Configure Call Routing

Call Routing Overview

The system uses route plans to determine how to route calls between clusters, and how to route external calls to a private network or to the Public Switched Telephone Network (PSTN). The route plan that you configure specifies the path that the system uses to route each type of call. For example, you can create a route plan that uses the IP network for on-net calls, or that uses one carrier for local PSTN calls and another for international calls.

The system has a three-tiered approach to route planning that uses the following components:

- Route Patterns—The system searches for a configured route pattern that matches the external dialed string and uses it to select a gateway or a corresponding route list.
- Route Lists—A prioritized list of the available paths for the call.
- Route Groups—The available paths; the route group distributes the call to gateways and trunks.

In addition to these building blocks, the route plan can also include the following components:

- Local Route Groups—Decouple the location of a PSTN gateway from the route patterns that are used to access the gateway.
- Route Filters—Restrict certain numbers that are otherwise allowed by the route pattern.
- Automated Alternate Routing—Automatically reroute calls through the PSTN or other network when the system blocks a call due to insufficient bandwidth.
- Time-of-day Routing—Create a time schedule that specifies when a partition is available to receive incoming calls.
## Call Routing Prerequisites

- Complete the tasks in the Partition Configuration Task Flow.
- Ensure that you have the following information:
  - Internal number extensions
  - A plan listing the calls that route to each gateway

## Call Routing Configuration Task Flow

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<th>Procedure</th>
<th>Command or Action</th>
<th>Purpose</th>
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<tr>
<td><strong>Step 1</strong></td>
<td>Configure Local Route Groups, on page 7</td>
<td>Optional. Configure local route groups to reduce the number of route lists that you need. Route lists point to the PSTN gateway that the system uses to route the call, based on the location of the PSTN gateway. As an alternative, you can use local route groups to decouple the location of a PSTN gateway from the route patterns that are used to access the gateway. This configuration allows phones and other devices from different locations to use a single set of route patterns, while Unified Communication Manager selects the correct gateway to route the call.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Configure Route Groups, on page 6</td>
<td>Optional. Configure route groups to set the selection order of the gateway devices. Route groups contain one or more devices.</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Configure Route Lists, on page 7</td>
<td>Optional. Route lists contain one or more route groups. Configure route lists to control the selection order of the route groups. If you configure a route list, you must configure at least one route group.</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Configure Route Filters, on page 9</td>
<td>Optional. Use route filters to restrict certain numbers that are otherwise allowed by a route pattern. Route filters are mandatory if you are using a dial plan installer; that is, if you install a dial plan file and then configure a route pattern based on that numbering plan. Route filters are optional if you are configuring a dial plan manually.</td>
</tr>
<tr>
<td>Command or Action</td>
<td>Purpose</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If you are configuring a dial plan manually, you need to configure route filters whenever you have a route pattern that contains the @ wildcard. When the route pattern contains the @ wildcard, the system routes calls according to the numbering plan that you specify with a route filter.</td>
<td></td>
</tr>
<tr>
<td>Step 5</td>
<td><strong>Configure Route Patterns, on page 3</strong></td>
<td>Configure route patterns to direct calls to specific devices and to include or exclude specific digit patterns. You can assign route patterns to gateways, to trunks, or to a route list that contains one or more route groups.</td>
</tr>
<tr>
<td>Step 6</td>
<td><strong>Configure Time of Day Routing, on page 13</strong></td>
<td>Optional. Create a time schedule that specifies when a partition is available to receive incoming calls.</td>
</tr>
</tbody>
</table>

---

## Configure Route Patterns

Unified Communications Manager uses route patterns to route or block internal and external calls. You can assign route patterns to gateways, to trunks, or to a route list that contains one or more route groups.

**Note**

Although the route pattern can point directly to a gateway, we recommend that you configure route lists and route groups. This approach provides the greatest flexibility in call routing and scalability.

### Procedure

**Step 1**

From Cisco Unified CM Administration, choose **Call Routing > Route/Hunt > Route Pattern**.

**Step 2**

Perform one of the following:

- Click **Add New** to create a new route pattern.
- Click **Find** and select an existing route pattern.

The **Route Pattern Configuration** Window appears.

**Step 3**

In the **Route Pattern** field, enter the number pattern that the dial string must match.

**Step 4**

From the **Gateway/Route** drop-down list, select the destination where you want to send calls that match this route pattern.

**Step 5**

Complete the remaining fields in the **Route Pattern Configuration** window. For more information on the fields and their configuration options, see the system Online Help.

