



Outbound Option Guide for Unified Contact Center Enterprise, Release 12.6(1)

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- [Conventions](#), on page xiv

Change History

This table lists changes made to this guide. The most recent changes appear at the top.

Change	See	Date
Release of Document for 12.6(1) ES65 Enable or disable outbound Dialer from redialing or retrying failed personal callbacks.	Dialer registry settings table in Registry Settings chapter	July 2023
Initial Release of Document for Release 12.6(1)		May 2021
Graceful Shutdown feature is introduced	Graceful Shutdown	

About This Guide

This manual provides conceptual, installation, and configuration information about the Cisco Unified Contact Center Enterprise (Unified CCE) Outbound Option application (formerly called “Blended Agent”). It also provides verification checklists and troubleshooting information to ensure that the Outbound Option installation and configuration setup is successful.

For detailed Outbound Option Components field descriptions, see the online help.



Note Successfully completing the Outbound Option installation also requires use of the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise*. See <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/tsd-products-support-series-home.html> for the complete set of Cisco Unified ICM/Contact Center Enterprise software manuals.

Audience

This document is intended for contact center supervisors and contact center technology experts who perform the following functions using Outbound Option:

- **System Administrators** – The installer/partner who sets up the Unified CCE system to support Outbound Option and installs and integrates the Outbound Option components.
- **Administrator** – The administrator responsible for configuration tasks, such as adding agents, skill groups, campaigns, and scripts necessary for ongoing activity.
- **Supervisors/Business users** – These users might perform such tasks as modifying a query rule, adjusting the lines per agent, or enabling or disabling a campaign. This group of users also read and interpret reports to help them run their business.
- **Sales** – A secondary audience, interested primarily in conceptual information.

Related Documents

For documentation for these Cisco Unified Contact Center Products, go to <https://www.cisco.com/cisco/web/psa/default.html>, select **Voice and Unified Communications > CustomCisco Unified Contact Center Productser Collaboration > Cisco Unified Contact Center Products** or **Cisco Unified Voice Self-Service Products**, and select the product/option in which you are interested.

Related documentation includes the documentation sets for:

- Cisco CTI Object Server (CTI OS)
- Cisco Unified Contact Center Management Portal
- Cisco Unified Customer Voice Portal (CVP)
- Cisco Unified IP IVR
- Cisco Unified Intelligence Center
- Cisco Finesse
- Documentation for Unified CM is also accessible through <https://www.cisco.com/cisco/web/psa/default.html>.
- Technical Support documentation and tools are accessible from: <https://www.cisco.com/en/US/support/index.html>.

- The Product Alert tool is accessible from (sign in required):
<https://www.cisco.com/cgi-bin/Support/FieldNoticeTool/field-notice>.

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Cisco Bug Search Tool

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We appreciate your comments.

Conventions

This document uses the following conventions:

Convention	Description
boldface font	<p>Boldface font is used to indicate commands, such as user entries, keys, buttons, folder names, and submenu names.</p> <p>For example:</p> <ul style="list-style-type: none"> • Choose Edit > Find. • Click Finish.
<i>italic font</i>	<p>Italic font is used to indicate the following:</p> <ul style="list-style-type: none"> • To introduce a new term. Example: A <i>skill group</i> is a collection of agents who share similar skills. • A syntax value that the user must replace. Example: IF (<i>condition, true-value, false-value</i>) • A book title. Example: See the <i>Cisco Unified Contact Center Enterprise Installation and Upgrade Guide</i>.
window font	<p>Window font, such as Courier, is used for the following:</p> <ul style="list-style-type: none"> • Text as it appears in code or that the window displays. Example: <pre><html><title>Cisco Systems, Inc. </title></html></pre>
< >	<p>Angle brackets are used to indicate the following:</p> <ul style="list-style-type: none"> • For arguments where the context does not allow italic, such as ASCII output. • A character string that the user enters but that does not appear on the window such as a password.



CHAPTER 1

Outbound Option Business Concepts

- [Overview, on page 1](#)
- [Outbound API, on page 4](#)
- [Dialing Modes, on page 5](#)
- [Callbacks, on page 6](#)
- [Relationships Between Outbound Option Components, on page 9](#)
- [Imports, on page 10](#)
- [Query Rules, on page 12](#)
- [Campaigns, on page 13](#)
- [Campaign Skill Groups, on page 16](#)
- [Customer Time Versus System Time, on page 17](#)
- [Call Progress Analysis \(Answering Machine Detection\), on page 18](#)
- [Two-Way Outbound Option Database Replication, on page 19](#)

Overview

This section provides a high-level overview of automatic dialers and the Cisco Outbound Option solution.

Automatic Dialers

Automatic dialers increase contact center efficiency because they save time, eliminate misdialing numbers, and make contact center agents more productive. By automatically dialing and screening for busy signals, no answer, and answering machines, dialers ensure that agents do not waste time on the mechanical tasks of placing a call. Only when the dialer reaches a live contact does the solution transfer the call to the next available agent.

Cisco Outbound Solution

Cisco Unified Intelligent Contact Management Enterprise and Cisco Unified Contact Center Enterprise help companies distribute inbound calls to various termination points:

- Automatic call distributors (ACDs)
- Voice response unit (VRU) systems
- Home agents

The *Cisco Outbound Option* application, with its combination of outbound dialing modes, enables call centers to manage outbound calls. The ability for agents to handle both inbound and outbound contacts enables contact center resource optimization.

Overview of Cisco Outbound Option

The Cisco Outbound Option application provides outbound dialing functionality along with the existing inbound capabilities of Cisco Unified Contact Center Enterprise (Unified CCE). This application enables the contact center to dial customer contacts and directly contacted customers to agents or VRUs.

With the Cisco Outbound Option, configure a contact center for automated outbound activities.

Enable the outbound option high availability to deploy a redundant pair of Campaign Managers. Combined with redundant SIP Dialers and bidirectional database replication, Outbound Option High Availability provides uninterrupted services.

Outbound Option Features

Unified CCE Compatible Dialer

You can implement Unified CCE in a single-site environment or integrated into a multisite contact center enterprise. Unified CCE includes intelligent call routing, ACD functionality, network-to-desktop computer telephony integration (CTI), VRU integration, call queuing, and consolidated reporting.

With Unified CCE integration, you place customer calls through the Cisco Voice Gateway using Unified CM for call control.

Outbound Option on Unified CCE provides a built-in, multisite outbound dialing solution.

Campaign Management

Outbound Option supports advanced list management, which provides you with the following capabilities:

- You can assign customer records to multiple lists, which you can merge into a single campaign.
- You set up rules that decide when to call the various lists.
- You assign agents to campaigns using skill groups.

Dedicated and Blended Dialing Modes

You assign agents to one of the following types:

Dedicated mode

Used for agents who only make calls for Outbound Option campaigns.

Blended mode

Enables agents to receive inbound calls and Outbound Option calls without switching between Inbound and Outbound skill groups. (In Blended mode, inbound calls receive precedence over Outbound Option calls.)

Outbound Option maximizes performance in both pure outbound and blended modes.

The outbound mode is a skill group attribute. You can control the outbound mode using administrative scripts.



Note The skill group mode variable is only a setting and has no impact on how the Router routes calls. For skill groups in Dedicated mode, create a corresponding routing script with an IF node to enforce the Dedicated mode. The IF node must state that, if the Outbound Control skill group setting is set to Dedicated, do not route inbound calls to that skill group.

Call Progress Analysis (CPA)

Call Progress Analysis (CPA) uses a combination of call signaling and media stream analysis to differentiate various types of calls.

You can enable CPA in the **Outbound Option Campaign** dialog box. On the **Campaign Purpose** tab, check the **Call Progress Analysis** checkbox.

You can enable CPA for each campaign individually on the Dialer. To enable record CPA, check the **Record CPA** checkbox.



Note You must enable the Record CPA option for debugging purposes only.

The Dialer can record a maximum of 100 simultaneous CPA streams. The streams are stored in .wav format. By default, the system automatically purges old recording files when the total size of CPA files stored reaches 500 MB.

Related Topics

[Call Progress Analysis \(CPA\)](#), on page 3

[Create a Campaign](#), on page 81

Transfer to VRU

The transfer to VRU feature provides Outbound Option with another outbound mode. In this mode, the Dialer transfers every customer call for a specific skill group to a service control-based VRU, instead of an agent. This feature enables a contact center to run unassisted outbound campaigns using prerecorded messages in the Unified IP-IVR and Unified CVP products.

Related Topics

[Transfer to VRU Campaigns](#), on page 14

Sequential Dialing

The sequential dialing feature enables you to associate up to ten phone numbers with a customer record.

Related Topics

[Sequential Dialing](#), on page 14

Cisco Unified CCE Agent Re-Skilling

Cisco Unified CCE agent re-skilling is an optional feature that enables supervisors to change the skill groups for their agents. Use the Unified CCE Web Administration application to change the skill group designations of agents on your team. You can also quickly view skill group members and details about individual agents

in this tool. Changes that you make to an agent's skill group membership take place immediately without requiring the agent to re-logout to the system.

Related Topics

[Agent Re-skilling](#), on page 102

Abandoned and Retry Call Settings

The Campaign component contains fields to support abandoned and retry calls.

For more information on the abandoned and retry call settings, see the *Outbound Option online help*.

Campaign Prefix Digits for Dialed Numbers

The **Campaign prefix digits** field on the **Campaign General** tab enables you to configure prefix digits for dialed numbers by campaign. If you configure a prefix, the dialer inserts those digits before the Dial prefix for all numbers dialed in a campaign. This prefix enables an administrator to create campaign-specific Unified CM translation patterns. You can use the translation patterns to tailor the Automatic Number Identification (ANI) seen by a customer. For example, customers for Campaign A see a caller ID of "1-800-333-4444," and customers for Campaign B see a caller ID of "1-800-555-1212."

Related Topics

[Create a Campaign](#), on page 81

Outbound API

Outbound API allows you to use REST APIs to create, modify, and delete Outbound Option campaigns.

Outbound API provides a streamlined mechanism for creating campaigns with a single preconfigured query rule and import rule. As such, if you use the API to create a campaign, that campaign is not available in the Outbound Option Campaign Configuration tool. If a campaign was created with the API, you must use the API to view, edit, or delete it. If a campaign was created with the Outbound Option Campaign Configuration tool, you must use that tool to view, edit, or delete it.

Administrative scripts are not required for Outbound Option campaigns created with the Outbound API. If an administrative script is provided, the information in the script overrides the information defined in the API.

Outbound API consists of the following APIs:

- **Outbound Campaign API:** Use this API to define new Outbound Option campaigns, and to view, edit, or delete existing campaigns. You can also use this API to disable all campaigns at once (emergency stop).
- **Do Not Call API:** Use this API to set the Do Not Call (DNC) import rule configuration for Outbound Option. This prevents the Dialer from dialing the numbers on the DNC list.
- **Import API:** Use this API to import customer contact information for an Outbound Option campaign.
- **Time Zone API:** Use this API to list all available time zones and to get information for a specified time zone. You also use this API with the Outbound Campaign API to set the default time zone for an Outbound Option campaign.
- **Campaign Status API:** Use this API to get the real-time status of running Outbound Option campaigns.

- **Personal Callback (PCB) API:** Use this API to configure your Outbound Option campaign to handle personal callbacks. You can create personal callback records individually or in bulk. You can also use this API to update or delete personal callback records.

For more information about Outbound API, see the *Cisco Unified Contact Center Enterprise Developer Reference Guide* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-programming-reference-guides-list.html>.

Dialing Modes

Outbound Option supports various dialing modes, described in the following sections.



Note All dialing modes reserve an agent at the beginning of every Outbound Option call cycle by sending a reservation call to the agent.

Predictive Dialing

In predictive dialing, the dialer determines the number of customers to dial per agent based on the number of lines available per agent and the configured maximum abandon rate. The agent must take the call if that agent is logged in to a campaign skill group.

A Predictive Dialer is designed to increase the resource utilization in a call center. It is designed to dial several customers per agent. After reaching a live contact, the Predictive Dialer transfers the customer to a live agent along with a screen pop to the agent's desktop. The Predictive Dialer determines the number of lines to dial per available agent based on the target abandoned percentage.

Outbound Option predictive dialing works by keeping outbound dialing at a level where the abandon rate is below the maximum allowed abandon rate. Each campaign is configured with a maximum allowed abandon rate. In Predictive mode, the dialer continuously increments the number of lines it dials per agent until the abandon rate approaches the configured maximum abandon rate. The dialer lowers the lines per agent until the abandon rate goes below the configured maximum. In this way, the dialer stays just below the configured maximum abandon rate. Under ideal circumstances, the dialer internally targets an abandon rate of 85% of the configured maximum abandon rate. Due to the random nature of outbound dialing, the actual attainable abandon rate at any point in time may vary for your dialer.

Preview Dialing

Preview dialing reserves an agent before initiating an outbound call and presents the agent with a popup window. The agent can then Accept or Reject the call with the following results:

- **Accept:** The customer is dialed and transferred to the agent.
- **Reject:** The agent is released. The system then delivers another call to the agent, either another Preview outbound call, or a new inbound call.
- **Rejects-Close:** The agent is released and the record is closed so it is not called again. The system then delivers another call to the agent, either another Preview outbound call or a new inbound call.

Direct Preview Dialing

The Direct Preview mode is similar to the Preview mode, except that the dialer automatically places the call from the agent's phone after the agent accepts. Because the call is initiated from the agent's phone, the agent hears the ringing, and there is no delay when the customer answers. However, in this mode, the agent must deal with answering machines and other results that the Dialer Call Progress Analysis (CPA) handles for other campaign dialing modes.



Note

- The CPA and the transfer to VRU features are not available while using Direct Preview Dialing mode.
 - A *zip tone* is a tone that announces incoming calls. There is no zip tone in Direct Preview mode.
 - If you select *personal callback* as the callback option for a Direct Preview mode campaign, a *personal callback* is dialed in Preview mode. The *personal callback* is processed like a call in the Preview mode.
-

Progressive Dialing

Progressive Dialing is similar to predictive dialing (see [Predictive Dialing, on page 5](#)). The only difference is that in Progressive Dialing mode, Outbound Option does not calculate the number of lines to dial per agent, but allows users to configure a fixed number of lines that will always be dialed per available agent.



Note

In the Outbound dialer log, the Progressive dialing mode is also logged as Predictive.

Callbacks

When the system contacts a customer and transfers the call to an agent, the customer can request to be called back later. The agent enters the date and time that the customer wants a callback in the agent application to schedule the callback. There are two types of callbacks: regular callbacks and personal callbacks.



Note

The callback number can be different from the number originally dialed.

Depending on the Outbound Option campaign settings, you can schedule a regular callback or a personal callback.

About Regular Callbacks

Any agent who is assigned to the campaign can handle regular callbacks.

Callbacks are handled in the same mode as the campaign type. If an agent schedules a callback for a predictive campaign, the callback for that campaign is handled in Predictive mode.

The campaign dialing times do not constrain the callback time. `CallbackTimeLimit` determines the time range when the callback can occur.

If the dialer cannot reach the customer, the callback time is rescheduled.

The CallbackTime limit might be exceeded if no agents are available. If the elapsed time exceeds the CallbackTimeLimit and RescheduleCallback is enabled, the record returns to the Pending state at TimeToResetDailyStats.

About Personal Callbacks

The Outbound Option *personal callback* feature schedules a specific agent to handle a customer callback. The feature enables the customer to continue working with the same agent who spoke with them initially.

Callbacks on personal callbacks are handled in the associated campaign mode.

Only an agent who dealt with the original call can set a personal callback. The dialer offers the agent the personal callback using a mode similar to the Preview dialing mode.

This feature is similar to Preview mode in that an agent reservation occurs first. When the agent is reserved, they can either accept the customer call or reject it. Clicking **Close** sets the *BAResponse* variable to indicate a close operation. The record is not dialed again.



Note Personal callbacks are not dependent on a particular campaign, and do not require a running campaign when the call is placed. This feature enables personal callbacks to occur with active campaigns containing either predictive or preview skill groups. Agents can receive a personal callback request while logged in to any inbound, outbound, or blended skill group. The callback is linked to the agent ID. If the agent logs in with a different agent ID, they cannot receive the callback request. Only one dialer on a particular peripheral is assigned personal callback records.



Note When an agent is on PCB reservation call, the real time reporting shows the agent's status as Talking. This status is shown because the dialer reserves the agent and puts a virtual hold.

The Personal_Callback_List table maintains a list of the customer records scheduled to be called back by a specific agent. The Campaign Manager creates records in the Personal_Callback_List table when an agent schedules a personal callback.

You can use an Outbound API to insert customer records directly into the Personal_Callback_List table to support scheduling customer calls for a specific time. For information on Outbound APIs, see the *Cisco Unified Contact Center Enterprise Developer Reference* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-programming-reference-guides-list.html>



Note When modifying the Personal_Callback_List table, be aware of the following restrictions:

- Applications that insert new records into this table must populate the InsertedIntoDBDateTime column with the current date and time. However, do not modify SentToDialerDateTime. This date and time is set by the Campaign Manager.
 - Do not close or delete Records when the Status is 'A'. Records that are pending can be marked as closed or deleted in a Campaign Dialing List if they are not in the Active state.
 - If Outbound Option High Availability is enabled, you must use the Personal_Callback API to insert data into the Personal_Callback_List table.
-

Personal callback supports three callback modes:

- Use Campaign DN
- Reschedule the personal callback to the same time the next business day.
- Abandon the personal callback.

The following actions can take place during a personal callback:

- If the customer is unreachable during the callback time, the call is rescheduled up to the maximum attempts or abandoned based on the configuration setup.
- If the dialer detects an answering machine response, the call is still transferred to the scheduled agent. The agent can leave a message or reschedule the callback for another convenient time.
- When the callback mode is set to Reschedule or Abandon:
 - If the agent is logged in at any point during the callback period, Outbound Option reserves the agent and places the callback.
 - If the agent is unavailable during the entire callback period, the personal callback fails. The call is rescheduled or abandoned based on the configuration setup.
- When the callback mode is set to Campaign DN:
 - If the agent is unavailable at the callback time, Outbound Option reserves another agent for the callback using the dialed number of the associated campaign skill group.
 - If an alternate agent is also unavailable from Campaign DN script, retry action is No Answer.

For more information, see Appendix F, "Personal_Callback_List Table".



Note The valid range for Callbacktime is from midnight, January 1, 1970 through December 31, 3000 Universal Coordinated Time (UTC). If Callbacktime is specified out of range then it is defaulted to NULL.

Related Topics

[Personal_Callback_List Table](#), on page 149

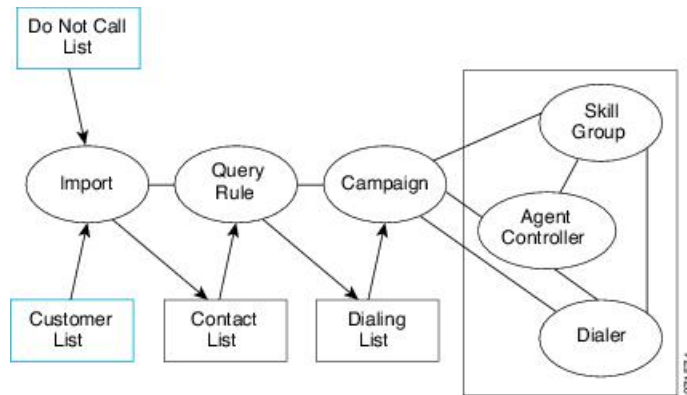
Relationships Between Outbound Option Components

The following figure shows the component relationships within Outbound Option.



Note The following figure and table only describe Outbound Option components and concepts; they do not describe the Outbound Option process.

Figure 1: Outbound Option Component Relationships



Note You configure the blue-outlined items in this figure.

Table 2: Outbound Option Component Concepts

Concept	Description
Import	Defines when and how Outbound Option reads in user-generated lists of customers to call and not to call.
Query Rule	A set of criteria for selecting customer contacts from a customer list.
Campaign	<p>Create the agent skill groups and associate them with one or more dialing lists by assigning them to a campaign.</p> <p>With Outbound Option, you can configure these types of campaigns:</p> <ul style="list-style-type: none"> • Agent-based campaign—In this campaign type, the Dialer transfers customer calls to an agent. • Transfer to VRU campaign—In this campaign type, the Dialer transfers customer calls to a service control-based VRU, instead of an agent. This feature enables a contact center to run unassisted outbound campaigns using pre-recorded messages in the VRU.

