



CHAPTER 4

Managing Domains and Service Areas

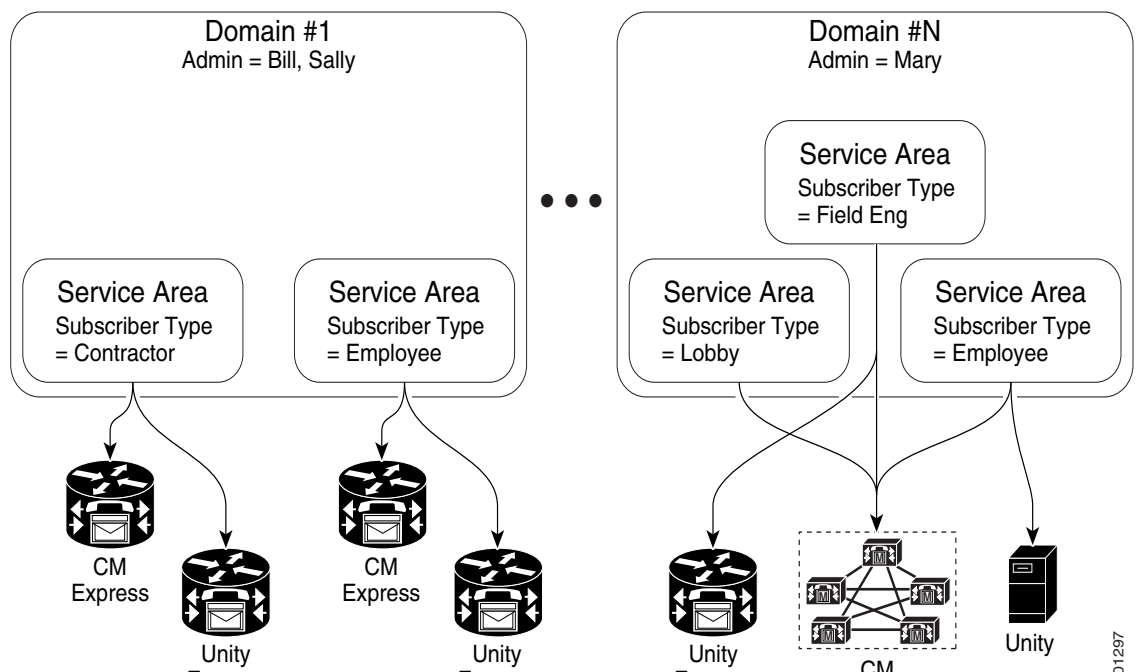
Domains are groupings of subscribers. For each grouping, one or more system users can be authorized to manage services for subscribers within that Domain. In addition, rules or policies may be set on a Domain; those rules and policies will apply to services for subscribers in that Domain. Common policies can also be applied on operations within a Domain.

A user can manage more than one Domain (if the user is assigned the proper authorization role). A user always belongs to a primary Domain, called a Services Domain. All of the user's services are provisioned in the Services Domain.

To use Domains in Provisioning, you must do the following:

- Create and configure the Domain—Includes assigning a Call Processor and Unified Message Processor (optional).
- Create and configure Service Areas—Includes selecting call search spaces, route partitions, and device pool; specifying user types that have access to the Service Area; and configuring directory number blocks.

Figure 4-1 Domain Configuration



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Creating a Domain

Table 4-1 describes the fields required for creating a Domain.

Table 4-1 Field Descriptions for the Configure a New Domain Page

Field	Description
Domain ID	Name of the Domain. Valid values are space, alphanumeric characters (A-Z, a-z, 0-9), and the following special characters: _ - . / : ; = ? @ ^ ' { } [] ~.
(Optional) Description	Description of the Domain.

To create a domain:

Step 1 Choose **Design > Set Up Deployment > Domains**.

Step 2 In the Configure a New Domain page, complete the fields as required.

Step 3 Click **Save**.

The Update Domain page appears. For configuring a Domain, see [Configuring a Domain, page 4-3](#).

Using the Customer Domain Template

If your implementation has more than one Domain, you can configure the Customer Domain Template according to the default business rules and user types that you require for your implementation.

When you create new Domains, they inherit the standard set of business rules and user types from the Customer Domain Template. You can then change the business rules and user types as required for each new Domain. Changes made to the Customer Domain Template affect only new Domains created after that point.

The Customer Domain Template is created by default when you install Provisioning. You configure it by specifying business rules and subscriber roles for it the same way that business rules and subscriber roles are specified for new Domains.

If you are upgrading from Provisioning 2.1, the following products are added along with the new features but are not automatically associated to the Customer Domain template:

- Mobility
- Phones such as Nokia S60
- iPhone products

If you want to use these new Provisioning features, you must edit the Customer Domain templates.

Configuring a Domain

After you have created a Domain, you must select one or more Call Processors for it. You can also select one or more Unified Message Processors. The Domain information includes Service Areas and subscriber roles that have access to your new Domain.

**Note**

You must create the Call Processor and Unified Message Processor before you can add them to a Domain. Call Processors and Unified Message Processors can be shared across Domains.

Table 4-2 describes the fields required for configuring a Domain.

Table 4-2 Domain Configuration Fields

Field	Description
Domain ID	Name of the Domain. Valid values are space, alphanumeric characters (A-Z, a-z, 0-9), and the following special characters: _ - . / : ; = ? @ ^ ' { } [] ~.
Description	Description of the Domain.
AAA Server	List of available AAA servers to use for authentication.
Call Processor	Call Processors for the Domain.
Unified Message Processor	Unified Message Processors for the Domain.
Subscriber Roles	Includes the default Provisioning subscriber roles.
Service Area	Geographic, organizational, or technological boundaries for the Domain.

- Step 1** Choose **Design > Set Up Deployment > Domains**.
- Step 2** From the Domain Configuration page, Click **View Domain**.
- Step 3** From the search page, select the Domain that you require.
- Step 4** From the Options pane of the View Domain page, click **Update**.
- Step 5** Enter the necessary field information in the Update Domain page, and click **Save**.

Synchronizing Domains

There are three types of synchronizations in Provisioning: infrastructure, subscriber, and domain synchronization. An infrastructure synchronization discovers all the objects in Cisco Unified Communications Manager that Provisioning uses and that are not specific to individual subscribers. Subscriber synchronization discovers all objects related to individual subscribers.

Domain synchronization puts existing subscribers discovered during subscriber synchronization into the Domain and the appropriate Service Area.