**Step 6**

Click **Save**.
Wildcards and Special Characters in Route Patterns

Wildcards and special characters in route patterns allow a single route pattern to match a range of numbers (addresses). Use these wildcards and special characters also to build instructions that enable the Unified Communications Manager to manipulate a number before sending it to an adjacent system.

The following table describes the wildcards and special characters that Unified Communications Manager supports.

**Table 1: Wildcards and Special Characters**

<table>
<thead>
<tr>
<th>Character</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
</table>
| @         | The at symbol (@) wildcard matches all National Numbering Plan numbers. Each route pattern can have only one @ wildcard. | The route pattern 9.@ routes or blocks all numbers that the National Numbering Plan recognizes. The following route patterns examples show National Numbering Plan numbers that the @ wildcard encompasses:  
• 0  
• 1411  
• 19725551234  
• 101028819725551234  
• 01133123456789 |
<p>| X         | The X wildcard matches any single digit in the range 0 through 9. | The route pattern 9XXX routes or blocks all numbers in the range 9000 through 9999. |
| !         | The exclamation point (!) wildcard matches one or more digits in the range 0 through 9. | The route pattern 9! routes or blocks all numbers in the range 910 through 91999999999999999999999. |
| ?         | The question mark (?) wildcard matches zero or more occurrences of the preceding digit or wildcard value. | The route pattern 91X? routes or blocks all numbers in the range 91 through 91999999999999999999999. |
| +         | The plus sign (+) wildcard matches one or more occurrences of the preceding digit or wildcard value. | The route pattern 91X+ routes or blocks all numbers in the range 910 through 91999999999999999999999999. |
| [ ]       | The square bracket ([]) characters enclose a range of values. | The route pattern 813510[012345] routes or blocks all numbers in the range 813510 through 8135105. |
| -         | The hyphen (-) character, used with the square brackets, denotes a range of values. | The route pattern 813510[0-5] routes or blocks all numbers in the range 8135100 through 8135105. |</p>
<table>
<thead>
<tr>
<th>Character</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>^</td>
<td>The circumflex (^) character, used with the square brackets, negates a range of values. Ensure that it is the first character following the opening bracket ([). Each route pattern can have only one ^ character.</td>
<td>The route pattern 813510[^0-5] routes or blocks all numbers in the range 8135106 through 8135109.</td>
</tr>
<tr>
<td>.</td>
<td>The dot (.) character, used as a delimiter, separates the Cisco Unified Communications Manager access code from the directory number. Use this special character, with the discard digits instructions, to strip off the Cisco Unified Communications Manager access code before sending the number to an adjacent system. Each route pattern can have only one dot (.) character.</td>
<td>The route pattern 9.@ identifies the initial 9 as the Cisco Unified Communications Manager access code in a National Numbering Plan call.</td>
</tr>
<tr>
<td>*</td>
<td>The asterisk (*) character can provide an extra digit for special dialed numbers.</td>
<td>You can configure the route pattern *411 to provide access to the internal operator for directory assistance.</td>
</tr>
<tr>
<td>#</td>
<td>The octothorpe (#) character generally identifies the end of the dialing sequence. Ensure the # character is the last character in the pattern.</td>
<td>The route pattern 901181910555# routes or blocks an international number that is dialed from within the National Numbering Plan. The # character after the last 5 identifies this digit as the last digit in the sequence.</td>
</tr>
<tr>
<td>+</td>
<td>A plus sign preceded by a backslash, that is, \+, indicates that you want to configure the international escape character + as used as a dialable digit, not as a wildcard.</td>
<td>Using + means that the international escape character + is used as a dialable digit, not as a wildcard.</td>
</tr>
</tbody>
</table>

**Example of Pre-dot Digit Removal**

One example of using pre-dot digit removal in a route pattern is when you want the phone users to dial an access code to reach an outside line. In North America, users typically dial 9 to access an outside line. You can specify using the following route patterns:

- Local calls: 9.@ or 9.[2-9]XXXXXX
- International calls: 9.011!#
In these patterns, 9 is the access code for an external line, and the dot (.) is a separator that helps format the route pattern by indicating which digits are internal to the network, and which ones are outside digits. When the system sends the dialed digits to the PSTN, you can use the Discard Digits option to strip the pre-dot digit from the dialed string so that the PSTN can route the call.

