



Dial Rules Overview

Cisco CallManager supports different types of dial rules: Application Dial Rules, Directory Lookup Dial Rules, and SIP Dial Rules.

The administrator uses Application Dial Rules to add and sort the priority of dialing rules for applications such as Cisco WebDialer, Cisco IPMA, and Cisco CallManager Attendant Console. Application Dial Rules automatically strip numbers from or add numbers to telephone numbers that the user dials. For example, the dial rules automatically add the digit 9 in front of a 7-digit telephone number to provide access to an outside line.

In Cisco IPMA, the assistant can perform a directory search from the assistant console. The assistant can drag and drop the directory entry to the My Calls panel on the assistant console, which invokes a call to the number that is listed in the entry. The dial rules apply to the number that is listed in the entry before the call gets made.

Cisco CallManager Attendant Console uses directory lookup rules to transform caller identification numbers into numbers that can be looked up in the directory. If Cisco CallManager Attendant Console can match the number with a user in the speed-dial entries of the attendant or in the directory, the attendant console displays the name in the Call Detail window.

Cisco CallManager performs system digit analysis and routing; however, the Cisco SIP IP Phone needs to know when enough digits are collected before call processing takes place, so the administrator configures SIP Dial Rules and adds the SIP dial rule to the phone.

The following sections describe dial rules:

- [Application Dial Rules Configuration Design, page 19-1](#)
- [Application Dial Rules Configuration Error Checking, page 19-2](#)
- [Directory Lookup Dial Rules, page 19-3](#)
- [SIP Dial Rules, page 19-4](#)
- [Where to Find More Information, page 19-8](#)

Application Dial Rules Configuration Design

The Application Dial Rules Configuration window organization includes the following information:

- **Name**—This field comprises a unique name for the dial rule that can contain up to 20 alphanumeric characters and any combination of spaces, periods (.), hyphens (-), and underscore characters (_).
- **Description**—This field comprises a brief description that you enter for the dial rule.

- **Number Begins With**—This field comprises the initial digits of the directory numbers to which you want to apply this application dial rule.
- **Number of Digits**—This required field comprises the initial digits of the directory numbers to which you want to apply this application dial rule.
- **Total Digits to be Removed**—This required field comprises the number of digits that you want Cisco CallManager to remove from directory numbers that apply to this dial rule.
- **Prefix With Pattern**—This required field comprises the pattern to prepend to directory numbers that apply to this application dial rule.
- **Application Dial Rule Priority**—This field, that displays when you enter the Prefix With Pattern information, allows you to set the priority order of the application dial rules.

The following example provides a dial rule condition and the consequence when a dial rule is created.

Condition

- **If the phone number begins with (the field is *blank*)**—This condition leaves blank one or more digits at the beginning of the number that the user dialed. For example, if the user dialed 1, 1500, or 1500555, each would match the dial number 15005556262.
- **and the number of digits is (the field is *blank*)**—This condition leaves blank the total number of digits in the telephone number that the user dialed. For example, if the dial number is 915005556262, the number of digits equals 12.

Consequence

- **Remove *blank* digits from the beginning**—The application deletes this number of digits from the front of the dialed number. For example, if 4 is specified, and the dialed number is 15005556262, the application removes 1500, leaving 5556262.
- **and prefix it with (this field is *blank*)**—After removing the specified number of digits, the application adds this string of numbers to the front of the dialed number. For example, if 9 was specified, the application adds 9 to the front of the dialed number (could be specifying an outside line).

Application Dial Rules Configuration Error Checking

The application dial rules perform the following error checking in the Dial Rule Creation section of the Dial Rules Configuration window:

- The phone number begins with field supports only digits and the characters +*#. The length cannot exceed 100 characters.
- The number of digits is field supports only digits, and the value in this field cannot be less than the length of the pattern that is specified in the pattern field. This field cannot be blank for a dial rule.
- The remove digits field supports only digits, and the value in this field cannot be more than the value in the number of digits is field.
- The prefix it with field supports only digits and the characters +*#. The length cannot exceed 100 characters.
- Ensure that dial rules are unique.
- The remove digits field and the prefix it with field cannot both be blank for a dial rule.