Infrastructure and subscriber synchronizations retrieve information from the device. They are unidirectional synchronizations. Provisioning does not update devices during these synchronizations. Infrastructure and subscriber synchronizations should be completed on all devices before a Domain synchronization is started.

Domain synchronization aggregates data from the processor synchronizations. Devices are not accessed during a Domain synchronization.

During a Domain synchronization, Provisioning does the following:

- Associates the voicemail, email, and unified messaging data in the Unified Message Processor with the user information in Provisioning.
- Synchronizes the assigned voicemail directory numbers in the Unified Message Processor to those in the Call Processor.
- Synchronizes subscribers and their ordered products with the Provisioning inventory, creates new subscribers, and updates their subscriber records.
- Synchronizes user accounts and updates Provisioning so that users can log in (logins are created only if the self-care rule is enabled; see [CreateSelfCareAccounts, page 11-4](#)).
- Associates services to Service Areas.

Business rules determine the criteria used for synchronizing Domains (see [Business Rules for Domain Synchronization, page 4-7](#)).

To fully synchronize a Domain, you must do the following:

1. For each Call Processor in the Domain, perform an infrastructure and subscriber synchronization.
2. For each Unified Message Processor in the Domain, perform an infrastructure and subscriber synchronization.
3. Perform a Domain synchronization.

**Note**

If a Call Processor or a Unified Message Processor in the Domain is synchronized, it is recommended that a Domain synchronization also be done.

While running Domain synchronization, remember the following:

- If you use a subscriber synchronization on Cisco Unified Communications Manager Express to add subscribers to Provisioning, the first name, last name, phone number, and department data are not obtained by Provisioning. The Manage Subscriber page displays “Unknown” in these fields.
You can update the subscriber information through Provisioning, but be aware that this information will be pushed to the Cisco Unified Communications Manager Express system, and will overwrite any existing information for the user in the ephone description field.
- You should not run more than one synchronization at a time (Domain or Processor synchronization). Run all synchronizations sequentially.
- If a Cisco Unified Communications Manager Express is the only device present in a Domain and Service Area, during Domain synchronization subscribers are not created in Provisioning if the ephone username command is not configured in Cisco Unified Communications Manager Express. Make sure the ephone username command is configured in Cisco Unified Communications Manager Express for all subscribers.
- If more than one matching Service Area is found for a Phone, Soft Phone, Line, EM Line, or Device Profile, Provisioning assigns them to the first matching Service Area, and a warning message appears in the Domain Synchronization log. (See [Deleting a Domain, page 4-16](#).)
- A device profile is added to a subscriber's record as an Extension Mobility Access product only if the device profile is subscribed to the extension mobility service in Cisco Unified Communications Manager.

- Service Area matching for Remote Destination Profile is based on the Device Pool and Calling Search Space of the Remote Destination Profile.
- If the Cisco Unified Communications Manager and Cisco Unified Presence added to the service area are upgraded to 9.0 versions, the following products will be removed from the subscriber records:
 - Enable Presence
 - Enable Presence Client
 - Client User Settings

The subscriber records will be updated with the User Services product details.

If a Service Area has Cisco Unified Communications Manager 8.x and Cisco Unified Presence 8.x, then Enable Presence, Enable Presence Client, and Client User Settings product details will be retained in the subscriber records.

- Provisioning allows you to provision device profiles with services enabled or disabled at enterprise level.

If a device profile has associated services, the device profile will be associated to a subscriber only if a matching service URL is found.

**Note**

Extension Mobility service can be associated to a subscriber, even if the device profile has no associated services or if the services are enabled at enterprise level.

Table 4-3 lists the attributes used to find a matching Service Area during Domain synchronization.

Table 4-3 *Attributes Matching Service Area*

Processor Type	Product	Attributes Matching Service Area
Call Processor	Phone	DevicePool
		Common Device Config
		Calling Search Space (Device)
		Location
		Phone Protocol
	Line	DevicePool
		Common Device Config
		Calling Search Space (Line)
		Location
		Route Partition
		Protocol
		Voice Gateway References
		Unified Message Processor (Voicemail)
		 Note Though Line belongs to the Call Processor, it is dependent on the Unified Message Processor for Voicemail.
		Email Processor (Email)
		 Note Though Line belongs to the Call Processor, it is dependent on the Email Processor for Email.
	Soft Phone	—
	Extension Mobility Access	—
	Extension Mobility Access Line	Calling Search Space
		Route Partition
	Mobility	—
	Remote Destination Profile	Device Pool
		Calling Search Space
	Enable Presence Client	Unified Presence Processor (Client User Settings).
		Enable Presence Client is associated with the Client User Settings product.
		Though Enable Presence belongs to Call Processor, it is dependent on the Unified Presence Processor for Client User Settings.
		Note Enable Presence, Enable Presence Client, and Client User Settings products are available only for Cisco Unified Presence 8.x.
	User Services	—

Table 4-3 *Attributes Matching Service Area (continued)*

Processor Type	Product	Attributes Matching Service Area
Unified Presence Processor	Client User Settings	—
Unified Message Processor	Unified Messaging Info	This product is added to the Service Area that is set on its associated email or voicemail product.

Step 1 Choose **Design > Set Up Deployment > Domains**.

Step 2 From the Domain Configuration page, click **View Domain**.

Step 3 From the search page, select the Domain that you require.



Note If the Domain was synchronized previously, the details are displayed in the Last Synchronization section.

Step 4 In the Options pane of the View Domain page, click **Synchronize**.



Note Domain synchronization cannot be started without configuring synchronization rules. Configure the synchronization rules and then proceed; see [Business Rules for Domain Synchronization, page 4-7](#).

Step 5 Click **Start**.

After the synchronization has completed, the Last Synchronization section displays the synchronization information.

Step 6 Click **Done**.

After the Domain synchronization completes, a log is created, listing the objects that could not be assigned; see [Deleting a Domain, page 4-16](#). The log lists the products that could not be assigned to a Service Area during a Domain synchronization. This log is replaced each time a Domain synchronization occurs.

Step 7 Click **View Detailed Synchronization Log** at the bottom of the page to view the log details.

For explanations of the log messages, see [Domain Synchronization Log Messages, page 4-9](#).

Business Rules for Domain Synchronization

Business rules determine the criteria used for adding users to a Domain.



Note Be aware that if you run a Domain synchronization and then change the configured Domain rule to Non-RestrictedDomainSync and then run another Domain synchronization, any services that were not previously synchronized will be placed in a Service Area based on the Non-RestrictedDomainSync rule (see [Non-RestrictedDomainSync, page 11-9](#)).