**Example of Digit Prefixing**

One example of using digit prefixing in a route pattern is when you configure On-Net dialing between sites. You can create a route pattern so that users within your organization dial 8 + XXX-XXXX to call between sites. For Off-Net calls, you can remove the prefix digit (8) and add a new prefix of 1<area code> so that you can route the call to the PSTN in E.164 format.

**Example of On-Net and Off-Net Patterns**

You can configure a route pattern as OnNet or OffNet using the Call Classification field. You can classify calls as Off-Net in cases where you want your users to get a secondary dial tone to let them know that their call is going outside your organization. For example, if you create a route pattern that requires users to dial 9 to access an outside line, and you classify it as an Off-Net pattern, the system provides the following dial tones:

- A dial tone when the phone is off-hook, before you dial 9.
- A secondary dial tone, after you dial 9 to indicate that the system is ready to call the Public Switched Telephone Network (PSTN) number.

Ensure that you deselect the Allow Device Override check box when you use this option.

**Example of Block and Route Patterns**

Use block and route patterns to prevent outgoing or incoming calls that you do not want to route. Use block patterns to:

- Block specific patterns. For example, blocking the pattern 91900XXXXXXX prevents users from placing calls to 900 services.
- Prevent toll fraud by blocking calls to specific area codes and locations.

**Configure Route Groups**

Configure a route group to prioritize the order in which the system selects gateways for outgoing calls. Use this procedure to group together gateways that have similar characteristics, so that any gateway in the group can dial the call. The system selects the gateway to use based on the order that you specify when you configure the route group.

You can assign a device to multiple route groups.

**Procedure**

**Step 1**

From Cisco Unified CM Administration, choose Call Routing > Route/Hunt > Route Group.

The Route Group Configuration window appears.
Configure Route Lists

Configure a route list to identify a set of route groups and place them in priority order. Unified Communications Manager uses the order in the route list to search for available devices for outgoing calls.

If you configure a route list, you must configure at least one route group. A route list can contain only route groups and local route groups.

Procedure

Step 1 From Cisco Unified CM Administration, choose Call Routing > Route/Hunt > Route List.
Step 2 Choose one of the following options:
   - Click Add New, to add a new route list.
   - Click Find and select a route list from the resulting list, to modify the settings for an existing route list.
Step 3 Configure the fields in the Route List Configuration window. For more information on the fields and their configuration options, see the system Online Help.
Step 4 To add a route group to the route list, click the Add Route Group button.
Step 5 From the Route Group drop-down list, choose a route group to add to the route list.
Step 6 Click Save.
Step 7 Click Apply Config.

Configure Local Route Groups

Optional. You can configure local route groups to reduce the number of route lists that you need. Route lists point to the PSTN gateway that the system uses to route the call, based on the location of the PSTN gateway. As an alternative, you can use local route groups to decouple the location of a PSTN gateway from the route patterns that are used to access the gateway. This configuration allows phones and other devices from different
locations to use a single set of route patterns, while Cisco Unified Communication Manager selects the correct gateway to route the call.

For example, a local route group allows you to have a single dial plan for a whole country rather than have separate dial plans for every city in the country. This approach works for centralized call-deployment scenarios only.

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**Note**

Extend and Connect works only with Standard Local Route Groups when Local route group for redirected calls are set to Local route group of last redirecting party.

Mobile Voice Access works only with Standard Local Route Groups when Local route group for redirected calls are set to Local route group of calling party.

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**Procedure**

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<th>Purpose</th>
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</thead>
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<td><strong>Configure Local Route Group Names, on page 8</strong></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td><strong>Associate a Local Route Group with a Device Pool, on page 9</strong></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td><strong>Add Local Route Group to a Route List, on page 9</strong></td>
</tr>
</tbody>
</table>

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**Configure Local Route Group Names**

**Optional.** The system provides a default local route group called Standard Local Route Group, but you can configure additional local route groups. Use this procedure to name the additional local route groups.

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>From Cisco Unified CM Administration, choose <strong>Call Routing &gt; Route/Hunt &gt; Local Route Group Names.</strong></td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Click <strong>Add Row.</strong></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Enter a name and description for the new local route group.</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Click <strong>Save.</strong></td>
</tr>
</tbody>
</table>
Associate a Local Route Group with a Device Pool

You can assign a local route group to use an existing route group, based on the device pool setting of the originating device. This configuration allows phones and other devices from different locations to use a single set of route patterns, while Unified Communication Manager selects the correct gateway to route the call.

To ensure that each device in the system is provisioned to know its local route group, associate the local route group with a device pool.

