CHAPTER 19

Dial Rules Overview

Cisco Unified 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 Unified CallManager Assistant, and Cisco Unified 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 Unified CallManager Assistant, 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 Unified CallManager Attendant Console uses directory lookup rules to transform caller identification numbers into numbers that can be looked up in the directory. If Cisco Unified 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 Unified 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 Unified 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 Unified CallManager Attendant Console uses directory lookup rules to transform caller identification numbers into numbers that can be looked up in the directory. If Cisco Unified 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 Unified 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 4085256666. If 408525666 matches a user in the speed-dial entries on the attendant PC or in the directory, Cisco Unified 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 Unified 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. Key Press Markup Language (KPML) allows for the digits to be sent to Cisco Unified CallManager digit by digit; SIP Dial Rules allow for a pattern of digits to be collected locally on the phone prior to sending to Cisco Unified CallManager. If SIP dial rules are not configured, KPML gets used. To increase the performance of Cisco Unified 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 Unified 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 Unified 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 Unified 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 Unified 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 Unified 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 30-4, 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.

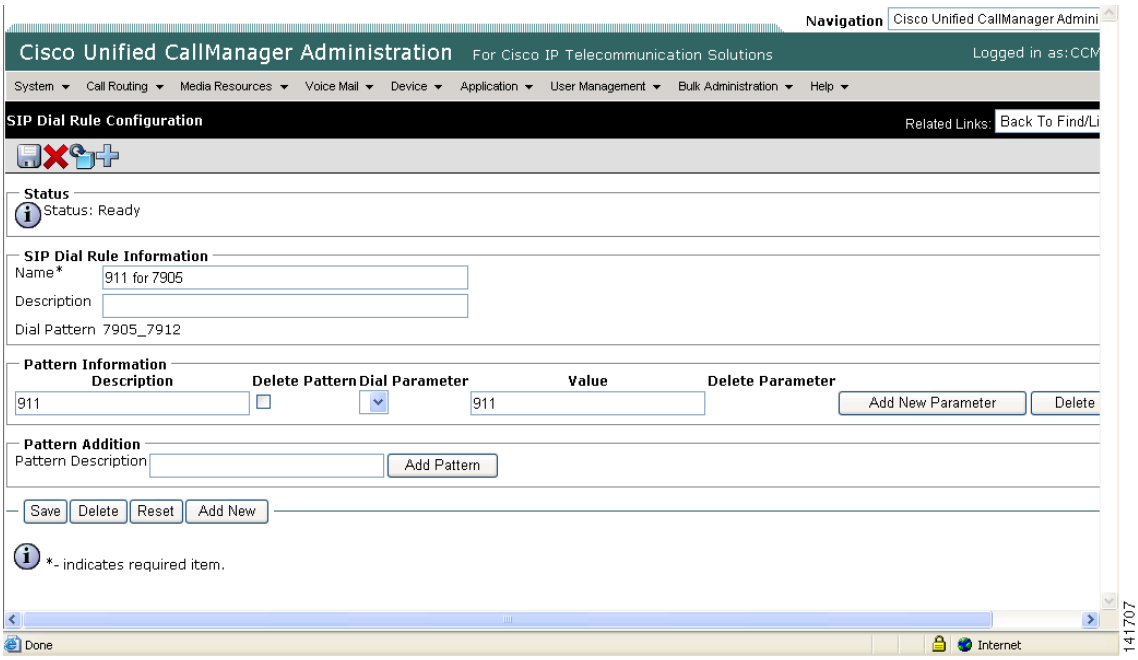
The following examples illustrate how to configure a dial rule for 911 and a pattern for any 4-digit extension beginning with the digit 2.

Sample Dial Rule for 911 on Cisco Unified IP Phone 7905

The administrator wants a dial rule pattern for 911on 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