For a Domain synchronization to work properly, you *must* configure at least one of the following five rules:

- **AssociateAllUsersInCallProcessor**—If enabled, all user accounts in all of the Call Processors in the Domain are assigned to the Domain being synchronized. This rule overrides the **AssociateUsersByDeptCode** rule.
- **AssociateOnlyExistingUsers**—If enabled, the Domain synchronization does not create new users. Only services of existing users in the Domain are synchronized.
- **AssociateUsersByDeptCode**—If enabled, the Domain synchronization associates only the Call Processor user accounts whose department code matches one in the list specified in the rule configuration.
- **AssociateUsersByLocation**—If enabled, the Domain synchronization associates only the Call Processor user accounts whose phone location matches one in the list specified in the rule configuration.
- **AssociateUsersByDevicePool**—If enabled, the Domain synchronization associates only the Call Processor user account whose Phone or Remote Destination Profile has a device pool value that matches one in the list specified in the rule configuration.

The rest of the Domain synchronization rules coreside (do not have a priority level) with the above rules.

Following are the coresident Domain synchronization rules:

- **AssociateAllUsersInUMProcessor**—If this rule is enabled, all user accounts in a given Unified Message Processor are assigned to a Provisioning Domain. Otherwise, only user accounts in the given Unified Message Processor with a matching Call Processor user account are assigned.
- **TakePrimaryUserInfoFromUMProcessor**—If enabled, user and subscriber information is updated from the associated Unified Message Processor account; otherwise it is updated from the Call Processor.
- **Non-RestrictedDomainSync**—If enabled, Domain synchronizations are performed when the rules for some of the Domain synchronization operations are reduced. The **Non-RestrictedDomainSync** business rule determines to which Service Area a subscriber's services are added. For more information, see [Non-RestrictedDomainSync, page 11-9](#).



Note

If you try to run a Domain synchronization when none of the required rules are enabled, a message appears in the Synchronize Domain page stating that you are required to enable one of the rules. You can click the [Configure Synchronization Rules](#) link on this page to open the [Configure Domain Sync Rules](#) page, where you can configure the desired Domain synchronization rule. For more information, see [Configuring Domain Synchronization, page 11-12](#).

If more than one of the required rules are enabled, only one of the rules will be in effect.

The rule priority is applied in the following order:

1. **AssociateAllUsersInCallProcessor**
2. **AssociateOnlyExistingUsers**
3. **AssociateUsersByDeptCode**
4. **AssociateUsersByDevicePool**
5. **AssociateUsersByLocation**

If the first rule (AssociateAllUsersInCallProcessor) is enabled, the settings of all the other rules are ignored. If the second (AssociateOnlyExistingUsers) rule is enabled, the settings for the last three rules are ignored. The last three rules are additive, meaning that if two of the rules are enabled, then only users that satisfy both constraints are synchronized.

Example of Configuring Business Rules for Domain Synchronization

Suppose a Domain has three Call Processors (CCM1, CCM2, and CCM3) and the following rules are enabled:

- AssociateUsersByDeptCode—Configured with Dept1.
- AssociateUsersByDevicePool—Configured with CCM2:DevicePool2;CCM3:DevicePool3.
- AssociateUsersByLocation—Configured with CCM3:Location3.

When the Domain is synchronized, the following users are synchronized:

- CCM1—Users with the department code Dept1.
- CCM2—Users with the department code Dept1 and phones with the device pool DevicePool2.
- CCM3—Users with the department code Dept1, phones with the device pool DevicePool3, and the location Location3.

Domain Synchronization Log Messages

This section provides explanations for some of the messages that can appear in the Domain Synchronization Log report.

The Phone SEP123123123123 could not be added to the customer record because a service area with the following properties could not be found:

Call Processor: TestCCM

Voice Device Group: TestVDG

Call Search Space: TestCSS

Location: Hub_None

The phone could not be assigned to a Service Area with the listed settings.

To fix this problem, either create a Service Area with the same settings or change the phone settings on Cisco Unified Communications Manager.

Duplicate username encountered. So skipping the creation of this user: TestUser from the Call Processor: TestCCM

Indicates that another user exists in Provisioning with the same ID, but the ID uses a different case. Services which belong to this user will not be synchronized.

To fix this problem, remove one of the users from Cisco Unified Communications Manager.

No matching voice mail info found for directory number 123400000

The synchronization could not find a voicemail for the directory number. This problem can occur when either a synchronization was not run on the Unified Message Processor (so the voicemails are not present in Provisioning), or there is no Service Area with the directory number's Call Processor, route partition, and voicemail's Unified Message Processor.

To fix this problem, either run a subscriber synchronization on the Unified Message Processor, or create a Service Area with the correct settings.

The device profile line Line 1 - 123400000 could not be added to the customer record because a service area with the following properties could not be determined in the domain Cisco:

Call Processor: TestCCM

Route Partition: null

Call Search Space (Line): TestCSS

A device profile line could not be assigned to a Service Area with the listed settings.

To fix this problem, either create a Service Area with the same settings or change the line settings on Cisco Unified Communications Manager.

Scheduling Synchronization

Provisioning provides a command line script utility that can be used to schedule periodic processor and Domain synchronizations. The synchronization script enables you to regularly schedule a subset of the synchronization operations at different periodic intervals and across multiple time zones. The sync.sh file is available at /opt/cupm/sep/build/bin/ folder.

To schedule synchronization:

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- Step 1** Login to the Provisioning server as root using SSH.
 - Step 2** Enter **crontab -e** to edit a copy of the crontab file in vi editor.
 - Step 3** Press the **i** key to enter insert mode.
 - Step 4** To run synchronization at regular intervals, for example, at 3:24 pm every day, run the following command:

24 15 * * * /opt/cupm/sep/build/bin/sync.sh all which says run sync.sh all
 - Step 5** Press ESC key to exit insert mode, and then press **:** to enter the command line.
 - Step 6** Enter **wq** to write and quit the editor.
 - Step 7** Enter **crontab -l** to see if the file is saved.
-



Note

Run **man 5 crontab** for information on other cron commands.

The command line script utility options are as follows:

Mass Sync Usage: ./sync.sh [callprocessor | messageprocessor | presenceprocessor | activedirectory | domain | all] [<option>]

Mass Synchronization invokes synchronization operations for all objects of the specified class. Both infrastructure and subscriber synchronizations run for each processor. The order of the synchronization is as follows: call processor, unified message processor, presence processor, and then domain.