**Procedure**

**Step 1**
From Cisco Unified CM Administration, choose System > Device Pool.

**Step 2**
Enter search criteria, click Find, and select a device pool from the resulting list.

**Step 3**
In the Local Route Group Settings area, select a route group from the Standard Local Route Group drop-down list.

**Step 4**
Click Save.

Add Local Route Group to a Route List

Configure a local route group that you can add to your route list. When you create a local route group, the system routes outgoing calls to the gateways that are defined for the user at the device pool level.

**Procedure**

**Step 1**
From Cisco Unified CM Administration, choose Call Routing > Route/Hunt > Route List.

**Step 2**
Choose one of the following options:

- Click Add New button to add a new route list.
- Click Find and select a route list from the resulting list, to modify the settings for an existing route list.

The Route List Configuration window appears.

**Step 3**
To add a local route group to the route list, click the Add Route Group button.

**Step 4**
From the Route Group drop-down list, select a local route group to add to the route list. You can add the standard local route group, or you can add a custom local route group that you have created.

**Step 5**
Click Save.

**Step 6**
Click Apply Config.

Configure Route Filters

Route filters use dialed-digit strings to determine how a call is handled. Route filters apply only when you configure a route pattern that contains the @ wildcard. When the route pattern contains the @ wildcard, Unified Communications Manager routes calls according to the numbering plan that you specify in this procedure.
Route filters are mandatory if you are using a dial plan installer; that is, if you install a dial plan file and then configure a route pattern based on that numbering plan. Route plans are optional when configuring dial plans manually.

If you are configuring a dial plan manually, you need to configure route filters whenever you have a route pattern that contains the @ wildcard. When the route pattern contains the @ wildcard, the system routes calls according to the numbering plan that you specify with a route filter.

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**Note**

When configuring your call routing, ensure that you do not assign a single route filter to many route patterns. A system core could result if you were to edit a route filter that has hundreds of associated route patterns. This is due to the extra system processing that is required to update call routing for all of the route patterns that use the route filter. Create duplicate route filters and associate any single route filter with no more than 250 Route Patterns.

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**Procedure**

**Step 1**  
From Cisco Unified CM Administration, choose Call Routing > Route Filter.

**Step 2**  
From the Numbering Plan drop-down list, choose a dial plan and click Next.

**Step 3**  
Enter a name in the Route Filter Name field. Ensure each route filter name is unique to the route plan.

**Step 4**  
Choose the route filter tags and operators and enter the data to create a clause for this route filter. For more information about available route filter tags, see Route Filter Tags, on page 10.

**Note**  
Do not enter route filter tag values for tags that are using the operators EXISTS, DOES-NOT-EXIST, or NOT-SELECTED.

**Step 5**  
Choose the route filter operators and enter data, where appropriate, to create a clause for this route filter. For more information about available route filter operators, see Route Filter Operators, on page 12.

**Step 6**  
Click Save.

**Step 7**  
Click Apply Config.

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**Route Filter Tags**

The tag serves as the core component of a route filter. A tag applies a name to a subset of the dialed-digit string. For example, the NANP number 972-555-1234 comprises LOCAL-AREA-CODE (972), OFFICE-CODE (555), and SUBSCRIBER (1234) route filter tags.

Route filter tags require operators and can require additional values to decide which calls are filtered.

The values for route filter tag fields can contain the wildcard characters X, *, #, [ ], ^, and the numbers 0 through 9. The descriptions in the following table use the notations [2-9] and XXXX to represent actual digits. In this notation, [2-9] represents any single digit in the range 2 through 9, and X represents any single digit in the range 0 through 9. Therefore, the three-digit area code in the form [2-9]XX means that you can enter the actual digits 200 through 999, or all wildcards, or any mixture of actual digits and wildcards that results in a pattern with that range.
Route filter tags vary depending on the numbering plan that you choose from the Numbering Plan drop-down list box on the Route Filter Configuration window. The following table describes the route filter tags for the North American Numbering Plan.