Concept	Description
Skill Group	<p>Defines a selection of agents for a campaign. Each skill group can only have one campaign assignment, but a campaign can service multiple skill groups.</p> <p>Their skill group associations tie the agents to the campaign. Agents might belong to multiple skill groups and be part of multiple campaigns.</p> <p>You cannot associate a specific dialing list to a specific skill group unless there is only <i>one</i> dialing list and <i>one</i> skill group in the campaign.</p>
Agent Peripheral Gateway (PG)	A collection of agents and skill groups that are bound to a specific Unified CM. The dialer is bound to serve the group of agents in a specific call center site.
Dialer	The component that places Outbound Option calls. The dialer is associated with the agent peripheral at a call center site. Outbound Option sends calls to a dialer based on the campaign skill group relationship for the agent controller at that site. The dialer monitors campaign skill groups and is mapped to an agent peripheral.
Customer List	List of contact information that you provide during import. This is a user-configured item.
Do Not Call List	List of contact information that must not be included in the Dialing List. This is a user-configured item.
Contact List	An internal table, to which an import applies a query rule to determine which records to insert in the dialing list. There is one Contact List for each import.
Dialing List	<p>The list of customer contacts to which Outbound Option makes calls. There is one dialing list for each campaign query rule.</p> <p>Each campaign query rule combination results in a unique dialing list.</p> <p>Only one dialing list is active at a time for a particular campaign. Whenever a dialing list is active, the list is distributed to all skill groups in the campaign.</p> <p>You cannot map a specific dialing list to a specific skill group in a campaign.</p>

Using some of the preceding terms, the following example demonstrates what happens during an Outbound Option import:

1. Outbound Option imports your customer list into an internal table of customer contacts.
2. During the import process, a query rule filter selects and inserts data from the customer contacts into a dialing list.
3. Outbound Option reads in records from the dialing list for the campaign. Outbound Option sends the records to contact to dialers that are colocated on the peripherals for the associated skill groups.

Imports

You can import a list of customer contact information and a list of customers to not call. You can configure Outbound Option to import both types of lists either by continuously polling or at scheduled intervals. Imported lists can replace existing lists or be appended to them.

Do Not Call List Imports

Many countries require phone solicitors to maintain do not call lists. A Do Not Call (DNC) list ensures that your contact center does not call those customers who request that you do not contact them.

The Do Not Call list is a list of numbers that are identified as off-limits for outbound calling. This list can include numbers from a national DNC list and numbers from customers who have directly requested that you not contact them. Outbound Option does not dial entries in the Do Not Call list even if they are included in a contact list. The DNC list is shared across all campaigns and contains only phone numbers.

The campaign validates that a number in the dialing list is not in the Do Not Call list before sending it to a dialer. The solution checks the list at the last minute before placing the call. You can update a Do Not Call list while a campaign is running.

When you enable Outbound Option High Availability and import the Do Not Call list data to the active Campaign Manager side, it may some time for the import of data (from the Do_Not_Call table in the database) to complete. It may take additional time for the data to replicate to the standby side before the standby Campaign Manager is able to read the data. After Campaign Manager loads records, Do Not Call numbers are in effect. If the Campaign Manager has already sent a record to the dialer, an update to the list does not stop the dialer from placing the call.

The import process validates Do Not Call imports for improper formatting and field lengths. The import process flags invalid records and writes them to an error file.

Related Topics

[Create Do Not Call List](#)

Contact List Imports

The contact list import reads in a user-generated text file of customer contacts and associated phone numbers to an internal contact table. The import includes validation that flags improperly formatted records and writes them to an error file. The error files are in the `\la\logfiles` directory on the Side A Logger and `lb\logfiles` directory on the Side B Logger. The filenames are based on the Target Table Name, the date, and time of the import. Phone numbers without prefix matches are not placed in a file.

You can add business-specific attributes to the contact list import file before the import occurs. You can use these attributes to segment a campaign with a query rule. In this way, a single import can contain records for multiple dialing lists for the same campaign. However, don't include the campaign customer contacts in multiple dialing lists because you might dial the same customer twice.

The U.S. area code mappings are available in the product. International customers must add their own data to the database.

The contact list import process assigns time zone and daylight saving time information to each contact by matching phone numbers to region prefix strings. If a phone number for a contact doesn't match a configured region prefix, the import uses the default time zone data for the campaign.



Note Things to know about campaign imports:

- Continuous imports of 10,000 records or more can cause the Campaign Manager to reach congestion control level which reduces the system port throttle until it catches up with requested work in its queue.
 - Continuous imports for a given campaign can cause problems for the import process.
 - Overwrite imports are more intensive than append imports. We recommend that you run overwrite imports during off hours to clear out the activity of that day, if possible.
 - The import fails if the import file has more than 10,000 errors.
 - Typically, the Campaign Manager sends dialing records to the dialer based on the DialingListID in an increasing order. However, the records imported on the Logger-B side has a negative DialingListID, so the newer records are sent for dialing before the older records.
 - Overwriting imports against active dialing campaigns may result in the rejection of the latest imported record due to a conflict with the ongoing records dialing list ID.
-

Import Rule Reports

The Do Not Call and Contact List imports use the same import rule reports. The reports display the following historical data:

- When an import occurred
- The number of imported records
- The number of invalid records due to length constraints or improper formatting

For contact list imports, the reports also list:

- The number of contacts that the import assigned to the default time zone
- The number of contacts that the import included in the dialing list after performing the query rule and format validation

Related Topics

[Administrative and Supervisory Tasks](#)

Query Rules

The query rule determines which customer contacts from the import to use for a campaign. You can associate multiple query rules with a campaign. You can use the query rules to segment a campaign for prioritization or other logical groupings. For example, if you want to dial certain customers between 9 AM and 11 AM, set up a query rule to only dial during those times. You then configure the campaign to switch to another query rule outside those times.

When dialing, only one query rule is active at any time for each campaign.

You can change query rules based on conditions such as configured time limit, several records attempted (referred to as penetration), current time, or current hit rate. The query rule automatically switches to another available query rule if the query rule runs out of numbers that can be dialed now.

Campaigns

A campaign is made up of one or more dialing lists and one or more campaign skill groups. Outbound Option reads in contacts from the dialing list for the currently active query rule in the campaign. The Campaign Manager then directs dialers to place customer calls. The dialer then directs contacted customers to agents or a VRU in the campaign skill group.

In the Outbound Option Campaign component, you can:

- Create a campaign.
- Modify a campaign.
- Delete a campaign.

A campaign is either an agent-based campaign or a transfer to VRU campaign. A campaign cannot combine both types of calls.

Related Topics

[Agent Campaigns](#), on page 13

[Create a Campaign](#), on page 81

[Transfer to VRU Campaigns](#), on page 14

Agent Campaigns

In an agent campaign, Outbound Option dials customers and transfers them to agents in targeted skill groups. The dialer monitors for available agents. When the dialer finds an available agent, the peripheral gateway (PG) places a virtual reservation call to prevent the router from using that agent for other calls. The agent phone does not actually ring, but the agent desktop updates to show a call in progress. After the agent is reserved, the dialer places a call using the dialing mode for the campaign skill group. After the dialer identifies a customer, the call transfers to the agent. The agent should stay on the reservation call until a customer call is reached to avoid abandoned calls. Once a customer call is reached, the dialer disconnects the reservation call from the agent desktop.



Note An internal call can interrupt an agent on a reservation call. The dialer still sends the call to the agent. The call is dropped unless call waiting is enabled on the agent extension. You can avoid this scenario by giving the agent a second line for internal call use, and make sure the line is interruptible with call waiting enabled.

The agent can still mark the call as a wrong number, wrong party, or schedule a callback for later which does not close out the record. If more than one line is dialed for the agent, several customers might answer their calls. The first call is assigned to the agent. The dialer then determines what to do with the extra answered calls. If another agent is reserved in the campaign, the call transfers to that agent. Otherwise, the call may be transferred to a VRU to handle the abandoned call. If no VRU is configured, then the call drops with no treatment. Specify a VRU in the campaign's Abandon to IVR setting to avoid dialer abandons. The VRU can play prompts, collect data, and redirect the customer to a properly skilled agent in the contact center.

CallerID Masking by Campaign

Outbound Option allows you to configure up to 15 prefix digits for dialed numbers in a campaign. If you configure a prefix, the dialer inserts the prefix before the Dial prefix for all numbers dialed in a campaign.

In a SIP Dialer deployment, the SIP Dialer uses the SIP message to make outbound calls directly to the gateway. The SIP interface allows the SIP Dialer to set the Automatic Number Identification (ANI) directly.

Transfer to VRU Campaigns

A transfer to VRU campaign, also known as an unattended or unassisted campaign, can send both live customer and answering machine calls to VRUs for customer treatment. This customer treatment includes playing prompts, collecting data from the customer, and redirecting the call to appropriate agents in the contact center.

The configuration allocates the maximum VRU ports to use for transfer to VRU campaigns. The campaign attempts to keep them busy within the dialing constraints.

An unattended campaign can use either Progressive or Predictive modes. You can play a different prompt for a live customer or for an answering machine.



Note You cannot use the transfer to VRU feature in the Direct Preview mode or the regular Preview modes.

Dialing Order

A contact can have several numbers configured (on the Call Target tab in the Campaign configuration). The campaign dials each number for the contact once, in the configured order. The campaign can then retry the numbers.

For more information, see Configuration of Campaigns and Imports chapter.

Sequential Dialing

The sequential dialing feature enables you to associate up to ten phone numbers with each customer record. You can configure two time periods, called “zones,” to call the customers for each campaign. Each time period (zone) lists which of the ten phone numbers to call during that time. You can call a phone number during either zone or both zones.



Note Customers are dialed based on the time zone of the first phone that is configured on this tab. The time zone is based on the prefix of the phone number and the region prefix configuration. If two phone numbers for the same customer have different time zones, the time zone for the first phone number in the list sets the times for calling both numbers.

Contact Priority for Callbacks, Retries, and Pending Contacts

The contact priority order is as follows:

- Top priority is given to customers who requested *callbacks*. This priority ensures that the customers are called at the requested time.

- *Retries* get second priority. After all the numbers for the contact are tried once, the system can retry a contact if some of their numbers had an appropriate call result.
- *Pending* contacts get third priority. A customer record is pending until all of its eligible phone numbers are tried once.



Note You can change the default priority order by changing the PendingOverRetryEnabled registry setting to 1 in the Campaign Manager. This setting ensures that all numbers and records are tried once before retries are attempted.

Related Topics

[Registry Settings](#)

Campaign Reports

The query rule call activity and pending record reports are available as campaign roll-ups for multiple query rules in a campaign.

There are also consolidated reports, that blend campaign call activity reporting information with skill group performance reports for a clear overview of the business activity. Because the consolidated reports mix data from different reporting engines, the reports have a few caveats. The reports include descriptions of these caveats. These reports provide a rough overview of agent activity, average time between calls, abandon rate, and so on.

Related Topics

[Administrative and Supervisory Tasks](#)

Campaign Query Rule Reports

There are two general categories of campaign query rule reports:

- Reports that show the number of records closed, in Pending state, and the total records in the query rule's dialing list.
- Reports that provide different views into the call result activity.

Transfer to VRU Reports

The campaign and query rule call activity reports display call activity for calls that are not transferred to a VRU. The campaign and query rule activity reports also count calls that are transferred to a VRU, but those reports do not show what happens after the call is sent to the VRU. If calls are queued and transferred back to an agent, the calls are treated as new inbound calls in the reports.

Call Type Reports

The call type is a Unified CCE concept that maps a route point dialed number to a routing script. The call type is also a useful reporting object to describe all calls that traversed a specific routing script. The call type applies primarily to inbound traffic in the call center. The dialer does not use the routing script when placing outbound calls. However, the Outbound Option does use routing scripts to reserve agents and to transfer calls to the VRU. So, the call type can provide some insight into how calls are routed.

Campaign Skill Groups

A campaign skill group describes the campaign resource pool and the information for managing the campaign. In deployments with multiple sites that have different hours and different equipment, you have different skill groups for each site. Dialing Mode is a skill group attribute that enables you to open and close skill groups at different times for shared campaigns.

The dialer uses campaign skill groups to monitor resource availability. In agent campaigns, the dialer looks at the number of available agents. In Transfer to VRU campaigns, the dialer monitors the number of calls in queue for each campaign skill group. The dialer ensures that no skill group exceeds its quota of configured VRU ports.

You associate each dialer with a peripheral (PG). The dialer monitors the skill groups on its own peripheral for resource availability and requests records for the appropriate campaigns.

The dialer only places calls for agents or VRUs that are located on its PG.



Note Multiple dialers can serve one campaign if skill groups from each dialer's PG are assigned to the campaign. This assignment enables campaigns to be site-specific or shared across the enterprise, depending on the configuration.

Smaller Skill Groups

Predictive mode campaigns are more efficient when there are more agents or VRU ports in a campaign skill group. The dialer adjusts its dialing rate based on the abandon rate. The more frequently calls are placed, the more often the dialer can adjust the dialing rate. The dialer cannot make accurate adjustments frequently enough when there are fewer than 10 agents in the campaign.

Blended Campaigns/Skill Groups

In blended campaigns, agents take inbound calls and outbound calls at the same time. The inbound program can use the same or a different skill group as the outbound campaign skill group. You can set up the campaign skill group to use a percentage of active agents and to reserve the rest for inbound calls. If an inbound customer is in queue, blended agents are not reserved for the campaign. These mechanisms result in the inbound calls generally receiving priority.

An agent on an outbound reservation call is not interrupted with a routed inbound call. An agent reservation call lasts until one of the following conditions occurs:

- The agent closes the reservation call.
- The campaign closes out for that skill group.
- The reservation times out.

An internal call can interrupt an agent on a reservation call. This interruption generally causes the reservation call to drop. Because the dialer is dialing customers for that agent during a reservation call, the interruption can also result in abandoned calls if no agents are available.



Note The configuration of blended agent with multiple skill groups per campaign is not supported in Preview/Direct Preview dialing.

Agents Skilled for Multiple Active Campaigns

You can skills agents for multiple active campaigns. Multiple campaigns cannot place simultaneous reservations on the same available agent.

For example, assume that you have an agent in three active campaign skill groups. That agent becomes available in all three skill groups at the same time. The dialer that monitors the skill groups for available agents sends up three reservation requests, one for each campaign skill group. The first campaign skill group in the dialer memory gets priority over the other requests. Over time, this situation results in an imbalance of agents between skill groups.

To work around this issue, you can queue reservation calls in a similar way to personal callbacks. This workaround services reservation requests in the second and third campaign skill groups first the next time an agent becomes available. This method evenly distributes calls across the active campaigns when agents are skilled in multiple campaigns.

Related Topics

[Configuration of Campaigns and Imports](#)

Campaign Skill Group Reports

Skill Group reports provide information about agent activity for outbound and inbound agents.

Related Topics

[Administrative and Supervisory Tasks](#)

Blended Campaign Skill Group Reports

If you use the same skill group for both inbound and outbound, then the campaign consolidated reports can provide a consolidated overview of business activity for both inbound and outbound calls.

Customer Time Versus System Time

This section describes when Outbound Option activities use the *customer time zone* rather than the *system time*.

Customer Time



Note The Outbound Option uses area code prefixes to determine the time zone. With cell phones or VoIP phones, the area code might not correspond to the actual time zone where the call is received.

A campaign can include customers across multiple time zones, as long as the time zones follow the same rules for when daylight saving time changes.

Unified CCE determines the time zone offset of each contact with a configurable *region prefix database*. The database contains area code prefixes, assigned time zone offsets, and a daylight saving time flag. The Outbound Option import uses this database to associate time zone offsets with customers. When the campaign searches for records in the active query rule's dialing list, the search considers the time zone offset when choosing contacts. This approach does not account for daylight saving time changes from time zone to time zone. Those changes are managed at the campaign level, so that campaigns take into account when each time zone changes over to daylight saving time.

For example, North America has time zone regions that do not observe daylight saving time, or that switch over on different days. A campaign that dials Houston, Texas and Mexico City, Mexico must account for these locations changing over to daylight saving time on different days.

If a contact's number does not match any of the configured region prefixes, then the campaign uses its default time zone offset. If all the customers are in one time zone, then you do not need the region prefix information.

Outbound Option receives its list of daylight saving zones from Microsoft Windows. Ensure that all Outbound Option components run on the same version of Windows as the Logger and AW VMs to keep the time zone information in synch.

System Time

The system time is based on the Central Controller's time. System time is used in scheduled imports and in the query rule *time of day* for switching contact lists.

Call Progress Analysis (Answering Machine Detection)

Call Progress Analysis (CPA) uses call signaling and media stream analysis to differentiate types of calls. CPA can detect the following:

- Fax or modem detection looks for specific tones in the media stream.
- Voice detection looks in the media stream for alternate voice and silence patterns after the call connects.
- Answering Machine Detection (AMD) uses media stream analysis to look for a longer voice stream with minimal silence periods. AMD can also use terminating tone detection.
- Operator Intercept relies on call signaling network identification. This method does not analyze the media stream looking for specific tri-tones.



Note CPA creates a delay before the call is transferred to an agent. Some countries require customer calls to be transferred to an agent in a certain amount of time. In those cases, you may not be able to use CPA.

Because virtual CUBE does not have the Digital Signal Processors (DSP) that a physical CUBE has, it cannot support CPA. Add a dedicated physical outbound gateway to support CPA.

Answering Machine Detection

Enable Answering Machine Detection on a campaign-by-campaign basis, depending upon the requirements of the campaign or the purpose of the call.



Note Enable IP AMD when using CPA. If you do not enable IP AMD, the SIP dialer instructs the gateway to transfer the call to an agent without waiting for detection.

AMD uses speech patterns and silence between voice patterns to differentiate a live voice from an answering machine recording and background noise. There are parameters in the Outbound Option Campaign Configuration component that modify the amount of silence or the expected time of greeting. Accuracy levels depend on such factors as the campaign list quality and the phone number types.

Two-Way Outbound Option Database Replication

If you choose to enable Outbound Option, you can also enable Outbound Option High Availability. Outbound Option High Availability supports two-way replication between the Outbound Option database on Logger Side A and the Outbound Option database on Logger Side B.

You create an Outbound Option database on Side A and Side B either by:

- Using the ICMDBA tool (if you haven't set up Outbound Option at all).
- Backing up the Outbound Option database on Logger Side A and restoring it to Logger Side B (if you have already set up Outbound Option on Side A).

You then use Web Setup to configure the Loggers to support Outbound Option and Outbound Option High Availability.

Related Topics

[Configure the Logger for Outbound Option](#), on page 59

[Upgrade Outbound Option for High Availability in an Existing Deployment](#), on page 61



CHAPTER 2

Architectural Overview

- [Unified CCE Software Overview, on page 21](#)
- [Outbound Option Software Components, on page 22](#)
- [Scripts for Outbound Option, on page 35](#)
- [Fault Recovery, on page 35](#)
- [Campaign Manager Congestion Control, on page 38](#)

Unified CCE Software Overview

This section provides a high-level overview of Unified CCE software, which must be installed and configured before installing Outbound Option.



Note See Chapters 3-5 for detailed information about installing Unified CCE and Outbound Option software.

Before installing Unified CCE software, the virtual machine guests must have the Microsoft Windows operating system and, for some components, Microsoft SQL Server database management software installed. Also, ensure that there is enough disk space available on each system to install the Unified CCE component.

See the [Compatibility Matrix for Unified CCE](#) for information on operating system and software requirements.

Unified CCE software contains the following components:

- **Router:** The component of the Central Controller that makes routing decisions. It gathers and distributes data to and from remote sites.
- **Logger:** The component of the Central Controller that controls the central database.
- **Administration & Data Server:** Known as the Admin Workstation in previous releases, the Administration & Data Server is the user interface for Unified CCE software. The Administration & Data Server can be located at any central or remote site. It allows users to monitor call handling within the system and change configuration data or routing scripts.
- **Peripheral Gateway:** The interface between the Unified CCE platform and third-party hardware in each call center, such as an ACD. A Peripheral Gateway (PG) is typically located at the call center.

Install the Peripheral Gateway from the PG Setup program; install the other components from the Web Setup program.

Together, the Router and Logger compose the Central Controller and are installed at a central site. At least one Peripheral Gateway is typically installed in each call center. Administration & Data Servers can be installed at a central site, a call center, or at a separate admin site.

Outbound Option Software Components

This section provides details about the server processes of the Outbound Option system:

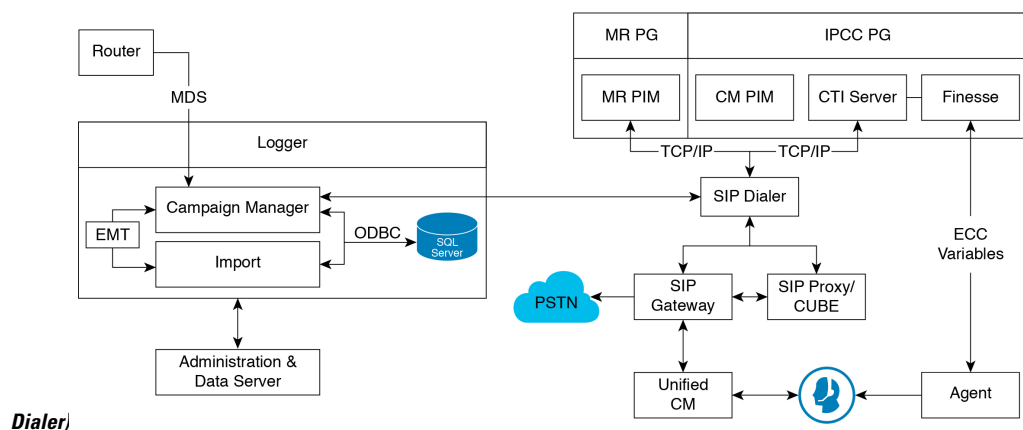
- **Campaign Manager:** Manages lists.
- **Outbound Option Import:** Reads customer import files and generates database lists.
- **Outbound Option Dialer:** Maximizes the resources in a contact center by dialing several customers per agent. This component resides on the PG server, where it performs the following actions:
 - Dials customers
 - Reserves agents
 - Performs call classification
 - Calculates agent availability
 - Keeps outbound dialing at a level where the abandon rate is below the maximum allowed abandon rate

The Outbound Option components provide a user interface where configuration data can be entered. The Outbound Option server processes use this configuration data to configure campaigns.

