAuthorizationRequiredForChangeOrder** and **IsAuthorizationRequiredForCancelOrder**)

Advanced Policy and Management

Provisioning Attributes Example – Speed Dial



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Scenarios 3-48

Provisioning Attributes Example – Speed Dial

When provisioning phones, lines, voice mail, and extension mobility there are many possible attributes that can be set. Setting them for each provisioning instance would require substantial time and be prone to human error. PM allows Provisioning Attributes to be set at the Domain, Subscriber Type, and Service Area levels that will be assigned to provisioning orders, thus simplifying the process. A PM user with the Advanced Ordering user role can also override any of these settings when placing an order.

Let's look at an example of setting a Speed Dial for Security on all Lobby Phones. For this example, we will configure the attribute at the Service Area level.

Note(s):

- Setting the attribute at the Service Area level takes precedence over any Speed Dials that may have been set at the Domain or Subscriber Type level.

Provisioning Attributes Example

Speed Dial

Set **Speed Dial** attributes for the ParisLobby Service Area

Only user with the global user role 'Administration' can modify Provisioning Attributes for a Domain or Service Area

The screenshot shows the Cisco Unified Provisioning Manager interface. The top navigation bar includes tabs for Provisioning Dashboard, Infrastructure Configuration, Advanced Setup (highlighted with a red circle 1), and System Administration. The left sidebar shows a tree view with Policies (highlighted with a red circle 2), Phone, Directory Number, and Provisioning Attributes (highlighted with a red circle 3). The main content area displays the 'Launching Provisioning Attributes Management' dialog, which prompts the user to 'Choose a Provisioning Attributes Assignment Level to Start'. Under 'Select assignment level:', the 'Service Area' option is selected (highlighted with a red circle 4). Below this, a dropdown menu shows '- Select a Domain -'. To the right, a 'Choose a Service Area' dialog is open, listing four service areas: ChambersExecutive, FranceNationwide, ParisContractor, and ParisLobby (highlighted with a red circle 5). A red arrow points from the 'ParisLobby' selection back to the 'Exit' button in the main dialog. A blue arrow labeled 'Next Page' points to the right.

Provisioning Attributes can also be edited from the appropriate Create/Update tasks (i.e. Infrastructure Configuration > Setup Deployment > Service Areas)

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Scenarios 3-49

Speed Dial

Phil uses the following steps to edit the Provisioning Attributes for the Service Area - ParisLobby. Any phone provisioning using the ParisLobby Service Area will be assigned these attributes:

1. Phil selects the **Advanced Setup** tab.
2. Next, Phil selects the **Policies** option.
3. A sub-menu is displayed on the left side of the PM desktop. Phil selects the **Provisioning Attributes** task.
4. The *Launching Provisioning Attributes Management – Choose a Provisioning Attributes Assignment Level to Start* dialog is displayed. Phil selects the **Service Area** option.
5. A dialog is displayed listing all configured Service Areas in PM. Phil selects **ParisLobby**. (see next page)

Provisioning Attributes Example

Speed Dial (Cont.)

Service Area Configuration
Provisioning Attribute Management

Service Area: ParisLobby

1. Extension Mobility Access
2. Extension Mobility Line
3. Line
6. Phone

Click to expand

AAR Calling Search Space: -- NONE --
Authentication Server URL: not set
Auto Line Select: not set
Built in Bridge: not set
Device Description: not set
Device Security Mode: not set
Directory Server URL: not set
Disable Speakerphone: not set
Disable Speakerphone and Headset: not set
Forwarding Delay: not set

Retry Video Call as Audio: not set
Services URL: not set
Settings Access: not set
Softkey Template: not set
Speed Dial Info: not set
User Hold Audio Sou: not set
User Locale: not set
Video Capabilities: not set
Web Access: not set

Done

Service Area Configuration
Provisioning Attribute Management

Update Phone Provisioning Attributes

Speed Dial Settings on Phone

Index	Directory Number	Label	Remove
1	65911	Security	

9. Update 10. Done

8. Enter appropriate information

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Scenarios 3-50

Speed Dial, (Cont.)

6. The *Service Area Configuration – Provisioning Attribute Management* dialog is displayed. It lists only the products that can be provisioned for this Service Area. Notice that there is no entry for voicemail. This is because no message processor was defined for the ParisLobby Service Area. Phil expands the **Phone** entry.
7. All Phone attributes are displayed. Phil finds the one related to Speed Dial and clicks the **notepad icon** to the right of the entry to modify it.
8. A new dialog is displayed. Phil enters the directory number for Security and enters the label Security.
9. Phil clicks **Update** which saves the attribute, and presents another entry line.
10. Phil clicks **Done** when finished adding speed dial information.

All phones provisioned using the ParisLobby Service Area will have a Speed Dial entry for Security displayed on their phone's display.



Managing Orders

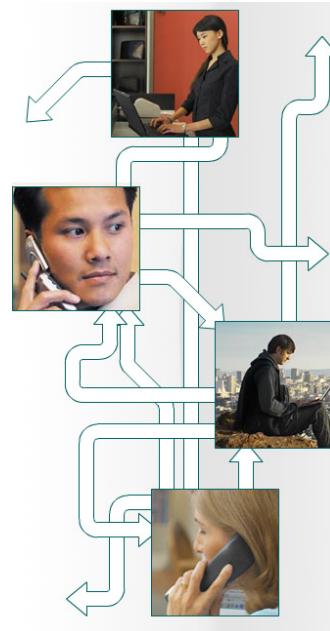
- Network Description
- Getting Started
- Existing VoIP Deployment Setup
- Advanced Policy & Management
- **Managing Orders**
- Adding Sites
- Batch Provisioning



Scenario 4 Outline

Managing Orders

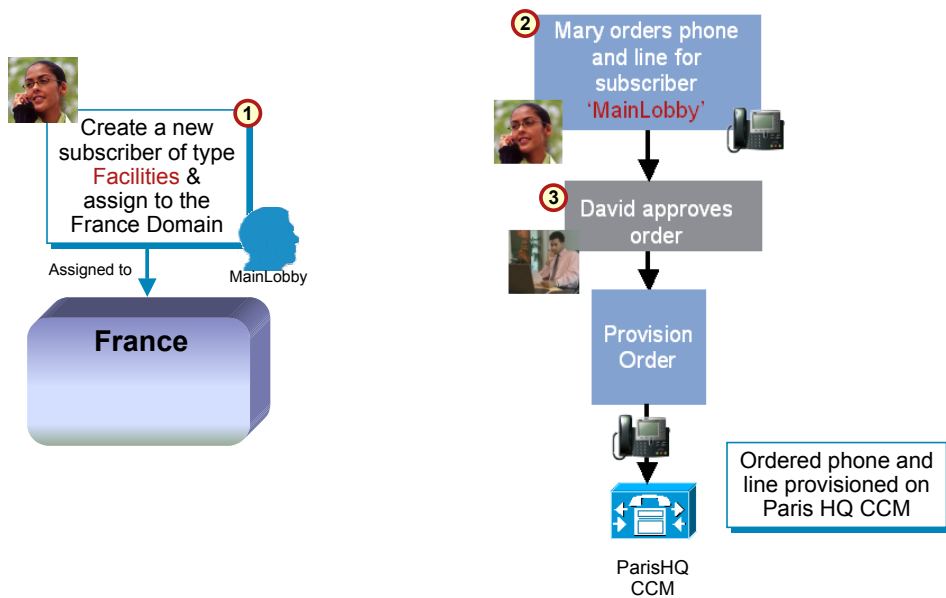
- Create Subscriber
- Order Services
 - Phone and Line
 - Order Status
 - Workflow Step
 - Order Completion
 - Shared Line
 - Change Phone
 - Change Owner



Scenario 4 Outline

Phil is now ready to turn over PM to Mary for managing the subscribers in the France Domain. This scenario will follow her steps as she creates a subscriber and orders a number of services.

Managing Orders



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Scenarios 3-53

Managing Orders

Mary's first activity with PM is to create a subscriber for a phone to be placed in the main lobby. She will then order a phone and line for the subscriber, called "MainLobby".

David will need to approve the order before it can be provisioned and activated.

Create Subscriber

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management Suite

Help | Log
User mary logged in

Manage Subscribers Manage Orders

Manage Subscribers
Add, modify, delete subscribers. Assign subscriber types; View subscriber details and ordered services. Search subscribers.

Add Subscriber (2)
View Subscribers
View Services
Search Subscribers

Subscribers / Users 2

Manage Orders
Order services for Subscribers; Search for orders; View order details;

Order Subscriber Services
Search Orders

Waiting 0
Failed 0
Executing 0

Manage Subscriber
Create Subscriber or Select Subscriber to Update

Subscriber ID: MainLobby
First Name: Main
Last Name: Lobby
Contact Phone Number: x65999 (3)
Contact Email: facilities@chambers.com
Department: facilities
Roles: Available

Assigned
Contractor Add > Facilities
Executive
Manager
Operator < Remove
Senior Manager

Assign Subscriber Type

Create (4) Clear Exit

Create a subscriber for the phone to be placed in the main lobby

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Scenarios 3-54

Create Subscriber

Mary logs into PM with the account created by the PM admin, Phil. Notice that her PM desktop doesn't have as many tabs and options as Phil's did. Since Mary was configured to only have ordering user rights, only the tabs and options pertaining to the ordering task are displayed.

As seen above in Mary's PM desktop, she can basically create subscribers and order services for them. Because of her assigned Domain, Mary can do this only for the France Domain. This is not a problem because from Mary's perspective she has no reason to know that PM is being used by any other areas.

Let's follow Mary as she creates a subscriber for the phone to be placed in the main lobby of the Paris Headquarters:

1. Mary selects the **Provisioning Dashboard** tab (her only option so it will be selected by default)
2. A set of dashboards are displayed that provide shortcuts to the various tasks. So rather than selecting the Manage Subscribers option and then the Add Subscribers task that will be displayed in a sub-menu, Mary simply selects **Add Subscriber** in the Manage Subscribers dashboard.
3. The *Manage a Subscriber – Create Subscriber or Select Subscriber to Update* dialog is displayed. Mary adds information pertaining to this subscriber's account, ID, first and last name, a contact phone number and email address, and department. Notice that she did not need to select a Domain because she only has rights in the France Domain. She must also assign the type of subscriber. Remember, Subscriber Type dictates the products and services that can be ordered. Mary uses the **Add** and **Remove** buttons until the Assigned Subscriber Type is **Facilities**.
4. Mary clicks **Create** to create this subscriber account.

Note(s):

- If Phil (padmin) was logged in and creating a subscriber, he would also have a pull-down menu to select the Domain to place the subscriber in.
- To modify subscriber information, click the arrow icon to the right of the Subscriber ID entry field. A list of subscribers in the Domain of the user logged in will be listed (or all subscribers if global admin). Select the subscriber to modify.

Order Services

Phone and Line

The screenshot shows the Cisco Unified Provisioning Manager interface. At the top, the Cisco logo is on the left, and 'Help | Log Out' is on the right. Below the logo, the text 'Cisco Unified Provisioning Manager' is displayed, followed by 'product from the Cisco Unified Communications Management Suite'. A red box labeled '1' highlights the 'Provisioning Dashboard' tab. Below this, a navigation bar contains 'Manage Subscribers' and 'Manage Orders', with a red box labeled '2' highlighting 'Manage Orders'. The main content area is titled 'Search Subscribers for Ordering Services'. It contains a form with fields for 'Subscriber ID', 'Email', 'First Name', 'Last Name', 'Department', and 'Telephone'. A red box labeled '3' highlights the 'Subscriber ID' field, which contains the text 'MainLobby'. Below the form, there are buttons for '< BACK', 'SEARCH' (highlighted with a red box labeled '4'), and 'CLEAR'. A red arrow points from the 'SEARCH' button to the 'Subscriber Search Results' section below. This section has a title bar 'Subscriber Search Results' and a search criteria line 'Search Criteria: User Id : MainLobby'. It states 'Found 1 Subscribers.' and displays a table with four columns: 'Subscriber', 'Department', 'Telephone', and 'Email'. The table has one row with the following data: 'Subscriber: Lobby, Main (MainLobby)', 'Department: Facilities', 'Telephone: x65999', and 'Email: facilities@chambers.com'. A red box labeled '5' highlights the 'Subscriber' column. Below the table is a 'Search Again' button and a 'Next Page' link.

Search for Subscriber to order service for

Subscriber Search Results

Search Criteria: User Id : MainLobby

Found 1 Subscribers.

Subscriber	Department	Telephone	Email
Lobby, Main (MainLobby)	Facilities	x65999	facilities@chambers.com

Search Again

Next Page

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Scenarios 3-55

Phone and Line

After creating the subscriber, the dialog will display the account information and have options to view or order services for this subscriber. However, after creating the MainLobby subscriber, Mary went on to create many other subscribers; so in order for her to order services for MainLobby, she needs to use the following steps:

1. Mary selects the **Provisioning Dashboard** tab (her only option so it will be selected by default)
2. This time instead of using the dashboard shortcuts, she selects the **Manage Orders** option.
3. The next step is to select which subscriber Mary will manage orders for. The *Search Subscribers for Ordering Services* dialog is displayed. Mary can use any of the account fields to search on and use an * as a wildcard. Mary enters **MainLobby** in the Subscriber ID field.
4. Mary clicks **Search** and PM presents a list of the subscribers matching her query. In this case, there is only one subscriber listed.
5. Mary clicks on **MainLobby** to select it. (see next page)

Order Services

Phone and Line, (Cont.-1)

The screenshot shows the Cisco Unified Provisioning Manager interface. At the top, the header includes the Cisco logo, the title 'Cisco Unified Provisioning Manager', and a subtitle 'A product from the Cisco Unified Communications Management Suite'. There are links for 'Help' and 'Log Out', and a user status 'User mary logged in.'.

The main navigation bar includes 'Manage Subscribers' and 'Manage Orders'. Below this, the 'Product Catalog Options' section shows 'Product Catalog: Category "Telephony and Messaging"'. A 'Quick Jump' bar allows filtering by 'TOP | # | A-E | F-J | K-O | P-T | U-Z'.

The 'Main Lobby (MainLobby)' section has a 'Search for a product' field with a 'Go' button and a 'Go to Subscriber Record' link. A red circle with the number 6 highlights the 'Phone Service' link in the 'Description' section.

A text box explains: 'Listing depends on the products associated with the Subscriber Type and devices in the Domain (Example listing for another Subscriber Type)'. To the right, a list of services is shown: 'Enable SoftPhone Support', 'Line on a shared Phone', 'Messaging Service', 'Phone', 'Phone Service', 'Phone Service with extra line', and 'Voicemail and Email Service'.

The 'Order Entry' section is titled 'Ordered Product List'. A blue dashed circle with '[Step 1 of 4]' is shown. Below this, the 'You are Ordering:' section displays 'Phone Service' with a description: 'Provides a standard set of voice services'. It also lists the contents: 'A single extension number' and 'A single IP handset'.

At the bottom, a red circle with the number 7 highlights the 'Continue' button, with a 'Cancel' button next to it. A blue arrow labeled 'Next Page' points to the right.

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Phone and Line, (Cont.-1)

The desktop now displays the subscriber's record. The record is used to order services, view the subscriber's current services (if any), and view a history of orders for the subscriber. As the scenario continues, you will have a chance to see subscriber records with more details than the one presented above.