**Table 2: Route Filter Tags**

<table>
<thead>
<tr>
<th>Tag</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AREA-CODE</td>
<td>This three-digit area code in the form [2-9]XX identifies the area code for long-distance calls.</td>
</tr>
<tr>
<td>COUNTRY CODE</td>
<td>These one-, two-, or three-digit codes specify the destination country for international calls.</td>
</tr>
<tr>
<td>END-OF-DIALING</td>
<td>This single character identifies the end of the dialed-digit string. The # character serves as the end-of-dialing signal for international numbers that are dialed within the NANP.</td>
</tr>
<tr>
<td>INTERNATIONAL ACCESS</td>
<td>This two-digit access code specifies international dialing. Calls that originate in the U.S. use 01 for this code.</td>
</tr>
<tr>
<td>INTERNATIONAL DIRECT</td>
<td>This one-digit code identifies a direct-dialed international call. Calls that originate in the U.S. use 1 for this code.</td>
</tr>
<tr>
<td>INTERNATIONAL OPERATOR</td>
<td>This one-digit code identifies an operator-assisted international call. This code specifies 0 for calls that originate in the U.S.</td>
</tr>
<tr>
<td>LOCAL-AREA-CODE</td>
<td>This three-digit local area code in the form [2-9]XX identifies the local area code for 10-digit local calls.</td>
</tr>
<tr>
<td>LOCAL-DIRECT-DIAL</td>
<td>This one-digit code identifies a direct-dialed local call. NANP calls use 1 for this code.</td>
</tr>
<tr>
<td>LOCAL-OPERATOR</td>
<td>This one-digit code identifies an operator-assisted local call. NANP calls use 0 for this code.</td>
</tr>
<tr>
<td>LONG-DISTANCE DIRECT</td>
<td>This one-digit code identifies a direct-dialed, long-distance call. NANP calls use 1 for this code.</td>
</tr>
<tr>
<td>LONG-DISTANCE OPERATOR</td>
<td>These one- or two-digit codes identify an operator-assisted, long-distance call within the NANP. Operator-assisted calls use 0 for this code, and operator access uses 00.</td>
</tr>
<tr>
<td>NATIONAL-NUMBER</td>
<td>This tag specifies the nation-specific part of the digit string for an international call.</td>
</tr>
<tr>
<td>OFFICE-CODE</td>
<td>This tag designates the first three digits of a seven-digit directory number in the form [2-9]XX.</td>
</tr>
<tr>
<td>SATELLITE-SERVICE</td>
<td>This one-digit code provides access to satellite connections for international calls.</td>
</tr>
<tr>
<td>SERVICE</td>
<td>This three-digit code designates services such as 911 for emergency, 611 for repair, and 411 for information.</td>
</tr>
<tr>
<td>SUBSCRIBER</td>
<td>This tag specifies the last four digits of a seven-digit directory number in the form XXXX.</td>
</tr>
</tbody>
</table>
Route Filter Operators

Route filter tag operators determine whether a call is filtered based on the dialed-digit string that is associated with that tag. The operators EXISTS and DOES-NOT-EXIST simply check for the existence of that part of the dialed-digit string. The operator == matches the actual dialed digits with the specified value or pattern. The following table describes the operators that you can use with route filter tags.

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT-SELECTED</td>
<td>Specifies do not filter calls based on the dialed-digit string that is associated with this tag.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> The presence or absence of the tag with which the operator is associated does not prevent Cisco Unified Communications Manager from routing the call.</td>
</tr>
<tr>
<td>EXISTS</td>
<td>Specifies filter calls when the dialed-digit string that is associated with this tag is found.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> Cisco Unified Communications Manager routes or blocks the call only if the dialed-digit string contains a sequence of digits that are associated with the tag.</td>
</tr>
<tr>
<td>DOES-NOT-EXIST</td>
<td>Specifies filter calls when the dialed-digit string that is associated with this tag is not found.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> Cisco Unified Communications Manager routes or blocks the call only if the dialed-digit string does not contain a sequence of digits that are associated with the tag.</td>
</tr>
<tr>
<td>==</td>
<td>Specifies filter calls when the dialed-digit string that is associated with this tag matches the specified value.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong> Cisco Unified Communications Manager routes or blocks the call only if the dialed-digit string contains a sequence of digits that are associated with the tag and within the numbering range that is specified in the attached field.</td>
</tr>
</tbody>
</table>
Route Filter Examples

Example 1: A route filter that uses AREA-CODE and the operator DOES-NOT-EXIST selects all dialed-digit strings that do not include an area code.

Example 2: A route filter that uses AREA-CODE, the operator ==, and the entry 515 selects all dialed-digit strings that include the 515 area code.

Example 3: A route filter that uses AREA-CODE, the operator ==, and the entry 5[2-9][X selects all dialed-digit strings that include area codes in the range of 520 through 599.

Example 4: A route filter that uses TRANSIT-NETWORK, the operator ==, and the entry 0288 selects all dialed-digit strings with the carrier access code 1010288.