Outbound Options Component Relationships

The following figure shows the component relationships within an Outbound Option deployment that uses the SIP Dialer. These relationships include the Unified CCE software components that Outbound Option uses.

Figure 2: Outbound Option Network Component Relationship (SIP)



Dialer)



Note Directly modifying or updating any Logger database tables isn't supported.

Outbound Option Campaign Manager Component

The Campaign Manager component, which resides on the Logger, is responsible for:

- Managing when a campaign runs.
- Maintaining system and dialer configurations.
- Deciding which contact records to retrieve from a campaign based on configurable query rules and delivering those contact records to dialers.

Records for callbacks are sent to the Dialer only when agents are logged in, and are controlled by registry values as described in Chapter 5, "Configuration of Campaigns and Imports".

- Distributing configuration data to the import process and all available dialers in the system.
- Collecting real-time and historical data and sending it to the Router.
- Managing the Do Not Call list to ensure that no records on it are sent to the Dialers.
- Performing record queries based on the following order:
 - Callback
 - Retry Zone1
 - Retry Zone2
 - Pending Zone1
 - Pending Zone1 DST
 - Pending Zone2
 - Pending Zone2 DST

Based on this order, the priority for the Retry record is higher than for the Pending record. However, the Pending record priority can be set above the Retry record by setting the "PendingOverRetryEnabled" registry key to **1** (default is 0). If the value is set to **1**, the record query order would be:

- Callback
- Pending Zone1
- Pending Zone1 DST
- Pending Zone2
- Pending Zone2 DST
- Retry Zone1
- Retry Zone2

For more information, see Appendix A, "Registry Settings".

Related Topics

[Registry Settings](#)

Outbound Option Import Component

The Outbound Option Import component resides on the Unified CCE Logger. The Import component imports a Contact list, which contains the phone numbers that Outbound Option dials. In addition, the Import component uses the scheduling configured in the Outbound Option components to process imports that are scheduled for a particular date and time.

When the Import component processes an import, the following steps occur:

1. Imports a Contact list into a table.
2. Builds a dialing list for a campaign.
3. Performs region prefix matching.



Note Outbound Option can continue to run a campaign while an import is in progress; however, some of the campaign's query rules might be disabled.

Outbound Option Dialer Component

The Outbound Option SIP Dialer component, which resides on the PG server, performs the following actions:

- Dials customers using the voice gateways.
- Reserves agents through the Media Routing (MR) interface.
- Performs call classification.
- Calculates agent availability by monitoring campaign skill groups through the CTI Server interface to the agent PG.
- Transfers answered customer calls to reserved agents.

For Outbound campaigns, the Voice Gateway handles functions such as dialing, call control, and Call Progress Analysis (CPA).

The following summarizes SIP Dialer features:

- Use the voice gateway or Cisco Unified Border Element (CUBE) dial peers and Unified SIP Proxy routing policies for outbound call routing.
- No need to configure Unified CM translation pattern to support Campaign Automatic Number Identification (ANI).
- Perform CPA at gateway DSP resource.



Note Unlike the physical CUBE, virtual CUBE does not have DSPs and cannot support CPA. Add a dedicated physical gateway for your outbound traffic if you need CPA.

- The following summarizes CPA support:

- With Voice Gateway (T1/E1), CPA supports G.711 (both a-law and mu-law) and G.729 codecs.
- With CUBE (IP-IP) flows, CPA only supports G711 (both a-law and mu-law).
- With Outbound Option SIP dialer, CPA only supports G711 (both a-law and mu-law).
- No need to configure dialer port on Unified CM.
- The dialer does not need to be in proximity of the voice gateway.
- Supports warm standby architecture.
- Requires one MR PIM for MR PG.
- Only connected outbound calls, which are transferred to agents or VRU, go through Agent PG and Unified CM.
- Call Throttling supports 60 CPS per dialer.
- Supports 3000 dialer ports.



Note These performance numbers can vary depending on the details of your deployment and your system configuration. To accurately size your Outbound deployment, use the Cisco Unified Collaboration Sizing Tool (Unified CST) available at <https://tools.cisco.com/cucst/faces>. For detailed instructions, see the online Help system for this tool.

The Unified CST is available to Cisco internal employees and Cisco partners, and proper login authentication is required.

Dialer Port Allocation

The dialer component reserves agents when it sees agents have become available. The Dialer requests skill group statistics from the agent PG every two seconds and attempts to reserve agents based on the number of available agents and the number of dialers active for this PG.

Each dialer checks agent availability to make reservation requests based on the skill group statistic refreshes that occur every two seconds. When skill groups for multiple campaigns are active for one or more of the same agents, then one campaign always reserves that agent or agents. You can avoid this situation by scripting the reservation scripts to queue reservation calls using the same mechanism that is described for queuing personal callback reservation requests. This resolution ensures a more even distribution of calls for active campaigns that share a common agent pool.

For example, in the following scenario where two campaigns are in progress:

- Campaign 1 has four available agents and is dialing two lines per agent, which has a relative weight of eight (two lines each for four agents).
- Campaign 2 has one available agent, but is dialing at four lines per agent, which has a relative weight of four (four lines for one agent).

To dial customers for all available agents requires 12 ports, but only 9 ports are available.

The results:

- Campaign 1 gets 2/3 of the remaining ports, or six of the remaining ports.

- Campaign 2 gets 1/3 of the remaining ports, or three of the remaining ports.
- Each dialer begins dialing using the ports assigned to it, and assigns additional ports to the campaigns when new ports become available.

Port Allocations for Campaign Modes

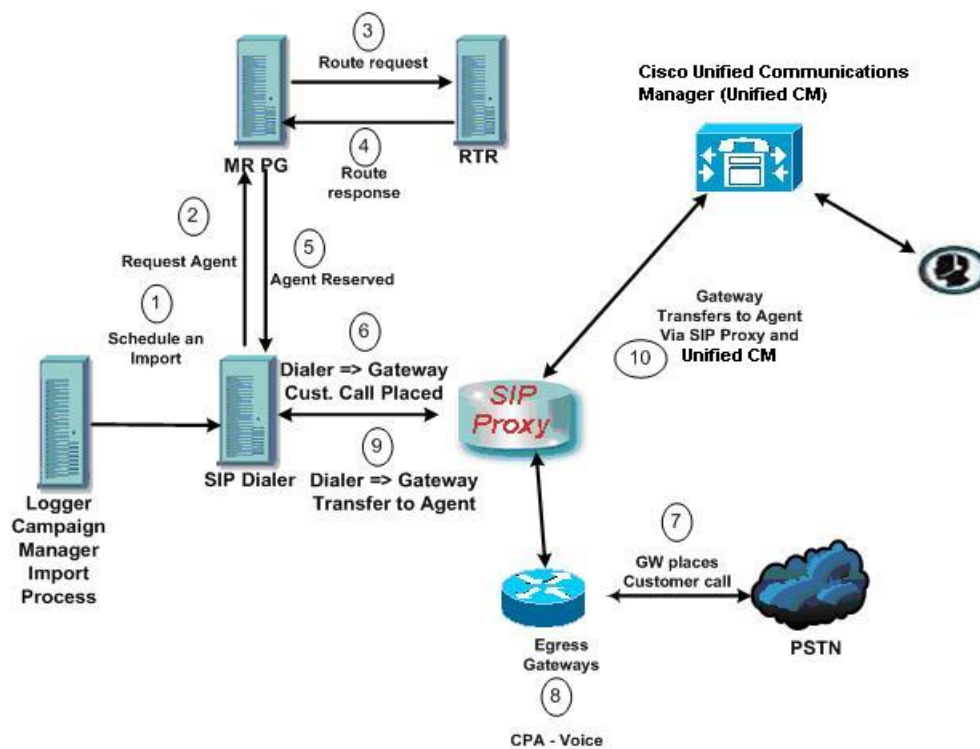
Preview, Predictive, and Progressive campaigns require at least two ports to place calls because they require at least one port to reserve the agent and one port to dial the customer. Because campaigns are shared across active dialers that service a PG, this maximum number of active campaigns applies to the PG.

Transfer to VRU and Direct Preview calls only require one port. Transfer to VRU calls do not reserve the VRU port before dialing, and Direct Preview calls use the agent's phone to place the call.

Transfer to Agent Call Flow: SIP Dialer with SIP Proxy

The following figure illustrates a Transfer to Agent Call Flow in a deployment with a SIP Dialer that is connected to a SIP Proxy.

Figure 3: Transfer to Agent Call Flow - SIP Dialer with SIP Proxy



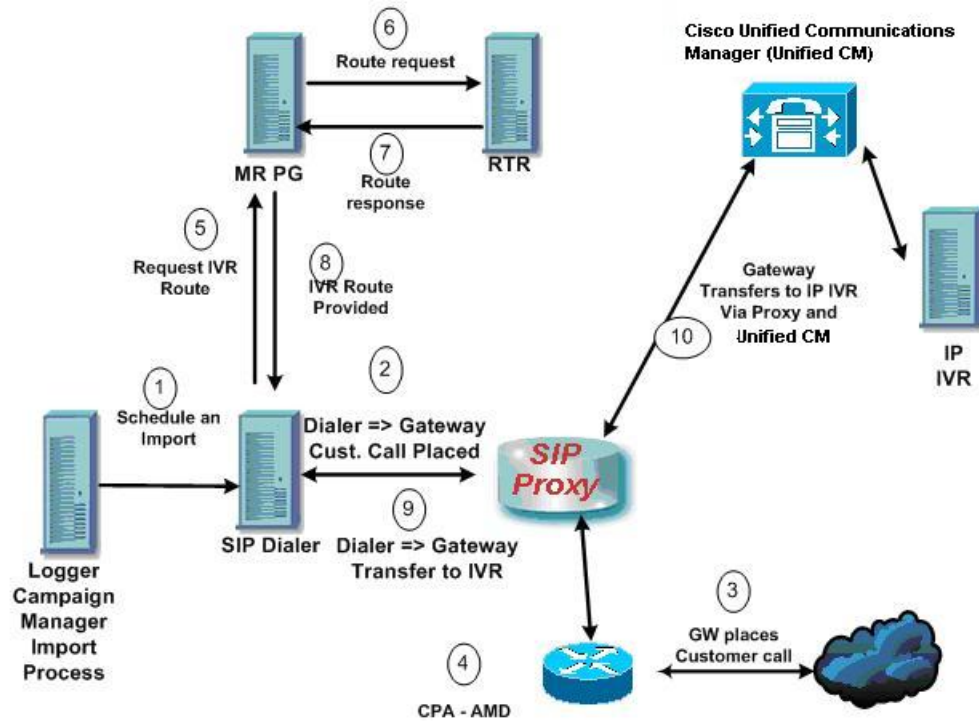
1. An agent campaign starts. Customer records are delivered to the Dialer.
- 2 to 5. An agent is reserved with a virtual placeholder call.
- 6 to 7. The dialer asks the gateway (via proxy) to place a call, and it does.
8. The Voice Gateway performs Call Progress Analysis and detects live voice. Media is terminated at the VGW until the CPA completes.

9. The dialer is notified and asks the voice gateway (via proxy) to transfer the call to the agent.
10. The Voice Gateway sets up the customer call with the voice agent (via proxy) and the UC Manager.

Transfer to VRU Call Flow: SIP Dialer with SIP Proxy

The following figure illustrates a Transfer to VRU Call Flow in an Outbound Option deployment with a SIP Dialer connected to a SIP Proxy.

Figure 4: Transfer to VRU Call Flow - SIP Dialer with SIP Proxy

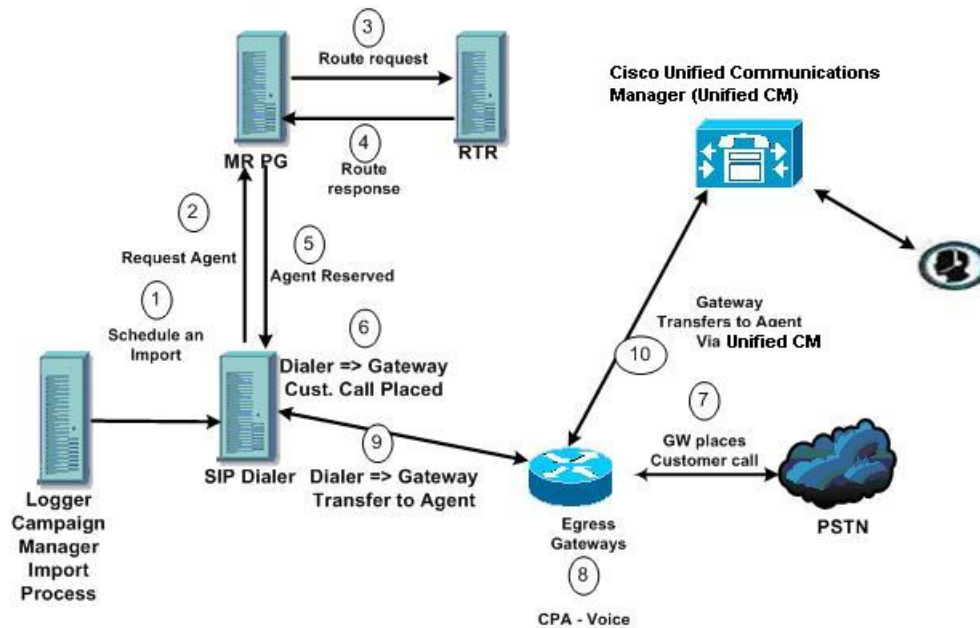


1. An unattended VRU campaign starts. Customer records are delivered to the Dialer.
2. The Dialer asks the SIP Proxy to forward an invitation to an available gateway to start a call.
3. The Gateway places the call.
4. Voice Gateway does Call Progress Analysis and detects an answering machine. The Dialer is notified.
5. The Dialer asks the MR PG where the VRU is.
6. MR PG forwards the request to the Router.
7. The routing script identifies the VRU and notifies the MR PG.
8. The MR PG forwards the route response to the Dialer.
9. The Dialer notifies the voice gateway to transfer the call to the VRU.
10. The Gateway starts the transfer to the SIP Proxy, and the SIP Proxy forwards the invitation to the Unified CM. Unified CM forwards the call invitation to the VRU, and media is set up between the Gateway and the VRU.

Transfer to Agent - SIP Dialer with No SIP Proxy

The following figure illustrates a transfer to agent call flow in an Outbound Option deployment with a SIP Dialer without a SIP Proxy.

Figure 5: Transfer to Agent - SIP Dialer with No SIP Proxy



1. Import is scheduled and campaign starts. Records are delivered to Dialer.
2. The Dialer looks for an available agent via the Media Routing Interface.
3. MR PG forwards the request to the Router.
4. The routing script identifies an agent and responds to the MR PG.
5. Media Routing PIM notifies the Dialer that the agent is available.
6. Dialer signals the gateway to place a call to the customer.
7. The Gateway places a call to the customer, and the Dialer is notified it is trying.
8. Call Progress Analysis is performed at the gateway. Voice is detected, and Dialer is notified.
9. The Dialer asks the voice gateway to transfer the call to the reserved agent by its agent extension.
10. The Gateway directs the call to the agent via Unified CM using dial peer configuration to locate the Unified CM. Media is set up between the Gateway and the agent's phone.

Peripheral Gateway (PG)

The peripheral gateways (PGs) are redundant in a SideA - SideB configuration; one side is active and the other side runs in standby while waiting to be activated. The dialers are co-located with the agent PGs with the dialers running in a peer model.

Agent PG

The agent PG is a primary data collection point for agent and skill group statistics. The Dialer connects to the agent PG through the CTI Server interface to monitor skill groups associated with campaigns. It uses the number of working agents and available agents to determine when to reserve agents and when to dial for agent campaigns. For 'Transfer to VRU' campaigns, the Dialer monitors the number of calls queued to determine when the Dialer component has reached the limit of VRU ports for this campaign as specified in the campaign skill group.

The agent PG also monitors all calls placed to the Dialer ports. The Dialer uses the PG representation of the call to push customer call context to the agent. The Dialer also provides information about call results so that the PG can report Outbound Option statistics for the campaign skill group.

Campaign statistics and skill group statistics both report the number of Outbound Option calls that reach agents. The Campaign Manager collects and reports campaign statistics. The PG collects and reports skill group statistics. The two reports can differ by a call or two for a given half hour, but they are reconciled at the end of the campaign.

Media Routing PG

The Media Routing PG (MR PG) is the interface the Dialer uses to make route requests to the Central Controller to find and reserve available agents. Each Dialer uses its own MR controller (MR PIM), and a separate dialed number is configured to differentiate requests for different campaign skill groups for agent campaigns.

For a quick reference on configuration limits and scalability constraints, see the *Solution Design Guide for Cisco Unified Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-implementation-design-guides-list.html>.

VRU

The Dialer uses the VRU for unassisted treatment of customer calls depending on campaign configuration for abandoned calls, answering machine treatment in an agent campaign, or for unassisted transfer to VRU campaigns.

VRU scripting is flexible in playing prompts to the user and collecting other data. It can also be a queue point to wait for the next available agent.

Partition the ports accordingly when using the same VRU for inbound and outbound campaigns. For inbound calls, do not use ports allocated for the transfer to VRU feature. For VRU ports shared between inbound and outbound applications, the Dialer might transfer customers to a VRU which does not have any available ports left. In this case, the called party hears a fast busy signal or a 'ring no answer' message. To avoid this situation, ensure that the VRU has enough ports for both inbound and outbound traffic.



Note The transfer speed between the Dialer and the VRU is usually under two seconds, but can be longer depending on the network design and configuration.

Administration and Data Server: Configuration

Use the Administration & Data Server configuration tools to configure the Unified CCE system. Enable the tools for configuring Outbound Option by editing the Administration & Data Server setup.

Cisco Unified Intelligence Center

Cisco Unified Intelligence Center (CUIC) is the standard Unified CCE reporting interface.

For details about Unified Intelligence Center, see the [Cisco Unified Intelligence Center Documentation](#).

Dialer Reports

The Outbound Option Dialer reports provide information about the dialer platform. These predefined templates include information about performance and resource usage. The templates also enable you to determine whether you need more dialer ports to support more outbound calls.

For more information, see chapter 6, "Administrative and Supervisory Tasks".

Outbound Option Agent Desktops

Cisco Finesse supports Outbound Option-enabled agents.

Cisco Finesse

Cisco Finesse provides the following applications and tools:

- A web-based desktop application for agents and supervisors. Agents and supervisors access their desktops by entering the following URL in their browsers: `http://hostname`, where `hostname` is the hostname or IP address of the Finesse server.
- A web service that provides contact center agent desktop functionality through a REST-like interface.
- An administration console for configuring system settings, desktop layout, wrap-up reasons, and reason codes. Administrators access this console by entering the following URL in their browsers: `http://hostname/cfadmin`, where `hostname` is the hostname or IP address of the primary Finesse server.



Note Cisco Finesse supports Outbound Option as follows:

- Finesse supports Progressive mode, Predictive mode, Preview mode, and Direct Preview mode.
- You can schedule both regular callbacks and personal callbacks.



Note Agents who are on Progressive or Predictive Outbound Option calls do not appear in the Talking - Outbound column of the Queue Statistics gadget on the supervisor desktop. This number only includes agents who are talking on outbound calls placed by those agents.

Outbound Option Extended Call Context Variables

The Outbound Option Dialer uses CTI Extended Call Context (ECC) variables to exchange information with the Finesse desktop. The following table lists the ECC variables Outbound Option uses.



Note You can use a custom ECC payload to pass the Dialer ECC Variables to a VRU.

Table 3: ECC Variables for Outbound Option

ECC Variable	Description
BACampaign	Indicates the name of the Outbound Option campaign to which the call belongs.
BAAccountNumber	Identifies a customer account number and can be used by the desktop application to perform a database lookup to obtain more customer data. This ECC variable is displayed only if the data was available in the customer import file. Note The maximum character length of this ECC variable is 30 characters.
BAResponse	Multipurpose placeholder that sends data from the Finesse desktop to the Outbound Option Dialer. This variable responds to the reservation call to schedule and cancel callbacks, and to changes to the callback phone number. See the following rows for more information about BAResponse.