6. MainLobby's subscriber record only lists a single bundle of products that can be ordered. The products listed depend on the products associated with the Subscriber Type of the subscriber, and the devices defined in the Domain (i.e. if the Domain does not have any message processors defined then voicemail will not be offered as a service even if it is associated with the Subscriber Type). Mary selects **Phone Service** to begin the ordering process.
7. The bottom half of the subscriber record changes into an Order Entry Wizard. The first step of the wizard describes what is being ordered. In this case, it is a single extension number and a single IP handset. Mary clicks **Continue** for the next step of the wizard. (see next page)

Order Services

Phone and Line, (Cont.-2)

Order Entry
Configure Product

[Step 2 of 4]
You are Ordering: **Phone Service**
Configure Product: **Line**
- Line Type: * Auto-Assigned Line

8 **Continue** Previous Cancel

Order Entry
Configure Product

[Step 3 of 4]
You are Ordering: **Phone Service**
Configure Product: **Phone**
- Phone Type: * (Selecting a Phone Type will refresh to display a photo and any additional attributes)
Cisco 7960
- MAC Address: 00059a3b7700

9 10 **Continue** Previous Cancel

Next Page

No selections in this step of the wizard based on Subscriber Type products settings

Phones available depends on products specified for Subscriber Type. After selecting type, phone picture is displayed

Phone assignment available here if user has **Ordering – Advanced Assignment** user role.
(Note: based on Business Rule, workflow may still wait for an assignment activity)

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Phone and Line, (Cont.-2)

8. The second step of the wizard configures the line. In this case, the Subscriber Type only allows an auto-assigned line so there is no selection to be made. The other possibility, if associated with the Subscriber Type, is to choose a line, which allows the user doing the ordering to assign the Directory Number. Mary simply clicks **Continue** to go to the next step in the wizard.
9. This step of the wizard is also used to configure a product being ordered. This time it's the phone. Mary uses the pull-down list to select a **phone type**. Again this list is based on the products associated with the Subscriber Type assigned to this subscriber. Once a phone is selected, a sample picture of the phone is displayed. Since Mary was also granted the Advanced Assignment user role, she can now assign the actual phone by entering its **MAC address**.
10. Mary clicks **Continue** to move to the final step of this wizard. (see next page)

Order Services

Phone and Line, (Cont.-3)

Order Entry

Order Confirmation

[Step 4 of 4]

You are Ordering: **Phone Service**

Service Area: * **ParisLobby** 11

Phone Button Template: * **Standard 7960**

Confirm Details:

- **Line**
 - Line: **Auto-Assigned Line**
 - Line Position: **1 - Available**
- **Phone**
 - MAC Address: **00059a3b7700**
 - Phone: **Cisco 7960**

Advanced Order Options...

Confirm **Previous** **Cancel**

Confirmation of Order

Thank you. Your customer's order has been accepted. Please give the order number to the customer. They will need this information in the future when dealing with other Customer Service Representatives.

Order Number: **1**

DONE 13

Order only matches one Service Area, so no selection necessary

Allows for setting specific Provisioning Attributes for ordered products. User must have **Ordering – Advanced Ordering** user role

Note the order number to track provisioning progress

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Scenarios 3-58

Phone and Line, (Cont.-3)

11. If the Subscriber Type was defined in more than one Service Area, Mary would need to select the appropriate one (good reason for descriptive naming of Service Areas). Here, Mary does nothing because Facilities was only associated with the ParisLobby Service Area. Mary must also select the appropriate Phone Button Template to use and finally which line on the phone the extension will be attached to.
12. Mary is satisfied with her selections, and clicks **Confirm** to place the order.
13. The Confirmation of Order dialog is displayed providing Mary with the Order Number to help her track it. Mary clicks **Done**.

Note(s):

- Many of the fields and available options will differ depending on the products being ordered.

Order Services

Phone and Line - Status

Check status of order

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Scenarios 3-59

Phone and Line – Status

Once the order is placed, it enters the ordering workflow where it goes through the steps of approval, assignment, shipping, and receiving. The steps are handled either automatically by PM or must have manual intervention by a PM user before proceeding. The workflow processing is defined by the setting of Business rules as discussed in the previous scenario.

Mary wants to check on the status of this order and uses the following steps to do so:

1. Mary selects the **Provisioning Dashboard** tab (her only option so it will be selected by default)
2. A set of dashboards are displayed that provide shortcuts to the various tasks. The Manage Order Dashboard contains a summary of currently being provisioned orders. Mary selects the **Waiting** total since she has only made one order so far. She could also have selected the Search Orders option or any option that would eventually display the MainLobby's subscriber record (see next page).

Order Services

Phone and Line – Status, (Cont.)

Order Search Results 					
Search Criteria: Extended Status : Waiting for Approval,Waiting to Assign,Waiting to Receive,Waiting to Ship,Waiting for Return Subscriber Domain : France					
Found 1 Orders.					
Order Number 	Subscriber 	Order Date 	Author 	Status 	Extended Status 
1	Main Lobby	01/22/2007 12:12:40 -0800	maryj	RELEASED	Waiting for Approval
					Search Again

Order Details

Subscriber
ordering
history

Order is
waiting on
workflow
activity

Status can be:

- In Progress
- Waiting for 'workflow step'
- Hold (error condition)
- Cancel
- Complete

Phone and Line – Status, (Cont.)

The list of orders in the 'Waiting' state is displayed. Mary's order for subscriber MainLobby is listed and indicates it is waiting for approval. This is exactly what the workflow was configured in the previous scenario to do; wait for approval by a user with the Approver user role.

Order Services

Phone and Line – Workflow Completion

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management Suite

Help | Log Out
User davidv logged in

Provisioning Dashboard

Manage Activities

Workflow related activities

View assigned order activities.

My Activities

Process Title	Process Name	Activity	State	Start Date
Order 1 for Main Lobby	VoIP	Authorize	Started	01/22/2007 12:12:47 -0800

Order 1 is waiting to be approved before continuing in the order workflow

Depending on business rules, workflow can also require user intervention for workflow steps: assignment, shipping, and receiving

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Phone and Line – Workflow Completion

The order will remain in the waiting state until it is approved. Phil configured David with the Approver user role in the France Domain. Therefore, before the order will continue on in the workflow, David must log into PM, and approve the order.

The screenshot above depicts David's PM desktop. Notice that the only task he can perform is titled My Activities. The My Activities task is used to handle the manual steps of the workflow assigned to the PM user logged in. If you were to look back a few pages, you would notice that Mary's desktop did not include this task because her account was not configured to handle any workflow steps.

For this order to proceed, David uses the following steps to approve the order:

1. David selects the **Provisioning Dashboard** tab (his only option so it will be selected by default)
2. A single dashboard is displayed. At the bottom of the My Activities dashboard is a status of the number of orders waiting for action by David. To view them, David selects the **My Activities** option.
3. A list of orders waiting for David's action is displayed. David selects **Order 1 for MainLobby** (see next page)

Note(s):

- There are many more options available for the Global Administrator under the Manage Activities dashboard including: My Activities, All Activities, Activities for a Group, Activities for a User. The last three only allows the Global Administrator to look at the activities, but not act on them. The Global Administrator can only act on the activities listed under My Activities.

Order Services

Phone and Line – Workflow Completion, (Cont.)

Viewing Activity

Process Name: Authorize
Process Title: Order 1 for Main Lobby [View Process History]

This activity has not been accepted yet. Once it has been accepted, this form will be editable.

4

User: Main Lobby
Order Number: 1
Service Area: ParisLobby

Order Details:

Add Product - Add a new product.

Product

- Line
 - Line: Auto-Assigned Line
 - Associated with: [Detail: Add Product - Phone]
- Phone
 - Phone: Cisco 7960
 - MAC Address: 00059a3b7700

Viewing Activity

Process Name: Authorize
Process Title: Order 1 for Main Lobby [View Process History]

User: Main Lobby
Order Number: 1
Service Area: ParisLobby

Order Details:

Add Product - Add a new product.

Product

- Line
 - Line: Auto-Assigned Line
 - Associated with: [Detail: Add Product - Phone]
- Phone
 - Phone: Cisco 7960
 - MAC Address: 00059a3b7700

Add a Note:
(Notes added here will appear in the Process History)

5

Add comments to appear in order history

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Scenarios 3-62

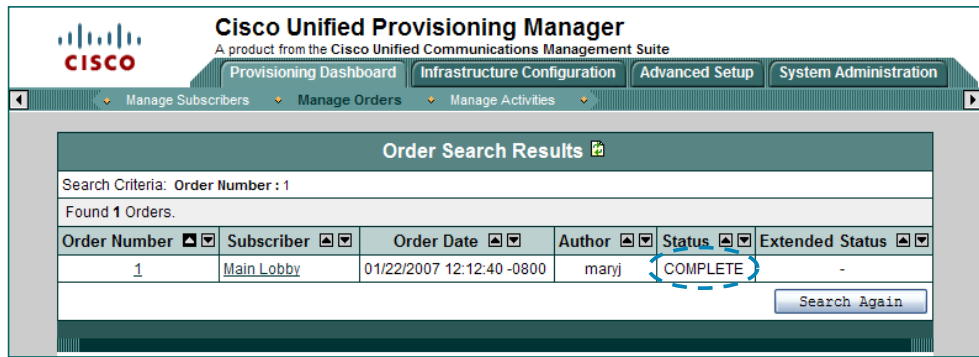
Phone and Line – Workflow Completion, (Cont.)

4. The *Viewing Activity* dialog is displayed. It presents details about what was ordered. David's first order of business is to either accept or decline the responsibility of approving this order. The Decline option may be selected if there were other users with the approval right that David wanted to defer to. In this case, David selects **Accept**.
5. At this point, David can choose to delegate this activity to another user or accept or reject it himself. David can add comments to this order that will appear in the order history for the subscriber. David selects **Approve** to approve the order.

Based on his assigned user roles, David's job is done and he can do nothing further using PM, including checking the order's progress.

Order Services

Phone and Line – Order Completion



Mary can search order by number or subscriber to get current status

Phone and Line – Order Completion

Once approved the order moved through the remainder of the workflow automatically (because no other user interventions were configured with the Business Rules), and was activated. Mary uses the same procedure as earlier to search for the order to get its status, where she sees that it completed successfully.

The subscriber, phone, and line were all configured in the CallManager ParishHQ by PM, and once the IP Phone is installed in the lobby, it is ready for use.

Order Services

Shared Line

Matt and Susan will have their own phones but share a line

Matt's phone and line have already been provisioned, Mary first searches the subscriber records to determine the DN to be shared

Susan's phone and line are provisioned by Mary. The line is assigned to the existing line DN=65000



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Scenarios 3-64

Shared Line

Chambers Engineering is a progressive company that allows job sharing. Matt is the current Training Coordinator, but will now be sharing the job with new hire Susan. Both Matt and Susan have their own desk and phone, but both need to be able to answer the Training Coordinator's line from their desks.

To meet this requirement, Mary will first search for Matt's subscriber record to determine the number to be shared, and then provision Susan with a phone and the shared number.

Order Services

Shared Line – Determine Line to be Shared

Subscribers Matt and Susan will be sharing a line

Matt has already been provisioned a phone. First step is to determine his assigned extension that he will be sharing.

The screenshot shows the Cisco Unified Provisioning Manager interface. The top navigation bar includes 'Provisioning Dashboard' (1), 'Manage Subscribers', and 'Manage Orders' (2). The left sidebar shows 'Order Subscriber Services' and 'Search Orders' (3). A red arrow points from 'Search Orders' to the 'Search' dialog box. The 'Search' dialog box has sections for 'Order details', 'Subscriber', and 'Order Date'. The 'Subscriber' section has fields for 'Login' (matta), 'Email', 'First Name', 'Last Name', 'Phone Number', and 'Department'. The 'Order Date' section has 'From' and 'To' date pickers. A 'SEARCH' button (5) is at the bottom right of the dialog box. A 'Next Page' button is also visible. A text box (4) indicates 'Search by order details, Subscriber, or order date'. Another text box at the bottom left suggests an alternative path: 'Could also use Provisioning Dashboard > Manage subscribers > Search Subscribers'.

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Scenarios 3-65

Shared Line – Determine the Line to be Shared

Matt's phone was previously provisioned, so his current number will be the one shared with Susan. Mary's first task is to determine Matt's current directory number. Mary doesn't want to rely on the published phone directory as it may be out-of-date, so she will search for Matt's subscriber records to determine what was provisioned for him.

1. Mary selects the **Provisioning Dashboard** tab (her only option so it will be selected by default)
2. She next selects the **Manage Orders** option.
3. A sub-menu is displayed on the left side of the PM desktop, Mary selects **Search Orders**.
4. A Search dialog is displayed allowing Mary to search for orders using a combination of Order Details, Subscriber Information, and/or Order Dates. Mary enters Matt's subscriber ID in the Subscriber Login entry box.
5. Mary clicks **Search** (see next page).

Note(s):

- Mary could have also selected the Manage Subscribers option to search for Matt's subscriber records.

Order Services

Shared Line - Determine Line to be Shared, (Cont.)

The screenshot shows the Cisco Unified Provisioning Manager interface. At the top, the 'Order Search Results' section displays search criteria: 'Subscriber Login : matta' and 'Subscriber Domain : France'. It indicates 'Found 1 Orders.' and shows a table with one order. The 'Subscriber' column for this order is highlighted with a red box and a red arrow pointing to the 'Subscriber Record Options' section below. In this section, 'Matt Accord (matta)' is selected, and the 'New Order' option is highlighted. The 'Subscriber Record Details' section shows 'Found 2 Products.' and lists two products: 'Line (Line 1 : 65000 Matt Accord)' and 'Phone (Cisco 7960: SEP00059A3B8000)'. A blue box with an arrow points to the 'Line' product, and a text box states 'Matt and Susan will be sharing extension x65000'. Another blue box points to the 'Products' column header with the text 'Click products for provisioning details (attributes)'. The 'Order Details' section at the bottom shows 'Found 1 Orders.' and a table with one order.

Order Number	Subscriber	Order Date	Author	Status	Extended Status
2	Matt Accord	01/22/2007 14:54:00 -0800	pmadmin	COMPLETE	-

Products	Location	Quantity	State	Last Update
Found 2 Products.				
Line (Line 1 : 65000 Matt Accord)			active	01/22/2007 15:03:10 -0800
Phone (Cisco 7960: SEP00059A3B8000)			active	01/22/2007 14:59:32 -0800

Orders	Status	Order Date
2	COMPLETE	01/22/2007

Shared Line – Determine the Line to be Shared, (Cont.)

6. A dialog appears, displaying a list of orders matching Mary's search parameters. She locates one related to Matt, and clicks on the subscriber in the Subscriber field to launch Matt's subscriber records.
7. Matt's Subscriber Record Details are displayed listing task options, order history, and current products. Under current products, Mary notes that the directory number associated with Line 1 on Matt's phone is 65000. This is the line that will be shared with Susan.

Order Services

Shared Line – Order Susan's Phone and Line

Order Susan's phone and line to be shared with x65000

A new subscriber has already been created for Susan. Use **Provisioning Dashboard > Manage Orders > Order Subscriber Services** to search for subscriber Susan

The screenshot displays the Cisco Unified Provisioning Manager interface. The top navigation bar includes 'Provisioning Dashboard', 'Manage Subscribers', and 'Manage Orders'. A red box highlights 'Order Subscriber Services' under 'Manage Orders', with a red circle and the number '1' next to it. An arrow points from this box to the 'Order Subscriber Services' dialog. In this dialog, the 'Search for a product' field is populated with 'Phone Service', and a red box highlights the 'Phone Service' option in the list of results, with a red circle and the number '2' next to it. An arrow points from this box to the 'Order Entry' section. In the 'Order Entry' section, the 'Continue' button is highlighted with a red box and a red circle with the number '3'. An arrow points from the 'Continue' button to the 'Next Page' button.

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Scenarios 3-67

Shared Line – Order Susan's Phone and Line

With the information about Matt's line, Mary uses the following steps to order phone services for Susan:

1. Mary selects **Provisioning Dashboard > Manage Orders > Order Subscriber Services** to search for subscriber Susan and launch the *Products Ordering* dialog.
2. From the *Products Ordering* dialog, she selects **Phone Service** from the list of available products for ordering.
3. The lower portion of the dialog displays the first step of the ordering wizard detailing what was selected for ordering. Mary clicks **Continue** to move to the next step of the ordering wizard (see next page)

Note(s):

- Subscriber Susan was given a Subscriber Type of employee which has more products and services associated with it then the Facilities Subscriber Type detailed earlier in this scenario.