Configure Time of Day Routing

Optional. Create a time schedule that specifies when a partition is available to receive incoming calls.

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**Note**

Time of Day routing is not implemented for Message Waiting Indication (MWI) intercept.

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**Procedure**

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<tr>
<th>Step</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Configure a Time Period, on page 13</td>
<td>Use this procedure to define time periods. You can define a start time and an end time, and also specify repetition interval either as days of the week or a specified date on the yearly calendar.</td>
</tr>
<tr>
<td>2</td>
<td>Configure a Time Schedule, on page 14</td>
<td>Use this procedure to create a schedule. The time periods that you configured in the previous procedure are building blocks for this schedule. You can assign time periods to multiple schedules.</td>
</tr>
<tr>
<td>3</td>
<td>Associate a Time Schedule with a Partition, on page 14</td>
<td>Associate time schedules with partitions to determine where calling devices search when they are attempting to complete a call during a particular time of day.</td>
</tr>
</tbody>
</table>

Configure a Time Period

Use this procedure to define time periods. You can define a start time and an end time, and also specify repetition interval either as days of the week or a specified date on the yearly calendar.

**Procedure**

**Step 1** From Cisco Unified CM Administration, choose Call Routing > Class of Control > Time Period.
Configure a Time Schedule

Use this procedure to create a schedule. The time periods that you configured in the previous procedure are building blocks for this schedule. You can assign time periods to multiple schedules.

Procedure

Step 1 From Cisco Unified CM Administration, choose Call Routing > Class of Control > Time Schedule.
Step 2 Configure the fields in the Time Schedule Configuration window. For more information on the fields and their configuration options, see the system Online Help.
Step 3 Click Save.

Associate a Time Schedule with a Partition

Associate time schedules with partitions to determine where calling devices search when they are attempting to complete a call during a particular time of day.

Procedure

Step 1 From Cisco Unified CM Administration, choose Call Routing > Class of Control > Partition.
Step 2 From the Time Schedule drop-down list, choose a time schedule to associate with this partition. The time schedule specifies when the partition is available to receive incoming calls. If you choose None, the partition remains active at all times.
Step 3 Click Save.

Call Routing Restrictions

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<th>Restriction</th>
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<tr>
<td>Route Filter Associations</td>
<td>When configuring your call routing, be careful not to assign a single route filter to too many route patterns. A system core crash could result if you were to edit a route filter that has hundreds of associated route patterns. This is due to the extra system processing that is required to update call routing for all of the route patterns that use the route filter. Create duplicate route filters to ensure that this does not happen.</td>
</tr>
</tbody>
</table>
Restriction Feature

External call control lets an adjunct route server make call routing decisions for Unified Communications Manager by using the Cisco Unified Routing Rules Interface. When you configure external call control, Unified Communications Manager issues a route request that contains the calling party and called party information to the adjunct route server. That server receives the request, applies appropriate business logic, and returns a route response that instructs your system on how to route the call along with any additional call treatment to apply.

For details, see the Configure External Call Control chapter of the Feature Configuration Guide for Cisco Unified Communications Manager.

Call Control Discovery

With Call Control Discovery, Unified Communications Manager clusters can automatically exchange the DN ranges they host by subscribing to a Cisco IOS service routing protocol called the Service Advertisement Framework (SAF). This feature enables clusters to advertise their own hosted DN ranges into the network as well as to subscribe to advertisements that are generated by other call agents in the network.

The main benefits of using SAF CCD are:

- Automated distribution of call routing information between call agents participating in the same SAF CCD network, thus avoiding incremental configuration work when new call agents are added or when new DN ranges are added to a call agent.
- No reliance on a centralized dial plan resolution control point.
- Automated recovery of inter-call agent call routing information when routing changes occur, including when multiple Unified CM clusters are combined.

To configure Call Control Discovery, refer to the Configure Call Control Discovery chapter of the Feature Configuration Guide for Cisco Unified Communications Manager.

Route Plan Report

You can view a detailed route plan within the Route Plan Report window of Cisco Unified CM Administration (Call Routing > Route Plan Report). The route plan report allows you to view either a partial or full list of your route plan and to go directly to the associated configuration windows by clicking the entry in the Pattern/Directory Number, Partition, or Route Detail columns of the report.

In addition, the route plan report allows you to save report data into a .csv file that you can import into other applications. The .csv file contains more detailed information than the web pages, including directory numbers for phones, route patterns, pattern usage, device name, and device description.