Directory Lookup Dial Rules

Cisco CallManager Attendant Console uses directory lookup rules to transform caller identification numbers into numbers that can be looked up in the directory. If Cisco CallManager Attendant Console can match the number with a user in the speed-dial entries of the attendant or in the directory, the attendant console displays the name in the Call Detail window.

The Directory Lookup Dial Rules window allows you to enter the following information for each dial rule:

- **Name**—This field comprises a unique name for the dial rule that can contain up to 20 alphanumeric characters and any combination of spaces, periods (.), hyphens (-), and underscore characters (_).
- **Description**—This field comprises a brief description that you enter for the dial rule.
- **Number Begins With**—This field comprises the initial digits of the directory numbers to which you want to apply this application dial rule.
- **Number of Digits**—This required field comprises the length of the directory numbers to which you want to apply this directory lookup dial rule.
- **Total Digits to be Removed**—This required field comprises the number of digits that you want Cisco CallManager to remove from directory numbers that apply to this dial rule.
- **Prefix With Pattern**—This required field comprises the pattern to prepend to directory numbers that apply to this dial rule.

Directory Lookup Dial Rule Example

You can create a directory lookup rule that automatically adds 40852 to 5-digit numbers beginning with 5. Using this rule, the number 56666 becomes 408525666. If 408525666 matches a user in the speed-dial entries on the attendant PC or in the directory, Cisco CallManager displays the name in the Call Details window.

To create this rule, enter the following information on the Directory Lookup Dial Rules window:

- In the **Number Begins With** field, enter “5,” so the dial rule applies to numbers that begin with the number 5.
- In the **Number of Digits** field, enter the number of digits “5,” so the dial rule applies to numbers that contain 5 digits.
- In the **Prefix With Pattern** field, enter “40852,” so the dial rules prepends 40852 to numbers that apply to this dial rule.

Limitations

When creating a directory lookup rule, consider the following limitations:

- The phone number begins with field supports only digits and the characters +*#. The length cannot exceed 100 characters.
- The number of digits is field supports only digits, and the value in this field cannot be less than the length of the pattern that is specified in the pattern field.
- The remove digits field supports only digits, and the value in this field cannot be more than the value in the number of digits is field.
- The prefix it with field supports only digits and the characters +*#. The length cannot exceed 100 characters.
- The remove digits field and the prefix it with field cannot both be blank for a dial rule.

For information on working with directory lookup rules, see the [“Directory Lookup Dial Rules Configuration”](#) section in the *Cisco CallManager Administration Guide*.

SIP Dial Rules

The administrator uses SIP dial rule configuration to configure SIP phone dial plans and associate them with the following SIP phones:

- Cisco SIP IP Phone model 7911, 7941, 7961, 7970, and 7971. These phones use the 7940_7960_OTHER dial rules patterns and support Key Press Markup Language (KPML). To increase the performance of Cisco CallManager (increasing the number of calls that get processed), Cisco recommends that administrators configure SIP dial rules.
- Cisco SIP IP Phone model 7940 and 7960. These phones use the 7940_7960_OTHER dial rules pattern and do not support KPML. If the administrator does not configure a SIP dial plan for these phones, the user must wait a specified time before digits are sent to Cisco CallManager for processing. This delays the actual call from being processed.
- Cisco SIP IP Phone model 7905 and 7912. These phones use the 7905_7912 dial rules pattern and do not support KPML. If the administrator does not configure a SIP dial plan for these phones, the user must wait a specified time before digits are sent to Cisco CallManager for processing. This delays the actual call from being processed.

Although SIP dial rules are optional, if they are configured, you must add them to the SIP phone by using the Phone Configuration window of Cisco CallManager Administration. (If the administrator configures SIP dial plans, those dial plans must get associated with a SIP phone device, so the dial plans get sent to the device configuration file.) Leave the SIP Dial Rules field in the Phone Configuration window set to <None> if you do not want dial rules applied to the Cisco SIP IP Phone.

After the administrator configures the SIP dial rule and applies it to the SIP phone by pressing Reset, the database sends the TFTP server a notification, so it can build a new set of configuration files for the SIP phone. The TFTP server notifies Cisco CallManager about the new configuration file, and the updated configuration file gets sent to the phone. See the [“TFTP Process Overview for Cisco SIP IP Phones”](#) section on page 10-3 for more information.