Order Services

Shared Line – Order Susan’s Phone and Line, (Cont.-1)

Order Entry
Configure Product

[Step 2 of 4]

You are Ordering: Phone Service

Configure Product: Line

- Line Type: * Chosen Line

- Directory Number: * 65000

4 Use Line Type of 'Chosen Line' to share an existing line

5 Continue Previous Cancel

Order Entry
Configure Product

[Step 3 of 4]

You are Ordering: Phone Service

Configure Product: Phone

- Phone Type: * (Selecting a Phone Type will refresh to display a photo and any additional attributes)

Cisco 7960

6 Select phone type and assign phone

- MAC Address: 00059a3b88f4

7 Continue Previous Cancel

Next Page

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Scenarios 3-68

Shared Line – Order Susan’s Phone and Line (Cont.-1)

4. The second step of the wizard is used to configure parameters for the line. Mary selects **Chosen Line** from the Line Type pull-down menu. A new entry box is now displayed asking for the Directory Number. Mary enters Matt’s extension - **65000**.
5. Mary clicks **Continue** to advance to the next step of the wizard.
6. The third step of the wizard is used to configure parameters for the phone. Mary selects a Cisco 7960 from the Phone Type pull-down menu. A picture of a 7960 is displayed. Since Mary has the Advanced Assignment user role assigned to her, she enters the MAC address of the phone she has selected to be placed on Susan’s desk.
7. Mary clicks **Continue** to advance to the final step of the wizard (see next page).

Order Services

Shared Line – Order Susan's Phone and Line, (Cont.-2)

Order Entry
Order Confirmation

[Step 4 of 4]

You are Ordering: **Phone Service**

Service Area: * **FranceNationwide**

Phone Button Template: * **Standard 7960**

WARNING: Your order includes the following shared lines: 65000

Confirm Details:

- **Line**
 - Line: Chosen Line
 - Directory Number: 65000
 - Line Position: 1 - Available
- **Phone**
 - MAC Address: 00059a3b88ff
 - Phone: Cisco 7960

Advanced Order Options...

8 Enter button template and line on phone to be shared. Select line on phone to be shared

Assign any Provisioning Attributes (Option only displayed if user has Advanced Ordering User Role)

9 Confirm Previous Cancel

Confirmation of Order

Thank you. Your customer's order has been accepted. Please give the order number to the customer. They will need this information in the future when dealing with other Customer Service Representatives.

Order Number: 3

10 DONE

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Scenarios 3-69

Shared Line – Order Susan's Phone and Line (Cont.-2)

8. In the final step of the wizard, Mary needs to select a Service Area, if more than one exists. In this case, the Employee Subscriber Type is only associated with the FranceNationwide Service Area, so no selection is necessary. Mary also selects the Standard 7960 Phone Button template, and Line 1 as the Line Position to use for the extension.
9. Mary clicks **Confirm** to enter the order.
10. A confirmation dialog is displayed providing the order number. Mary clicks **Done**.

At this point the order enters the ordering workflow and, as before, will wait until David logs in and approves the order.

Order Services

Shared Line – Verify Order

The screenshot shows the Cisco Unified Provisioning Manager interface. The top header includes the Cisco logo, the title "Cisco Unified Provisioning Manager", and the subtitle "A product from the Cisco Unified Communications Management Suite". There are links for "Help" and "Log Out". The user "maryj" is logged in. The main navigation bar includes "Manage Subscribers" and "Manage Orders". The "Subscriber Record Options" sidebar for "susan Guitiez (susang)" includes links for "New Order", "View Orders", "Subscriber Notes", and "Go to Product Catalog". The "Subscriber Record Details" table shows two products:

Products	Location	Quantity	State	Last Update
Line (Line 1: 65000 susan Guitiez)	FranceNationwide	1	Active	01/22/2007 15:33:30 -0800
Phone (Cisco 7960: SEP00059A3B00FF)	FranceNationwide	1	Active	01/22/2007 15:31:53 -0800

A blue dotted circle highlights the "Line" product, and a blue arrow points from a text box below to it.

Susan's Subscriber Record shows that the line with DN 65000 on her phone is shared



Shared Line – Verify Order

Once David has approved the order, the phone and line are provisioned on the ParisHQ CallManager and activated. Looking at the details in Susan's subscriber record, Mary can see that Susan's line was set to 65000, and the icon (illustrated above) indicates that it is a shared line.

Order Services

Change Phone



Change Phone

It seems that most of Matt's calls these days require input from others in the room. He has decided that changing his phone to a conference model would simplify his life and has asked Mary to make it happen.

Order Services

Change Phone, (Cont.)

Upgrade Matt's Phone

Use [Provisioning Dashboard > Manage Subscribers > Search Subscribers](#) to search for subscriber Matt

The screenshot displays the Cisco Unified Provisioning Manager interface. The top navigation bar includes 'Provisioning Dashboard', 'Manage Subscribers', 'Manage Orders', and 'Manage Activities'. The user 'maryi' is logged in. The main content area is divided into two sections: 'Subscriber Record Options' on the left and 'Subscriber Record Details' on the right. In the 'Subscriber Record Options' section, the 'Matt Accord (matta)' record is selected, and the 'Expand' icon is highlighted with a red circle and the number 1. In the 'Subscriber Record Details' section, the 'Products' table is shown with two entries. The second entry, 'Phone (Cisco 7960: SEP00059A3B8000)', is highlighted with a red circle and the number 2. The 'Change' button for this entry is also highlighted with a red circle and the number 2. Below the table, the 'Order Entry' section is visible, showing the 'Ordered Product List' with one item: 'Phone'. The 'Continue' button is highlighted with a red circle and the number 3. A red arrow points from the 'Change' button to the 'Continue' button.

Products	Location	Quantity	State	Last Update
Found 2 Products.				
Line (Line 1: 65000 Matt Accord)	FranceNationwide	1	Active	01/22/2007 10:06:38 -0800
Phone (Cisco 7960: SEP00059A3B8000)	FranceNationwide	1	Active	01/22/2007 09:56:10 -0800

Orders	Status	Order Date
2	COMPLETE	01/22/2007

Order Entry

Ordered Product List

(Step 1 of 3)

You are Ordering: Phone

Description: A single IP handset

This product contains the following:

- A single IP handset

Continue Cancel Next Page

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Scenarios 3-72

Change Phone

Mary uses the following steps to change Matt's phone:

1. Mary selects [Provisioning Dashboard > Manage Subscribers > Search Subscribers](#) to search for subscriber Matt and launch his Subscriber Record. Under the current products provisioned section, Mary locates the phone entry and clicks the expand icon.
2. This displays a number of tasks that can be executed. Mary clicks [Change](#).
3. The Order Wizard is opened in the lower portion of the record. The first step of the wizard indicates the products being ordered. Mary clicks [Continue](#) to move to the next step of the wizard (see next page).

Order Services

Change Phone, (Cont.)

Order Entry
Configure Product

[Step 2 of 3]

You are Ordering: Phone
Configure Product: Phone

- Phone Type: * (Selecting a Phone Type will refresh to display a photo and any additional attributes)
Cisco 7936

- MAC Address: 00068b4c97a4

4 Choose new phone type, and assign phone (Note assign step depends on business rules)

5 Continue Previous Cancel

Order Entry
Order Confirmation

[Step 3 of 3]

You are Ordering: Phone
Service Area: * FranceNationwide
Phone Button Template: * Standard 7936

Confirm Details:

- Phone
 - MAC Address: 00068b4c97a4
 - Phone: Cisco 7936

Advanced Order Options...

6 Confirm Previous Cancel

Assign any Provisioning Attributes (Option only displayed if user has Advanced Ordering User Role)

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Change Phone, (Cont.)

- The next step is used to configure parameters for products being ordered. In this case, Mary selects a **Cisco 7936** from the Phone Type pull-down menu. A picture of a 7936 is displayed. Since Mary has the Advanced Assignment user role assigned to her, she enters the MAC address of the phone she has selected to replace the one on Matt's desk.
- Mary clicks **Continue** to advance to the final step of the wizard.
- The final step of this wizard would be to assign Service Area, Phone Button Template, and Line position, but in this case, there is nothing to be selected. Mary clicks **Confirm** to enter the order. A confirmation dialog is displayed providing the order number. Mary clicks **Done**.

At this point the order enters the ordering workflow and, as before, will wait until David logs in and approves the order.

Note(s):

- Since Mary has also been assigned the user role Advanced Ordering, an Advanced Ordering Options button is displayed on the final step of the wizard allowing Mary to set Provisioning Attributes.

Order Services

Change Phone – Verify Order

The screenshot shows the Cisco Unified Provisioning Manager interface. The top navigation bar includes 'Manage Subscribers', 'Manage Orders', and 'Manage Activities'. The 'Subscriber Record Options' sidebar on the left lists 'New Order', 'View Orders', and 'Subscriber Notes'. The main 'Subscriber Record Details' section displays a table with columns: Products, Location, Quantity, State, and Last Update. Two products are listed, both for 'FranceNationwide' with a quantity of 1 and state of 'Active'. The second product is a 'Phone (Cisco 7936: SEP00068B4C97A4)'. A callout box labeled 'New Phone' points to this entry.

Products	Location	Quantity	State	Last Update
Line (Line 1: 65000 Matt Accord)	FranceNationwide	1	Active	01/26/2007 16:08:03 -0800
Phone (Cisco 7936: SEP00068B4C97A4)	FranceNationwide	1	Active	01/26/2007 16:08:03 -0800

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Scenarios 3-74

Change Phone – Verify Order

Once David has approved the order, the new phone is provisioned on the ParishQ CallManager and activated. Looking at the details of Matt's subscriber record, Mary can see that Matt's provisioned phone is now a model Cisco 7936.

Order Services

Change Owner

- Susan is changing positions and Steve will take her place.
- Replace Susan with Steve as the new owner.



Change Owner

Susan has found a full-time position within the company and is being transferred. Luckily, Steve is looking for a part-time position and applies for Susan's old position of shared Training Coordinator with Matt. Mary needs to update current provisioning to show Steve as the new owner of Susan's phone services.

Order Services

Change Owner, (Cont.)

Change owner of Susan's phone to Steve

Use **Provisioning Dashboard > Manage Orders > Order Subscriber Services** to search for subscriber Susan

The screenshot shows the Cisco Unified Provisioning Manager interface. The top navigation bar includes 'Manage Subscribers', 'Manage Orders', and 'Manage Activities'. The main content area is titled 'Subscriber Record Options' and 'Subscriber Record Details'. On the left, there's a sidebar with 'Susan Guitiez (susang)' and options like 'New Order', 'View Orders', and 'Subscriber Notes'. The main area displays a table of products with columns for Location, Quantity, State, and Last Update. A red circle labeled '1' highlights the 'Expand' icon next to the 'Phone' entry. A red circle labeled '2' highlights the 'CHANGE OWNER' button. Below this, the 'Change Owner' wizard is displayed, showing the current owner 'Susan Guitiez (susang)' and the products to be changed. A red circle labeled '3' highlights the 'Continue' button. A blue arrow labeled 'Next Page' points to the right.

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Scenarios 3-76

Change Owner

Mary uses the following steps to make Steve the new owner of Susan's services:

1. Mary selects **Provisioning Dashboard > Manage Subscribers > Search Subscribers** to search for subscriber Susan and launch her Subscriber Record. Under the current products provisioned section, Mary locates the phone entry and clicks the expand icon.
2. This displays a number of tasks that can be executed. Mary clicks **Change Owner**.
3. The Change Owner Wizard is opened in the lower portion of the record. The first step of the wizard indicates the existing products and current owner. Mary clicks **Continue** to move to the next step of the wizard (see next page).


Order Services

Change Owner, (Cont.)

Change Owner

Choose a New Owner

Current Owner: **Susan Guitiez (susang)**

Choose New Owner: *  **4**

Product(s):

- Phone (Cisco 7960: SEP00059A3B88FF)
 - MAC Address: 00059A3B88FF
 - Phone: N/A
- Line (65000 Susan Guitiez)
 - Line: N/A

Click to assign new owner

6

Choose a User

Listing 14 Users

Lobby2
MainLobby
assign
davidv
erics
marvi
matta
mauriceb
pourcelc
receive
ship
steveb 5
susang
wjvneq

Change Owner

Change Owner Confirmation

Current Owner: **Susan Guitiez (susang)**

New Owner: **steveb** **7**

Product(s):

- Phone (Cisco 7960: SEP00059A3B88FF)
 - MAC Address: 00059A3B88FF
 - Phone: N/A
- Line (65000 Susan Guitiez)
 - Line: N/A

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Scenarios 3-77

Change Owner, (Cont.)

- The next step is used to select a new owner. Mary clicks the arrow icon to the right of the **Choose New Owner** entry to display a list of existing subscribers.
- Mary selects subscriber **steveb** as the new owner.
- Mary clicks **Continue** to advance to the final stage of this wizard.
- A confirmation for this order shows Steve will be the new owner of Susan's phone and associated lines. Mary clicks **Submit** to enter the order. A confirmation dialog is displayed providing the order number. Mary clicks **Done**.

At this point the order enters the ordering workflow and, as before, will wait until David logs in and approves the order before being provisioned and activated.

Note(s):

- Steve must have already been configured as a subscriber prior to being set as the new owner.

Order Services

Change Owner – Verify Order

Use Provisioning Dashboard > Manage Orders > Order Subscriber Services to search for subscriber Steve to see that the change was made

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management Suite

Provisioning Dashboard | User maryi logged in.

Manage Subscribers | Manage Orders | Manage Activities

Subscriber Record Options

Steve Boniface (steveb)

- New Order
- View Orders
- Subscriber Notes

Go to Product Catalog

Subscriber Record Details

Products	Location	Quantity	State	Last Update
Filter by Product	Location		State	FILTER
Found 2 Products				
Line (Line 1:65000 Steve Boniface)	wide	1	Active	01/26/2007 15:26:05 -0800
Phone (Cisco 7960: SEP00059A3B88FF)	wide	1	Active	01/26/2007 15:26:03 -0800

New Owner

View Orders

Found 1 Orders.

Orders	Status	Order Date
8	COMPLETE	01/26/2007

Click to display order details

Order Details

View Order #78

Steve Boniface (steveb)

Order Date: Friday, January 26, 2007 15:25:48 -0800

Requested Delivery Date: -

Actual Delivery Date: Friday, January 26, 2007 15:26:05 -0800

Location: Multiple

Status: COMPLETE

Extended Status: -

NOTES

Order Details

Add Product - Select a new product from the Product Catalog to order.

Product	Location	Quantity
Line (65000 Steve Boniface)	FranceNationwide	1
Phone (Cisco 7960: SEP00059A3B88FF)	FranceNationwide	1

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Scenarios 3-78

Change Owner – Verify Order

Once David has approved the order, Susan's phone and associated lines are provisioned for Steve on the ParisHQ CallManager. Looking at the details of Steve's subscriber record, Mary can see that Steve now owns Susan's phone and associated line. Notice that the line is still shared with Matt (shared icon is displayed).



Adding Sites

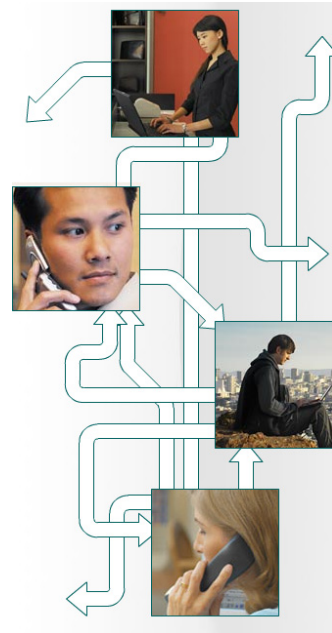
- Network Description
- Getting Started
- Existing VoIP Deployment Setup
- Advanced Policy & Management
- Managing Orders
- **Adding Sites**
- Batch Provisioning



Scenario 5 Outline

Adding Sites

- Task Flow
- Configuration Templates Overview
- Create Template
- Push Template



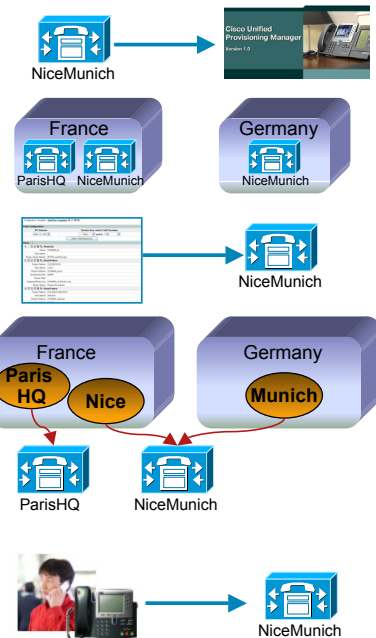
Scenario 5 Outline

Chambers Engineering is now ready to bring additional offices on-line. This scenario looks at how PM can be used to configure the voice infrastructure.