ECC Variable	Description												
BAResponse for Preview mode	<p>On the Finesse desktop, when an agent uses the Accept, Reject, and Reject-Close buttons in Preview mode, BAResponse is set to one of the following values:</p> <ul style="list-style-type: none"> • Accept: Accepts the current preview call. • Reject: Rejects the current preview call. Sets record to “R” for retry. • Reject-Close: Rejects the current preview call and closes the record so it will not be called again. <p>On the Finesse desktop, an agent in Preview mode can respond with the following options:</p> <table border="1" data-bbox="662 682 1487 1100"> <thead> <tr> <th data-bbox="667 688 938 741">Agent Action</th> <th data-bbox="938 688 1214 741">BAResponse setting</th> <th data-bbox="1214 688 1482 741">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="667 741 938 829">Accept</td> <td data-bbox="938 741 1214 829">Accept</td> <td data-bbox="1214 741 1482 829">Accepts the current preview call.</td> </tr> <tr> <td data-bbox="667 829 938 947">Decline > Reject</td> <td data-bbox="938 829 1214 947">Reject</td> <td data-bbox="1214 829 1482 947">Rejects the current preview call. Sets record to “R” for retry.</td> </tr> <tr> <td data-bbox="667 947 938 1094">Decline > Close</td> <td data-bbox="938 947 1214 1094">Reject-Close</td> <td data-bbox="1214 947 1482 1094">Rejects the current preview call and closes the record so it will not be called again.</td> </tr> </tbody> </table>	Agent Action	BAResponse setting	Description	Accept	Accept	Accepts the current preview call.	Decline > Reject	Reject	Rejects the current preview call. Sets record to “R” for retry.	Decline > Close	Reject-Close	Rejects the current preview call and closes the record so it will not be called again.
Agent Action	BAResponse setting	Description											
Accept	Accept	Accepts the current preview call.											
Decline > Reject	Reject	Rejects the current preview call. Sets record to “R” for retry.											
Decline > Close	Reject-Close	Rejects the current preview call and closes the record so it will not be called again.											
BAResponse for the Callback button	<p>When an agent uses the Callback button, BAResponse is set to one of the following values:</p> <p>Note Spaces are relevant and must be included in these commands.</p> <ul style="list-style-type: none"> • Callback mmddyyyy hh:mm: Schedules a callback for the indicated date and time • Callback Cancel: Cancels a previously scheduled callback for this call • P#xxxxxxxxxxxxxxxxxxxxxx: Changes the callback phone number to the number specified by xxxx <p>For Preview modes, cancel the reservation call by clicking Reject.</p> <p>For Predictive mode, cancel the reservation call by clicking Not Ready and then hang up the reservation call.</p>												

ECC Variable	Description
<p>BAResponse for Direct Preview calls</p>	<p>For Direct Preview calls, any connected customer call is classified as VOICE by the Dialer (default). To reclassify the call result, the agent can click the following buttons:</p> <ul style="list-style-type: none"> • Voice: To reclassify a call as a voice call, set the BAResponse variable to REX_VOICE. Enable the Voice button only after pressing one of the other buttons first. Pressing one of the other buttons first enables an agent to reclassify the call if needed. • Answering Machine: To reclassify the call as an answering machine call, set the BAResponse variable to REX_ANS_MACHINE. • Fax/Modem: To reclassify the call as a fax/modem call, set the BAResponse variable to REX_FAX. • Invalid: To reclassify the call as an invalid call, set the BAResponse variable to REX_INVALID.
<p>BAResponse for answering machine detection in a transfer to VRU campaign</p>	<p>For answering machine detection on a transfer to VRU campaign, the BAResponse variable is evaluated to carry the CPA result of the customer call. Two new IF node configurations are supported:</p> <ul style="list-style-type: none"> • Call.BAResponse="CPA_AnswerMachine" • Call.BAResponse="CPA_Voice" <p>These IF nodes route to separate External Scripts to allow for different treatment depending on whether a voice or an answering machine was detected.</p>
<p>BAStatus</p>	<p>Contains two characters indicating the mode and direction of the Outbound Option Dialer initiated call. The first character identifies the call mode:</p> <ul style="list-style-type: none"> • R: Reservation call, Predictive mode • R: Reservation call, Predictive mode • G: Reservation call, Progressive mode • P: Reservation call, Preview mode • D: Direct Preview reservation call • C: Customer call • A: Reservation call, personal callback. <p>During a reservation call, the first character is P, R, G, or A.</p> <p>When a customer call is transferred to an agent, the first character is C.</p> <p>The second character of BASTatus indicates the call direction:</p> <ul style="list-style-type: none"> • O: Outbound • I: Inbound • B: Blended

ECC Variable	Description
BADialedListID	Unique key identifying a specific customer record within the Dialing List table in the Outbound Option private database.
BATimeZone	<p>Indicates the GMT offset, in minutes, for the customer's time zone and obtains the customer's local time. The format of this ECC variable is +/-#####.</p> <p>This field's first character is either a positive or negative sign, followed by 5 digits. For example:</p> <ul style="list-style-type: none"> This example indicates that the customer is one hour behind GMT: BATimeZone = -00060 This example indicates that the customer is two hours ahead of GMT: BATimeZone = +00120
BABuddyName	Contains the customer's last and first name separated by a comma, which is compiled using the imported LastName, FirstName that was configured on the Import Rule Definition tab page.

Desktop Button Behavior

The following table explains the desktop button behavior when a call is placed using Outbound Option.

For more information about dialing modes, refer to [Dialer Reports, on page 113](#).

Dialing Mode / Other Conditions	Call Description	Buttons Enabled
Preview	Reservation calls: Dialer places the call and agent is available.	Accept , Reject , and Reject-Close buttons are enabled if the reservation call has not yet been accepted.
	Initial customer calls: Agent accepts the call and Dialer calls the customer.	No buttons are enabled if the customer does not answer the call.
	Transferred customer calls: Agent is talking to a customer.	Callback button is enabled.
Predictive and Progressive	Reservation calls: Dialer places the call and agent is available.	No buttons are enabled.
	Initial customer calls: Dialer calls the customer.	No buttons are enabled if the customer does not answer the call.
	Transferred customer calls: Agent is talking to a customer.	Callback button is enabled.

Dialing Mode / Other Conditions	Call Description	Buttons Enabled
Direct Preview	Reservation calls: Dialer places the call and agent is available.	Accept , Reject , and Reject-Close buttons are enabled if the reservation call has not yet been accepted.
	Initial customer calls: Agent accepts the call and calls a customer.	No buttons are enabled if the customer does not answer the call.
	Transferred customer calls: Agent is talking to a customer.	Callback , AnsMach , Fax , and Invalid buttons are enabled. Note You can revert to voice if you make a mistake.
Personal Callback	BAStatus is set to A and O or A and B for a reservation call.	Accept and Reject buttons are enabled, if the reservation call has not been accepted yet.
	Initial customer calls: Agent accepts the call and calls a customer.	No buttons are enabled if the customer does not answer the call.
	Transferred customer calls: Agent is talking to a customer.	Callback button is enabled.

Scripts for Outbound Option

Outbound Option uses Unified CCE scripting configured on the Administrative Workstation to manage campaigns.

There are two types of scripts:

- Administrative scripts to enable, disable, or throttle campaign skill groups for outbound campaigns.
- Agent reservation routing scripts to reserve agents for specific outbound campaigns and personal callbacks. These scripts can also transfer calls to VRU campaign or transfer calls to non-VRU campaigns for answering machine or abandons.

Related Topics

[Administrative Scripts for Outbound Option](#), on page 83

[Routing Scripts for Outbound Option](#), on page 83

Fault Recovery

This section describes Outbound Option behavior when specific components fail and recover.

Outbound Option High Availability

If you use the optional Outbound Option High Availability deployment, the active Outbound Option components manage all updates to the database such as importing new records and updating Dialing Lists. This process

of managing updates to the database is also applicable when you use the Outbound Option API for importing records.

The data is replicated to the standby Outbound Option database by the Campaign Manager process running on the standby side.

The standby Campaign Manager connects to a file share that is automatically created via Web setup when Outbound Option High Availability is selected on the active side. The file share contains a series of files representing Imports, API-generated imported files, and updates to the outbound database.

Replication data is first written to a series of temporary files (extension .tmp), which represent an ongoing operation on the active side. The temporary files are later renamed to replication files (.repl extension) and are then available for the standby Campaign Manager for any action. When these files are consumed by the standby Campaign Manager and the standby Outbound Option database is brought in sync, they are deleted from the active side.

In a process or network failure, the active Campaign Manager fails over, and the standby campaign Manager attempts to become active. If the formerly active Logger file share is still reachable and replication is not fully synchronized, the Campaign Manager continues to process the replication files until it is synchronized, and then goes active. Dialers then connect to the newly active side and the operations continue, using the data that was replicated. All the updates to the database are again made by the newly active Campaign Manager, and data is replicated to the standby side. If a Logger server goes down, Outbound Option database updates the pending records until the server recovers. That data is then replicated to the database.

If a Logger side remains down for a sustained period while the active Logger continues to dial, the replication file share continues to store all the data required to bring the other database into synchronization.

There may be substantial amount of data to be managed depending upon the number of imports, the rate at which the system is Dialing, and the duration of downtime for the Logger. Therefore, the drive that the Logger service resides on should contain enough space to handle such an event.

You can consider the following estimate for drive space:

- A 1 million record import with a single phone number, name, and account number takes approximately 120 MB of replication drive space. Additional phone numbers and optional columns increases this usage.
- Dialing a million records results in 3 times as many updates, although the amount of data is smaller. However, a safe estimate is approximately 360 MB of replication drive space.

Campaign Manager Fault Recovery

Campaign Manager is an MDS client for the router and is enabled on the router. The duplex structure for high availability requires a Side B router that replicates Side A. When Campaign Manager on the Side A fails over, the Campaign Manager on Side B is moved to Active state.

The Campaign Manager resides on the Logger.

If the Unified CCE Router and MR PG are still accessible when the Campaign Manager process shuts down, the Dialer can still reserve agents for an agent campaign. In this case, the Dialer continues to dial contacts and saves the results until it processes all the cached calls in memory.

After processing all its cached records, the Dialer cannot dial more calls until the Campaign Manager process recovers and sends it more records.

When the Campaign Manager is back online, it updates call results based on the information it receives from the Dialer. A few records can be lost when the Campaign Manager is not available. If High Availability is enabled, CampaignManager resumes the replication of pending records from the active side to idle side.

Dialer Fault Recovery

You deploy the SIP Dialer in redundant pairs in warm-standby mode. You can have one redundant pair for each Agent PG. To install multiple Dialers, install each on a separate PG VM, but assign them the same Dialer Name.

When the Campaign Manager detects that a Dialer state change from ready to not ready or that the connection from the active Dialer is lost, the Campaign Manager activates the standby Dialer, if there is a standby Dialer in ready state.

For regulatory compliance, the SIP Dialer does not automatically re-attempt calls that were in progress during a failover. Instead, the Dialer sends all active and pending customer records to the Campaign Manager. If the Campaign Manager is not available, the dialer closes them internally.

Active calls are handled as follows:

- Canceled if the call is not connected.
- Abandoned if the call is connected but not yet transferred to the agent or VRU.
- Continued if the call is already transferred and the PG/CG does not fail during that time.

If the standby Dialer does not respond during a set period, the Campaign Manager marks all outstanding records with an Unknown status and returns them to Pending status.



Note Calls, that were already connected to an agent, continue during failover. However, the Dialer Detail table changes the call from Closed to Dialed (D) state while the agent is still talking to the customer. When the call ends, the Dialer Detail record for that call may show an earlier end time than the actual end of the call.

Dialer Redundancy in Outbound Option High Availability

The Dialer updates the Campaign Manager with the intermediate Dialed (D) state of the customer records. This ensures that the Campaign Manager tracks the next set of actions for the dialed calls when the active dialer fails and the standby dialer is activated.

When the dialer calls a customer by sending a SIP Invite, it updates the state of the customer record in the Campaign Manager to the D (Dialed) state. The Campaign Manager receives the D state message and updates the CallStatus of the record to the D state in the DialingList (DL) table.

The Campaign Manager again updates the state of the customer record in the DL table and the DialerDetail table in the following events:

- **When the call is successful:** The Campaign Manager receives a message to close the customer records and it updates the state to the C state.
- **When the communication between the Dialer and Campaign Manager breaks:** The Campaign Manager does not receive any message to close the customer records. Here, all the D state records remain in the D state and the A state records move to the U state.

- **When the communication between the dialer and the CTI server breaks:** The Campaign Manager receives a close customer record message for all the customer calls that are in progress and updates these records to the C state. Next, the Campaign Manager sends the dialer disconnected status and all the A state records move to the U state and the D state records remain in the D state.
- **When the communication between the dialer, and the SIP gateway (GW), breaks:** All the calls that were in progress get disconnected from the phone but the call remains on the Agent Desktop. Campaign Manager receives Close customer record message once the call is released from the Agent Desktop. In this condition, all the D state records moves to C state once the call is released from Agent Desktop and the A state records move to the U state.
- **When the communication between the dialer and the MR PIM breaks:** The Campaign Manager receives only the dialer status when the MR interface fails. The ongoing calls continue. When the call is complete, the record is updated to the Closed (C) state.

The callresult statistic for records in D state is zero.

Campaign Manager Congestion Control

The Campaign Manager depends on an internal dispatch thread to process messages between the Campaign Manager and its registered Dialers. At times of high call rates, the Campaign Manager cannot process the volume of inbound messages from the Dialers fast enough and the number of messages queued to the dispatch thread, the *queue depth*, increases. Under these conditions, the Campaign Manager performance can be decreased, and if the queue depth becomes too large, the Campaign Manager restarts.

To protect the Campaign Manager from these overload conditions, the Congestion Control feature dynamically reduces the dialing rate of the registered Dialers as the queue depth increases. Congestion control is triggered when the Campaign Manager message queue depth reaches predefined thresholds, the Congestion Levels. As each level is reached, the Campaign Manager instructs all the registered Dialers to reduce their dialing rate by a specified percentage of the configured Port Throttle value, reducing the number of records dialed. As the congestion eases, the Campaign Manager updates the dialers to a lower Congestion Level and a reduced throttle percentage until the system returns to usual state and no additional throttling is applied.

The following table summarizes the Congestion Levels, the queue depth threshold for each level, and the throttle percentage applied at each level.

Congestion Level	Queue Depth Thresholds to Increase Level	Throttle Percentage	Queue Depth Thresholds to Decrease Level
0 - Normal operation	Queue depth is below 3,000 messages	No throttling	N/A
1 - Slightly congested	Queue depth increases to 3,000 messages	25%	Level 1 decreases to Level 0 when queue depth decreases to 1,500 messages
2 - Moderately congested	Queue depth increases to 5,000 messages	50%	Level 2 decreases to Level 1 when queue depth decreases to 2,500 messages

Congestion Level	Queue Depth Thresholds to Increase Level	Throttle Percentage	Queue Depth Thresholds to Decrease Level
3 - Heavily congested	Queue depth increases to 7,500 messages	90%	Level 3 decreases to Level 2 when queue depth decreases to 4,500 messages



CHAPTER 3

Outbound Option Installation Preliminary Steps

- [Before You Begin, on page 41](#)

Before You Begin

Review **Cisco Outbound Option Description** in the Solution Design Guide for Cisco Unified Contact Center Enterprise to learn about deployment options and other design considerations.

The following sections discuss considerations for Outbound Option installations.

System Requirements

System requirements for Outbound Option include the following:

- Choose a Region on Windows Server that includes a 12-hour time format. Outbound Option assumes that times are in a 12-hour format. If you choose a Region that only has a 24-hour format, such as Spanish (Spain), the Outbound Option configuration tools do not work properly.
- A working Unified CCE system that has the following:
 - Router and Logger
 - Administration & Data Server
 - Agent PG, Unified CCE Generic PG, or System PG
 - MR PG
 - CTI Server
 - Unified CM connectivity with agents and CTI Route Points
- If you plan to use the transfer to VRU feature, configure a VRU deployment that supports transfer to VRU. See your Unified CVP, Unified CCX, or third-party VRU documentation for instructions.
- Your system must meet the hardware and software requirements as listed in the following documents:
 - *Virtualization for Unified Contact Center Enterprise* at https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/uc_system/virtualization/virtualization-unified-contact-center-enterprise.html

- *Contact Center Enterprise Compatibility Matrix* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-device-support-tables-list.html>
- T1 PRI, E1 PRI and CUBE interfaces to the PSTN are supported for Outbound Option SIP dialers. BRI, FXO, E1R2 will not work with Dialer.

Outbound Option Database

If you enable Outbound Option High Availability, ensure that the Logger virtual machine datastore is large enough to accommodate both the Logger database and the Outbound Option database on Logger Side A and Logger Side B. For more information on drive space, see [Outbound Option High Availability, on page 35](#)

VRU Integration

The Dialer uses the VRU for unassisted treatment of customer calls depending on campaign configuration for abandoned calls, answering machine treatment in an agent campaign, or for unassisted transfer to VRU campaigns.

Unified CVP deployments might require Media Termination Point (MTP) resource allocations for calls that are transferred to the VRU from the dialer.

Related Topics

- [Configure a Transfer to VRU Script](#), on page 87
- [Create a Network VRU](#), on page 45
- [Send to VRU](#), on page 86
- [Transfer to VRU](#), on page 3
- [Transfer to VRU Call Flow: SIP Dialer with SIP Proxy](#), on page 27
- [Transfer to VRU Campaigns](#), on page 14
- [Transfer to VRU Campaign Tasks](#), on page 73
- [VRU](#), on page 29

Auto Answer Settings

Outbound Option is flexible when configuring auto-answer, depending on the system requirements. The main determining factor is whether the business requires the Outbound Option agent to hear a zip tone. Using an agent zip tone increases the transfer time line by almost one second.

Related Topics

- [Auto Answer Configuration on Agent Phones](#), on page 65
- [Install Dialer Component on the PG Virtual Machine](#), on page 62



CHAPTER 4

Outbound Option Installation

- [Unified CCE Configuration for Outbound Option, on page 43](#)
- [Unified Communications Manager and Gateway Configuration, on page 48](#)
- [Outbound Option Software Installation Steps, on page 56](#)
- [Verification, on page 66](#)

Unified CCE Configuration for Outbound Option

This section provides procedures for configuring Unified CCE for Outbound Option.

Unified CCE System Configuration for Outbound Option

The following table lists the steps required to set up your Unified CCE system to handle the optional Outbound Option components.

Table 4: Configure Unified CCE for Outbound Option

Step	Task	See
1	Configure the Unified CCE PG.	Configure the PG
2	Configure the Dialer component.	Configure Dialer Component
3	Configure the port map.	Configure Port Map
4	Create a Network VRU.	Create a Network VRU
5	Configure the Media Routing PG.	Configure Media Routing PG (MR PG)
6	Configure a skill group.	Configure Skill Group
7	Create a dialed number.	Create Dialed Number
8	Create a translation route to a VRU.	Unified CCE Documentation
9	Configure system options.	Configure System Options
10	Enable ECC variables.	Enable Expanded Call Variables

Step	Task	See
11	Enable packet capture.	Packet Capture for Troubleshooting

Configure the PG

Procedure

-
- Step 1** In ICM Configuration Manager, open **Tools > Explorer Tools > PG Explorer**.
 - Step 2** Click **Retrieve**, and then click **Add PG**.
 - Step 3** Enter the name (for example, **PG1**).
 - Step 4** Select the **Client Type**, either Call Manager, **CUCM**, or **Generic**.
 - Step 5** Click **Add Peripheral**.
 - Step 6** Enter the name (for example, **PG1_PIM1**).
 - Step 7** On the **Peripheral** tab, check **Enable post routing**.
 - Step 8** Select the **Default Desk Setting** from the drop-down list.
 - Step 9** On the **Routing Client** tab, enter the routing client name (for example, **PIM1_Voice**).
 - Step 10** Click **Save**.
 - Step 11** Record the assigned Logical Controller ID for later use: _____.
 - Step 12** Record the assigned Peripheral ID for later use: _____.
-

Configure the Dialer Component

You deploy the Dialer as a single redundant pair for each Agent PG with agents who handle Outbound Option calls.

Procedure

-
- Step 1** Make sure that all CCE services are running.
 - Step 2** In the **Unified CCE Configuration Manager**, expand **Outbound Option Option** and double-click **Dialer** to display the **Outbound Option Option Dialer configuration** window.
 - Step 3** Click **Retrieve**.
 - Step 4** Click **Add** to add a new dialer.
 - Step 5** Enter the required information on the **Dialer General Tab**. See the *Configuration Manager Online Help* for details of these fields.
 - Step 6** Click **Save**.
 - Step 7** Select the **Port Map Selection** tab to display the port map configuration. See the *Configuration Manager Online Help* for details of configuring these mappings.
 - Step 8** Click **Add**.
 - Step 9** Configure a set of ports and their associated extensions.

A Dialer can support 3000 ports. The allowed **Telephony Port** range is from 0 to 2999.