Granular Sync Usage: ./sync.sh [-g <filename>] [<option>]

Granular Synchronization invokes synchronization operations that are specified in a formatted file, where

- <filename>—is a text file that has lines of the appropriate format: <object class>.<object name>: <sync type> that is,
 - cp.Test-UCM: infra
 - mp.all: sub

- pp.all: both—equivalent to the [presenceprocessor] mass sync
- ad.all:—ActiveDirectory mass sync
- domain.Test-Dom:
- <option>—(Optional field) the following are available as options:
 - test—Allows a script to run without performing any syncs, but list the processors and Domains that will be synchronized.
 - abortonfail—Instructs the script to quit after a synchronization failure. If this parameter is not specified, the sync script will continue on success or failure.
 - forcedomainsync—Allows the domain sync to be performed even if one of the devices in the domain had a failed sync. If this parameter is not specified, then the domain sync will not proceed if there are device sync errors.
 - parallel—runs the device syncs in parallel
 - help—Displays usage information.

Editing a Domain's Provisioning Attributes

You can set provisioning attributes at the Domain level. All provisioning attributes set at other levels (Service Area, subscriber type, Advanced Order) take precedence over provisioning attributes set at the Domain level. For more information on provisioning attributes, see [Configuring Provisioning Attributes, page 11-15](#).

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- Step 1** Choose **Design > Set Up Deployment > Domains**.
 - Step 2** In the Domain Configuration page, click **View Domain**.
 - Step 3** In the search page, select the Domain that you require.
 - Step 4** In the Options pane of the View Domain page, click **Edit Provisioning Attributes**.
 - Step 5** From the Provisioning Attribute Management page, update attributes as desired, then click **Done**. (For descriptions of the provisioning attributes, see [Configuring Provisioning Attributes, page 11-15](#).)
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Exporting Phones Without Associated Users

You can export phones without associated users to batch import them with real or pseudo usernames. They can also be managed through the Subscriber Dashboard. Provisioning enables you to export to a file all phones that do not have associated users. This action takes place at the Domain level and you can choose from which Call Processors you want to export.



Note

You can export only hardware phones. You cannot export SoftPhones or Extension Mobility.

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- Step 1** Choose **Design > Set Up Deployment > Domains**.
The Domain Configuration page appears.
 - Step 2** Click **View Domain**.

A search page appears, listing the available Domains.

Step 3 Select the Domain that you require.

The View Domain page appears.

Step 4 In the Options pane, click **Export Phones Without Associated Users**.

Step 5 In the Suffix for User IDs field, select how you want the phones listed.

Step 6 In the Call Processor to Export From field, add the Call Processors that you want to export from.

Step 7 Click **Export**.

Step 8 In the confirmation box, click **OK**. The report is created.

Step 9 View the report by clicking **View Export Data File**.

In the exported file, each row represents the change owner data for a phone. The NewUserID column is generated based on the PseudoUserID rule. The NewLastName column is generated by using the phone's description. If there is no description available, the MAC address is listed.

Synchronizing an LDAP Server with Provisioning

You can synchronize the information in a Lightweight Directory Access Protocol (LDAP) server with Provisioning. Provisioning can use this information to create new subscribers, update existing subscriber information, or delete subscribers. You configure the LDAP server synchronization to determine which actions should be performed.

For information on setting up Provisioning to use an LDAP server, see [Configuring Provisioning to Use AAA Servers, page 3-24](#).

Table 4-4 describes the fields for configuring LDAP server synchronization.

Table 4-4 **Update LDAP Services Settings Page Fields**

Field	Description
Mode	<ul style="list-style-type: none"> Authentication Only—The LDAP server is used only for user authentication. Authentication and Synchronization—The LDAP server is used both to provide user authentication and to obtain user information.
Update Existing User Details	<ul style="list-style-type: none"> All fields—If any user information is changed in the LDAP server, the same information is updated in Provisioning. Do not update—User information in Provisioning is not updated when there are changes to the user information in the LDAP server.
Delete Users	<ul style="list-style-type: none"> Do not delete—When a user is deleted in the LDAP server, the corresponding user/subscriber in Provisioning is not deleted. Delete if user has no services—When a user is deleted in the LDAP server, the corresponding user/subscriber in Provisioning Manager is also deleted, if the user does not have any services in Provisioning Manager. The user will not be deleted in Provisioning Manager, if the user has any services in Provisioning Manager. Always delete—When a user is deleted in the LDAP server, the corresponding user/subscriber in Provisioning Manager is also deleted, even if the user has any services in Provisioning Manager.
User Search Base	<p>The user search base. Provisioning searches for users under the base. CN-Users, DC-Cisco, DC-com.</p> <p>This search base is used only for LDAP synchronization; it is not used for authentication.</p> <p>In the Microsoft Active Directory server, you can use the command dsquery user to list the complete user search base.</p>
Field Mapping	<p>Lists which user fields in Cisco Unified Communications Manager correspond to certain LDAP user fields. The only fields you can configure in Provisioning are the following:</p> <ul style="list-style-type: none"> Contact phone number—Select either telephone number or iPhone. Contact email—Select either mail or sAMAccountName. <p>For a list of all field mapping between Cisco Unified Communications Manager and LDAP, see Table 4-5.</p>
Filter Query for Synchronization	<ul style="list-style-type: none"> Synchronize all users—All users will be synchronized. Simple query—You can configure a query by using a combination of the following fields: <ul style="list-style-type: none"> User ID Department Contact phone number Contact email <p>You can use an asterisk (*) for a partial string search.</p> Advanced query—You can enter any LDAP query; for example: ((&(sAMAccountName=johndoe)(department=Cisco*)(mail=john@cisco.com))).

Table 4-5 lists the field mapping between Provisioning and the LDAP server. The data in the specified Provisioning field is synchronized with the user data in the corresponding LDAP field.

Table 4-5 LDAP Field Mapping

Provisioning Field	LDAP Field
Phone Number	telephoneNumber or ipPhone number.
Email	mail or sAMAccountName.
User ID ¹	sAMAccountName.
First Name ¹	givenName.
Last Name ¹	sn.