Adding Sites

Task Flow

1. Setup Devices
 - Add NiceMunich Processors (Call & Message) to PM
2. Setup Deployment
 - Add NiceMunich CCM to France Domain
 - Create Germany Domain
 - Add NiceMunich CCM
3. Provision Voice Network
 - Create Template(s) to configure CCMs
 - Push Template(s)
4. Setup Deployment
 - Create Service Areas for Nice and Munich offices in the France and Germany Domains as needed
 - Sync both Domains
5. Admin
 - Add or modify Subscriber Types as needed in both Domains
 - Create Users to administrate the Germany Domain
 - Set Provisioning Attributes
6. Manage Orders



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Scenarios 3-81

Adding Sites - Task Flow

There is only one real difference between the task flow for managing an existing IP voice deployment and deploying a new one. Instead of importing the existing voice infrastructure into PM, PM can be used to configure and push the voice infrastructure. This capability could also be use to extend an existing deployment as well.

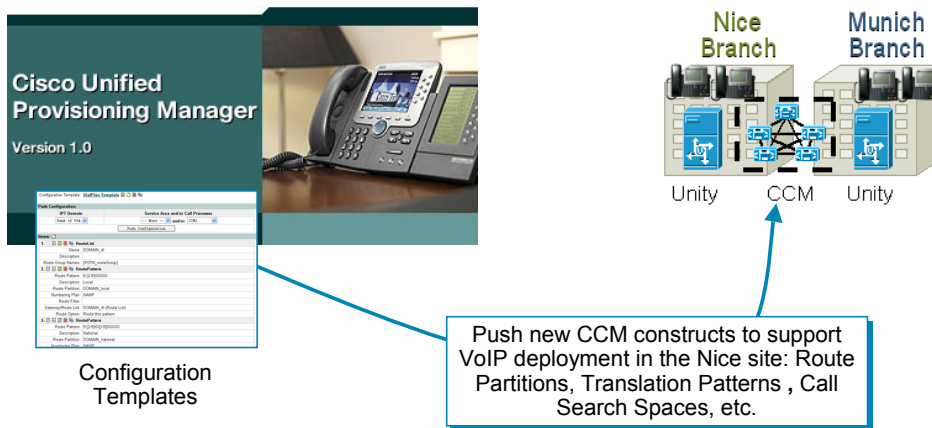
Since most task flow steps have already been covered in previous scenarios, this scenario will focus on the task of using PM to create and push voice infrastructure configurations.

Prior to this step, Phil (the PM global administrator):

- Added the call and message processor that will be used to provision subscribers in the Nice and Munich offices to PM.
- Associated the NiceMunich CCM to the France Domain. This will allow Mary to order services for the Nice subscribers.
- Created a Germany Domain to allow for the administration of voice services to Germany and nearby offices, separate from the France administration.
- Associated the NiceMunich CCM with the Germany Domain to allow Germany Domain administrators to order subscriber services for Munich subscribers.

Adding Sites

Most of the Adding Sites workflow has been covered in earlier scenarios; therefore, this scenario will focus on the 'Provisioning Network' step that hasn't been covered



Adding Sites

Phil needs to configure the NiceMunich CCM with voice constructs, such as: Route Partitions, Translation Patterns, Calling Search Spaces, etc. After the voice infrastructure configuration is complete, Phil can continue with the PM configuration by adding Services Areas for the Nice and Munich sites.

In this scenario, Phil will use the PM Configuration Templates to create generic templates for configuring basic voice infrastructure components that can then be reused when deploying future processors.

When the voice infrastructure is configured by PM, it is immediately aware of the configuration. Therefore, infrastructure synchronization is not necessary for PM to learn about the voice infrastructure that it configured.

Add Sites

Configuration Templates Overview

CallManager Group
Call Park
Call Pickup Group
Call Search Space
H323 Gateway
Hunt List
Hunt Pilot
Line Group
Location
Media Resource Group
Media Resource List
Route Group
Route List
Route Partition
Route Pattern
Translation Pattern
Voice Device Group
Voicemail Pilot
Voicemail Profile
Voice Region

Configuration Templates provide the ability to create or extend CallManagers, CallManager Express, and Unity Express configurations in a consistent reusable manner

Configuration templates allow replaceable keywords for consistency across devices

CallManager configuration templates provide a list of configurable items and include configuration boxes for all necessary attributes

CallManager Express and Unity Express configuration templates are created by adding the appropriate IOS commands

Configuration Templates Overview

Configuration Templates provide PM with the ability to create or expand CallManager, CallManager Express, and Unity Express configurations in a consistent reusable manner.

The left-side of the illustration above displays a list of the constructs that PM can configure on a CallManager via a template. The template can be constructed generically using keywords (variables) that are replaced at run-time to allow for both consistency and reuse. Typically, templates are created by grouping together similar voice constructs that build upon one another, and are then executed in the appropriate order.

Configuration Templates for CallManager Express and Unity Express simply contain IOS commands, but can also take advantage of the keyword replacement feature.

This is a task that can only be performed by a global PM administrator.

Provision Network

Create Template

Only users with the global user role
'Administration' can use Configuration Templates

The screenshot shows the Cisco Unified Provisioning Manager web interface. The top navigation bar includes 'Provisioning Dashboard', 'Infrastructure Configuration' (highlighted with a red box and a circled '1'), 'Advanced Setup', and 'System Administration'. The 'Provision Network' dashboard is active, showing three main sections: 'Setup Devices', 'Setup Deployment', and 'Provision Network'. The 'Provision Network' section contains a 'Configuration Templates' link (highlighted with a red box and a circled '2') and a 'Next Page' button. A blue callout box at the bottom left states: 'Create a template to add CCM constructs to the CCM covering the Nice site'. A blue callout box at the top right states: 'Only users with the global user role 'Administration' can use Configuration Templates'. A blue dashed circle highlights the user 'pmadmin' logged in.

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Scenarios 3-84

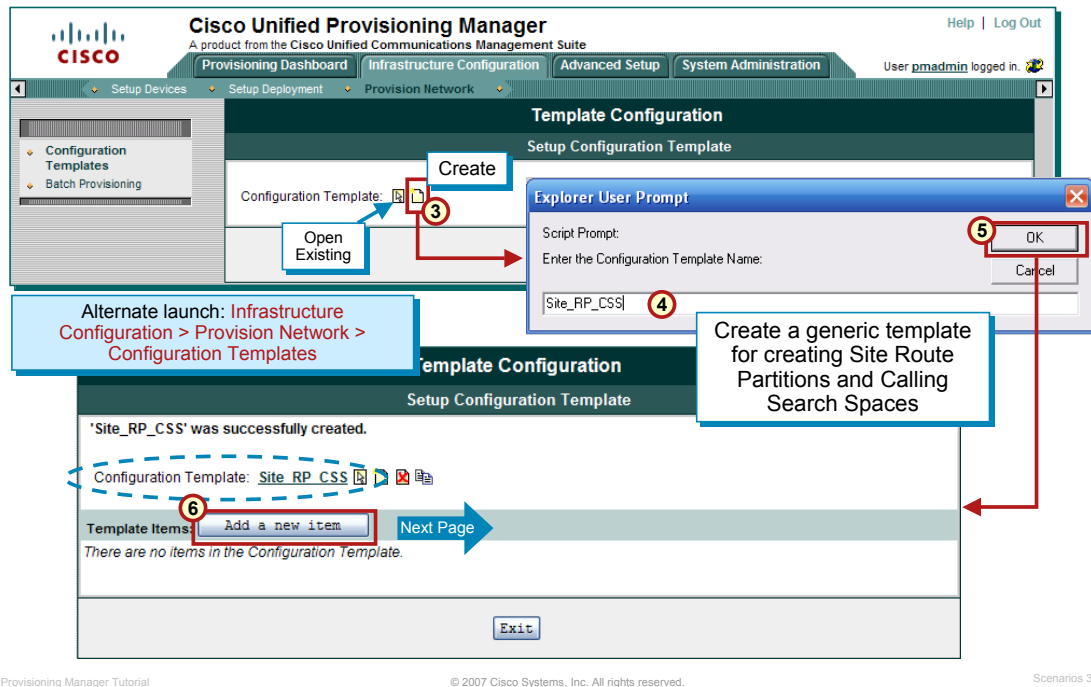
Create Template

Let's peek over Phil's shoulder as he creates a generic template for defining Route Partitions and Calling Search Spaces that can be reused when he brings other sites on-line.

1. Phil selects the **Infrastructure Configuration** tab.
2. A set of dashboards are displayed that provide shortcuts to the various tasks. So rather than selecting the Provision Network option and then the Configuration Templates task that will be displayed in a sub-menu, Phil simply selects **Configuration Templates** in the Provision Network dashboard (see next page).

Provision Network

Create Template, (Cont.)



Create Template (Cont.)

3. The *Template Configuration- Setup Configuration Template* dialog is displayed. Icons exist that allow Phil to open an existing template or create a new one. Phil selects the **Notepad Icon** to create a new template.
4. A *Explorer User Prompt* window is displayed. Phil enters a name for the template. Phil tries to make the name as descriptive as possible to reflect that it will be used for creating Route Partitions and Calling Search Spaces for new sites. Phil enters **Site_RP_CSS**.
5. Phil clicks **OK** to create the new template.
6. The *Template Configuration – Setup Configuration Template* is displayed. There are several icons next to the template name that would allow Phil to select a different template, create a new template, or delete this template. There is also a button that allows Phil to **Add a new item** to the template which he selects now (see next page).

Provision Network

Create Template – Add Items

1. Select a configuration item type or embed another template
2. Complete the required field information
3. Repeat steps 1 & 2 for each configuration item type required

Notes: The `${KEYWORD}` construct allows you to create generic templates. The keyword is defined during configuration. Use the 'Existing Configuration Template' to embed templates configuring other constructs.

Create Template – Add Items

Templates are a collection of voice infrastructure constructs. They can be added one at a time or in mass by adding another existing template. Phil uses the following steps to add an item to the template:

7. After selecting the **Add a new Item** button, the *Template Configuration – Add a Configuration Item* dialog is displayed. Phil has a choice of adding either a new item or an existing template. Phil selects the **New Item** radio button.
8. Next, Phil must select the type of device that this template will configure. He selects **CallManager** from the pull-down list. This changes the remaining input fields.
9. Phil then selects the type of item to add and configure. From the Item Type pull-down menu, Phil selects **Route Partition**.
10. The configuration fields depend on the item selected. In this case, two parameters are displayed, one to name the Route Partition and the other to provide a description.
Phil will use the keyword construct to make this template reusable. The construct `${KEYWORD}` is used to create a variable that will be replaced at configuration time. Phil enters `${SITE}_Local` to represent a site local Route Partition (i.e. Nice_Local).
11. Phil clicks **Save** to enter this item into the template and save the template. Phil continues adding items in this manner (steps 6-11) until finished (see next page).

Note(s):

- If CallManager Express or Unity Express were chosen as the Device Type, the remaining input fields will be an entry box to enter IOS commands.

Provision Network

Create Template – Keyword List

Continue to add items (or templates) until complete

Notes: The same dependencies exist for configuring infrastructure objects automatically that exist for configuring them manually on CallManager. Objects must be defined in the configuration template in the appropriate order. Use 'Arrow' icons to move items as necessary.

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Scenarios 3-87

Create Template – Keyword List

When the items of a Configuration Template are executed, they will be configured on the processor in the order they appear in the template. Therefore, Phil must make sure he maintains any dependencies. If he needs to re-order the list, he can use the up/down arrow icons next to each item to put them in the proper order.

Once the order is set, Phil can create a keyword replacement or select an existing one. Phil creates a keyword replacement using the following steps:

1. In the upper right-hand corner of the *Template Configuration – Setup Configuration Template* dialog, Phil finds a couple of icons associated with the Keyword Substitution list. Phil selects the **Notepad Icon** to create a new substitution list.
2. An *Explorer User Prompt* window is displayed. Phil enters a meaningful name for this list.
3. Phil clicks **OK** and returns to the *Template Configuration – Keyword List* dialog. The dialog has a single row that asks for the Keyword to be replaced and the replacement value. Since Phil will be using this template instance to configure Route Partitions and Calling Search Spaces for Nice he enters **SITE** as the keyword and **NICE** as the value.
4. Phil clicks **Update** to add the keyword substitution to the list. A new row for more substitutions will appear.
5. Since no additional substitutions are required, Phil clicks **Done**.

Note(s):

- Phil will later use this same template to configure Route Partitions and Calling Search Spaces for Munich. He will just need to create a new Keyword Substitution List defining Site as the keyword and MUNICH as the value.

Provision Network

Create Template – Generate Configuration

Template Configuration
Setup Configuration Template

Configuration Template: Site_RP_CSS

Generate Configuration:

Domain: France **1** Service Area: None **2** Device: NiceMunich **3** Keyword Substitution List: Nice **4**

Generate Configuration

Next Page

Template Items:

- 1. Route Partition: Description: \$(SITE)_local, Name: \$(SITE)_local
- 2. Route Partition: Description: \$(SITE)_national, Name: \$(SITE)_national
- 3. Route Partition: Description: \$(SITE)_international, Name: \$(SITE)_international
- 4. Call Search Space: Description: \$(SITE)_local, Name: \$(SITE)_local, Route Partitions: \$(SITE)_local
- 5. Call Search Space: Description: \$(SITE)_national, Name: \$(SITE)_national, Route Partitions: \$(SITE)_national, \$(SITE)_local
- 6. Call Search Space: Description: \$(SITE)_international, Name: \$(SITE)_international, Route Partitions: \$(SITE)_international, \$(SITE)_national, \$(SITE)_local

Exit

Annotations:

- 1:** This selection area is used as filters to select the Call Processor that will be configured
- 2:** Select Domain. This will then populate Device pull-down with only the CCMs defined in the selected Domain
- 3:** Note: Selecting a SA will auto-populate the Device field since only one processor can be associated with a SA
- 4:** Select Keyword list to use for substitution

Once processor is selected, PM will analyze the items to ensure they are supported by the version of CCM

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Scenarios 3-88

Create Template – Generate Configuration

Phil now has a Keyword Substitution List selected. The remaining steps to generate the configuration basically tell the template which CallManager to configure. The other two selection areas in the Generate Configuration area of the dialog are basically filters that allow you to select the appropriate device to configure. Phil uses the following steps to make sure this configuration is done on the NiceMunich CCM:

1. Using the Domain pull-down list, Phil selects **France** since Nice provisioning will be handled by Mary – the ordering administrator of the France Domain.
2. The Device pull-down is now populated with all CallManagers associated with the France Domain. Phil selects the **NiceMunich** CCM.
3. Ensure that the Keyword Substitution List is the one Phil created previously.
4. Phil is now ready to generate the configuration and clicks the **Generate Configuration** button (see next page).

Note(s):

- Before configuring new CCMs, it is important to add them first to PM and then associated them with all appropriate Domains. Before starting this effort, Phil had added the NiceMunich CCM and associated it with both the France and Germany Domains.
- If the Service Area filter is used, then the Device field will be selected automatically since only a single call processor can be associated with a Service Area.

Provision Network Push Template

Batch Provisioning
Configure a Batch Project

Project Name: IC_Site_RP_CSS_01291457
Project Notes:
Created On: 01/29/2007 14:57:03 -0800 by pmdadmin

Project Schedule
Schedule Start: (not set)
Project Start Date/Time: **NOW**
Status: Not Scheduled

Batch Project Actions
Upload a Batch Action File

Action	Status	Order Type	User ID	Product	Service Area	Details
1	Not Started	add	icadmin	Route Partition		View
2	Not Started	add	icadmin	Route Partition		View
3	Not Started	add	icadmin	Route Partition		
4	Not Started	add	icadmin	Call Search Space		
5	Not Started	add	icadmin	Call Search Space		
6	Not Started	add	icadmin	Call Search Space		

[Exit](#)

Batch Provisioning
View Batch Action Details

Action Number: 1
Product: Route Partition

Details for batch action

Description: NICE_local
FirstName: IC
LastName: Administrator
Name: NICE_local
Processor Name: NiceMunich
Time Schedule:
Timezone:
Originating Dev true
Timezone:

[Close](#)

Choose to run now or at a scheduled time

Details

Notice the keyword substitution

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Scenarios 3-89

Push Template

Once the configuration is generated from the template, the *Batch Provisioning – Configure a Batch Project* dialog is displayed. The lower portion of the dialog lists the batch action steps that will be executed. Clicking on the **View** link shows the details of the action. When Phil clicks one, he sees that the Keyword substitution was made and the proper name will be created.