To accommodate extension mobility users, so they can use SIP dial rules, the administrator must configure the SIP dial rule on the phone that will allow extension mobility users to log on.



Note

Extension mobility supports Cisco SIP IP Phone model 7941, 7961, 7970, and 7971.

SRST does not support KPML; however, the SIP phone will continue to use the Dial Rules it received from Cisco CallManager when it is in SRST mode.

Administrators use the SIP Dial Rules Configuration window to configure dial rule patterns and the parameters for the pattern.

SIP Dial Rule Patterns

Two types of dial rule patterns exist in the SIP Dial Rules Configuration window:

- 7905_7912—Use this dial rule pattern for Cisco SIP IP Phone model 7905 and 7912.
- 7940_7960_OTHER—Use this dial rule pattern for Cisco SIP IP Phone model 7911, 7940, 7941, 7960, 7961, 7970, and 7971.

After the appropriate dial rule pattern gets chosen, the administrator configures the dial rule parameters for the dial rule pattern.

SIP Dial Rule Parameters

After the administrator defines the dial pattern, the SIP Dial Rule Information window displays, so the administrator can configure the dial pattern parameters such as timeouts, buttons, or Private Line Automatic Ringdown (PLAR).

Ensure all pattern information has a name; for example, PLAR1 or 911. After you name the pattern information, you need to configure the parameters for the pattern. The SIP Dial Rules Configuration window displays an area for the pattern information. The administrator chooses the type of pattern parameter from a drop-down list box that displays on the configuration window. See [SIP Dial Rule Configuration Settings, page 31-3](#), for a description of the dial parameters.

These dial patterns get sent to the TFTP server, which creates the proper configuration file that contains the dial pattern information.

The following examples illustrate how to configure a dial rule for 911 and a pattern for any 4-digit extension beginning with the digit 2.

Sample Dial Rule for 911 on Cisco IP Phone 7905

The administrator wants a dial rule pattern for 911 on the Cisco SIP IP Phone model 7905. To accomplish this pattern, the administrator performs the following (see [Figure 19-1](#)) steps:

1. Create a 7905_7912 SIP dial rule.
2. Create a pattern called 911 for 7905.
3. Enter a pattern description called 911.
4. In the dial parameter value field, enter 911.

Figure 19-1 05_12 911 Dial Rule Pattern

The screenshot shows the Cisco CallManager Administration web interface. The top navigation bar includes 'Navigation', 'CCM Administration', and a 'Go' button. Below this is a breadcrumb trail: 'System > Call Routing > Media Resources > Voice Mail > Device > Application > User Management > Bulk Administration > Help'. A 'Log Off' button is on the right. The main heading is 'SIP Dial Rule Configuration'. Below this is a 'Status' section showing 'Status: Ready'. The 'SIP Dial Rule Information' section contains fields for 'Name*' (911 for 7905), 'Description', and 'Dial Pattern' (7905_7912). The 'Pattern Information' section is a table with columns: 'Description', 'Delete Pattern', 'Dial Pattern', 'Value', and 'Delete Parameter'. It contains one row with '911' in the Description column, a checkbox in the Delete Pattern column, 'Pattern' in the Dial Pattern column, '911' in the Value column, and a checkbox in the Delete Parameter column. To the right of the table are buttons for 'Edit Parameter', 'Delete Selected', and 'Add New Parameter'. Below the table is the 'Pattern Addition' section with a 'Pattern Description' field and an 'Add Pattern' button. At the bottom are 'Save', 'Delete', 'Reset', and 'Add New' buttons. A note at the bottom left states '*- indicates required item.' The browser's address bar shows '141457'.

Sample Dial Rule for Extension

The administrator wants a dial rule pattern for any 4-digit extension beginning with the digit 2 on a Cisco SIP IP Phone model 7961. To accomplish this pattern, the administrator performs the following (see [Figure 19-2](#)) steps:

1. Create a 7940_7960_OTHER SIP dial rule.
2. Create a pattern called 4-digit extension.
3. Enter a pattern description called SIP extension.
4. In the dial parameter value field, enter 2 followed by three dots (2...).