1. Not configurable in Provisioning.

Configuring LDAP Server Synchronization

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- Step 1** Choose **Design > Set Up Deployment > Domains**.
- Step 2** From the Domain Configuration page, click **View Domain**.
- Step 3** From the search page, select the Domain that you require.
- Step 4** In the Options pane of the View Domain page, click **LDAP Services**.
- Step 5** From the View LDAP Services Settings page, click **Update Services Setting**.
The Update LDAP Services Settings page appears.
In the Update LDAP Services Settings page, you configure the information Provisioning gets from the LDAP server. (For descriptions of the fields in this page, see Table 4-4.)
- Step 6** For all the changes on the LDAP server to be synchronized to Provisioning, select the following:
- Mode—**Authentication and Synchronization**.
 - Update existing user details—**All fields**.
 - Delete Users—**Always delete**.
 - User Search base—Enter a user search base.
 - Filter query for sync—Synchronize all users.
- Step 7** Click **Save**.
- Step 8** On the View LDAP Services Settings page, click **Start**.
The synchronization starts.
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Scheduling LDAP Server Synchronization

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- Step 1** Choose **Design > Set Up Deployment > Domains**.
- Step 2** From the Domain Configuration page, click **View Domain**.
- Step 3** From the search page, select the Domain that you require.
- Step 4** In the Options pane of the View Domain page, click **LDAP Services**.

- Step 5** From the View LDAP Services Settings page, click **Synchronize Server**.
- Step 6** From the Synchronize LDAP Server page, click **Set Schedule**.
- Step 7** From the Set LDAP Synchronization Schedule page, configure the scheduling parameters.
- Step 8** Click **Save**.
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Viewing the LDAP Synchronization Report

After an LDAP synchronization occurs, a report is created. The report lists the operations that could not be performed during the synchronization. Operation failure can be due to incorrect data entered into the LDAP server or incorrect user settings.

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- Step 1** Choose **Design > Set Up Deployment > Domains**.
- Step 2** From the Domain Configuration page, click **View Domain**.
- Step 3** From the search page, select the Domain that you require.
- Step 4** In the Options pane of the View Domain page, click **LDAP Services**.
- Step 5** From the View LDAP Services Settings page, click **View AAA Synchronization Report**.

The LDAP synchronization report appears (for explanations of the messages in the report, see [LDAP Synchronization Report Description, page 4-15](#)).

LDAP Synchronization Report Description

This section provides explanations for some of the messages that can appear in the LDAP Synchronization report.

The following users were not created because they are already present in another Domain: user1, user2

The listed users are present in the LDAP server, but could not be created in Provisioning in the current Domain, because they are already present in another Domain.

To fix this problem, delete the users from the other Domain and run the LDAP synchronization again.

The following users were not deleted because they have services: user1 user2

This message appears when Delete if user has no services is enabled, and the listed users were deleted in the LDAP server but have services in Provisioning.

To fix this problem, run an LDAP synchronization after you do one of the following:

- Cancel the users' services in Provisioning.
- If the users' services were already deleted in Cisco Unified Communications Manager, run a Cisco Unified Communications Manager subscriber and Domain synchronization.

The following users were not deleted because the delete option was not set: user1 user2

The users were deleted in the LDAP server, but they were not deleted during the LDAP synchronization, since Do not delete is enabled.

To fix this problem, enable either Delete if user has no services or Always Delete, and run the LDAP synchronization again.

Deleting a Domain

When a Domain is deleted, subscribers, rules, Service Areas, directory number blocks, and subscriber roles are removed. Voice terminal, directory number, license capabilities, and instances of Unified Presence user settings in IM are moved to the Global Resources namespace. Before a Domain can be deleted, the following conditions must be met:

- No active released orders, including unrecoverable or recoverable errors.
- No active batch projects.
- No Domain synchronizations in progress.
- No Call Processor or Unified Message Processor synchronizations in progress.

If these conditions are not met, a message appears on the page when you attempt to delete a Domain, telling you the operation will not start. The system must be in maintenance mode before the delete option is available.

While the Domain deletion is in progress, avoid performing any activities until the Domain deletion is complete.

Step 1 Put Provisioning in maintenance mode (see [Maintenance Mode, page 2-8](#)).

Step 2 Choose **Design > Set Up Deployment > Domains**.

Step 3 From the Domain Configuration page, click **View Domain**.

Step 4 From the search page, select the Domain that you require.

Step 5 In the Options pane of the View Domain page, click **Delete Domain**.

A confirmation dialog appears, asking you to confirm the Domain deletion.



Note The system must be in maintenance mode for the Delete command to appear in the Options pane.

Step 6 Click **OK**.

The Domain deletion begins, with a progress bar displaying the status of the deletion in the Options pane.

Service Areas

You use Service Areas to structure and manage the required IP telephony and messaging services across geographic, organizational, or technological boundaries. The Service Area determines the mappings from the business view of the service to the technology delivering those services.

For example, on a Service Area associated to a Cisco Unified Communications Manager, the Service Area defines the device group, route partition, calling search spaces, location, and external phone number mask that the products will use within Cisco Unified Communications Manager.

In this case, when you configure a Service Area, you have a list of route partitions that can be assigned to it based on the selected Call Processor for the Service Area. If the Service Area does not have any associated route partition, then the directory numbers and lines are created in the default route partition in Cisco Unified Communications Manager.