- Step 10** Click **OK**. The port mappings appear on the **Port Map Selection** tab.
- Step 11** Click **Save** to save all the configuration information.

Related Topics

- [Dialer Port Allocation](#), on page 25
- [Install Dialer Component on the PG Virtual Machine](#), on page 62
- [Outbound Option Dialer Component](#), on page 24

Create a Network VRU

Create a Type 2 VRU to use during the Media Routing (MR) PIM setup.

Procedure

- Step 1** In the **Configuration Manager**, open the **Explorer** tools.
- Step 2** Open the **Network VRU Explorer** tool.
- Step 3** Click **Retrieve**
- Step 4** Click **Add Network VRU**
- Step 5** In the **Network VRU** dialog, enter a **Name** for the VRU.
- Step 6** Set the **Type** drop-down list to Type 2.
- Step 7** Record the VRU name: _____.
- Step 8** Click **Save**.



- Note** See the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html> for detailed information about the Unified CCE Configuration Manager tools.
-

Configure Media Routing PG (MR PG)

Perform the following steps to configure the MR PG (for example, PG3).

Procedure

- Step 1** In **Configuration Manager**, open the **Tools > Explorer Tools > PG Explorer**.
- Step 2** Click **Retrieve**, then click **Add PG**.
- Step 3** Enter the **Name** (for example, **PG3_MR**).
- Step 4** Select a **Client Type** of **Media Routing**.

- Step 5** Click **Add Peripheral**.
- Step 6** Enter the **Name** (for example, **PG3_MR_PIM1**).
- Step 7** On the **Peripheral** tab, check **Enable post routing**.
- Step 8** On the **Routing Client** tab, enter the routing client name (for example, **MR_PIM1_Voice**).
- Step 9** Set the **Routing Type** dropdown to **None**.
- Step 10** Set the **Default call type** to **None**.
- Step 11** On the **Advanced** tab, select the **Network VRU** from the drop-down list that you created during Unified CCE configuration for Outbound Option.
- Step 12** Click **Save**.
- Step 13** Record the assigned **Logical Controller ID** displayed on the Logical Controller panel for later use:
_____.
- Step 14** Record the assigned **Peripheral ID** displayed on the Peripheral tab, for later use: _____.

Related Topics

[Create a Network VRU](#), on page 45

Configuration for Send to VRU Campaign

Follow these procedures to create and configure the VRU.



Note See **Configuring Network VRUs and VRU Scripts** in the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html> for detailed information about the Unified CCE Configuration Manager tools.

Configure Network VRU Type 10

Create a Unified CVP Type 10 VRU.

Procedure

- Step 1** In the **Configuration Manager**, open the **Explorer** tools.
- Step 2** Open the **Network VRU Explorer** tool.
- Step 3** Click **Retrieve**
- Step 4** Click **Add Network VRU**
- Step 5** In the **Network VRU** dialog, enter a **Name** for the VRU.
- Step 6** Set the **Type** drop-down list to **Type 10**.
- Step 7** Record the VRU name: _____.
- Step 8** Click **Save**.
-



Note See the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html> for detailed information about the Unified CCE Configuration Manager tools.

Assign Type 10 Network VRU to VRU-PG

Procedure

- Step 1** In **Configuration Manager**, open the **Tools > Explorer Tools > PG Explorer**.
- Step 2** Click **Retrieve**, then click **Add PG**.
- Step 3** Enter the **Name** (for example, **PG_VRU**).
- Step 4** Select a **Client Type** of **VRU**.
- Step 5** Click **Add Peripheral**.
- Step 6** Enter the **Name** (for example, **CVP_PIM**).
- Step 7** On the **Peripheral** tab, check **Enable post routing**.
- Step 8** On the **Routing Client** tab, enter the routing client name (for example, **CVP_PIM_Voice**).
- Step 9** Set the **Routing Type** dropdown to **None**.
- Step 10** Set the **Default call type** to **None**.
- Step 11** On the **Advanced** tab, select the **Type 10Network VRU** from the drop-down list that you created during Unified CCE configuration for Outbound Option.
- Step 12** Click **Save**.
- Step 13** Record the assigned **Logical Controller ID** displayed on the Logical Controller panel for later use: _____.
- Step 14** Record the assigned **Peripheral ID** displayed on the Peripheral tab, for later use: _____.

Configure System Options

Procedure

- Step 1** In **Unified CCE Configuration Manager**, expand **Outbound Option**, and then select **System Options**.
- Step 2** Click the **General Options** tab and define the dialing time range to use for all your Outbound Option campaigns, and then click **OK**.

Note Remember to select AM or PM for your start and end times.

What to do next

Note If you have previously configured campaigns, you can update them now. Click the **Bulk Update** tab page and define specific dialing time ranges for phone numbers, and then click **Update All Campaigns**.

Enable Expanded Call Context Variables

Perform the following steps to enable the expanded call context variables.

Procedure

-
- Step 1** In the **Configuration Manager**, open **Miscellaneous Tools > System Information**.
 - Step 2** Check **Expanded call context enabled** and save your change.
 - Step 3** In the **List** tools, open the **Expanded Call Variable List** tool and click **Retrieve**.
 - Step 4** Enable all BAxxxx variables (BAAccountNumber, BABuddyName, BACampaign, BADialedListID, BAResponse, BASTatus, and BATimezone).
 - Step 5** Select each variable, and, in the **Attributes** tab, check **Enabled**.
 - Step 6** Click **Save**.
-

What to do next

By default, the solution includes the predefined BAxxxx ECC variables in the "Default" ECC payload. You can also create a custom ECC payload for your Outbound Option call flows. Always remember that you cannot use an ECC variable unless it exists in one of the ECC payloads that you use for a call flow.

Unified Communications Manager and Gateway Configuration

In the next phase of Outbound Option installation, you set up Unified Communications Manager and its related gateway.

The following table lists the steps that comprise Unified CM setup.

Table 5: Unified CM Configuration Steps for Deployments with SIP Dialer

Step Number	Task	Procedure
1	Disable Ring Tone for Dialer Transfer	Disable Ringback During Transfer to Agent for SIP, on page 49
2	Configure SIP Trunks	Configure SIP Trunks, on page 54

Disable Ringback During Transfer to Agent for SIP

The voice gateway generates a ringback tone to the customer. To prevent the gateway from generating a ringback, apply a SIP normalization script to the Unified Communications Manager SIP trunk.

Apply this SIP normalization script only to the SIP trunk that handles the inbound call from the voice gateway for agent transfer.

- If your deployment uses the same gateway for both PSTN calls and the dialer, complete all steps, 1 to 13, to create a dedicated SIP trunk and apply the normalization script.



Note The trunk for PSTN calls still needs a 180 RINGING SIP message for inbound calls to trigger the gateway to play ringback to the PSTN.

- If your deployment has a dedicated SIP trunk to handle the agent transfer dialer, complete steps 1 to 2 and 8 to 13 to apply the normalization script to your SIP trunk.

Procedure

- Step 1** Navigate to `https://<IP_address>:8443` where `<IP_address>` identifies the Unified Communications Manager server.
- Step 2** Sign in to Unified Communications Manager.
- Step 3** To create a SIP trunk security profile in Unified Communications Manager, select **Communications Manager GUI > System > Security > SIP Trunk Security Profile > [Add New]**.
The default port is 5060.

Figure 6: SIP Security Profile

SIP Trunk Security Profile Information

Name*

Description

Device Security Mode

Incoming Transport Type*

Outgoing Transport Type

Enable Digest Authentication

Nonce Validity Time (mins)*

X.509 Subject Name

Incoming Port*

Enable Application Level Authorization

Accept Presence Subscription

Accept Out-of-Dialog REFER **

Accept Unsolicited Notification

Accept Replaces Header

Transmit Security Status

SIP V.150 Outbound SDP Offer Filtering*

284955

Step 4 Click **Save**.

Step 5 Create a new SIP trunk and add the new SIP Trunk Security Profile.

Figure 7: Create a New SIP Trunk

SIP Information

Destination

Destination Address is an SRV

	Destination Address	Destination Address IPv6	Destination Port
1*	<input type="text" value="10.10.10.1"/>	<input type="text"/>	<input type="text" value="5060"/>

MTP Preferred Originating Codec*

BLF Presence Group*

SIP Trunk Security Profile*

347384

Step 6 Click **Save**.

Step 7 Click **Reset**.

Step 8 In **Communications Manager GUI > Devices > Device Settings > SIP Normalization Scripts > [Create New]**, enter the following SIP normalization script into the content field. All other values remain set to default.

```
M = {}
function M.outbound_180_INVITE(msg)
msg:setResponseCode(183, "Session in Progress")
end
return M
```


Figure 8: Add Normalization Script

SIP Normalization Script Configuration

Save Delete Reset Add New Import File

Add successful

SIP Normalization Script Info

Name* DialerNormalizationScript

Description

Content*

```
M = {}
function M.outbound_180_INVITE(msg)
msg:setResponseCode(183, "Session in Progress")
end
return M
```

Script Execution Error Recovery Action* Message Rollback Only

System Resource Error Recovery Action* Disable Script

Memory Threshold* 50 kilobytes

Lua Instruction Threshold* 1000 instructions

Step 9 Click **Save**.

Step 10 Click **Reset**.

Step 11 Associate the new normalization script with the SIP trunk.

Figure 9: Associate Script with Trunk

Normalization Script

Normalization Script DialerNormalizationScript

Enable Trace

	Parameter Name	Parameter Value
1		

Step 12 Click **Save**.

Step 13 Click **Reset**.

Configuration of Voice Gateways

In an Outbound Option deployment that uses the SIP Dialer, you can have these configuration types:

- The SIP Dialer connects to a SIP Proxy, such as Cisco Unified SIP Proxy. The SIP Proxy, in turn, connects to a voice gateway. A SIP Proxy can connect to more than one voice gateway. A configuration with multiple voice gateways is known as a *server group*.
- Alternately, the SIP Dialer connects directly to a voice gateway without a SIP Proxy. The voice gateway uses a standard dial peer configuration. This setup enables the gateway to know how to direct traffic to agent extensions or to a VRU.

Specify your configuration when you install the Dialer component.

When you configure the voice gateway, you can keep most of the default configuration values. You do set some of the configuration values. If you do not know these values, request the information from your voice network administrator.

- Enable 100rel for Outbound Option. Otherwise, Outbound calls from the SIP Dialer fail. 100rel is enabled globally on the gateway by default. However, if you also route Unified CVP calls with the gateway, you cannot have 100rel enabled globally. In this case, disable 100rel globally with the command `rellxx disable`. Then, enable 100rel on the Outbound dial peer with the example dial-peer command:

```
voice-class sip rellxx supported "100rel".
```
- The SIP Dialer does not support signaling forward unconditional under voice service voip. When configuring a voice gateway for use with the SIP Dialer, specify signaling forward none.

Telecom carriers sometimes send an ISDN alerting message without a progress indicator. This situation causes the voice gateway to send a SIP 180 Ringing message, instead of a SIP 183 Session In Progress message, to the SIP dialer. The SIP dialer can process provisional messages such as 180, 181, 182, and 183 with or without Session Description Protocol (SDP). When the SIP dialer receives these provisional messages without SDP, the dialer does not perform Call Progress Analysis (CPA) and the Record CPA feature is disabled.

To enable the SIP dialer to perform CPA, add the following configuration to the POTS dial-peer of the voice gateway: `progress_ind alert enable 8`. This code sends a SIP 183 message to the SIP dialer.

Telecom carriers sometimes send an ISDN alerting message without a progress indicator. This situation causes the voice gateway to send a SIP 180 Ringing message, instead of a SIP 183 Session In Progress message, to the SIP dialer. The SIP dialer can process provisional messages such as 180, 181, 182, and 183 with or without Session Description Protocol (SDP). The SIP Dialer processes the CPA information along with the SDP information because the SDP information is part of these provisional messages. But if the dialer receives these provisional messages without SDP, the dialer does not perform Call Progress Analysis (CPA) and the Record CPA feature is disabled. If the next provisional message changes the SDP information, the dialer processes the SDP information.



Note In a SIP Dialer with Unified CVP VRU deployment, dialer-related call flows do not invoke call-survivability scripts that are enabled on an incoming POTS dial-peer in the Ingress gateway. However, enabling a call-survivability script on an Inbound POTS dial-peer does not negatively affect dialer-related call flows.

Configure Transcoding Profile for Cisco Unified Border Element

The following example shows the transcoding profile for Cisco UBE.



Note Transcoding impacts port density.

```
dspfarm profile 4 transcode universal
  codec g729r8
  codec g711ulaw
  codec g711alaw
  codec g729ar8
  codec g729abr8
  maximum sessions 250
  associate application CUBE
!
```

If you use a SIP Proxy, perform the following configuration on the SIP Proxy:

- Enable the SIP Dialer to reach the correct voice gateway for outbound calls.
- Enable the voice gateway to reach all the applicable Unified CM and CVP nodes for calls transferred to an agent, a VRU, or to CVP.
- If your SIP proxy connects to more than one voice gateway, you can optionally load balance between the voice gateways.

For detailed instructions on how to perform SIP Proxy configuration, see the Cisco Unified SIP Proxy documentation website at

https://www.cisco.com/en/US/partner/products/ps10475/products_installation_and_configuration_guides_list.html.

Configure Cisco Unified Border Element

For full details on configuring the Cisco Unified Border Element (Cisco UBE) to support Outbound dialing, see Cisco Unified Border Element Configuration Guide at <https://www.cisco.com/c/en/us/support/unified-communications/unified-border-element/tsd-products-support-configure.html>

When configuring Cisco UBE with Outbound Option, ensure that you:

- Configure three dial-peers in the Cisco UBE.

The dial-peers are used for:

- Incoming calls from the dialer.
 - Outgoing calls to the terminating network from the Cisco UBE.
 - Calls to be routed to the Cisco Unified Communications Manager.
- When configuring REFER consumption, issue the following commands in global VoIP configuration mode:
 - **no supplementary-service sip refer**
 - **supplementary-service media-renegotiate**

Configure Cisco UBE for G.711 A-Law

By default the SIP Dialer always dials out calls using the U-law and A-law codec.

For full details on understanding and configuring codec support, see Cisco Unified Border Element Configuration Guide at <https://www.cisco.com/c/en/us/support/unified-communications/unified-border-element/tsd-products-support-configure.html>



Note The Cisco Unified Call Manager enables A-law by default.

To enable the G.711 A-law codec, make the following changes in the Cisco UBE/Egress Gateways.

1. Set the **Outgoing dial peer** codec to "**g711alaw**".

Specifies that the SDP sent out from Cisco UBE to the customer end point should use the g711alaw codec.

Example:

```
dial-peer voice 2613 voip
destination-pattern 244T
session protocol sipv2
session target ipv4:10.77.58.33
session transport udp
codec g711alaw
no vad
```

2. Set the **Incoming dial peer** codec to "**g711alaw**".

Specifies that the SDP sent out from Cisco UBE to the Dialer should use g711alaw codec.

Example:

```
dial-peer voice 2614 voip
description sipp_SIP_Incoming_DialPeer_from_dialer
session protocol sipv2
session transport udp
incoming called-number 244T
codec g711alaw
no vad
```

Configure SIP Trunks

Unified CM is connected to the voice gateway or the SIP Proxy by SIP Trunks, which you configure on Unified CM. Set up route patterns for the Dialer which are appropriate for your dial pattern.

Procedure

Step 1

Configure these trunks as follows:

Option	Description
If you are using a SIP Proxy	<p>Configure two SIP trunks on Unified CM for making the transfer to agents. Configure one trunk between Unified CM and the SIP Proxy. Specify the IP address of the SIP Proxy in the Destination field. Then, configure a second trunk from Unified CM to the voice gateways. Specify the IP address of the voice gateways in the Destination field.</p> <p>Note Incoming transport time accepts TCP and UDP. The trunk accepts traffic from the Gateway in TCP or UDP.</p>

Option	Description
If you are not using a SIP Proxy	Configure a SIP trunk on Unified CM from Unified CM to the voice gateway. Specify the IP address of the voice gateway in the Destination field.
If you are using Cisco UBE	Configure a SIP trunk between the Unified CM and Cisco UBE. Specify the IP address of the Cisco UBE in the Destination field.

Step 2 In Unified CM clusters with more than two nodes, both the voice gateway and Cisco Unified SIP Proxy might connect to each node. To enable those connections, add the SIP trunk to a device pool that points to the Communications Manager Publisher. This configuration ensures that calls go to the agent if a subscriber node fails over. See the following configuration example:

Example:

```
dial-peer voice 617 voip
description catch all for refer
destination-pattern 617T
session protocol sipv2
session target ipv4:10.86.227.107 (CUCM Publisher)
codec g711ulaw
!

dial-peer voice 508 voip
description catch all for refer
destination-pattern 508T
session protocol sipv2
session target ipv4:10.86.227.107 (CUCM Publisher)
codec g711ulaw
!
```

Related Topics

[Disable Ringback During Transfer to Agent for SIP](#), on page 49

Configure E1 R2 Signaling

The Outbound Option Dialer may be configured with systems using the E1 R2 signaling protocol. E1 R2 signaling is a channel associated signaling (CAS) international standard that is used with E1 networks in Europe, Latin America, Australia, and Asia. For more information, see [E1 R2 Signaling Theory](#)

The high-level procedure for configuring an E1 R2 controller for use with the Outbound dialer is summarized below. For full configuration details, see [E1 R2 Signaling Configuration and Troubleshooting](#).

Procedure

- Step 1** Set up an E1 controller connected to the private automatic branch exchange (PBX) or switch. Ensure that the framing and linecoding of the E1 are properly set for your environment.
- Step 2** For E1 framing, choose either **CRC** or **non-CRC**.
- Step 3** For E1 linecoding, choose either **HDB3** or **AMI**.
- Step 4** For the E1 clock source, choose either **internal** or **line**. Keep in mind that different PBX's may have different requirements for their clock source.

- Step 5** Configure line signaling.
 - Step 6** Configure interregister signaling.
 - Step 7** Customize the configuration with the `cas-custom` command.
-

Example E1 R2 Settings

```

controller E1 0/0/0
 framing NO-CRC4
 ds0-group 1 timeslots 1-15,17-31 type r2-digital r2-compelled ani
 cas-custom 1
 country telmex
 category 2
 answer-signal group-b 1
 caller-digits 4
 dnis-digits min 4 max 13
 dnis-complete
 timer interdigit incoming 1000
 groupa-callerid-end

```

Outbound Option Software Installation Steps

This section discusses the tasks that are associated with installing Outbound Option and related components. Before proceeding, navigate to Logger Side A and Logger Side B and stop all ICM services there. Then perform the steps in the following sections.

Software Installation and Database Creation

Install the Outbound Option component software and create its database.

If you want to enable Outbound Option High Availability, perform Step 1 on both Logger Side A and Logger Side B.

Table 6: Software Installation and Database Creation Steps

Step	Task	See the topic that describes
1	Install the Outbound Option private database on the Logger platform.	How to create an Outbound Option private database.
2	Install the Dialer component on the PG platform.	How to install the Dialer component on the PG.
3	Install the MR PG on the PG platform.	How to install the MR PG on the PG platform.

Outbound Option for High Availability: Preliminary Two-Way Replication Requirements

If you plan to set up Outbound Option for High Availability two-way replication, there are several preliminary requirements.

Create an Outbound Option Database on Logger Side A and Side B

If you have enabled Outbound Option on Logger Side A in a previous release, you must:

- Stop all Logger services on Logger Side A.
- Perform a full database backup for the Outbound Option database on Logger Side A and restore it to Logger Side B. Use SQL Server Management Studio (SSMS) to complete this task.

If you have not enabled Outbound Option in a previous release, you must create an Outbound Option database on Logger Side A and Logger Side B. Use the ICMDBA utility to complete this task.



Note If the database replication fails and it is resolved, the Outbound Option HA must be enabled again. In such a case, you must again synchronize the databases on the Active and Standby sides. Perform a full database backup for the Outbound Option database on Active side and restore it to the Standby side.

Define Logger Public Interface Hostname on Logger Side A and Logger Side B

As you configure Outbound Option for High Availability, you must define the Logger Public Interface Hostname on both sides of the Logger. IP addresses are not allowed.

Make Campaign Manager and Dialer Registry Setting Customizations on Both Side A and Side B

If you customize any Campaign Manager and Dialer registry settings on one side, you must make the same updates for the registry settings on the other side.

Stop the Logger Service Before Enabling or Disabling Outbound Option High Availability

Before you enable or disable Outbound Option High Availability, stop the Logger service on the applicable side or sides.

Related Topics

[Configure the Logger for Outbound Option](#), on page 59

[Create Outbound Option Database](#), on page 57

Create Outbound Option Database

Before you use Outbound Option, estimate the size for the Outbound Option database.

Procedure

Step 1

Collect the following information:

- The size, in bytes, of each customer record in the import file. If the size is less than 128 bytes, use 128. (RecordSize)
- The number of records that are imported. (RecordCount)
- Do the records from new imports replace or append to records that are already in the database?