Phil has the option to schedule the push (provisioning) operation or to execute it immediately. Phil selects **Now** for immediate execution.

Provision Network Results

Batch Provisioning

Configure a Batch Project

Project Name: IC_Site_RP_CSS_01291457

Project Notes:
Created On: 01/29/2007 14:57:03 -0800 by pmadmin

Project Schedule

Schedule Start: 01/29/2007 15:00:22 -0800

Status: Completed

Started on: 01/29/2007 15:00:25 -0800

Completed on: 01/29/2007 15:02:25 -0800

Batch Project Actions

Upload a Batch Action File

Action	Status	Order Type	User ID	Product	Service Area	Details
1	Completed	add	icadmin	Route Partition		View
2	Completed	add	icadmin	Route Partition		View
3	Completed	add	icadmin	Route Partition		View
4	Completed	add	icadmin	Call Search Space		View
5	Completed	add	icadmin	Call Search Space		View
6	Completed	add	icadmin	Call Search Space		View

Exit

Order Result

[admin Mon Jan 29 15:01:16 PST 2007]
The result from configuring Call Search Space on the device NiceMunich is:
Success

CLOSE

Results of the Configuration Template Push

Results

Leaving this dialog open, Phil can track the results of the configuration. If Phil performed other PM activities, thus closing this dialog, he could check the results later by selecting **Infrastructure Configuration > Provision Network > Batch Provisioning**, then clicking the **arrow icon**, and finally selecting the **batch provisioning job** from the displayed list.

Phil notes that the configuration of Route Partitions and Calling Search Spaces, used for provisioning the Nice office, were completed successfully on the NiceMunich CCM.

Note(s):

- All changes were made following the order process so they can be searched like any other order to see what changes were made, who made the changes, etc.



Batch Provisioning

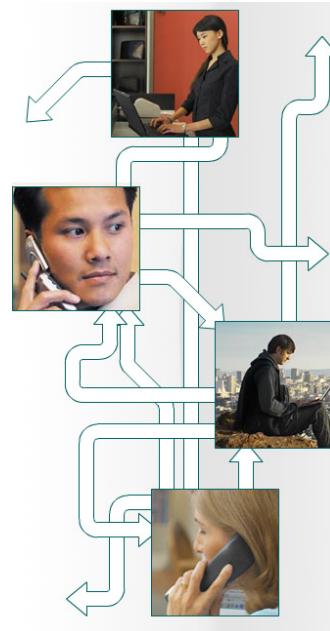
- Network Description
- Getting Started
- Existing VoIP Deployment Setup
- Advanced Policy & Management
- Managing Orders
- Adding Sites
- **Batch Provisioning**



Scenario 6 Outline

Batch Provisioning

- Overview
- Create Batch Action File
- Create Batch Project
- Upload Batch Action File
- Execute Batch Project
- Results



Scenario 6 Outline

Once Phil is finished configuring PM for the Nice and Munich offices, he wants to quickly bring all subscribers on-line without using PM repeatedly to creating the subscriber and then order their services.

This scenario looks at how PM can be used to create a Batch Project to provision subscribers and their services.

Batch Provisioning Overview

Order Type *
UserID *
FirstName **
LastName **
Domain
Product Name *
Phone Type
Service Area *
MAC Address
Enable Extension Mobility
Phone Load Name
Calling Search Space
AAR Calling Search Space
Location
Media Resource Group
User Hold Audio Source
Order Type
Speed Dial Numbers
Module 1
Module 1 Load Name
Module 2
Module 2 Load Name
Device Security Mode
Built in Bridge
Privacy
Softkey Template
Information
Directory
Services
Authentication Server
Proxy Server
Idle
Idle Timer
MLPP Domain
MLPP Indication
MLPP Preemption
AAR Calling Search Space
Disable Speakerphone
Disable Speakerphone and Headset
Forwarding Delay
Gratuitous ARP
PC Voice VLAN Access
Auto Line Select
Web Access
PC Port
Settings Access
Video Capabilities

Provisioning Manager Tutorial

The **Batch Provisioning** feature allows you to create a large number of subscribers and provision their services automatically

- Enables easy roll-outs of new offices
- Simplifies the transition off of legacy systems

Done via a **Batch Action File** consisting of attributes used to provision a service and a corresponding value

- Required Attributes:
 - Order Type (Add, Change, Cancel)
 - User ID (Subscriber)
 - Product Name (orderable product or bundle)
 - Service Area
- Additional required attributes if creating the subscriber:
 - First Name
 - Last Name
 - Optional (Domain, Phone Number, Email, Department)

Provisioning Manager provides sample files that contain most of the commonly-used actions. The sample files are located in the following directory/folder:

`<install-dir>/sep/ipt/config/sample/batchProvisioning`

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Batch Provisioning Overview

Although PM provides a simple GUI for managing subscribers, it would be time consuming to use the GUI if a large number of subscriber services need to be provisioned at once.

The Batch Provisioning feature of PM allows you to easily not only create many subscribers, but also provision their services. The administrator needs to create a batch action file detailing the subscriber, their services, and any necessary parameters.

The left-hand side of the graphic above displays the list of possible variables that can be included in the batch action file. The variables marked with an asterisk are mandatory.

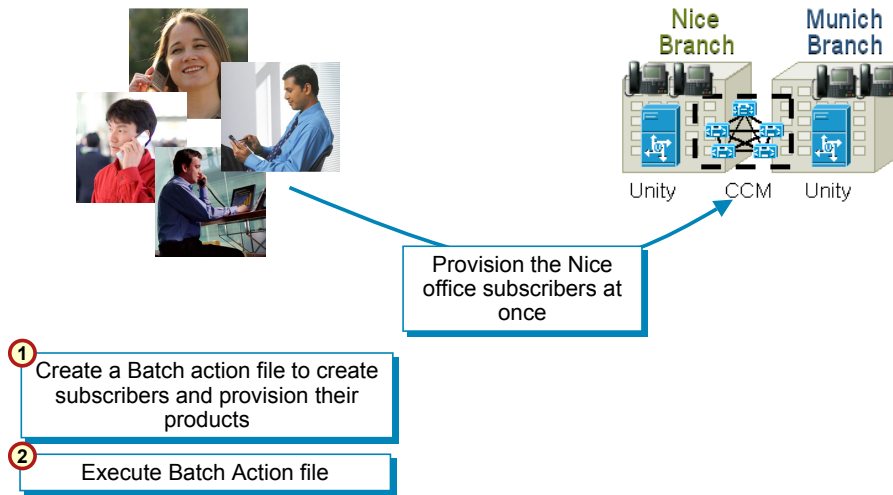
This is a task that can only be performed by a Global PM Administrator.

Note(s):

- The PM server includes several sample batch action files for common service provisioning tasks located in the `<install-dir>/sep/ipt/config/sample/batchProvisioning` folder.

Batch Provisioning

Provision Services for Nice Office Subscribers



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Scenarios 3-94

Batch Provision

The Nice office is ready to go on-line for IP communications. IP phones have already been placed on employees' desks. Phil could turn the task of provisioning all the subscriber services over to Mary (France Domain ordering administrator), but using the GUI to configure one subscriber at a time will be too time consuming, considering their analog phones have already been removed. So Phil will use the Batch Provisioning feature to quickly provision all Nice employees at once.

Batch Provisioning

Create Batch Action File

Add and provision a group of subscribers

To create a batch action file, create a spreadsheet of users, phones, and lines and then convert it to a tab-delimited text file

File should be saved to client PC and not on PM server

OrderType	UserID	FirstName	LastName	Domain	ProductName	Phone Type	ServiceArea	MAC Address	Enable Extension Mobility	Line Type
add	marcelid	Marcel	Dionne	France	Phone Service	Cisco 7960	NiceEmployee	00059a3b8a01	yes	Auto-Assigned Line
add	royp	Patrick	Roy	France	Phone Service	Cisco 7960	NiceEmployee	00059a3b8a02	yes	Auto-Assigned Line
add	lucr	Luc	Robitaille	France	Phone Service	Cisco 7961	NiceEmployee	00059a3b8a03	yes	Auto-Assigned Line
add	staved	Steve	Duchene	France	Phone Service	Cisco 7962	NiceEmployee	00059a3b8a04	yes	Auto-Assigned Line

The action file must contain a single row of column headers

- The data columns can be in any order
- Any number of non-required attributes can be included

Create Batch Action File

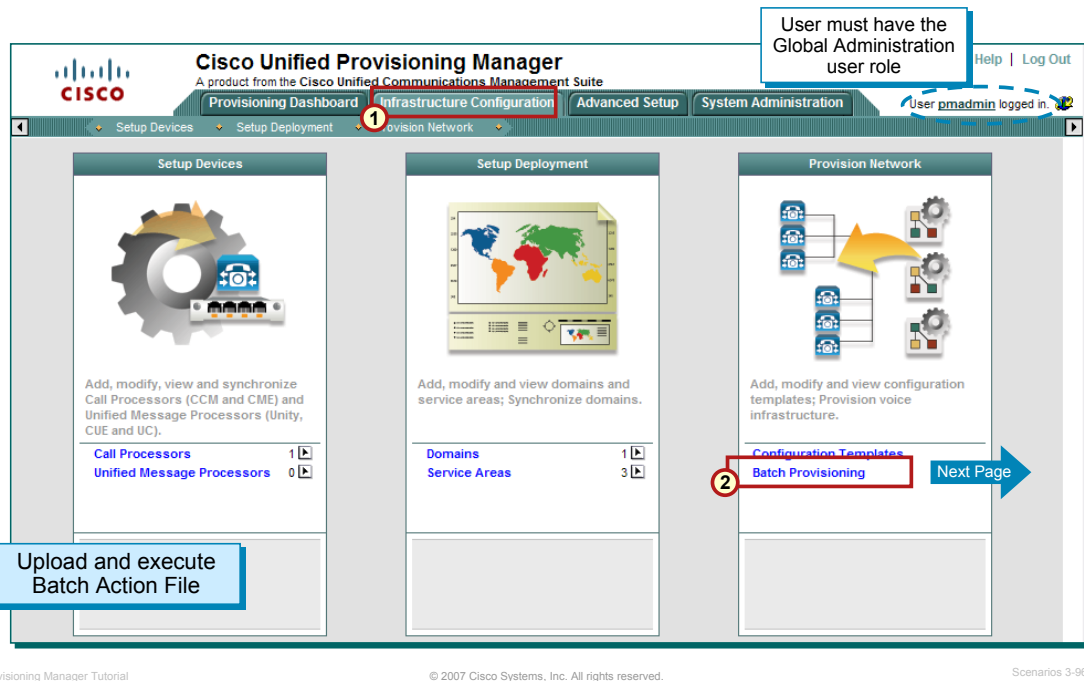
Phil's first task is to create a Batch Action File detailing the subscribers and their services.

Phil copies one of the sample files to his local PC and opens it in Microsoft Excel (using a spreadsheet application facilitates this process) to give him a head start.

Phil then quickly enters all necessary information and saves the file as a tab-delimited file on his local PC.

Batch Provisioning

Create Batch Project



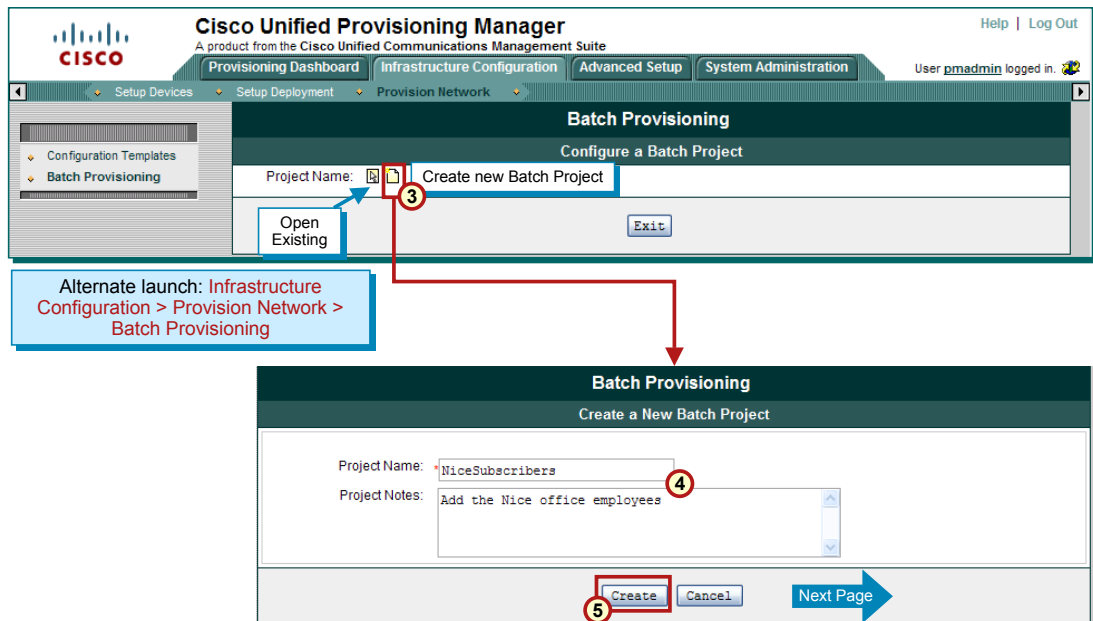
Create Batch Project

Now that the Batch Action File is created, Phil needs to use the following steps to upload the file to the PM server and execute it:

1. Phil selects the **Infrastructure Configuration** tab.
2. A set of dashboards are displayed that provide shortcuts to the various tasks. So rather than selecting the Provision Network option and then the Batch Provisioning task that will be displayed in a sub-menu, Phil simply selects **Batch Provisioning** in the Provision Network dashboard (see next page).

Batch Provisioning

Create Batch Project (Cont.)



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Scenarios 3-97

Create Batch project (Cont.)

3. The *Batch Provisioning – Configure a Batch Project* dialog is displayed. Icons exist that allow Phil to open an existing project or create a new one. Phil selects the **Notepad Icon** to create a new project.
4. The *Batch Provisioning – Create a New Batch Project* dialog is displayed. Phil enters a meaningful name and adds notes detailing the purpose of the project.
5. Phil clicks **Create** to create the new project (see next page).

Batch Provisioning

Upload Batch Action File

The image shows two screenshots of a web-based provisioning interface. The top screenshot is titled 'Batch Provisioning' and 'Configure a Batch Project'. It displays project details for 'NiceSubscribers', including project notes and creation information. Under the 'Batch Project Actions' section, the 'Upload a Batch Action File' button is highlighted with a red circle and the number 5. A red arrow points from this button to the bottom screenshot. The bottom screenshot is titled 'Batch Provisioning Configuration' and 'Upload a Batch Action File'. It shows a file upload field with the path 'ator\My Documents\Cisco_06\AddPhoneServiceNice.txt' and a 'Browse...' button. Below the field are 'ADD' and 'CANCEL' buttons. The 'ADD' button is highlighted with a red circle and the number 6. A blue arrow labeled 'Next Page' points to the right, and a text box indicates 'File should be on client PC'.

Batch Provisioning
Configure a Batch Project

Project 'NiceSubscribers' successfully created.
Project Name: NiceSubscribers [X] [Y]
Project Notes: [admin Mon Jan 29 16:31:15 PST 2007]
Add the Nice office employees

Created On: 01/29/2007 16:31:15 -0800 by pmadmin

Project Schedule
Schedule Start: (not set)
Status: Not Scheduled

Batch Project Actions
Upload a Batch Action File

Action	Status	Order Type	User ID	Product	Service Area	Details
There are no batch actions to list.						

Batch Actions listed once the Batch Action file is uploaded

Exit

Batch Provisioning Configuration
Upload a Batch Action File

*File to Upload: ator\My Documents\Cisco_06\AddPhoneServiceNice.txt Browse...