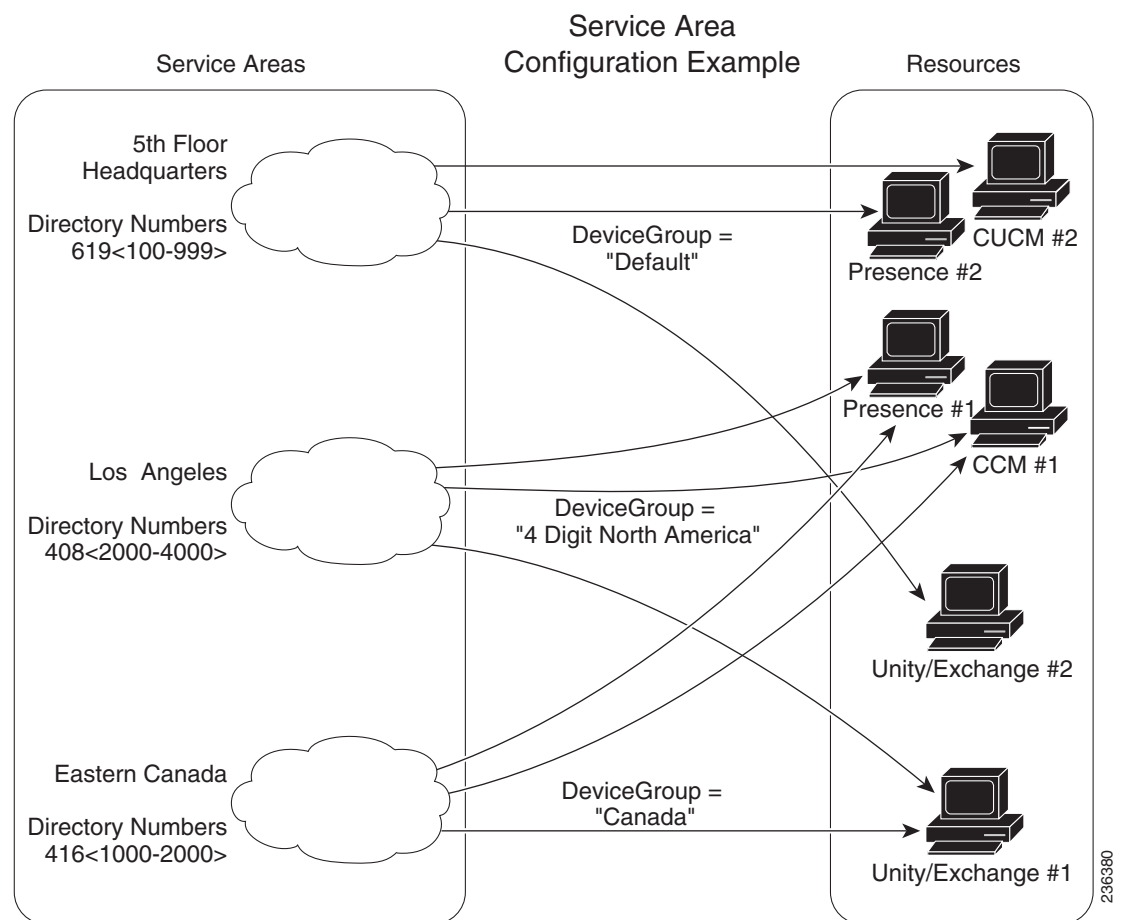
For Cisco Unity and Cisco Unity Connection Unified Message Processors, if you assign a Unified Message Processor to a Service Area, the Subscriber Template (with or without the TTS feature) and Subscriber CoS (with or without the TTS feature) can be configured. These templates can be used for voicemail provisioning of subscribers in the Service Area.

**Note**

For Service Areas with Call Processors based on Cisco Unified Communications Manager Express, only device groups are available for selection. Calling search spaces and route partitions are not available.

Figure 4-2 shows how the associations with Service Area to route partition, device group, calling search spaces, and Domain are established when you create and configure the Service Area. Service areas also determine the key voicemail settings and call forwarding behaviors.

Figure 4-2 Service Area Configuration



Creating Service Areas

Table 4-6 describes the fields for creating a Service Area.

Table 4-6 *Fields for Creating a Service Area*

Field	Description
Service Area ID	Name of the Service Area. Valid values are alphanumeric characters (A-Z, a-z, 0-9), underscore (_), hyphen (-), asterisk (*), and period (.).
Domain	The Domain that the Service Area belongs to.

-
- Step 1** Choose **Design > Set Up Deployment > Service Areas**.
- Step 2** In the Service Area Configuration page, click **New Service Area**.
- Step 3** In the Service Area ID field, type the name of the new Service Area.
- Step 4** Select the Domain that you want the Service Area to belong to.
- Step 5** Click **Save**.

The Edit Service Area page appears. For information on configuring a Service Area, see [Configuring Service Areas, page 4-18](#).

Configuring Service Areas

When configuring a Service Area, you can do the following:

- Map the Service Area to the corresponding Call Processor objects by specifying its Call Processors and related objects (for a Cisco Unified Communications Manager, some examples are call search space, route partition, and device pool), Unified Message Processor, and Unified Presence Processor.
- Specify the subscriber types for the Service Area (only users within a Service Area can order products from it).
The Employee subscriber role is the default based on the Domain rule DefaultUserType.
- Create directory number blocks for the Service Area users.
- Set a default phone number mask and/or call forward settings for new lines ordered within the Service Area.
- Unified Presence Processor settings will list the Presence processor if the selected Call Processor has associated Presence processors.

**Note**

After a Service Area is assigned to a Domain, it cannot be changed. Further, after a Call Processor, Unified Message Processor, or Unified Presence Processor is assigned to a Service Area, it cannot be changed.

Table 4-7 describes the fields for configuring a Service Area.

Table 4-7 Service Area Configuration Fields

Field	Description
Service Area ID	Name of the Service Area.
Domain	Domain that the Service Area belongs to.
Call Processor Settings	The settings available depend on the device type of your Call Processor.
Name	Call Processor for the Service Area (read-only).
Phone Protocol	The protocol to be configured when phones are ordered. You will have an option of either SIP or SCCP for Cisco Unified Communications Manager versions which support SIP. Otherwise SCCP is displayed. Note This field appears only if you selected Cisco Unified Communications Manager 5.0 and later.
Call Search Space (phone) ¹	Call search space to be assigned to phones and extension mobility profiles. It can be left blank.
Call Search Space (Line) ¹	Call search space to be assigned to lines on a phone or extension mobility profile. It can be left blank.
Common Device Config ¹	Configuration of common device settings for the Service Area. The following settings are controlled by Common Device Configuration: <ul style="list-style-type: none"> • Softkey Template • User Hold MOH Audio Source • Network Hold MOH Audio Source • User Locale • MLPP Indication • MLPP Preemption • MLPP Domain Note This field appears only if you selected Cisco Unified Communications Manager 6.0.
Location ¹	Location to be assigned to a device.
Route Partition ¹	Route partition for the Service Area. This is the same as a partition in Cisco Unified Communications Manager.
Device Pool	Device pool for the Service Area.
Voice Gateway References	Voice gateway references for the Service Area.
Unified Presence Processors	The settings available depend on the device type of your Unified Presence Processor.
Name	Name of the Unified Presence Processor.
Unified Message Processors	The settings available depend on the device type of your Unified Message Processor.
Name	Unified Message Processor for the Service Area (if applicable).