Step 2 Estimate the contact table size as follows:

- If imports overwrite existing records: Do not change record count.
- If imports append to existing records: RecordCount = total number of rows kept in a customer table at a time.
- contact-table-size = RecordSize * RecordCount * 1.18

Step 3 Estimate the dialing list table size as follows:

- If imports overwrite existing records: RecordCount = number of rows imported * 1.5. (50% more rows are inserted into the dialing list than are imported.)
- If imports append existing records: RecordCount = total number of rows kept in customer table at a time * 1.5
- dialing-list-table-size = rows in dialing list * 128 bytes * 4.63

Step 4 Calculate the database size using this formula:

```
(Number of rows in all DL tables * (size of one row + size of index) ) +
(Number of rows in personal call back table * (size of one row + size of index) ) +
(Number of rows in Contact List table * (size of one row + size of index))
```

Step 5 Start ICMDBA by entering **ICMDBA** in the Microsoft Windows **Run** dialog box or command window.

Step 6 Select the **Logger**. Then, select **Database > Create**.

Step 7 In the **Create Database** window, specify the Outbound Option database type.

Step 8 Click **Add**. The **Add Device** window appears.

Use this window to create a new data device and log device for the Outbound Option database. Specify the disk drive letter and size in megabytes for each new device.

Step 9 Click **OK** to create the device.

Step 10 Click **Create**, and then click **Start**.

Step 11 Click **Close**.

If necessary, you can later edit the device to change storage size, or remove a device, using the **Database > Expand** option.



Caution You cannot make manual changes to the contents of the Outbound Option database. Do not use triggers in the Outbound Option database. Do not add or modify triggers for the dialing lists or personal callback list. The Dialer_Detail table in the logger or HDS contains the information that custom applications require. Extract that information from the historical database server (HDS) to a separate server where the custom application can process the data without impacting the HDS.



Note If you have used the ICMDBA tool to create an Outbound Option database on Logger Side B and you later want to uninstall the release, you can manually delete the database. Use SQL Server Management Studio (SSMS) to delete the database. If you have enabled Outbound Option two-way replication, you must disable replication from both Logger Side A and Logger Side B before you can delete the database.



Note When you use the **Append** option to import records to the **Outbound Contact Table**, the size of the Blended Agent (BA) database keeps increasing and it occupies all the available space in the disk. Hence, you must manually purge the **Outbound Contact Table** to create more space on the disk.

What to do next

You must enable autogrowth on the Outbound Option database. For details, refer to the section on verifying database configurations.

Related Topics

[Outbound Option Database](#)

[Verify Database Configuration](#), on page 69

Configure the Logger for Outbound Option

Use this procedure to configure the Logger for Outbound Option.

You can (optionally) configure the Logger to enable Outbound Option and Outbound Option High Availability. Outbound Option High Availability facilitates two-way replication between the Outbound Option database on Logger Side A and the Outbound Option database on Logger Side B. Use the ICMDBA tool to create an outbound database on Side A and Side B; then set up the replication by using Web Setup.

Perform the following procedure on both the Side A and Side B Loggers to configure Outbound Option or Outbound Option High Availability. Both Logger machines must be up and operational.



Important Before you configure the Logger for Outbound Option High Availability:

- Confirm that an Outbound Option database exists on Logger Side A and Logger Side B.
-

Procedure

-
- Step 1** Open the Web Setup tool.
 - Step 2** Choose **Component Management > Loggers**.
 - Step 3** Choose the Logger that you want to configure, and click **Edit**.
 - Step 4** Click **Next** twice.
 - Step 5** On the Additional Options page, click the **Enable Outbound Option** check box.

- Step 6** Click the **Enable High Availability** check box to enable Outbound Option High Availability on the Logger. Checking this check box enables High Availability two-way replication between the Outbound Option database on Logger Side A and the Outbound Option database on Logger Side B. Two-way replication requires that you check this check box on the Additional Options page for both Logger Side A and Side B. If you disable two-way replication on one side, you must also disable it on the other side.
- You must enable Outbound Option in order to enable Outbound Option High Availability. Similarly, if you have enabled High Availability, you must disable High Availability (uncheck the **Enable High Availability** check box) before you can disable Outbound Option (uncheck the **Enable Outbound Option** check box).
- Step 7** If you enable High Availability, enter a valid public server hostname address for **Logger Side A** and **Logger Side B**. Entering a server IP address instead of a server name is not allowed.
- Step 8** If you enable High Availability, enter the **Active Directory Account Name** that the opposite side Logger runs under or a security group that includes that account.
- Note** While using Outbound Option High Availability, if you want to change the **Logger Public Interface** or **Active Directory Account Name**, you must disable Outbound Option High Availability using logger setup. Only after disabling Outbound Option HA, change the **Logger Public Interfaces** or **Active Directory Account Name**, then re-enable Outbound Option High Availability to update the new **Logger Public Interface** or **Active Directory Account Name**.
- Step 9** Select the **Syslog** box to enable the Syslog event feed process (cw2kfeed.exe).
- Note** The event feed is processed and sent to the Syslog collector only if the Syslog collector is configured. For more information about the Syslog event feed process, see the *Serviceability Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html>.
- Step 10** Click **Next**.
- Step 11** Review the Summary page, and click **Finish**.

Related Topics

- [Outbound Option for High Availability: Preliminary Two-Way Replication Requirements](#), on page 57
- [Two-Way Outbound Option Database Replication](#), on page 19
- [Upgrade Outbound Option for High Availability in an Existing Deployment](#), on page 61

Additional Two-Way Outbound Option Database Replication Consideration

Keep in mind the following consideration when setting up two-way replication.

Import to Active Side

Importing a local file succeeds only if you import it to the active side. To avoid having to identify which side is active, you can use any of the following methods:

- Create a Microsoft Windows file share that is accessible to both sides with the same mapping; for example, `//<machine_name>/drive/file`, viewable from both sides.
- Use Microsoft Windows Distributed File System (DFS). With DFS, you can set up a local drive that DFS updates for you. DFS also makes sure that operations are replicated. For more information, see your Microsoft documentation.

- For campaigns created by using the Outbound API, you can use the Import API to import contacts without identifying the active side. For more information, see the *Cisco Unified Contact Center Enterprise Developer Reference Guide* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-programming-reference-guides-list.html>.

Upgrade Outbound Option from a Previous Release

Outbound Option Database

If you are upgrading from a previous CCE release, run the Enhanced Database Migration Tool (EDMT) to upgrade your Outbound Option database. Otherwise, Campaign Manager does not start, and an alarm for an incorrect private database version triggers. See the *Cisco Unified Contact Center Enterprise Installation and Upgrade Guide* at https://www.cisco.com/en/US/products/sw/custcosw/ps1844/prod_installation_guides_list.html for instructions on running EDMT.

Do Not Call Data

To support Outbound Option High Availability and replication between Logger Side A and Logger Side B, Do Not Call data now resides in a Do_Not_Call database table. Previously, the DoNotCall data was stored in the DoNotCall.restore file on Logger Side A. The DoNotCall.restore file is a text file that contains a comma-delimited list of phone numbers and extensions (if extensions exist).

When you upgrade to the current release and enable Outbound Option (whether or not you enable High Availability), the Do_Not_Call table is initially empty, as it is newly created on each Logger side. Populate the Do_Not_Call table on Side A and Side B by importing the DoNotCall.restore file, just as you would perform any other import of customer contact information. You do this only once, when you perform an upgrade.

Upgrade Outbound Option for High Availability in an Existing Deployment

Outbound Option High Availability facilitates two-way replication between the Outbound Option database on Logger Side A and the Outbound Option database on Logger Side B. If you have enabled Outbound Option on Logger Side A in an existing deployment and want to enable Outbound Option High Availability, perform the following steps using SQL Server Management Studio (SSMS).



Note Note that you need not perform the following procedure if the baA and baB databases are already in synchrony.

Procedure

-
- Step 1** On the Logger Side A server, start SSMS and perform a full database backup of the <customer>_baA database. (Refer to your SQL Server Management Studio documentation if you require further details about database backup.)
- Step 2** Restore the <customer>_baA database backup on the Logger Side B server, and rename it as <customer>_baB.
- In SSMS, select **Databases** in the tree in the left pane, and right-click.
 - Choose **Restore database**.
 - Choose **Device**, and browse to the backed-up <customer>_baA database file.

- d) Click **Add** to add the database file.
- e) Click **OK**, then click **OK** again.
- f) In the **Database** field, enter <customer>_baB.
- g) In the tree in the left pane, select **Files**. Note the **Logical File Name** for both the **Rows Data** and **Log** file types.
- h) In the tree in the left pane, select **Options** and check the **Overwrite the existing database (WITH REPLACE)** check box.
- i) Click **OK**.
- j) When the database restore completes with the new name <customer>_baB, run the following command in a New Query window to rename the **Logical File Name** for both Rows Data and Log:

```
USE master;
GO
ALTER DATABASE <customer>_baB MODIFY FILE ( NAME = <customer>_baA_data0, NEWNAME =
<customer>_baB_data0 );
GO
USE master;
GO
ALTER DATABASE <customer>_baB MODIFY FILE ( NAME = <customer>_baA_log0, NEWNAME =
<customer>_baB_log0 );
GO
```

in which:

- <customer>_baB is the renamed new database.
- <customer>_baA_data0 is the Logical File Name for the Rows Data file type for the database on Side A.
- <customer>_baB_data0 is the new Logical File Name for the Rows Data file type for the database on Side B.
- <customer>_baA_log0 is the Logical File Name for the Log file type for the database on Side A.
- <customer>_baB_log0 is the new Logical File Name for the Log file type for the database on Side B.

Related Topics

[Configure the Logger for Outbound Option](#), on page 59

Install Dialer Component on the PG Virtual Machine

Procedure

- Step 1** Stop all ICM Services.
- Step 2** On both the Side A and Side B PGs, run Peripheral Gateway Setup. Select **Start > All Programs > Cisco Unified CCE Tools > Peripheral Gateway Setup**.
- Step 3** In the **Cisco Unified ICM/Contact Center Enterprise Components Setup** dialog, select an instance from the left column under **Instances**.
- Step 4** Click **Add** in the **Instance Components** section.

The **ICM Component Selection** dialog opens.

Step 5 Click **Outbound Option Dialer**.

The **Outbound Option Dialer Properties** dialog opens.

Step 6 Check **Production mode** and **Auto start at system startup**, unless your Unified ICM support provider specifically tells you otherwise. These options set the Dialer Service startup type to Automatic, so the dialer starts automatically when the machine starts up.

The **SIP (Session Initiation Protocol)** Dialer Type is automatically selected.

Step 7 Click **Next**.

Step 8 Supply the following information on this page:

- In the **SIP Dialer Name** field, enter the name of the SIP dialer. For example, **Dialer_for_Premium_Calling_List**. There's a 32-character limit. The name entered here must match the name that is configured in Configuration Manager.
- For **SIP Server Type**, select either **Cisco voice gateway** or **CUSP/CUBE (Cisco Unified SIP Proxy or Cisco Unified Border Element)**.
- In the **SIP Server** field, enter the hostname or IP address of the Cisco voice gateway.
Note The **SIP Server** hostnames are restricted to a maximum of 16 characters.
- In the **SIP Server Port** field, enter the port number of the SIP Server port. Default is 5060.

Click **Next**.

Step 9 On the **Outbound Option Dialer Properties** dialog, specify the following information:

- **Campaign Manager server A**—If the Campaign Manager is set up as duplex, enter the hostname or IP address of the machine where the Side A Campaign Manager is located. If the Campaign Manager is set up as simplex, enter the same hostname or IP address in this field and the **Campaign Manager server B** field. You must supply a value in this field.
- **Campaign Manager server B**—If the Campaign Manager is set up as duplex, enter the hostname or IP address of the machine where the Side B Campaign Manager is located. If the Campaign Manager is set up as simplex, enter the same hostname or IP address in this field and the **Campaign Manager server A** field. You must supply a value in this field.

In simplex mode, make sure not to provide same port number in server Side B and Side A. For more information about port ranges, see the [Port Utilization Guide](#).

- **Enable Secured Connection**— Allows you to establish secured connection between the following:
 - CTI server and dialer
 - MR PIM and dialer

Check the **Enable Secured Connection** check box to enable secured connection.

Note Before you enable secured connection between the components, ensure to complete the security certificate management process.

For more information, see the *Security Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html>.

- **CTI server A**—The hostname or IP address of the VM with CTI server-Side A. This server is typically the same VM where the PG is located.
- **CTI server port A**—The port number that the dialer uses to create an interface with CTI server-Side A. Make sure the CTI server port matches with the CG configuration.
- **CTI server B**—The hostname or IP address of the VM with CTI server-Side B. This server is typically the same VM where the PG is located.
- **CTI server port B**—The port number that the dialer uses to create an interface with CTI server-Side B.
- **Heart beat**—The interval between dialer checks for the connection to the CTI server, in milliseconds. The default value is 500.
- **Media routing port**—The port number that the dialer uses to create an interface with the Media Routing PIM on the Media Routing PG. The default is 38001. Make sure that the Media routing port matches that of the MR PG configuration. For example, you can access this registry key:
Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM*instance_name*\PG3A\PG\CurrentVersion\PIMS\piml\VRData\Config\ApplicationTopServiceNameL

Step 10 Click **Next**. A **Summary** screen appears.

Step 11 Click **Next** to begin the dialer installation.

Optional - Edit Dialer Registry Value for Auto-Answer

If you enable auto answer in the CallManager with a zip tone, you must disable auto answer in the Dialer or Dialers, if there are more than one. A zip tone is a tone sent to the agent's phone to signal that a customer is about to be connected.

To disable auto answer in the Dialer, after the Dialer process runs for the first time, change the value of the following registry key to 0:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM\instance_name
\Dialer\AutoAnswerCall
```

Modification of Local Static Route File

The SIP Dialer installation process installs an empty template file named DNPHost in the `\icm\customerInstanceName\Dialer` directory. This file defines the static route mappings of a dialed number wildcard pattern to the IP address or host name with which an agent phone or CTI Route point is registered. For each static route you define, add a row in the following format:

```
wildcard pattern, IP address or host name, description
```

Examples:

```
7?????, 10.86.227.144, transferring outbound calls to agent extensions
86! , 10.86.227.186, for CTI Route Points on CUCM node1
4?????, gambino.cisco.com, transfer to IVR campaign
```

For single gateway deployments, the SIP Dialer reads the static routing info from DNPHost and uses the information to construct the SIP REFER message. If the SIP Dialer supports a voice gateway, the SIP Dialer loads DNPHost, validates the routing entries, and sends an alarm if the file does not exist or is invalid.

See the installed DNPHost file template for additional information about its use.

Auto Answer Configuration on Agent Phones

The dialer component is preconfigured during installation to auto answer Outbound Option related calls to the Outbound Option agent. However, this default configuration does not provide a zip tone to the agent (which notifies of incoming calls), so agents must monitor the agent application for incoming customer calls.

To enable zip tone, enable auto-answer on the agent's phone configuration in Unified CM. This solution adds about a second onto the transfer time. This solution is identical to the solution that is used for Unified CCE.

For Mobile Agents using the nailed connection, the Unified CM auto answer setting does not provide a zip tone, but contact center enterprise does provide an option for playing a notification tone to the agent using the agent desk settings.

Enabling auto answer in the agent desk settings or in the dialer component in conjunction with the Unified CM can be problematic. Therefore, disable the auto answer option in the dialer component, and enable it either in the agent desk settings or in Unified CM.

Install MR PG

Perform the following steps to install the MR PG on the Side A platform.

If you are also running a Dialer on Side B, perform the steps on Side B as well.

Procedure

- Step 1** Run ICM Setup to install a PG that corresponds with the PG you configured (for example, PG3).
- Step 2** In the Peripheral Gateway Properties window, select the MR PG Node ID (for the configured PG; for example, PG3) and the **MediaRouting** Client Type.
- Step 3** Click **Next**.
- Step 4** Add a PIM, **PIM1**.
- Step 5** In the MediaRouting Configuration window, enable the PIM.
- Step 6** Enter the peripheral name and the peripheral ID (recorded at the end of the procedure described in [Configure Media Routing PG \(MR PG\), on page 45](#)) of the MR_PIM.
- Step 7** Set the Application Hostname fields:
 - For simplex deployments, set both of the Application Hostname fields to the computer name of the Outbound Option Dialer.
 - For duplex Sip Dialers with duplex MR PG deployments,
 - Specify the local Dialer HostName in ApplicationHostName1.
 - Specify the remote, duplex Dialer HostName in ApplicationHostName2.
- Step 8** Set the Application Connection Port to the port number used by the Outbound Option Dialer (usually 38001).

- Step 9** Click **Next** until Setup finishes. When Setup finishes, click **Finish**.
- Step 10** Repeat the preceding steps to install the MR PG on the Side B PG platform.
-

What to do next

When you add new PG make sure that PG ID is provided in the Router configuration. Provide the number that is assigned to the PG in the **Enable Peripheral Gateway** field in Web Setup. *See chapter: Installation* in <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-guides-list.html>

Related Topics

[Configure the PG](#), on page 44

Verification

This section provides a series of verification steps to determine if the system has been installed properly. These steps are designed to pinpoint problems that might exist in the setup before actually attempting to deploy the Dialer. If problems occur while using this product, please see this section before contacting Cisco Technical Support (TAC).

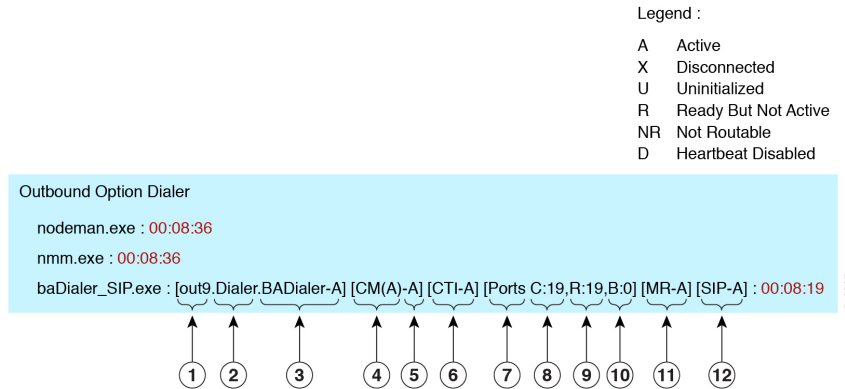


-
- Note** This section assumes that the Outbound Option application is installed and at least one Dialer has been configured along with its associated port map. This section also assumes that the Dialer port map has been exported and configured on Unified CM using the BAT tool.
-

Dialer Component Status

The Dialer component process status provides details about the health of the installation even before any campaign configuration is initiated or before any call is placed. You can view the Dialer component status in the Diagnostic Framework Portico.

Figure 10: SIP Dialer Component Status



1. Customer Instance Name
2. Node Name
3. Process Name
4. Campaign Manager
5. Side Information
6. CTI Server
7. Telephony Port Status
8. Configured Ports
9. Ready Ports
10. Blocked Ports
11. MR PIM
12. SIP Proxy or Voice Gateway

Customer Instance Name

The customer instance name shows the dialer’s customer instance, node name, and process name. This can be used if TAC asks you to interrogate the system while debugging a problem for a case.

Campaign Manager

The Campaign Manager shows the Campaign Manager connectivity status. This status is either A for active or X for disconnected. If the Campaign Manager connectivity status is X, the dialer is not connected to the Campaign Manager.

Try pinging from the dialer to the active Campaign Manager by hostname and by IP Address.

- If the ping fails for the IP address, recheck that the IP address is correct and troubleshoot network connectivity.
 - Check to verify whether Outbound Option has been enabled, and the Campaign Manager process is running.
- If the ping is successful for the IP address but not for the DNS hostname, check that the DNS hostname is correct and that it is properly configured in the system’s DNS server.
- If the ping is successful, then recheck the dialer component setup to see if the dialer component setup contains the wrong address or port number for the Logger.
- Check to see if the name of the Dialer configured in Configuration Manager matches the name entered during PG setup.

CTI Server

The third block shows CTI Server connectivity status. This status is either **A** for active or **X** for disconnected. If the status is **X**, then the dialer cannot connect to either CTI Server on side A or side B.

Try pinging from the dialer to the CTI Server/PG machines by hostname and by IP address.

- If the ping fails for the IP address:
 - Recheck that the IP address is correct, and troubleshoot network connectivity.
 - Check to see whether the CTI Server processes are running.
- If the ping is successful for the IP address but not for the DNS hostname, check that the DNS hostname is correct and whether it is properly configured in the system's DNS server.
- If the ping is successful, then recheck the dialer component set up to see if the dialer component set up contains the wrong address or port number for the CTI Server.
- Check that the PG is online. Check that the PG has been enabled properly in the ICM Router setup.

Ports

The fourth block shows the state of all dialer ports. The first value, C, shows the total number of configured ports. The second value, R, shows the total number of ready ports. Finally, the third value, B, reports the number of dialer ports that are blocked. (This is runtime activity; it is unusual for ports to be blocked.)

If the number of ports Configured is zero, then the dialer is not receiving port configuration from the Campaign Manager component. Check to verify that ports are configured properly.

If the number of Ready ports is zero, confirm that the PG has been started.

MR PIM

The next block shows connectivity status with the MR PIM. This status is either **A** for active, **X** for disconnected, or **NR** which means connected but not yet able to route. (The U status is rarely seen and indicates that a particular connectivity object within the dialer has not been created yet.)

- If the MR Status is **X**, check the connectivity by verifying the MR PG address and port configured in the dialer component setup.

If the MR PG status is **NR**, then the Media Routing connection is established. Check to see if the MR PG is online by looking at its status window.

SIP Dialer

The final block shows connectivity status with the SIP Proxy or Voice Gateway that is connected to the SIP dialer. This status is either **A** for active, **X** for disconnected, or **D** for heartbeat disabled.

Verify Critical Configuration Steps

In the Dialer Configuration Component, click the Port Map Selection tab and ensure the Dialer is assigned to a Unified CM PG.

Verify Database Configuration

Perform the following steps in Microsoft SQL Server:

Procedure

- Step 1** Open the SQL Server Management Studio.
 - Step 2** Expand the databases.
 - Step 3** Select the <cust instance_baA> **Outbound Option** or <cust instance_baB> **Outbound Option** database. Right click and select **Properties**.
 - Step 4** Select the **Files** page.
 - Step 5** In the database file row, click the button in the **Autogrowth** column. A Change Autogrowth dialog box appear.
 - Step 6** Ensure that the **Enable Autogrowth** box is checked. Click **OK**.
 - Step 7** In the log file row, click the button in the **Autogrowth** column. A Change Autogrowth dialog box appears.
 - Step 8** Ensure that the **Enable Autogrowth** box is checked. Click **OK**.
 - Step 9** Select the **Options** page.
 - Step 10** On the Recovery Model drop-down menu, select **Simple**.
 - Step 11** Click **OK**.
-

Verify Router Registry Key

If you are using the Transfer to IVR feature, verify that the following router registry key on Side A and Side B of the Router has a value of 2.