ADD CANCEL

Next Page

File should be on client PC

Upload Batch Action File

5. The *Batch Provisioning – Configure a Batch Project* dialog is re-displayed with details of the project. (This screen was also seen after generating the configuration from the infrastructure template.) Under the Batch Project Actions portion of the dialog, Phil clicks the **Upload a Batch Action File** button.
6. The *Batch Provisioning Configuration – Upload a Batch Action File* dialog is displayed. Phil uses the **Browse** button to find the Batch Action File that he created on his local PC and then clicks **ADD** (see next page).

Batch Provisioning

Execute Batch Project

Batch Provisioning

Configure a Batch Project

Project Name: NiceSubscribers

Project Notes: [admin Mon Jan 29 16:31:15 PST 2007]
Add the Nice office employees

Created On: 01/29/2007 16:31:15 -0800 by pmdadmin

Project Schedule

Schedule Start: (not set)
Project Start Date/Time: NOW
Status: Not Scheduled

Batch Project Actions

Upload a Batch Action File

File Upload Completed

File AddPhoneServiceNice.bt uploaded successfully on 01/29/2007 16:34:42 PST

Action	Status	Order Type	User ID	Product	Service Area	Details
1	Not Started	add	marceld	Phone Service	NiceEmployee	View
2	Not Started	add	royp	Phone Service	NiceEmployee	View
3	Not Started	add	lucr	Phone Service	NiceEmployee	View
4	Not Started	add	steved	Phone Service	NiceEmployee	View

Exit

Details

Batch Provisioning

View Batch Action Details

Action Number: 1
Product: Phone Service

Details for batch action

Domain: France
MAC Address: 00059a3b8a01
Line Type: Auto-Assigned Line
FirstName: Marcel
Phone Type: Cisco 7960
Enable Extension Mobility: yes
LastName: Dionne

Close

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Scenarios 3-99

Execute Batch Action File

The *Batch Provisioning – Configure a Batch Project* dialog is again re-displayed, only this time, the individual actions from the Batch Action File are loaded. Clicking on the **View** link next to any action shows its details.

Phil has the option to schedule the push (provisioning) operation or to execute it immediately. Phil selects **Now** to execute them immediately.

Batch Provisioning Results

Batch Provisioning

Configure a Batch Project

Project Name: NiceSubscribers
Project Notes: [admin Mon Jan 29 16:31:15 PST 2007]
Add the Nice office employees
Created On: 01/29/2007 16:31:15 -0800 by pmdadmin

Project Schedule
Schedule Start: 01/29/2007 16:38:23 -0800
Project Start Date/Time: NOW
Status: Completed
Started on: 01/29/2007 16:38:26 -0800
Completed on: 01/29/2007 16:50:26 -0800

Batch Project Actions

Upload a Batch Action File

Action	Status	Order Type	User ID	Product	Service Area	Details
1	Completed	add	marceld	Phone Service	NiceEmployee	View
2	Completed	add	royd	Phone Service	NiceEmployee	View
3	Completed	add	lucr	Phone Service	NiceEmployee	View
4	Completed	add	steved	Phone Service	NiceEmployee	View

Exit

Results of the Batch Project execution

Subscriber Record show phone and line have been provisioned

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management Suite

Provisioning Dashboard
Infrastructure Configuration
Advanced Setup
System Administration

User pmdadmin logged in

Manage Subscribers
Manage Orders
Manage Activities

Subscriber Record Options

Marcel Dionne (marceld)
New Order
View Orders
Subscriber Notes
Go to Product Catalog

Subscriber Record Details

Products
Location
Quantity
State
Last Update

Filter by Product
Location
State
FILTER

Found 2 Products.

Line (Line 1: 65200 Marcel Dionne)
Phone (Cisco 7960: SEP00059a3b8a01)

NiceEmployee	1	Active	01/29/2007 16:41:13 -0800
NiceEmployee	1	Active	01/29/2007 16:38:36 -0800

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Scenarios 3-100

Results

Leaving this dialog open, Phil can track the results of the subscriber service provisioning. If Phil performed other PM activities, thus closing this dialog, he could return at a later time to check the results by selecting **Infrastructure Configuration > Provision Network > Batch Provisioning**, then clicking the **arrow icon**, and finally selecting the **batch provisioning job** from the displayed list.

Phil searches for one of the subscribers just provisioned and reviews the details of their subscriber record to verify that the service was provisioned and activated as expected.

Note(s):

- All batches are created, managed, and tracked as orders, thus all the same workflow and policies are applied to them as if they were manually executed by the GUI.



Thank You!

This chapter has demonstrated the use of most PM features in a simulated real-world environment. The reader should now have a good understanding of how to use PM to manage provisioning tasks in their enterprise.

Continue on to Chapter 4 to learn about some of the PM system administrative tasks not yet discussed.

Cisco Systems

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Cisco Unified Provisioning Manager

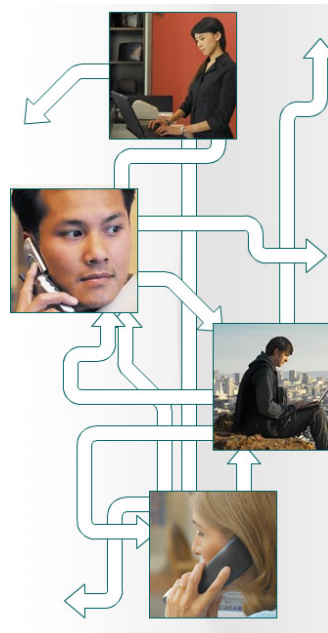
System Administration

Chapter 4



Chapter 4 Outline

- Requirements
 - System Capacity
 - Server
 - Client
 - Applications
 - Ports
- Installation Guidelines
 - Licensing
- Additional Administration Tasks
- Maintenance
- Helpful Troubleshooting Tips



Chapter 4 Outline

This chapter covers system administration aspects of Cisco Unified Provisioning Manager (PM). The chapter starts out by presenting the basic requirements for both the PM server and the client used to access the server, as well as, the requirements for preparing the voice applications in order to be managed by PM. Following the requirements, the remaining sections cover installation guidelines, additional administration tasks not covered in Chapters 2 or 3, periodic maintenance tasks, and some helpful troubleshooting tips.

For detailed installation steps, refer to the Installation and Setup Guide for Cisco Unified Provisioning Manager.



System Requirements

- **Requirements**
- Installation Guidelines
- Additional Administrative Tasks
- Maintenance
- Helpful Troubleshooting Tips



Requirements

System Capacity

Item	Maximum Supported Number
Users/Subscribers	30,000
Phones	30,000
Lines	60,000
Directory Numbers	60,000
Device Profiles	60,000
Cisco Unified CallManager	No Limit
Cisco Unified CallManager Express	No Limit
Cisco Unified Unity	No Limit
Cisco Unified Unity Connection	No Limit
Cisco Unified Unity Express	No Limit

System Capacity

The table above presents the current maximum number of supported elements that can be managed by Cisco Unified Provisioning Manager.

Note(s):

- The actual number of phones supported by Provisioning Manager depends on the applied license. More details on licensing will be presented in the next section.
- An evaluation license is limited to 100 phones, 5 call processors, and 2 message processors.

Requirements

Server

	Up to 1000 Phones	Up to 10,000 Phones	Up to 30,000 Phones
Processor	Single 3.0-GHz Intel P4 Processor	Single 3.0-GHz Intel P4 Processor	2 machine deployment: • App. – Dual 3.0 GHz Intel P4 • DB – Dual 3.0 GHz Intel P4
Memory	2 GB	4 GB	4 GB each machine
Swap	2 - 4 GB	4 - 8 GB	4 - 8 GB each machine
Drive Space	30 GB	60 GB	Application - 30 GB Database – 80 GB
System Software	Windows Server 2003 Standard or Enterprise with SP2		

* **Minimum requirements**

Check Release Notes for most up-to-date requirements

Server Requirements

The chart above details the sizing requirements for the Cisco Unified Provisioning Manager server depending on the size of the deployment.

Note(s):

- It is always a good idea to check the latest release notes for up-to-date information regarding system requirements.

Requirements

Server, (Cont.)

	Special Notes
Memory	<p>On 4 GB system, Windows only detects 3.5 GB of RAM even though your system has 4 GB installed.</p> <p>If you want to choose the medium or large installation when installing Provisioning Manager, you must first enable all 4 GB of RAM on the system - Refer to install guide for procedure</p>
Other Software	<p>Provisioning Manager has been tested with the following software:</p> <ul style="list-style-type: none">– Cisco Security Agent 5.0 (Disable prior to installing)– McAfee Virus Scan Enterprise 8.0

- Check Release Notes for most up-to-date requirements
- Exclude virus scan of the following: **pgsql** folder and **postmaster.exe** file (see Student Guide for locations)

Server Requirements, (Cont.)

On 4 GB system, Windows only detects 3.5 GB of RAM even though your system has 4 GB installed. If you want to choose the medium or large installation when installing PM, you must first enable all 4 GB of RAM on the system. Do the following:

1. On the Provisioning Manager system, in Windows right-click **My Computer**.
2. Select **Properties**.
3. Select the **Advanced** tab.
4. Under Startup and Recovery, click **Settings**.
5. Click **Edit**. The boot.ini file opens.
6. In the file, add **"/PAE"** in line starting with "multi(0)disk(0)rdisk(0)partition(1)\WINDOWS=..."
7. Restart the system.

PM has undergone interoperability testing with the following software:

- Cisco Security Agent 5.0
- McAfee Virus Scan Enterprise 8.0 (Patch 11)

Note(s):

- Cisco Security Agent must be disabled during installation of PM.
- Exclude the following from virus scanning: The **pgsql** folder (if you selected the default location during installation, it is C:\CUPM\pgsql). The **postmaster.exe** file (located in the CUPM\pgsql\bin folder).

Requirements

Client

Client Requirements	
Processor	1 GHz Intel P4
Memory	1 GB
Swap	1 – 2 GB
System Software	<ul style="list-style-type: none">• Windows XP with SP2• Windows Server 2003 Standard or Enterprise with SP2
Additional Software	<ul style="list-style-type: none">• Microsoft Internet Explorer 6.0 with SP2• Microsoft Internet Explorer 7.0• Mozilla 1.7

* **Minimum requirements**

Check Release Notes for most up-to-date requirements

Client Requirements

Access to a PM server is achieved using a standard web browser. PM has been tested and certified only on PC compatible systems running Windows XP or Windows 2003, and using Microsoft Internet Explorer 6.0 Service Pack 2 (SP2), Microsoft Internet Explorer 7.0, or Mozilla 1.7.

Note(s):

- *It is always a good idea to check the latest release notes for up-to-date information regarding system requirements.*
- *Clients not conforming to the above requirements may also work, but have not been tested and certified by Cisco, and therefore will not be supported should problems arise.*

Requirements

Supported Application Versions

- Cisco Unified CallManager
 - 4.0(2), 4.1(3), 4.2(1), 4.2(3)
- Cisco Unified CallManager Express
 - 3.3, 3.4
- Cisco Unified Communications Manager
 - 5.0(4), 5.1(1), 6.0
- Cisco Unified Communications Manager Express
 - 4.0, 4.1
- Cisco Unity
 - 4.0, 4.1, 4.2, 5.0
- Cisco Unity Express
 - 2.1, 2.2, 2.3, 3.0
- Cisco Unity Connection
 - 1.1.1, 2.0
- Cisco Unified IP Phones.

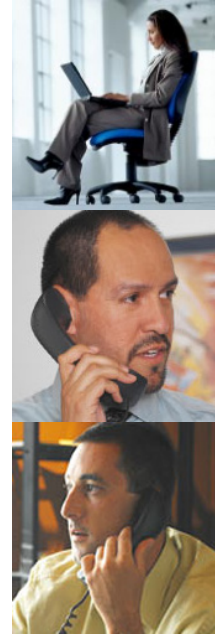
Refer to the Cisco Unified Provisioning Manager Compatibility Information for specific versions that have been certified in testing

http://www.cisco.com/en/US/products/ps7125/products_device_support_tables_list.html

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System Admin 4-8



Requirements – Supported Application Versions

Refer to the Cisco Unified Provisioning Manager Compatibility Information for specific versions that have been certified in testing:

http://www.cisco.com/en/US/products/ps7125/products_device_support_tables_list.html

Requirements

Pre-Setup of End Systems (Call Processors)

Cisco Unified Communications Manager (CUCM):

- No specific pre-configuration is required for Provisioning Manager. However, the following conditions should already have been met during a normal installation or upgrade
 - CUCM and IIS services are running
 - Voice mail ports are configured (if Unity is deployed)
 - Configured to '*Not Allow AutoRegistration of Phones*' (this functionality exists within UCPM)
 - Create a User account with Administrator privileges to be used by UCPM for access to the CUCM; Notes for multilevel administration access (MLA):
 - If MLA is enabled, a username and password of a multilevel administration access account with full access to the Standard Serviceability Functional Group is required.
 - If MLA is not enabled, then the username or password of an account with administrative privilege is needed.
 - Note: if using CUCM 4.x, you must increase the setting for '*Maximum Search Result*' if you have more than 500 users.

Cisco Unified Communications Manager Express (CME):

- Disable '*Auto Allocation of Numbers*' (Configure using IOS interface)
- CME 4.0 and later - Disable of '*ephone auto-registration*' (Configure using IOS interface)

Check see the Cisco Unified Provisioning Manager Supported Device Table for most up-to-date certified device versions

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System Admin 4-9

Pre-Setup of End Systems (Call Processors)

Some minimal configuration is required on end systems before you can use them with Provisioning Manager. The chart above and the text following describe the pre-configuration steps required for the various call processor applications.

Cisco Unified Communications Manager (CUCM):

No specific pre-configuration is required for Provisioning Manager. However, the following conditions should already have been met during a normal installation or upgrade

- CUCM and IIS services are running
- Voice mail ports are configured (if Unity is deployed)
- Configured to '*Not Allow AutoRegistration of Phones*' (this functionality exists within UCPM)
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 - If MLA is enabled, a username and password of a multilevel administration access account with full access to the Standard Serviceability Functional Group is required.
 - If MLA is not enabled, then the username or password of an account with administrative privilege is needed.
- Note: if using CUCM 4.x, you must increase the setting for '*Maximum Search Result*' if you have more than 500 users.

Cisco Unified Communications Manager Express (CME):

- Disable '*Auto Allocation of Numbers*' (Configure using IOS interface)
- CME 4.0 and later - Disable of '*ephone auto-registration*' (Configure using IOS interface)

Requirements

Pre-Setup of End Systems (Message Processors)

Cisco Unity and Cisco Unity Connection (v1.1.1 only)

- Configure message store with Microsoft Exchange 2000 or 2003 ([Required for Cisco Unity only](#))
- Integrate with one or more CUCMs
- Create a SQL Server user and password that can be used by CUPM to access Cisco Unity or Cisco Unity Connection database and the SQL Server master database
- Verify the TCP/IP port used by Cisco Unity or Cisco Unity Connection. This port number is needed when adding a Message Processor in CUPM.
- Define Class of Service and Subscriber templates

Since Unity Connection v1.1.1 uses JDBC to interface with CUPM, it requires the pre-configuration of a JDBC account on the SQL server. For Unity Connection 2.0, a HTTP/SOAP based interface is used and that just needs the administrator password of Unity Connection.

Cisco Unity Express

- Determine the Service Engine Interface number. The Service Engine Interface number is needed when adding a Cisco Unity Express to CUPM.

Check see the Cisco Unified Provisioning Manager Supported Device Table for most up-to-date certified device versions
http://www.cisco.com/en/US/products/ps7125/products_device_support_tables_list.html

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System Admin 4-10

Pre-Setup of End Systems (Message Processors)

Some minimal configuration is required on end systems before you can use them with Provisioning Manager. The chart above and the text following describe the pre-configuration steps required for the various message processor applications. (Refer to Installation Guide for detailed steps.)

Cisco Unity / Cisco Unity Connection (v1.1.1)

Before you can create a Unified Message Processor based on Cisco Unity or Cisco Unity Connection (only required for Cisco Unity Connection 1.1.1) in Provisioning Manager, you must do the following:

- Install and configure the message store using Microsoft Exchange 2000 or 2003. (Required for Cisco Unity only.)
- Configure an integration with one or more corresponding Cisco Unified Communications Manager systems.
- Create a SQL Server user and password that can be used by Provisioning Manager to access the SQL Server database on Cisco Unity or Cisco Unity Connection (only required for Cisco Unity Connection 1.1.1). The SQL Server user requires access to both the Cisco Unity (or Cisco Unity Connection) and master databases.
- Verify the TCP/IP port used by Cisco Unity or Cisco Unity Connection (only required for Cisco Unity Connection 1.1.1). This port number is required when you create a Unified Message Processor.
- Define Class of Service and Subscriber templates.