Table 4-7 Service Area Configuration Fields (continued)

Field	Description
Email Processors	Available only for Cisco Unity Connection and integrated with an external Exchange Server for IMAP client support. To configure an external Exchange Server for IMAP in Cisco Unity Connection, on the Cisco Unity Connection system, go to System Settings > External Services > Add New , and fill in the required fields.
Subscriber Template without TTS Enabled	Subscriber Template to be used to disable unified messaging for a subscriber in the Unified Message Processor.
Subscriber CoS with TTS Enabled ²	Class of Service Template to be used to enable unified messaging for a subscriber in the Unified Message Processor. It is used in conjunction with the Subscriber Template. To enable TTS for a CoS, you must configure the following in Cisco Unity Connection: <ul style="list-style-type: none"> For Cisco Unity Connection 2.1, do one of the following: <ul style="list-style-type: none"> Select Allow Users to Access Voice Mail Using an IMAP Client field (under Licensed Features). Select Allow Users to Access Voice Recognition or Text to Speech for E-mail field (under Licensed Features) and Allow Users to Use Text to Speech to Read E-mail field (under Features). For Cisco Unity Connection 7.0, do one of the following: <ul style="list-style-type: none"> Select Allow Users to Access Voice Mail Using an IMAP Client field (under Licensed Features). Select Allow Access to Advanced Features field and Allow Access to Email in Third-Party Message Stores field (under Licensed Features).
Subscriber CoS without TTS Enabled ²	Class of Service Template to be used to disable unified messaging for a subscriber in the Unified Message Processor. It is used in conjunction with the Subscriber Template.
Subscriber Roles	Subscriber roles that have access to the Service Area.
Directory Number Blocks	DNBs for the Service Area are an enhancement of the Service Area batch provisioning. See Creating Directory Number Blocks, page 4-22 .

1. Applies only to Unified Communications Manager.

2. Applies only to Unity and Unity Connection.

It is recommended that you specify the following for a Service Area before you synchronize the Domain that it belongs to:

- Call Processors
- Call search space
- Route partition
- Device group
- Unified Message Processor

- Location

**Note**

After a Call Processor, Unified Message Processor, or Unified Presence Processor is assigned to a Service Area, it cannot be removed.

-
- Step 1** Choose **Design > Set Up Deployment > Service Areas**.
- Step 2** In the Service Area Configuration page, click **View Service Area**.
- Step 3** In the search page, select the Service Area that you require.
- Step 4** In the Options pane, click **Update**.
- Step 5** During the initial configuration, select a Call Processor. (After a Call Processor is configured to a Service Area, it cannot be changed.)
- Step 6** Update the desired information. For a description of the fields, see [Table 4-7](#).
- Step 7** Click **Save**.
-

Editing a Service Area's Provisioning Attributes

You can set provisioning attributes at the Service Area level. Any provisioning attributes set at the Service Area level take precedence over provisioning attributes set at either the subscriber type or Domain level. For more information on provisioning attributes, see [Configuring Provisioning Attributes, page 11-15](#).

-
- Step 1** Choose **Design > Set Up Deployment > Service Areas**.
- Step 2** In the Service Area Configuration page, click **View Service Area**.
- Step 3** In the search page, select the Service Area that you require.
- Step 4** In the Options pane, click **Edit Provisioning Attributes**.
- Step 5** Update attributes as desired, then click **Done**. (For descriptions of the provisioning attributes, see [Configuring Provisioning Attributes, page 11-15](#).)
-

Deleting a Service Area

Before a Service Area can be deleted, the following conditions must be met:

- No active released orders, including unrecoverable or recoverable errors.
- No active batch projects.
- No Domain synchronizations in progress.
- No Processor synchronizations in progress.

If these conditions are not met, a message appears on the page when you attempt to delete a Service Area, telling you the operation will not start. The system must be in maintenance mode before the delete option is available.

While the Service Area deletion is in progress, avoid performing any activities until the deletion is complete.

-
- Step 1** Put Provisioning in maintenance mode (see [Maintenance Mode, page 2-8](#)).
 - Step 2** Choose **Design > Set Up Deployment > Service Areas**.
 - Step 3** In the Service Area Configuration page, click **View Service Area**.
 - Step 4** In the search page, select the Service Area that you require.
 - Step 5** In the Options pane, click **Delete Service Area**.



Note The system must be in maintenance mode for the Delete command to appear in the Options pane.

- Step 6** In the confirmation dialog box, click **OK** to delete the service area.
- The Service Area deletion begins, with a progress bar displaying the status of the deletion in the Options pane.
-

Creating Directory Number Blocks

Numbers within a directory number block are relative to the Cisco Unified Communications Manager on which they are being created. Therefore, the prefix portion of a directory number block may or may not map to a Numbering Plan Area/Network Numbering Exchange (NPA/NXX). Routing via various gateways will ultimately determine how the directory numbers on a specific Cisco Unified Communications Manager are interpreted during a call setup.

For example, if prefix = 408, first number = 0, last number = 100, and minimum length = 4, then the range of the directory number block would be 4080000 through 4080100. Provisioning handles directory numbers the same way as they are handled by Cisco Unified Communications Manager.

If a subscriber tries to order a service from a Service Area that does not have a directory number block, the order is paused in the workflow until that directory number block has been added. You can also set up individual directory numbers using the Directory Number Inventory component. For more information, see [Managing Directory Inventory, page 7-4](#).

E.164 Support

If you are using Cisco Unified Communications Manager version 7.x or later, you can configure the international escape character, +, in Provisioning to allow your phone users to place calls without having to remember and enter the international direct dialing prefix/international escape code that is associated with the called party. Depending on the phone model, for example, dual-mode phones, your phone users can dial + on the keypad of the phone. In other cases, the phone user can return calls by accessing the call log directory entries that contain +.

The international escape character, +, signifies the international access code in a complete E.164 number format. For example, NANP numbers have an E.164 global format in the format +1 214 555 1234. The + is a leading character that gets replaced by service providers in different countries with the international access code to achieve global dial plans.

You can enter + or \+ to indicate the international escape character.

Remember the following while using E.164 format directory numbers:

- For directory numbers, you can configure the international escape character at the beginning of the number (prefix) only (for example, \+5678, +0034).
- To configure the international escape character for supported patterns, you can enter \+ or + in the pattern or directory number field.
- You can assign the E.164 format directory numbers to the ordered lines by using the Chosen Line option.
- E.164 support is not available for Cisco Unified Communications Manager Express.
- For Cisco Unity Connection 7.x and 8.x versions, while provisioning voicemail for E.164 format Directory Number line, Provisioning will automatically set the extension number by removing the + symbol from the directory number. After order completion, the directory number (along with the + symbol) will be auto populated in the Alternate Extension field. For Unity Connection 9.0 and above versions, Alternate Extension field will not be auto populated.
- While ordering bundled products like Enhanced Phone Service, Unified Messaging Service, Messaging Service, and so on, if you select Auto-assigned Line type option, the Alternate Extension field will not be auto populated for voicemail product while creating the order. Alternate extension will be added at the back end at the available position and will be displayed when the order is completed.