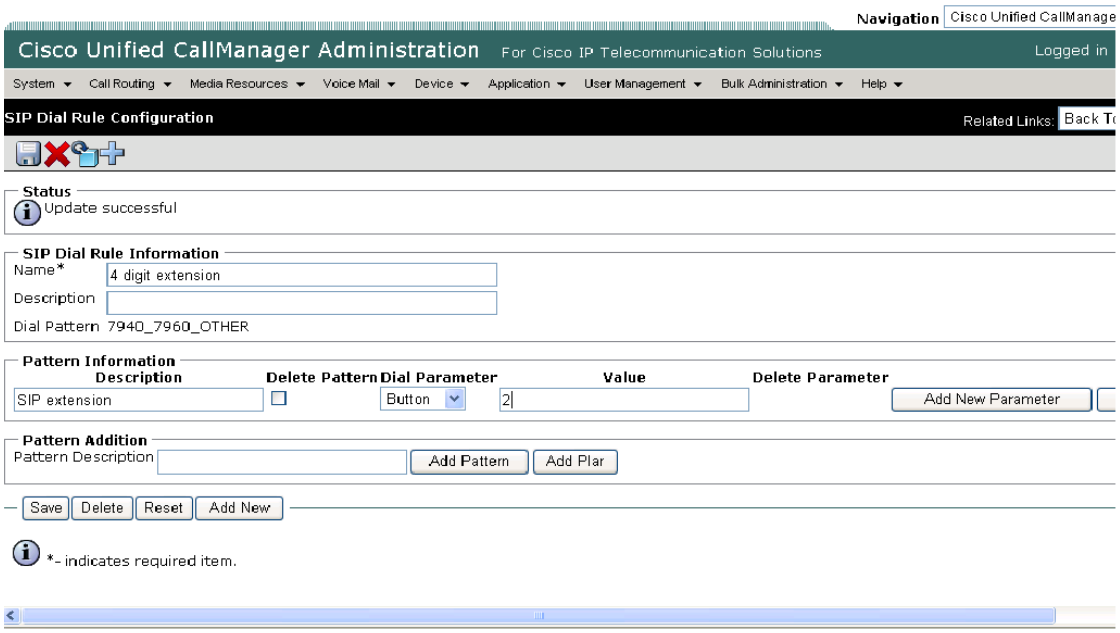


Sample Dial Rule for Extension

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



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 Unified 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 Unified CallManager Administration.

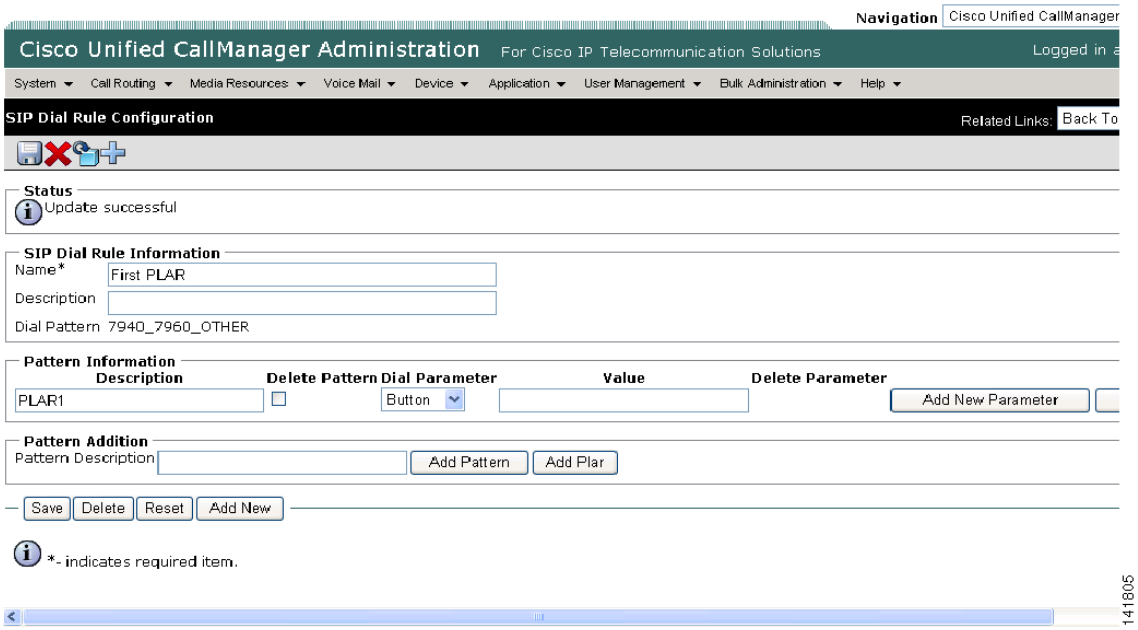
Note Only Cisco SIP IP Phone model 7940/41, 7960/61, and 7970/71 support PLAR.

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



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 Unified CallManager Administration Guide*
- Configuring Dial Rules, *Cisco Unified CallManager Administration Guide*
- Application Dial Rule Configuration Settings, *Cisco Unified CallManager Administration Guide*
- Configuring SIP Dial Rules, *Cisco Unified CallManager Administration Guide*
- SIP Dial Rule Configuration Settings, *Cisco Unified CallManager Administration Guide*

Additional Cisco Documentation

- *Cisco Unified CallManager Features and Services Guide*