Cisco Unity Express

Before you can create a Unified Message Processor based on Cisco Unity Express in Provisioning Manager, you must determine the Service Engine Interface number for Cisco Unity Express. The Service Engine Interface number is required when adding a Cisco Unity Express to Provisioning Manager.

Requirements Ports

Not all ports need to be opened in firewall.

Port Number	Service Name	Application
80	HTTP / Apache Web Server	CUCM
443	HTTPS	CUCM 4.x
8443	HTTPS	CUCM 5.0
22	SSH	CUCME and CUE
23	Telnet	CUCME and CUE
1433	MS SQL	CU and CU Connection
80 *	HTTP / Apache Web Server	PM
1098	JBoss RMI activation	PM
1099	JBoss JNDI	PM
1602 *	Network Interface & Configuration Engine	PM
4444	JBoss RMI/JRMP	PM
4445	JBoss pooled invoker	PM
5432 *	Postgres database	PM
8008	JBoss Application Server	PM
8009	AJP Connector	PM
8083	JBoss Webservice	PM
8093	JBoss UILServerILService	PM

If there is firewall between PM and the call / message processors, then the ports listed in dark gray need to be opened.

If there is firewall between the client browser and PM server, then the HTTP port used by PM needs to be opened.

Ports

Before installing PM, make sure that the ports used by PM (listed above) are not used by other applications.

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Installation Guidelines

- Requirements
- **Installation Guidelines**
- Additional Administrative Tasks
- Maintenance
- Helpful Troubleshooting Tips



Installation Guidelines

- Requires approximately 60 minutes to complete
- Use local Administrator account (not cloned account)
- Install on a dedicated platform with static IP Address
- Do not install it on a system with:
 - A Primary or Backup Domain Controller
 - Other management software
 - Access Control Server
 - Voice applications
- Verify server requirements and Required and Recommended Service Packs or Patches for operating system are installed
- Verify TCP, UCP ports are available for use
- Refer to Installation and Setup Guide for Provisioning Manager for installation procedure
 - Do not install under the Program Files directory
 - Have license file available or choose evaluation copy
 - Advanced install option allows you to select installation details (ports, JBoss servers, accounts, etc.)



See install guide for exact steps and options

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Installation Requirements

Installation of Provisioning Manager should be performed according to the steps detailed in the Installation and Setup Guide. (A link to this guide can be found in Chapter 5.)

- Provisioning Manager should be installed using the local Administrator (not a cloned account) user account.
- Provisioning Manager requires a dedicated system; do not install it on a system with:
 - Third-party management software (such as HP OpenView or NetView).
 - Cisco Secure Access Control Server (ACS).
 - Any Cisco applications other than those that are documented to be able to coexist with Provisioning Manager
- Do not install on any of your voice application servers or on a Cisco CallManager server.
- Verify that the system date and time are set properly.

Note(s):

- Do not install Provisioning Manager under the Program Files directory.

Installation Guidelines

Licensing

The Provisioning Manager license dictates the features of PM available and the number and types of devices that can be managed

- **Product Evaluation** – good for 90 days, limited to 100 phones, 5 call processors, and 2 message processors. Can register license file at a later date.
- **Valid License** – Can be purchased in increments of number of phones to be managed. Comes with Product Authorization Key (PAK). Register PAK and PM server MAC address at www.cisco.com/go/license. A license file will be emailed. Place license file in *<PM Install Dir>/license*

Licensing

Provisioning Manager requires a license to operate. If a license is not installed, Provisioning Manager operates in Evaluation mode for 90 days. An evaluation license supports 100 phones, 5 call processors, and 2 message processors.

The license enables functions within Provisioning Manager and dictates the number and types of devices that can be managed. Licenses can be bought in increments of phones supported. If multiple licenses are purchased, they are combined to determine the total number of phones supported.

A purchased license comes with a Product Authorization Key (PAK). An administrator must register this PAK along with the PM server's MAC address at www.cisco.com/go/license. When registration is complete, the administrator will receive a license file via email. This file is placed in the *<Install Dir>/license* directory. The license should take effect after a few minutes.

Note(s):

- The MAC address is required because PM licensing uses node-locking technology. The license file can only be used with the MAC address supplied during registration.

Installation Guidelines

License Status

System Administration > License Information

License Status Information					
Last Audit date: Wed Jan 31 12:31:54 PST 2007					
PERFORM AUDIT					
Unavailable features					
No expired and overused features found.					
Features in overdraft state					
No overdraft features found.					
Valid Features					
Feature	Description	Available	Overdraft	Used	Expiry
ipt_ccm_max	Checks if number instances of class CallProcessor over the allowed value	5	0	2	04/19/2007
ipt_phones_max	Checks if number instances of class VoiceTerminal over the allowed value	100	0	42	04/19/2007
ipt_ump_max	Checks if number instances of class UnifiedMessageProcessor over the allowed value	2	0	0	04/19/2007

Unavailable features – Lists features in PM that you do not have access to based on currently installed license

Products in overdraft – Lists the types and number of devices this instance of PM is licensed for and any that are currently in an overdraft state

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System Admin 4-16

License Status

Since the license can put restrictions on the use of Provisioning Manager, there is a GUI task that allows the administrator to view the current license conditions. To view this information, select the **System Administration > License Information** task.

Note(s):

- If a new license does not take affect after a few minutes, verified by this task: Select the Perform Audit which will force a license update.



Additional Administrative Tasks

- Requirements
- Installation Guidelines
- **Additional Administrative Tasks**
- Maintenance
- Helpful Troubleshooting Tips



Phone Inventory

Provisioning Manager keeps an inventory of Phones:

- Add phones that can be used for provisioning
- Reserve phones for specific subscribers
- View details for specific phone
- Search for phones by Domain

Cisco Unified Provisioning Manager
A product from the Cisco Unified Communications Management Suite

Provisioning Dashboard | Infrastructure Configuration | **Advanced Setup** | System Administration

Phone | Directory Number

Phone Inventory Management

Add a Phone or Choose a Phone to Update

Phone SEP00059A3B7701 updated.

Phone: SEP00059A3B7701
Domain: France
Model: Cisco 7960
MAC Address: 00059A3B7701
Status: Reserved
Reserved For: mauriceb
Reserved On: 03/06/2007 10:10:36 -0800
Reservation Timeout: 10 Days

Clear Expired Reservations or Search Phone for domain -- Global Resources --

Add Update Remove Clear Exit

Global PM Administrators Only

Callouts:
- Select specific phone (points to Phone field)
- Phone details (for selected phone or phone to add) (points to Domain, Model, MAC Address, Status, Reserved For, Reserved On, Reservation Timeout)
- Reserve phone (points to Status)
- Search phones in a Domain (points to Search Phone button)

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System Admin 4-18

Phone Inventory

PM keeps an inventory of phones for tracking purposes. Without any interaction, this inventory will include the phones provisioned by PM and/or the phones learned during a subscriber synchronization with a call processor.

The phone inventory can also be used to add phones that are available for provisioning for all subscribers or can be reserved for a specific subscriber. To add a phone and reserve it for a subscriber, use the following steps:

1. Select the **Advanced Setup** tab.
2. The options bar displays three choices, select the **Phone** option.
3. The *Phone Inventory Management – Add a Phone or Choose a Phone to Update* dialog is displayed. Select a Domain to associate this phone with from the Domain pull-down menu or to make the phone available system-wide, select **Global Resources**.
4. Select the **Model of the Phone** to add from the Model pull-down menu.
5. Enter the **MAC address** of the phone to add in the MAC Address entry field.
6. Select **Reserved** from the Status pull-down menu.
7. Click the **Arrow Icon** to the right of the Reserved For entry field to display a list of subscribers in the selected domain. Select the subscriber to reserve the phone for.
8. Click **Add** to add the phone and make the reservation.

Note(s):

- To see a list of phones for a domain, select the Domain (or Global Resources to see all phones in the inventory) from the Domain pull-down list in the bottom right-hand corner of the dialog, and click **Search Phones**.

Directory Number Inventory

Provisioning Manager keeps an inventory of Directory Numbers:

- Add Directory Number for a Call Processor/Route Partition
- View/Update status of Directory Number
- Reserve Directory Number for specific subscribers

The screenshot shows the Cisco Unified Provisioning Manager web interface. The top navigation bar includes tabs for 'Provisioning Dashboard', 'Infrastructure Configuration', 'Advanced Setup' (highlighted with a red box), and 'System Administration'. Below this, a breadcrumb trail shows 'Policies' > 'Phone' > 'Directory Number' (highlighted with a red box). The main heading is 'Directory Number Inventory Management'. A sub-heading reads 'Add or Update a Directory Number'. A message states: 'The DN 65911 exists on more than Call Processor/Route Partition. Please select a Call Processor/Route Partition.' The form contains two main sections. The left section has a 'Directory Number' field with '65911' and a 'Search' button. Below it is a 'Search Call Processor' dropdown menu with 'ParisHQ-ParisLocal' selected. There are three links: 'Add New Directory Number', 'Update Current Directory Number', and 'Clear Expired Reservations'. The right section displays details for 'Directory Number: 65911'. It includes a 'Call Processor/Route Partition' dropdown with 'ParisHQ-ParisLocal' selected, a 'Status' dropdown with 'Reserved' selected, a 'Reserved For' field with 'ParisSecurity' and a small icon, a 'Reserved On' timestamp '01/30/2007 14:45:31 -0800', and a note 'Reserved DNs expire after 7 days.' At the bottom of the form are 'Save', 'Back', and 'Exit' buttons. A yellow box at the bottom left of the interface contains the text 'Global PM Administrators Only'.

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System Admin 4-19

Directory Number Inventory

PM also keeps an inventory of Directory Numbers that have been allocated. In most cases, Service Area Directory Number Blocks (DNBs) are used to allocate the directory numbers. However, you can use the Directory Number Inventory to explicitly reserve a directory number for a specific subscriber using the following step:

1. Select the **Advanced Setup** tab.
2. The options bar displays three choices, select the **Directory Number** option.
3. The *Directory Number Inventory Management – Add or Update a Directory Number* dialog is displayed. Select the **Add a New Directory Number** task.
4. Enter the number to reserve for a subscriber in the Directory Number entry box.
5. Select the **Call Processor/Route Partition** this number is to be part of from the Call Processor/Route Partition pull-down menu.
6. Select **Reserved** from the Status pull-down menu.
7. Click the **Arrow Icon** to the right of the Reserved For entry field to display a list of subscribers in the selected domain. Select the subscriber to reserve the phone for.
8. Click **Save** to add and reserve the directory number.

PM Inventory

The screenshot displays the Cisco Unified Provisioning Manager web interface. The top navigation bar includes tabs for Provisioning Dashboard, Infrastructure Configuration, Advanced Setup, and System Administration. The 'Inventory' tab is selected, showing a tree view on the left with various object classes like AARGroup, CallForwardInfo, and CallProcessor. The main pane shows the 'CallProcessor NiceMunich' object with its properties. A table lists properties such as enablePassword, type, deviceProtocol, version, hasExternalDirectory, ID, isPrimary, commonName, name, description, ipAddress, userName, password, EMServiceName, EMServiceURL, and syncStatusMessage. Two callout boxes provide additional context: one states that Provisioning Manager tracks information about all services and subscribers in an internal asset management or inventory system, and another notes that the Global PM Administrator can browse the inventory or create Advanced Searches to produce report templates.

Provisioning Manager tracks the information about all services and subscribers in an internal asset management or inventory system

Global PM Administrator can browse the inventory or create Advanced Searches of the inventory to produce report templates

Name	Value
enablePassword	***** (password)
type	CallManager
deviceProtocol	HTTPS
version	4.1(3) SR3a
hasExternalDirectory	None
ID	NiceMunich
isPrimary	false
commonName	
name	
description	
ipAddress	192.168.140.140
userName	administrator
password	***** (password)
EMServiceName	
EMServiceURL	
syncStatusMessage	Successfully completed synchronization.

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System Admin 4-20

PM Inventory

PM tracks the information about all services and subscribers in an internal asset management or inventory system. This information can be viewed by an administrator, and advanced searches may be created and saved that permit producing report templates in HTML or Microsoft Excel format.

Sync Script

Ensure Provisioning Manager is up-to-date in the event of a manual update to a call or message processor:

- Default is manually through PM GUI
- Alternatively use the Windows Scheduler to run the sync script

<PM_DIR>/sep/build/bin/**sync.bat** [callprocessor] [messageprocessor] [domain] [all]

If you provide:

- The '**callprocessor**' input it will run infrastructure and subscriber syncs for ALL call processors in the system.
- The '**messageprocessor**' input it will run infrastructure and subscriber syncs for ALL message processors in the system.
- The '**domain**' input it will execute syncs for all domains in the system.
- The '**all**' input it will execute infrastructure and subscriber syncs for ALL call processors, then for all message processors, followed by domain syncs for all domains.

Sync Script

After adding a call processor from an existing deployment, the PM administrator next performs a synchronization so that PM is made aware of the existing configuration and subscriber base. Moving forward, if all configuration and subscriber provisioning is done with PM, then the call processor and PM should remain in sync. However, there is nothing other than policy keeping an IP voice administrator from making changes through the applications interface. In this case, the processor and PM would be out-of-sync.

The PM administrator can always use the GUI to perform a synchronization, but it may prove easier and more reliable to schedule a special sync job.

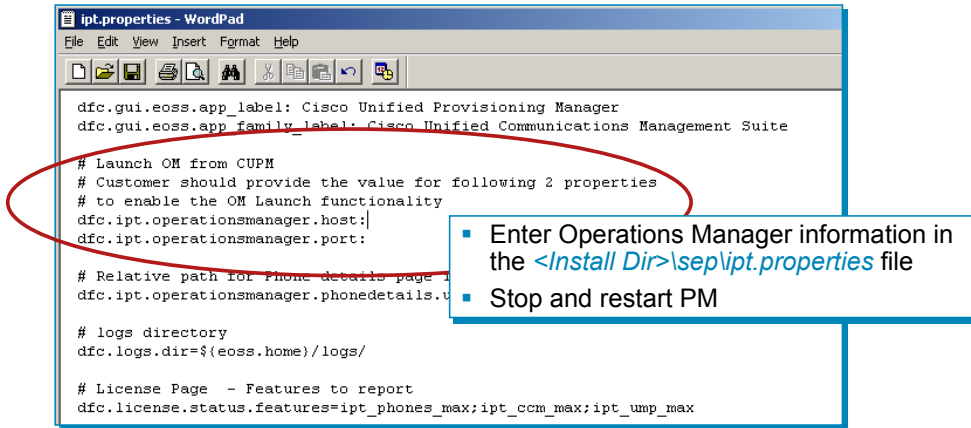
Using the Microsoft Windows scheduler, schedule the sync.bat job to run on a periodic basis. The script will perform synchronizations depending on the inputs to the batch job.

- If the '**callprocessor**' input is provided, an infrastructure and subscriber sync for ALL call processor in the system will be executed.
- If the '**messageprocessor**' input is provided, an infrastructure and subscriber syncs for ALL message processor in the system will be executed.
- If the '**domain**' input is provided, a syncs for all domains in the system will be executed.
- If the '**all**' input is provided, the sync.bat job will execute infrastructure and subscriber syncs for ALL call processors, then all message processors, followed by domain syncs for all domains.

Integration with Operations Manager Configuration

Integrate with Cisco Unified Operations Manager to see additional details about a subscriber's phone:

- IP Address, CCM Address, Switch Address, Switch Port



Next Page

Integration with Cisco Unified Operations Manager

Cisco Unified Operations Manager (OM) is another management product in the Cisco Unified Communications Management Suite of products. It is used for managing voice infrastructures on a day-to-day basis. As such, it contains a wealth of information on voice applications and IP phones.

PM can be integrated with OM and allow the PM administrators to get more information about a provisioned phone, like the phones IP address, the CCM the phone is registered to, and the switch and switch port the phone is connected to.