If you select Chosen Line type option, Alternate extension will be auto populated (at the first index) for voicemail while creating the order.

- Meet-Me patterns, Call Park patterns (and related call park features; for example, Directed Call Park), and Call Pickup patterns do not support the international escape character, +, so you cannot enter \+ in the pattern fields that are configured for these features.

Provisioning supports “+” character in the Directory Number fields for the following:


- Directory Number (DN) Block (under Service Area)
- EM Access Line and RDP Line products
- Provisioning Attributes
 - Speed Dial
 - Busy Lamp field
 - Call Forward
- Infrastructure products
 - Distribution List
 - Basic Call Queuing

Table 4-8 describes the fields for creating a block of directory numbers.

Table 4-8 Directory Number Blocks Field Descriptions

Field	Description
Prefix	Directory number prefix.
First Number	Starting number for the block of directory numbers.
Last Number	Last directory number in the block.
Minimum Length	The minimum number of digits that a directory number can contain before the prefix is added. Used by the system to pad numbers with zeros.

To add a new directory number block:

-
- Step 1** Choose **Design > Set Up Deployment > Service Areas**.
- Step 2** In the Service Area Configuration page, click **View Service Area**.
- Step 3** In the search page, select the Service Area that you require.
- Step 4** In the Options pane, click **Update**.
- Step 5** In the Directory Number Block(s) field, click the Add icon ().
The Add New Directory Number Block screen appears.
- Step 6** Complete the fields as required.
- Step 7** Click **Add**. A confirmation message appears on the Edit Service Area screen that it has been updated.
-

Viewing the Directory Number Block Assigned to a Service Area or to the Same Call Processor

-
- Step 1** Choose **Design > Set Up Deployment > Service Areas**.
- Step 2** In the Service Area Configuration page, click **View Service Area**.
- Step 3** In the search page, select the Service Area that you require.
- Step 4** In the Directory Number Block field do one of the following:
- To view the directory number block assigned to the Service Area:
 - a. Click the Assigned to this Service Area drop-down list.
 - b. Select the directory number block. The details of the directory number block appear.
 - To view the directory number blocks assigned to the same Call Processor:
 - a. Click the Assigned to the Same Call Processor drop-down list.
 - b. Select the directory number block. The details of the directory number block appear.
-

Quick Site Builder

Quick Site Builder helps the Provisioning administrators to easily create Domains and configure multiple Service Areas for a Domain in a single window, thereby reducing the time spent on day one activities. Using Quick Site Builder, you can create a Domain with a maximum of 21 Service Areas.

You can only create sites but not manage them using the Quick Site Builder. You cannot modify the existing Service Areas associated with the Domain. Only Service Areas created through Quick Site Builder can be modified.

You can use the Service Area screens to modify or delete the sites. Advanced Service Area settings like Directory Number Block Assignment and Provisioning Attributes Configuration will be enabled only after creating the Service Areas. Using Quick Site Builder, you can clone or create a copy of the Service Area, multi-edit, and also filter the Service Areas.

The session will be active until the Quick Site Builder screen is closed.

Configuring Domain and Multiple Service Areas in Quick Site Builder

Step 1 Choose **Design > Set Up Deployment > Quick Site Builder**.

Step 2 Select an existing Domain Name or enter a name for the new Domain.

If you select an existing domain, the values associated with the selected Domain are displayed.



Note

You cannot modify the existing Domain related details in this screen.

Step 3 Enter the domain related details.

Step 4 Click **Configure Servicearea**.

Service Area Configuration pane will be refreshed and twenty one rows will be listed. Only mandatory fields are listed as column names. Click the Settings button to add or remove the field names.

Step 5 Enter the Service Area related details.

Step 6 Click **Save** to add a Service Area to the Domain.

Step 7 Click the **Expand** button to view and enter the details for the non-mandatory fields.

Step 8 Click **Save** to add the non-mandatory details.



Note

You cannot specify non-mandatory details for the rows without specifying the mandatory details.

Step 9 Click **Edit** to modify the existing Service Area details.

Step 10 Click **Clear** to clear the selected Service Area's mandatory and non-mandatory details.

The Clear option clears only the Service Area related details from a row. The row is not deleted from the Service Area Configuration pane.

Step 11 Click **Clone** to create a new Service Area with the existing Service Area details.

While cloning a Service Area, the new Service Area will be listed in the first empty row.

Step 12 To perform a multi edit, select multiple Service Areas and click **Edit**.

The value set for the fields in the multi edit page are displayed in the following ways:

- Among the selected rows, if a value appears for the maximum number of times in a column, then that value is displayed.
For example, if three rows are selected, out of which, two rows have the same value **a** and the third row has the value **b**; then, value **a** is only populated.
- Among the selected rows, if different values appear for the same number of times in a column, then no value is displayed; the field is empty.
For example, if two rows are selected, out of which, one row has the value **a** and the other row has the value **b**; then, both the values are not populated.

Step 13 Select **Uncheck** if you want cancel multiple Service Area selections.

Step 14 Click **Create Site** to create a Domain and multiple Service Areas or associate multiple Service Areas to an existing Domain.

Configured field values are only displayed in the Service Area Configuration pane. A progress bar appears indicating the progress in the configuration. Once the configuration is complete, a success message is displayed.

When you create a Domain through Quick Site Builder, a success message is displayed when the Domain is successfully created. **Complete** tick mark appears for the successfully created Service Areas.

DN Block and Provisioning Attribute field names appear as hyperlinks for successfully configured Service Areas. If you do not provide values for DN Block and Provisioning Attribute and if you click on **Exit**, you cannot view the newly configured Service Areas in the Quick Site Builder screen.

You have to choose **Design > Set Up Deployment > Service Areas** to provide DN Block and Provisioning Attribute details.

The Quick Site Builder screen will be refreshed.

Step 15 Click the **Update** link to provide a Directory Number Block to the Service Area.

Directory Number Block(s) screen appears.

Step 16 Enter the required details.

Step 17 Click **Add**.

The newly created Directory Number Block is displayed in the Assigned Directory Number Block(s) pane.

Step 18 Click **Close** to close the Directory Number Block(s) screen.

Step 19 Click the **Update** link to add provisioning attributes.

The Provisioning Attribute Management page appears.

Step 20 Update the provisioning attributes for the Service Area.

Step 21 Click **Done**. (For descriptions of the provisioning attributes, see [Configuring Provisioning Attributes, page 11-15](#).)