Figure 19-2 7940_7960_OTHER Dial Rule Pattern

The screenshot shows the Cisco CallManager Administration web interface. The top navigation bar includes 'Navigation' with a dropdown for 'CCM Administration' and a 'Log' button. Below this is a breadcrumb trail: 'System > Call Routing > Media Resources > Voice Mail > Device > Application > User Management > Bulk Administration > Help'. The main heading is 'SIP Dial Rule Configuration' with a 'Related Links' section containing 'Back To Find/List'. The interface is divided into several sections:

- Status:** Shows 'Status: Ready'.
- SIP Dial Rule Information:** Contains fields for 'Name*' (4 digit extension), 'Description', and 'Dial Pattern' (7940_7960_OTHER).
- Pattern Information:** A table with columns: Description, Delete Pattern, Dial Pattern, Value, and Delete Parameter. It shows a single entry for 'SIP extension' with a 'Pattern' dropdown set to '2...' and buttons for 'Edit Parameter' and 'Delete Select'.
- Pattern Addition:** A section with a 'Pattern Description' field and 'Add Pattern' and 'Add Plar' buttons.
- Buttons:** At the bottom, there are 'Save', 'Delete', 'Reset', and 'Add New' buttons.

Private Line Automatic Ringdown (PLAR)

Configure a SIP phone for Private Line Automatic Ringdown (PLAR), so when the user goes off hook (or the NewCall softkey or line key gets pressed), the phone immediately dials a preconfigured number. The phone user cannot dial any other number from the phone line that gets configured for PLAR. Because PLAR gets configured in Cisco CallManager Administration as an empty pattern, it does not get associated with a device or line. To make the SIP IP phone support PLAR, an empty pattern gets configured in the SIP Dial Rules for a specific line, and the dial rule then gets applied to the Cisco SIP IP Phone by using Phone Configuration in Cisco CallManager Administration.



Note

Only Cisco SIP IP Phone model 7940/41, 7960/61, and 7970/71 support PLAR.

7940_7960_OTHER Dial Rule Plan for PLAR

The administrator wants a dial rule pattern for PLAR on line 1 of the Cisco SIP IP Phone model 7960. To accomplish this pattern, the administrator performs the following (see [Figure 19-3](#)) steps:

1. Create a 7940_7960_OTHER SIP dial rule.
2. Create a PLAR pattern called First PLAR.
3. Enter a pattern description called PLAR1.
4. Click the Add PLAR button, and the Button parameter displays.

Figure 19-3 7940_7960_OTHER Dial Rule Pattern for PLAR

The screenshot shows the Cisco CallManager Administration web interface. The top navigation bar includes links for System, Call Routing, Media Resources, Voice Mail, Device, Application, User Management, Bulk Administration, and Help. The user is logged in as CCMAdministrator. The main heading is "SIP Dial Rule Configuration". Below this, there is a "Status" section showing "Status: Ready". The "SIP Dial Rule Information" section contains fields for Name (First PLAR), Description, and Dial Pattern (7940_7960_OTHER). The "Pattern Information" section is a table with columns: Description, Delete Pattern, Dial Parameter, Value, and Delete Parameter. It lists a pattern named "PLAR1" with a delete checkbox and a dropdown menu set to "Button". There are buttons for "Add New Parameter" and "Delete Selected". The "Pattern Addition" section has a "Pattern Description" field and "Add Pattern" and "Add Plar" buttons. At the bottom, there are "Save", "Delete", "Reset", and "Add New" buttons. A note indicates that an asterisk (*) denotes a required item.

Description	Delete Pattern	Dial Parameter	Value	Delete Parameter
PLAR1	☐	Button		

Where to Find More Information

Related Topic

- [TFTP Process Overview for Cisco SIP IP Phones](#), page 10-3
- “Understanding Session Initiation Protocol (SIP)” section on page 41-1
- [Directory Lookup Dial Rules Configuration](#), *Cisco CallManager Administration Guide*
- [Configuring Dial Rules](#), *Cisco CallManager Administration Guide*
- [Application Dial Rule Configuration Settings](#), *Cisco CallManager Administration Guide*
- [Configuring SIP Dial Rules](#), *Cisco CallManager Administration Guide*
- [SIP Dial Rule Configuration Settings](#), *Cisco CallManager Administration Guide*

Additional Cisco Documentation

- *Cisco CallManager Features and Services Guide*