To configure the OM integration, the *<Install Dir>\sep\ipt.properties* file must be modified. The file contains two entries to inform PM of how to contact OM:

`dfc.ipt.operationsmanager.host:` <Enter the IP address or DNS host name of the OM server>

`dfc.ipt.operationsmanager.port:` <Enter the OM port – 1741 by default>

After making the changes, PM must be stopped and restarted.

Start > All Programs > Cisco Unified Provisioning Manager > Stop Cisco Unified Provisioning Manager

Start > All Programs > Cisco Unified Provisioning Manager > Start Cisco Unified Provisioning Manager

Integration with Operations Manager Execution

The screenshot shows the Cisco Unified Provisioning Manager interface. The 'Subscriber Record Details' section displays a table with columns: Location, Quantity, State, and Last Update. A red box highlights the 'DETAILS' button in the 'Phone' row. A red arrow points from this button to a callout box containing the following text:

- **Details** button added to list of Subscriber's phone tasks
- Launches Operations Manager *IP Phone Details* report

The 'IP Phone Details' report is displayed as a modal window with the following information:

IP Phone Details	
Extension	2211003
IP Address	172.20.4.151
MAC Address	001469a9542d
CCM Address	172.20.4.132
Switch Address	172.20.4.132
Switch Name	la-3845-cmecue.cisco.com
Switch Port	Fa2/5
Port status	up
IP Phone status	yes
IP Phone Type	7960
Protocol	SCCP
VLAN Name	default
VLAN ID	1
SRST Router	-
SRST mode	-

At the bottom of the report are buttons for 'Print', 'Prev', and 'Next'.

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Integration with Cisco Unified Operations Manager (Cont.)

An additional button "DETAILS" will now be available in a Subscriber Record under Phone product. Clicking on this launches OM. You will need to provide OM credentials to continue. OM initiates an IP Phone Search on the selected phones' MAC address and when found will display an *IP Phone Details* report providing additional information about the selected phone(s).

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Maintenance

- Requirements
- Installation Guidelines
- Additional Administrative Tasks
- **Maintenance**
- Helpful Troubleshooting Tips



Periodic Maintenance

Database Backup

- Step 1.** On the CUPM system, stop the following services using the Control Panel: **Apache**, **cupm JBossService**, and **cupm NiceService**
- Step 2.** Open postgres command prompt: **Start > All Programs > PostgreSQL8.2 > Command Prompt**
- Step 3.** Run command to backup the database, by storing the database information in a file

pg_dumpall -o -U<username> >[path and fileForBackup]

Where <username> is the username of the postgres administrator. Default administrator username is *postgres*.
- Step 4.** If you are backing up for a new install, make backup copies of the files and directories listed in the student guide.
- Step 5.** Restart the following services using the Control Panel: **Apache**, **cupm JBossService**, and **cupm NiceService**

Database Backup

CUPM and Database on Same Machine

It is important that the PM database be periodically backed up. This can not be done from the Provisioning Manager's GUI. Use these steps to backup the data in the database into a file, preferably on a different server.

This procedure requires postgres administrator level access.

1. On the Provisioning Manager system, stop the following services: **Apache**, **cupm JBossService**, and **cupm NiceService**. Stop these services from the Control Panel. Select **Start > Control Panel > Administrative Tools > Services**; Right-click each of the services and click **Stop**.
2. On the Windows desktop, select **Start > All Programs > PostgreSQL8.2 > Command Prompt**. A command prompt opens in the <Install directory>\pgsql\bin directory. **Note** If you accepted the default location during installation, the installation directory is C:\CUPM.
3. In the command prompt, run the following command and enter the postgres admin password when prompted. **pg_dumpall -o -U <username> >[path and fileForBackup]**

Where <username> is the username of the postgres administrator. If you accepted the default, the administrator username is *postgres*. **Note** Enter the password each time that you are prompted. This command is used to backup the database, by storing the database information in a file.
4. If you are backing up on the same install, proceed to the next step. If you are backing up for a new install, make backup copies as described in this step. In a backup folder, make copies of the following files and directories:
 - <installLocation>/install.log
 - <installLocation>/sep/dfc.properties
 - <installLocation>/sep/dfc.keystore
 - <installLocation>/jboss-4.0.3SP1/server/cupm/conf/login-config.xml
5. Start the following services: **Apache**, **cupm JBossService**, and **cupm NiceService**. Start these services from the Control Panel. Select **Start > Control Panel > Administrative Tools > Services**; Right-click each of the services and click **Start**.

Periodic Maintenance

Database Restore

- Step 1.** If you are restoring to a new install, have the CUPM system with the new install up and running
- Step 2.** Shutdown Provisioning Manager (previous slide)
- Step 3.** Open postgres command prompt: **Start > All Programs > PostgreSQL8.2 > Command Prompt**
- Step 4.** Run command to backup the database, by storing the database information in a file: **psql.exe -U <username>**
- Step 5.** Drop the database name and role by entering several commands in the command prompt. (See Student Guide)
- Step 6.** Run command to restore the database: **psql.exe -U<username> -d postgres < [path and fileToRestoreFrom]**
- Step 7.** If restoring to a new install, copy the backed up files
- Step 8.** Restart the following services using the Control Panel: **Apache, cupm JBossService, and cupm NiceService**
- Step 9.** You should perform a subscriber synchronization to all Call Unified Message Processors, and a Domain synchronization before placing any orders.

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Database – Restore

CUPM and Database on Same Machine

If you have backed up your data and want to restore it, follow these steps. If you are restoring to a new install, have the system with the new install up and running before beginning this procedure. **Note** This procedure requires postgres administrator level access.

1. Stop Provisioning Manager services on the machine running CUPM.
2. On the Windows desktop, select **Start > All Programs > PostgreSQL8.2 > Command Prompt**. A command prompt opens in folder <Install directory>\pgsql\bin. **Note** If you accepted the default location during installation, the installation directory is C:\CUPM.
3. To enter the postgres prompt, run the following command and enter the postgres administrator password for the current install when prompted: **psql.exe -U<username>**

Where <username> is the username of the postgres administrator. If you accepted the default, the administrator username is *postgres*.

4. Before restoring the database, you must drop the database name and role. In the command prompt, run the following commands exactly as shown, one at a time in the following order:

- **DROP DATABASE cupm;**

Where *cupm* is the database name to be removed. Expected output: DROP DATABASE

- **DROP ROLE <rolename>;**

Where <rolename> is the username for the SEP database user. If you accepted the default, the username is *cupm*. Expected output: DROP ROLE

- **ALTER ROLE <username> WITH PASSWORD '<password>';**

Where *username* is the username of the postgres administrator user, and *password* should be the password set for the postgres administrator with backed up data. If you accepted the default administrator username, the username is *postgres*. Expected output: ALTER ROLE

5. Enter `\q` to quit the postgres prompt.
6. From the command line, run the following command, entering the password set in the previous step for the postgres user when prompted: **`psql.exe -U<username> -d postgres < [path and fileToRestoreFrom]`**
 Where *<username>* is the username of the postgres administrator. If you accepted the default, the administrator username is *postgres*. This command restores the database.
7. If you are restoring to the same install, proceed to the next step. If you are restoring to a new install, complete the following step to copy the backed up files. Copy back the following backed up files:
 - `<installLocation>/install.log`
 - `<installLocation>/sep/dfc.properties`
 - `<installLocation>/sep/dfc.keystore`
 - `<installLocation>/jboss-4.0.3SP1/server/cupm/conf/login-config.xml`
8. Start the following services: **Apache**, **cupm JBossService**, and **cupm NiceService**. Start these services from the Control Panel. Select **Start > Control Panel > Administrative Tools > Services**; Right-click each of the services and click **Start**.

Distributed Machines

If the CUPM and database are distributed, follow the same procedures as with a single machine backup and restore, however, review the following important notes.

- Stop the services (Apache, cupm JBossService, and cupm NiceService) and run the postgres command prompt on the system where CUPM is running
- If restoring to a new install with a new IP address, then following these steps prior to restarting the services:
 - On the system where Provisioning Manager is running, in the file `<installLocation>\sep\dfc.properties`, find the property `dfc.postgres.host`, and change it to: `dfc.postgres.host=<New DB Server IP Address>`
 - On the Windows desktop of the machine where the database is running, go to **Start > Programs > PostgreSQL 8.2 > pgAdmin III**.
 - Double click on `cupmPostgreSQL` and login using the postgres administrator password.
 - Click on the SQL menu item at the top of the query window, and in the top right window pane enter the following command: `delete from nicesyseng where host='<Old NICE Server IP Address>'`
 - Click on the **Execute Query** button at the top of the query window.
 - In the Output Pane at the bottom of the screen, confirm that the result message says the query was returned successfully.
 - Exit the query window.
 - Exit the pgAdminIII window.
 - Restart Postgres on the machine where the database is running. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**. Right-click the service `cupmPostgreSQL` and click **Start**.

Periodic Maintenance

Data Purge

What data to purge

Enable Purging	Type of data	Retention Time in Days	Retention Count
<input checked="" type="checkbox"/>	Orders **	7	100
<input checked="" type="checkbox"/>	ServiceAction	7	100
<input checked="" type="checkbox"/>	Workflow **	7	50

How much to keep

Export Data

Export Before Purge: ☐ Yes ☒ No

Directory to save the exported data file:

Save data before purge

Schedule Purging

Purge Interval: 24 Hours

How often to purge

Purging Information

Time Of Next Purge Occurrence	Tue Mar 06 12:40:36 PST 2007
Time Of Last Purge Occurrence	Mon Mar 05 12:40:36 PST 2007
Status Of Last Purge Occurrence	The purge operation was successful.

Only ** objects are exported when Export Data is enabled.

Provisioning Manager retains the following types of data:

- **Order** - order data objects are created for any placed order
- **Service Action** - objects created during PM to device communication for provisioning
- **Workflow** - workflow objects are created after order placed and before service activation

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Data Purge

Provisioning Manager retains the following types of data:

- **Order**—When an order is placed for any product provisioning (for example; phone, line, voicemail or any bundle), an order data object is created and stored in the system.
- **ServiceAction**—Are objects that get created during the application to device communication for product provisioning.
- **Workflow**—After an order is placed for a product, it goes through a workflow (approval, and shipping and receiving) before going to the service activator.

You can use the **System Administration > Data Maintenance** task to modify the retention count (number of objects to keep) for each of these three objects and schedule the purge interval. The task also gives you the option to first export the file prior to purging the data.

The default settings for the Retention Count are:

- Orders—100
- ServiceAction—100
- Workflow—50



Helpful Troubleshooting Tips

- Requirements
- Installation Guidelines
- Additional Administrative Tasks
- Maintenance
- **Helpful Troubleshooting Tips**



Helpful Troubleshooting Tips

Log Files

PM keeps log files detailing behavior of the system

- Located in the <install-dir>/sep/logs file
- Files naming format <log-name>.log.<date-stamp>-<time-stamp>
 - Current logs have no date/time stamp
- Files backed up hourly or when they reach maximum size (default is 20 MB)
 - To change, open the <install-dir>/sep/dfc.properties file and modify the dfc.log.maxsize property to desired size
- Cannot disable, but can change amount of data written to file
 - Available logging levels: DETAIL, LOW, NORMAL (default), HIGH, and EMERGENCY
 - To change, open the <install-dir>/sep/dfc.properties file and modify the dfc.log.level property to desired level

Log File Management

Provisioning Manager writes application log files for the Service Enabling Platform (SEP) module (sep.log) and the Network Interface and Configuration Engine (NICE) service (nice.log). The log files are located in the <Installation Directory>/sep/logs folder.

You cannot disable logging. However, you can:

- Collect more data when needed by increasing the logging level
- Return to the default logging level (NORMAL)

Following are the available logging levels:

- DETAIL (provides the most information)
- LOW
- NORMAL
- HIGH
- EMERGENCY (provides the least information)

To change, open the <install-dir>/sep/dfc.properties file and modify the dfc.log.level property to desired level.

Log files are backed up every hour, or when they reach their maximum log size limit. The default size limit is 20 Mb. To change, open the <install-dir>/sep/dfc.properties file and modify the dfc.log.maxsize property to desired size. The files are saved in the format

<log_name>.log.<date stamp>-<timestamp>

the current files have no date/time stamp.



Thank You!

We hope that you have enjoyed using Cisco Unified Provisioning Manager and have found its features to be an important part of your network-management toolkit.

Cisco Systems



Cisco Unified Provisioning Manager

References

Chapter 5



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Reference Materials

Many Cisco reference documents have been created to help users understand the use of Cisco Unified Provisioning Manager. However, finding help and documentation can often be a challenge. This reference chapter has been created to assist you in your pursuit of additional product information. Below are links to documents and Web pages that provide further details on Cisco Unified Provisioning Manager.

- **Cisco Unified Provisioning Manager (PM)**
 - ♦ **Cisco Unified Provisioning Manager ([URL](http://www.cisco.com/en/US/products/ps7125/index.html))**
<http://www.cisco.com/en/US/products/ps7125/index.html>
 - ♦ **Data Sheet ([URL](http://www.cisco.com/en/US/products/ps7125/products_data_sheets_list.html))**
http://www.cisco.com/en/US/products/ps7125/products_data_sheets_list.html
 - ♦ **Install and Upgrade Guides ([URL](http://www.cisco.com/en/US/products/ps7125/prod_installation_guides_list.html))**
http://www.cisco.com/en/US/products/ps7125/prod_installation_guides_list.html
 - ♦ **Release Notes ([URL](http://www.cisco.com/en/US/products/ps7125/prod_release_notes_list.html))**
http://www.cisco.com/en/US/products/ps7125/prod_release_notes_list.html
 - ♦ **User Guide ([URL](http://www.cisco.com/en/US/products/ps7125/products_user_guide_list.html))**
http://www.cisco.com/en/US/products/ps7125/products_user_guide_list.html
 - ♦ **Frequently Asked Questions ([URL](http://www.cisco.com/en/US/products/ps7125/prod_qandas_list.html))**
http://www.cisco.com/en/US/products/ps7125/prod_qandas_list.html

- **Other Related Material**

- ♦ **Cisco Unified Communications (URL)**
http://www.cisco.com/en/US/products/ps7125/prod_brochure_list.html
- ♦ **Cisco Unified Communications Management (URL)**
http://www.cisco.com/en/US/products/ps5747/Products_Sub_Category_Home.html
- ♦ **IP Communications and Voice Solutions (URL)**
http://www.cisco.com/en/US/netsol/ns340/ns394/ns165/networking_solutions_packages_list.html
- ♦ **Deployment of QoS in Converged Networks (PDF)**
http://www.cisco.com/application/pdf/en/us/guest/tech/tk759/c1482/cdccont_0900aecd8019f3e0.pdf
- ♦ **QoS Configuration and Monitoring White Papers (URL)**
http://www.cisco.com/en/US/partner/tech/tk543/tk759/tech_white_papers_list.html
- ♦ **Network Professionals Connection (URL) <Select Network Management>**
<http://forums.cisco.com/eforum/servlet/NetProf?page=main>
- ♦ **Cisco's SNMP Object Navigator (URL)**
<http://tools.cisco.com/Support/SNMP/do/BrowseOID.do?local=en>

- **Online Bug Tracker**

Search for known problems on the Cisco bug tracking system tool, called Bug Toolkit.

To access Bug Toolkit, perform the following steps:

- Click on the link above (www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl)
- Login to Cisco.com
- Click **Launch Bug Toolkit**.
- Locate **Provisioning Manager** from the list of Cisco Software Products
- Then click **Next**.

- **Technical Notes / White Papers**

- ◆ **Network Management Systems: Best Practices White Paper ([URL](#))**

http://www.cisco.com/en/US/tech/tk869/tk769/technologies_white_paper09186a00800aea9c.shtml

The objective of this paper is to provide some deployment guidelines for all areas of network management: Fault, Configuration, Accounting, Performance, and Security (FCAPS).

- ◆ **Unified Communications Design Guides ([URL](#))**

http://www.cisco.com/en/US/netsol/ns656/networking_solutions_design_guidances_list.html#anchor10

A collection of design guides for unified communications applications and products. These guides:

- Focus on the specific solution that is being addressed.
- Provide an overview of relevant technologies.
- Give a description of the architecture.
- Offer design best practice recommendations.
- Provide configuration examples.