```
HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM<customer
instance>\RouterA/B\Router\
CurrentVersion\Configuration\Global\SkillGroupCallsInQTimerInterval = 2
```




CHAPTER 5

Configuration of Campaigns and Imports

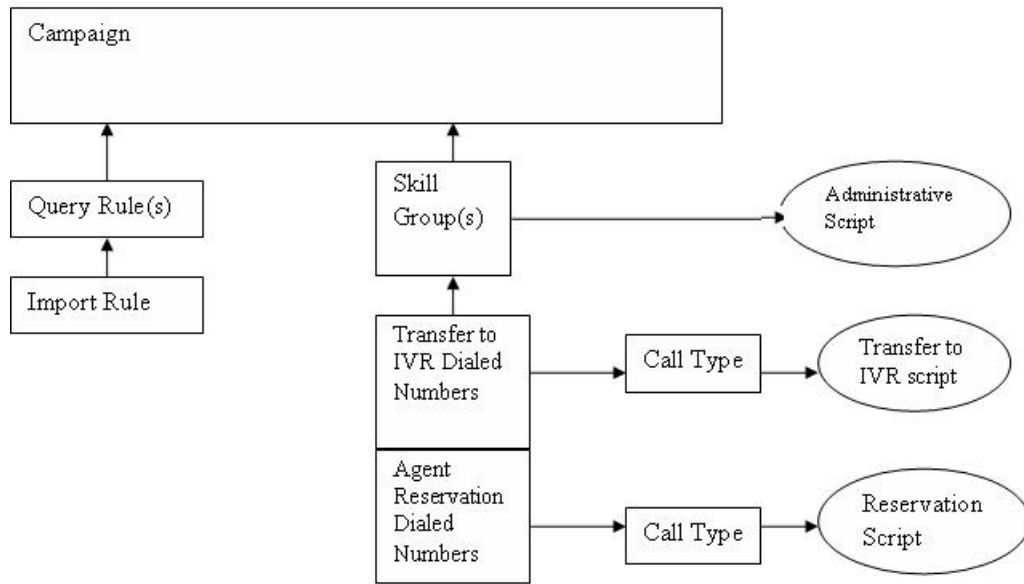
- [Outbound Option Configuration Process Overview, on page 71](#)
- [Configuration Process Task Maps, on page 72](#)
- [Preliminary Configuration Requirements, on page 73](#)
- [Contact and Do Not Call List Imports, on page 76](#)
- [Outbound Option Campaign Creation, on page 80](#)
- [Outbound Option Scripting, on page 82](#)
- [\(Optional\) Configure Personal Callbacks, on page 94](#)
- [Final Configuration and Verification, on page 98](#)

Outbound Option Configuration Process Overview

The process of configuring Outbound Option involves the following procedures:

- Configuring dialed numbers (DNs) for agent reservation and transferring to IVR
- Creating a skill group and a route for the campaign
- Creating an import rule to schedule contact and do-not-call imports
- Creating a query rule to filter contact records based on SQL queries and associate those records with an import
- Create a campaign to define campaign settings, such as the campaign name, description, answering machine detection, personal callback settings, dial settings, query rule selections, and skill group selections
- Create call types to map the DN to a reservation or transfer to IVR routing script
- Create reservation, transfer to IVR, and administrative scripts

The following figure provides a high-level overview of this process.



Configuration Process Task Maps

This section contains configuration process task map tables that list the steps for creating an agent campaign and a transfer to IVR campaign.

Campaign Task List

The following table lists the steps required to create an agent campaign. An agent campaign requires an agent reservation script. A transfer to VRU campaign does not require agent reservation.

Table 7: Steps for Creating an Agent Campaign

Step Number	Task	Where Discussed
1	Create a Dialed Number (DN) on the MR client.	Create Dialed Numbers
2	Create DN for Abandon to VRU on the MR PG for the SIP Dialer.	Create Dialed Numbers
3	Create DN for AMD to VRU on the MR PG.	Create Dialed Numbers
4	Configure an Import Rule.	Create Import Rule
5	Configure Query Rules.	Create a Query Rule

Step Number	Task	Where Discussed
6	Configure a Campaign.	Create a Campaign
7	Configure a Call Type.	Create a Call Type
8	Configure Reservation Script.	Set Up Reservation Script
9	Configure transfer to VRU scripts for AMD and Abandon to VRU.	Configure a Transfer to VRU Script
10	Map Scripts to Call Types and DNs.	Map Scripts, Call Types, and Dialed Numbers
11	Configure Administrative Script.	Set Up Administrative Script

Transfer to VRU Campaign Tasks

The following table lists the steps required to create a transfer to VRU campaign, *in the order that you need to perform these steps*, and the location (in this document or in another Cisco document) of the instructions for the task.

Step Number	Task	Where Discussed
1	Configure Network VRU.	Configuration for Send to VRU Campaign
2	Create a Dialed Number (DN) for Abandon to VRU on the MR PG.	Create Dialed Numbers
3	Create DN for AMD to VRU on the MR PG.	Create Dialed Numbers
4	Configure an Import Rule.	Create Import Rule
5	Configure Query Rules.	Create a Query Rule
6	Configure a Campaign.	Create a Campaign
7	Configure Call Type.	Create a Call Type
8	Configure transfer to VRU script.	Configure a Transfer to VRU Script
9	Map Scripts to Call Types and DNs.	Map Scripts, Call Types, and Dialed Numbers
10	Configure Administrative Script.	Set Up Administrative Script

Preliminary Configuration Requirements

You use specific instances of the following for your Outbound Option campaign:

- Skill Groups

- Agent Targeting Rules
- Call Types
- Dialed Numbers

Configure Skill Group

Procedure

-
- Step 1** In **ICM Configuration Manager**, open the **Skill Group Explorer** tool.
- Step 2** Ensure that the **Select filter data** section displays the PIM.
- Step 3** Click **Retrieve**.
- Step 4** Click **Add Skill Group**.
- Step 5** Set the **Media Routing Domain** to **Cisco_Voice**.
- Step 6** Enter a peripheral name and number (record them): _____ . (You can either enter a name or allow the system to generate the name.)
- Step 7** Check **ICM picks the agent**.
- Step 8** Click **Add Route**.
- Step 9** Enter a name for the new route (any name is allowed).
- Step 10** Click **Save**.

Related Topics

[Configure the PG](#), on page 44

Agent Targeting Rules for Outbound Option

For Outbound Option campaigns, configure an Agent Targeting Rule that uses the routing client for the MR PG with your agents who handle outbound calls.

For more information on configuring Agent Targeting Rules, see the section on peripherals and trunk groups in Configuration Guide for Cisco Unified ICM/Contact Center Enterprise at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html>.

Create a Call Type

The dialed numbers and routing scripts that you create reference *call types*, so you should create them as needed. For example, you can create one call type for an agent campaign and another for a VRU campaign. You associate the call types with the dialed numbers you create.

For more information about using call types, see *Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise*

Perform the following steps to create the call type that the routing scripts you create will reference.

Procedure

-
- Step 1** In ICM Configuration Manager, double-click the Call Type List tool.
 - Step 2** Click **Retrieve**.
 - Step 3** Click **Add**.
 - Step 4** Enter the **Name** for the call type.
 - Step 5** Accept the defaults for all other fields.
 - Step 6** Click **Save**.
-

Create the Dialed Numbers

Before you configure an Outbound Option campaign, create the dialed numbers to specify for certain fields on the Campaign Skill Group tab page. The following table lists these fields, the purpose for each dialed number, and the routing client for that dialed number.

Campaign Skill Group Tab Field Name	Purpose	Associated Routing Client
Dialed Number	Dialed Number to reserve agents. Not applicable for Transfer to VRU campaigns.	Configure on the MR routing clients for each Dialer.
After AMD and for transfer to VRU	Dialed Number for Transfer to VRU.	Configure on the MR Peripheral PG.
When no agents are available	Dialed Number for Transfer to VRU.	Configure on the MR Peripheral PG.

For agent campaigns, create all three dialed numbers. For transfer to VRU campaigns, create the dialed numbers for the **After AMD and for transfer to VRU** field.

Procedure

-
- Step 1** In the **Configuration Manager**, double-click the **Dialed Number/Script Selector List** tool.
 - Step 2** Click **Add**.
 - Step 3** On the **Attributes** tab:
 - a) For **Routing Client**, select the routing client listed in the preceding table.
 - b) For **Media Routing Domain**, select **Cisco_Voice**.
 - c) Enter values for the **Dialed Number String/Script Selector** and **Name**. The Dialed Number allows only alphanumeric and (.) and (_) as valid characters; there is a ten-character limitation.
 - Step 4** Click **Save**.
 - Step 5** For Unified CCE configurations that have more than one Dialer component, repeat these steps to create the dialed number for each media routing client.
 - Step 6** On the **Dialed Number Mapping** tab, click **Add**.

- Step 7** In the **Calling Line ID** radio set, select **All**.
- Step 8** In the **Caller-entered digits** radio set, select **All**.
- Step 9** In the **Call type** drop-down list, select the MR call type.
- Step 10** Click **OK** in the **Dialed Number Map Entry** dialog, and then click **Save**.



Note The Personal Callback feature requires a second dialed number. This dialed number must have the **PersonalCallback** dialed number string. Map all Calling Line IDs and all Caller-entered digits to the call type for the MR routing client. Multiple dialers require multiple dialed numbers—One for each routing client for a given skill group.

Contact and Do Not Call List Imports

Outbound Option campaigns require you to import lists of customers to call and to not call. Create these lists before creating your campaign.

Import Rule Files

Outbound Option campaigns require you to import these lists of contact information:

- **Do Not Call List**—A text file that lists phone numbers that the campaign should not dial. These files must match a specified format.
- **Contact List**—A text file that lists customers to consider contacting as part of the campaign. You can specify the format of the records using a set of standard and custom column types.

Do Not Call Lists

The import rule file for a Do Not Call list contains a list of phone numbers that the Dialer should not call.

Each entry in an import rule file for a Do Not Call List must be a single phone number of no more than 20 characters.

The Do Not Call table can support up to 60 million entries. But, the information is also stored in memory in the Campaign Manager process. Unless you set the **Overwrite table** option, each import appends to the table. A single large import or several smaller ones can create a Do Not Call list in memory that consumes all the memory for the process. A Do Not Call entry uses 16 bytes of memory. So, 60 million entries require approximately 1 GB of memory on the Logger Side A platform.



Note To clear the Do Not Call list, import a blank file with the **Overwrite table** option enabled.

Contact Lists

The import rule file for a Contact list contains the list of customers that you want to contact for a campaign. If any of the phone numbers appear in the Do Not Call table, the Dialer does not call those numbers.

Unlike the import rule file for Do Note Call lists, you can define the format of entries in the Contact list as follows:

- Each row has a limit of 1024 characters.
- You specify the columns in each entry on the **Import Rule Definition** tab of the Outbound Option configuration dialog. The tab provides a set of standard column types to choose from. It also provides a Custom type for flexibility.

Custom attributes are only useful for filtering out customer contacts into different dialing lists based on your business needs. For example, use a custom entry called “Amount Owed” to add contacts that owe more into a different dialing list with a higher priority.



Note These custom attributes are not forwarded to the agent desktop.

- You specify if the columns are comma-delimited, pipe-delimited, or fixed-format on the **Import Rule General** tab of the Outbound Option configuration dialog.



Note For fixed-format columns, the number of characters in the entry for each column must exactly match the column definition. If the data for a field does not fill the specified width of the column, pad the entry with spaces to the defined character width.

When the import runs, the data is read and the import file is renamed or deleted so that it is not reimported. This allows you to read and review the import file (if necessary) to troubleshoot problems.

Create Do Not Call List Import File

When creating a Do_Not_Call list file, format it correctly.



Note Remember that the Do_Not_Call table created from these lists can grow to consume all available memory. The default import appends each new list to the existing table.

To clear the Do Not Call list, import a blank file with the **Overwrite table** option enabled.

Procedure

-
- Step 1** Using a text editor, create a text file to contain the do-not-call phone numbers.
 - Step 2** For each Do-Not-Call entry, enter a phone number of up to 20 characters on a new line.
 - Step 3** Save the text file to the local server.
-

The Campaign Manager reads from the Do_Not_Call table. The campaign Manager marks Dialing List entries as Do Not Call entries only when it fetches the Dialing List entry that is an exact, digit-for-digit match. This allows Do Not Call imports to happen while a Campaign is running without rebuilding the Dialing List.



Note For a base number plus extension, this entry must match a Do-Not-Call entry for that same base number and same extension. The dialer will not dial the extension.

Example

The following is an example of a Do_Not_Call list:

2225554444

2225556666

2225559999

Create Contact Import File

When creating a contact import file, observe the format you designed according to the database rules set up in **Import Rule Definition** tab.

The following example assumes that you have contact information with AccountNumber, FirstName, LastName, and Phone column types.

Procedure

- Step 1** Using a text editor, create a text file that contains the information for these fields.
- Step 2** Enter an account number, first name, last name, and phone number for each entry on a new line.
Use either Comma Delimited, Pipe Delimited, or Fixed Format, as defined on the **Import Rule General** tab.
- Step 3** Save the text file to the local server.
-

Example

The following is an example of a contact import file in the comma-delimited format:

6782, Henry, Martin, 2225554444

3456, Michele, Smith, 2225559999

4569, Walker, Evans, 2225552000

The following is the same example in Fixed Format with the following column definitions:

- Custom - VARCHAR(4)
- FirstName - VARCHAR(10)
- LastName - VARCHAR(10)
- Phone - VARCHAR(20)

6782Henry Martin 2225554444

3456Michele Smith 2225559999

4569Walker Evans 2225552000

Each field must match the length given in the import rule. In the example shown, spaces have been added to make the FirstName and the LastName fields to each be 10 characters long.

Create Import Rule

The Import Rule defines how Outbound Option:

- Locates the imported file and defines the name of the contact table into which the import process places the contact information.
- Recognizes and defines the contact list data in the imported file. The Import Rule defines the import format of the user contact list (fixed format, comma-delimited, or pipe-delimited fields). The rule also defines the format and fields for the Import Rule file.
- Schedules updates for your calling lists imports.



Note When you add or modify any field in the existing import rule table, you have to change the target table name. Otherwise, you will not be able to save the import rule change.

Changing the target table name creates a new table, but does *not* remove the old table. The old table remains in the database, but the system does not use it.

When you import records, take note of the following:

- The dialing rate/CPS is affected.
- The “record fetch query performance” is also affected if you are importing huge numbers of records. The performance of the query impacts the call rate.

Perform the following steps to create an import rule.

Procedure

Step 1 In the Configuration Manager, expand the **Outbound Option** menu and double-click **Outbound Option Import Rule**.

Step 2 Click **Retrieve**.

Step 3 Click **Add** at the bottom of the list box area of the window. Then fill out the necessary information on the following tabs:

- Import Rule General** tab
- Import Rule Definition** tab
- Import Rule Schedule** tab

Note For details of these tabs, see the Outbound Option section of the *Configuration Manager Online Help*.

Step 4 Click **Save**.



Note If you edit an import rule, the changes take effect on the next import.

Import Rule Deletion

When you delete an import rule, the corresponding contact table is deleted.

If you are using Outbound Option High Availability and either Side A or Side B is down when the rule is deleted, the corresponding table on that side is not deleted. However, when the side restarts, the table is then automatically deleted.

Outbound Option Campaign Creation

Create a Query Rule

The Query Rule component defines the SQL rule that the Outbound Option Import process uses to build the dialing list for a particular campaign. Based on SQL queries to the database, the rule defines how the contact records from the Outbound Option database are selected to be inserted in the dialing list.

Perform the following steps to create a query rule.

Procedure

- Step 1** In Unified CCE Configuration Manager, expand the Outbound Options menu, then open the Outbound Option Query Rule component.
- Step 2** Click **Retrieve**.
- Step 3** Click **Add** at the bottom of the list box area of the window.
- Step 4** Fill in the appropriate information on the Query Rule General tab page. See the online help for details of the fields on this tab.
- Step 5** Click **Save**.

Delete a Query Rule

When you delete a query rule, the corresponding Dialing List table is also deleted.

If you are using Outbound Option High Availability and either Side A or Side B is down when the rule is deleted, the corresponding table on that side is not deleted. However, when the side restarts, the table is then automatically deleted.

Create a Campaign

Use the Outbound Option Campaign tool to define or modify the settings that apply to a campaign. You can also add or delete a campaign through this tool.

You can define two types of campaigns: agent-based, and transfer to VRU. However, only one campaign type can be configured per campaign.

Before you create a campaign, first configure the following information:

- A dialed number for accessing the agent reservation script
- A dialed number for transferring the call to the VRU for AMD
- A dialed number for transferring the call to the VRU for abandon treatment when no agents are available.

Perform the following steps to create a campaign.

Procedure

- Step 1** In Unified CCE Configuration Manager, expand the Outbound Option menu, then open the Outbound Option Campaign component.
- Step 2** Click **Retrieve**.
- Step 3** Click **Add** at the bottom of the list box area of the window.
- Step 4** Fill in the fields described on the following tabs. See the online help for detailed descriptions of the fields:
- a) Campaign General tab.
 - b) Campaign Purpose tab.
 - c) Query Rule Selection tab.
 - d) Skill Group Selection tab.
 - e) Call Target tab.
- Step 5** Click **Save**.
-

Modification of Maximum Number of Attempts in a Campaign

You can recall customers who were previously not reached without having to import their phone numbers again by increasing the maximum number of attempts amount in the **Maximum attempts** field on the Campaign General tab page. This option is useful if the campaign import is an append type instead of an overwrite type.



Note Do not update the **Maximum attempts** field while the campaign is in progress. Modifying this option in the campaign configuration results in an update of all customer records that were not successfully contacted. The Campaign Manager can update only about 20 records per second, and no new customer records are delivered to the dialer for this campaign while this update is in progress.

You can view how many records have been closed and how many were successfully reached by using the Call Summary Count per Campaign Real Time report. See [Reports, on page 109](#) for more information.

Maximum Attempts per Phone Number in a Record

If you want to dial all the phone numbers in a record at least once, set the **EnableMaxAttemptsPerNumber** registry key, which is created automatically. This key can be located at:

HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems Inc \ICM\
<instance-Name>\LoggerA\BlendedAgent\CurrentVersion and the default value is "0."

The registry key controls the behavior of the software to determine how the Max Attempts, that configured in each campaign, are used. The two values for EnableMaxAttemptsPerNumber are 0 and 1. When it is set to 0, the behavior does not change from previous releases. When it set to 1, the new behavior is enabled.

Enabling the new behavior causes each phone number associated with the record, to be dialed Max Attempt times. (When set to 0 the default behavior is to attempt each record Max Attempt times, where each number within the record is counted as an attempt.

Example

Assume that we have 2 records that are configured in a campaign. Record 1 has 3 numbers that are associated with it and record 2 has 2 numbers that are associated with it. Also assume that all call attempts fail to reach a voice connection.

John Smith 5551111 5552222 5553333

Jane Doe 6661111 6662222

When Max Attempts = 3 and EnableMaxAttempts= 0 all 3 numbers for John Smith will be dialed once, for a total of 3 attempts. First number for Jane Doe will be dialed twice and the second number dialed once, for a total of 3 attempts.

When Max Attempts = 1 and EnableMaxAttempts=0. First number of John Smith and Jane Doe will be dialed.

When Max Attempts = 1 and EnableMaxAttempts= all 3 numbers for John Smith will be dialed once. All 2 numbers for Jane Doe will be dialed once.

When Max Attempts = 2 and EnableMaxAttempts= 1 all 3 numbers for John Smith will be dialed twice. All 2 numbers for Jane Doe will be dialed twice.

Notes on Editing a Campaign in Progress

You can edit most campaign configuration settings while a campaign is running. The changes take effect with new calls after the setting has been changed. However, do not edit the following settings while a campaign is in progress:

- Do not modify the **MaxAttempts** value. Modifying this value while a campaign is in progress can cause a long delay in record retrieval and longer agent idle times.
- Do not delete a skill group while a campaign is in progress.

Outbound Option Scripting

Outbound Option uses Unified CCE scripting configured on the Administrative Workstation to manage campaigns.

There are two types of scripts:

- Administrative Scripts
- Agent Reservation Routing Scripts

Administrative Scripts for Outbound Option

Outbound Option administrative scripts enable, disable, or throttle campaign skill groups for outbound campaigns. The scripts can also automatically close out a skill group for a specific campaign. The administrative scripts can use time or any other conditional factor that the script can access to close a skill group. You can perform this scripting at the skill group level to provide more flexibility for managing larger campaigns with multiple skill groups.

Enable a campaign skill group by setting the campaign mode to one of the available modes: Preview, Direct Preview, Progressive, or Predictive. Schedule an administrative script to run at regular intervals. Disable the campaign skill group in the administrative script by creating a script node to change the campaign mode to inbound for that skill group.

An administrative script controls a campaign skill group. You can only map a campaign skill group to one campaign at a time. Multiple administrative scripts controlling the same skill group can result in conflicting campaign mode requests.



Note Both the Outbound API and administrative scripts can set the dialing mode for a campaign. The value set by the administrative script takes precedence over the value set by the API.

You can also use administrative scripts to control the percentage of agents that a campaign skill group can use. A script can also set whether to use a skill group for other campaigns or inbound calls.



Note To allow the outbound control and percent configured values from Campaign Skill group (set by either the Configuration Manager Campaign Skill Group tab or the Campaign API) to apply without restarting the router. If you use an administrative script to set the outbound control and percent variables in operation and if you want to employ these configured value on the Campaign Skillgroup, set the outbound control and percent variable to -1 in the administrative script accordingly.



Note You can set a default for the skill group dialing mode and reservation percentage in the **Skill Group Selection** dialog. A Set node in the administrative script can override these settings.

Related Topics

[Dialing Modes](#), on page 5

Routing Scripts for Outbound Option

Two types of routing scripts are described later in this document. One is for Agent Campaign and one is for VRU Campaign.

The Dialer uses Reservation scripts to reserve agents for specific outbound campaigns and personal callbacks. With this type of script, the Dialer makes a route request through its Media Routing Client using the configured dialed number for the campaign skill group. Each campaign has its own dialed number and reservation scripting. If an agent is not available, the default behavior is for the script to end the call and the Dialer receives an error. The Dialer retries the reservation request when it sees available agents in the skill group statistics as described in the Dialer description earlier in this chapter. You can queue reservation calls which have scripts that distribute agents across campaigns when those agents are skilled for multiple, active campaigns.

A call can be transferred to a VRU as part of a transfer to VRU campaign, or transferred to non-VRU campaigns for answering machine or abandons. A transfer to VRU campaign places a route request call to a CTI Route Point dialed number on the Agent PG. This enables the campaign to transfer the call context of the customer call to the VRU. You can add incoming call context to the call while the VRU treats the call.

Set Up Reservation Script

Use the Script Editor application to create a reservation script that uses the dialed number for the Outbound Routing Type and routes through one of the following methods:

- Using a Select node to the previously configured skill group.
- Using Dynamic Route Target by ID in the Skill Group node.

Script for Agent Campaign

The following steps and accompanying diagrams provide an example of how to create a script for an agent campaign.

Procedure

Using the **Call Type Manager** in **Script Editor**, associate the MR (and Personal Callback, if used) dialed numbers with the configured call type and newly created reservation script.

Figure 11: Sample Script for Agent Campaign Without Personal Callback (Using Select Node)

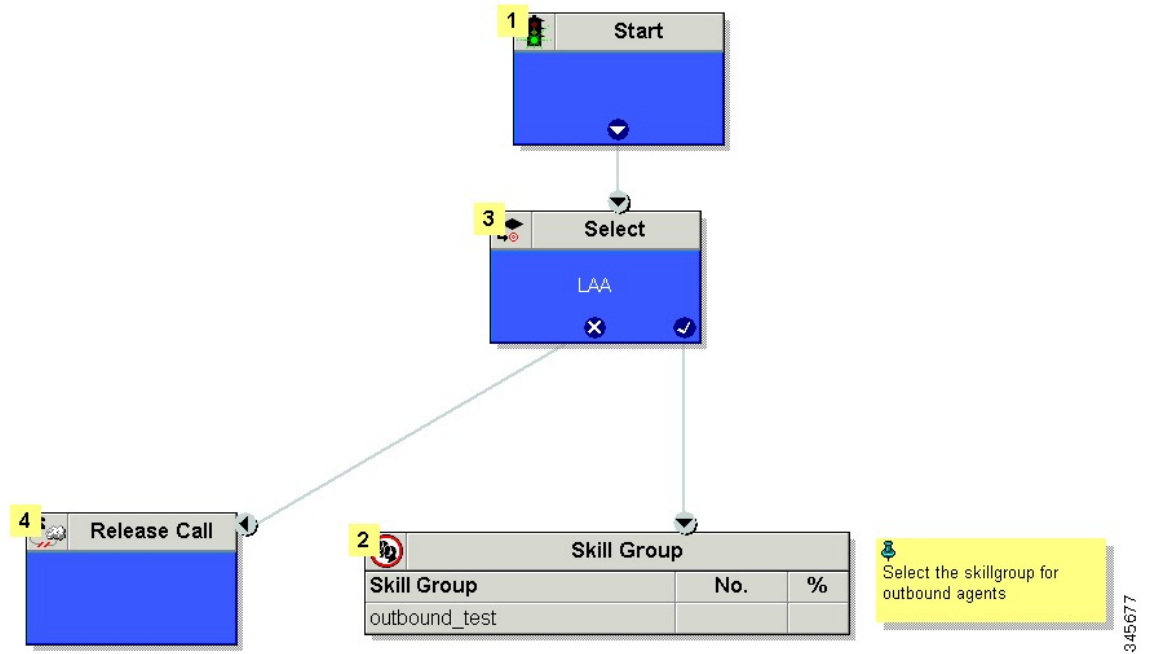
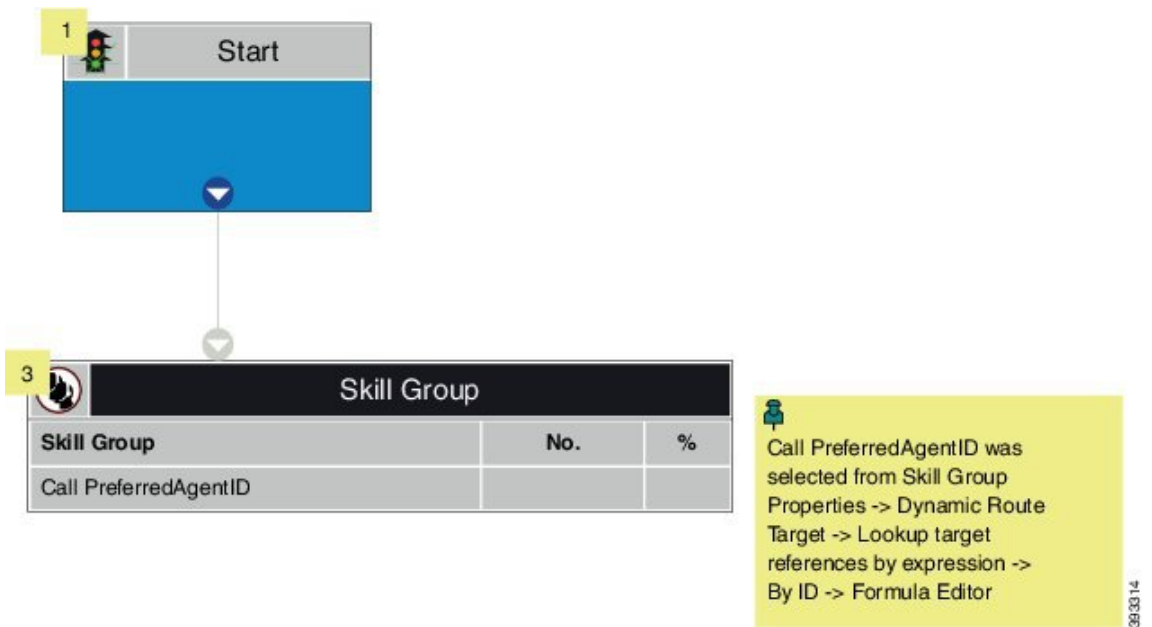


Figure 12: Sample Script for Agent Campaign Without Personal Callback (Using Dynamic Route Target by ID)



Related Topics

(Optional) [Configure Personal Callbacks](#), on page 94

Map Scripts, Call Types, and Dialed Numbers

After you create a reservation script, associate that script with the call type and dialed number configured for the campaign. To make the association, perform the following steps.

Procedure

- Step 1** In **Script Editor**, open the script.
 - Step 2** Select **Script > Call Type Manager**. A **Call Type Manager** dialog opens.
 - Step 3** On the **Schedules** tab, select the call type from the **Call Type** drop-down list.
 - Step 4** Click **Add**. A **Call Type Schedule** dialog opens.
 - Step 5** Select the script and click **OK**.
 - Step 6** Click **OK** to save your changes and close the **Call Type Manager**.
-

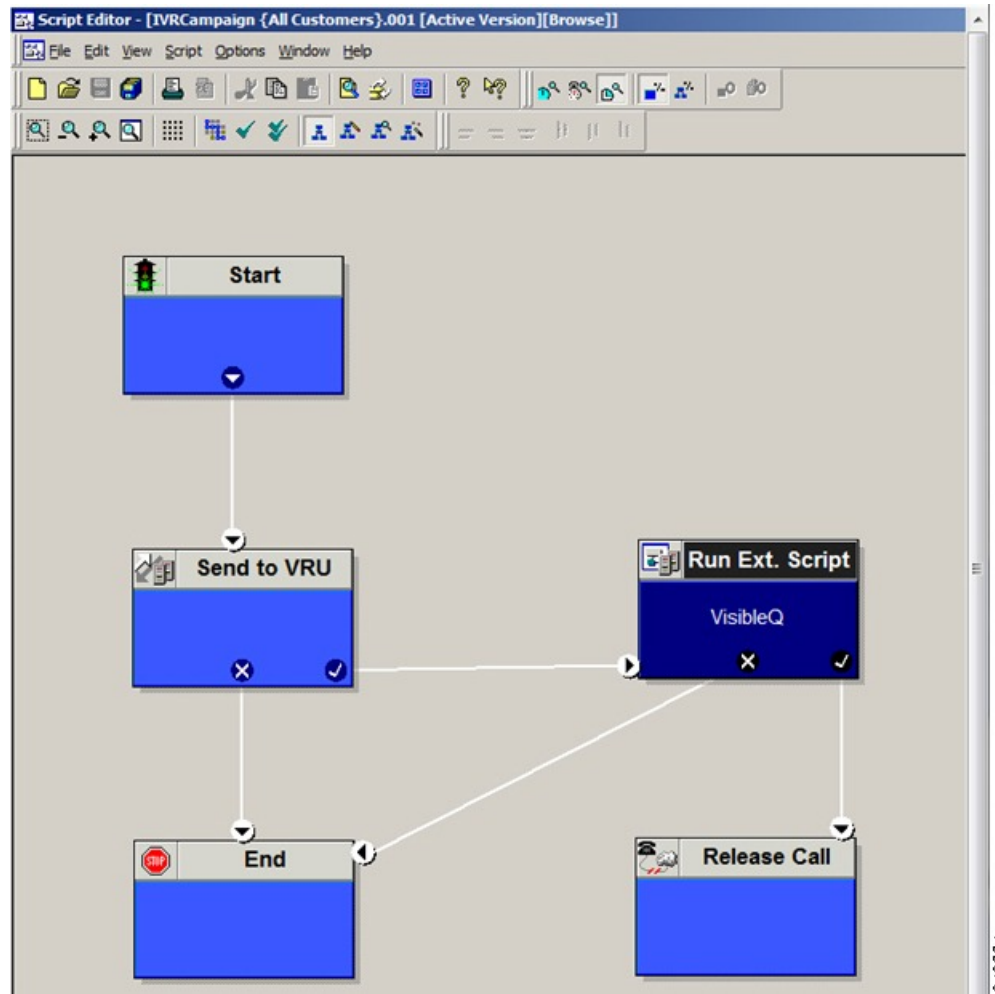
Send to VRU

If your solution uses Unified CVP Type 10, you can use the **Send to VRU** node in a routing script for a VRU campaign. The following example illustrates creating a script for a VRU campaign.

Procedure

- Step 1** Use the **Dialed Number** tool to associate the MR dialed numbers with the configured call type.
- Step 2** Use the **Script Editor Call Type Manager** to associate the call type with the newly created reservation script.

Note See the Script Editor online help for information about using the Script Editor application.



Configure a Transfer to VRU Script



Note For a solution that uses Type 2 IVR (such as IPIVR) or any other solution that requires a translation route to IVR, configure a translation route before you start this procedure. See the *Cisco Unified Contact Center Enterprise Installation and Upgrade Guide* for instructions.

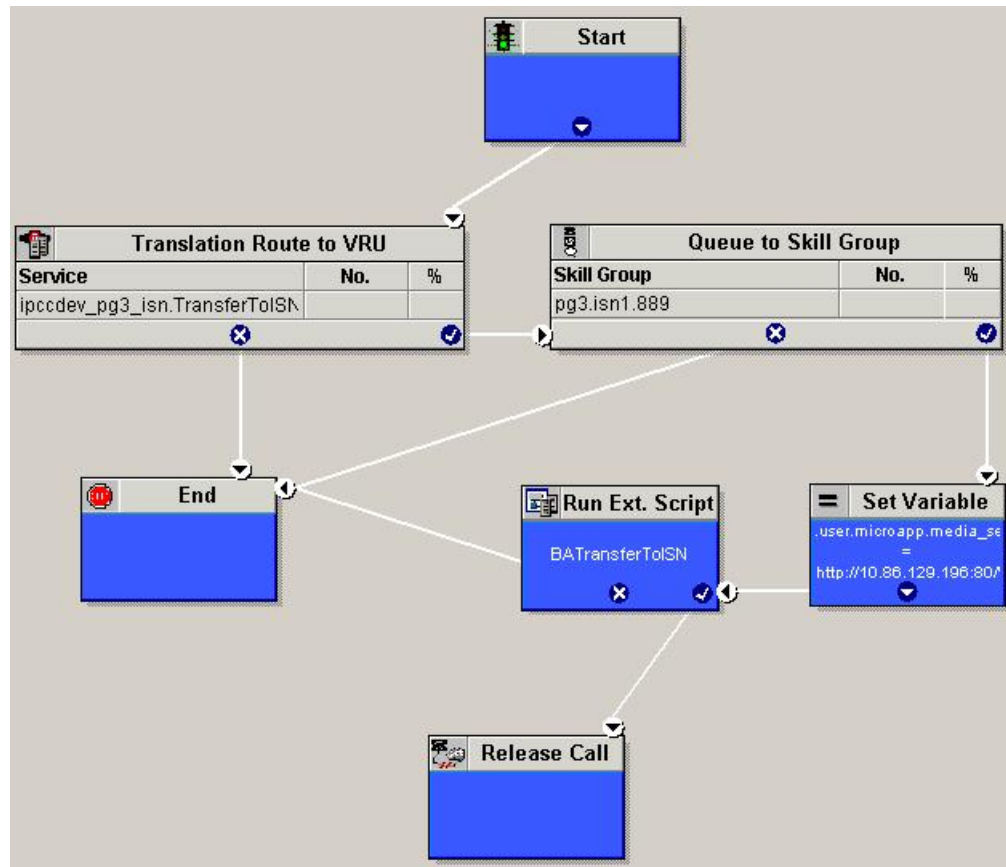
Perform the following steps to configure a Transfer to VRU script for Outbound Option campaigns.

Procedure

Step 1

Use the Script Editor to create a Transfer to VRU script that includes Translation Route to VRU, Queue to Skill Group, Run Ext. Script, and Set Variable nodes. The following diagram illustrates an example.

Figure 13: Sample CVP Routing Script



Note

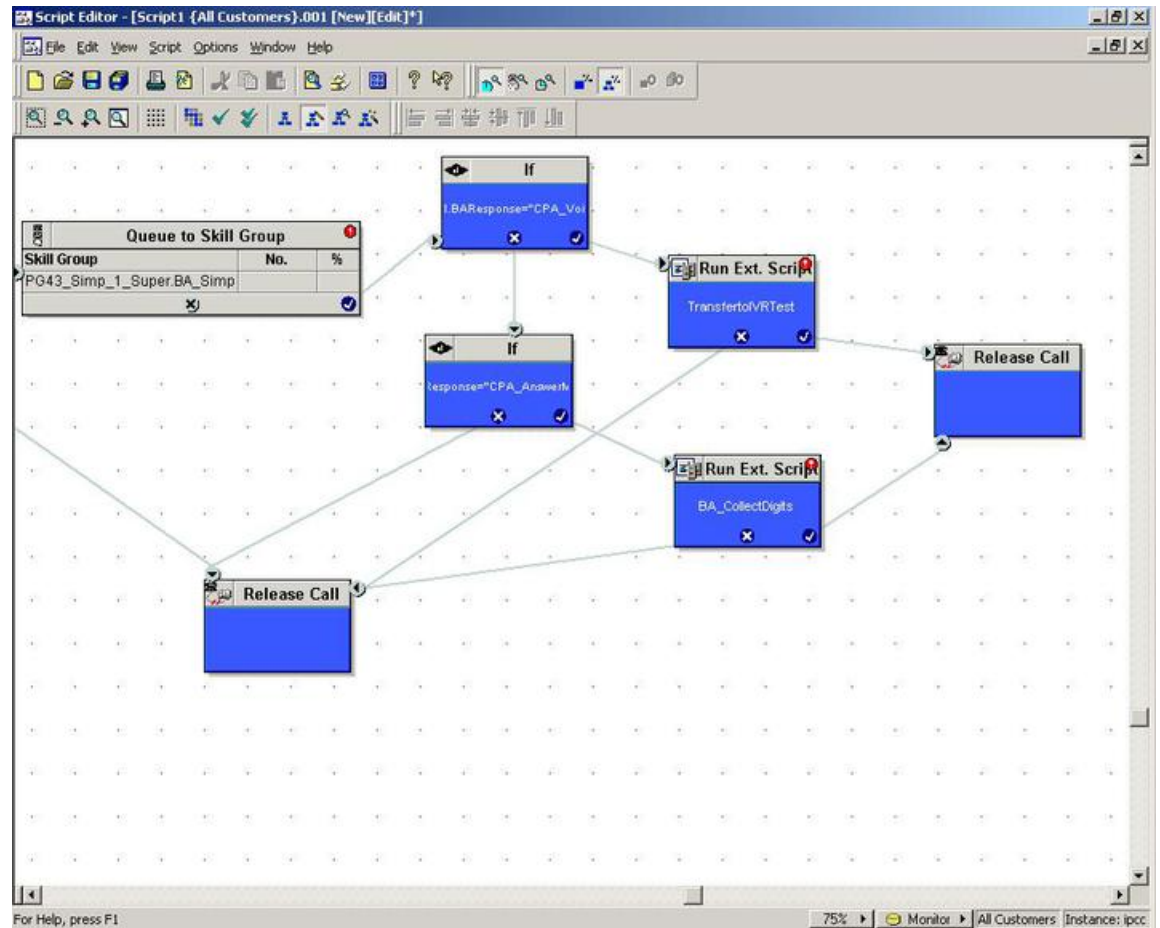
- The Transfer to VRU feature requires that a translation route to a skill group must be specified in a Transfer to VRU script. It also requires that the translation route must point at a Queue to Skill node.
- See the *Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise* for task-based information about using Script Editor. See the Script Editor online help for detailed information about the Script Editor options.

Step 2

To implement answering machine detection as part of this transfer to VRU script, include an IF node that evaluates the value of the BAResponse variable and prescribes a call treatment depending on the CPA result of the call (whether the call detected voice or an answering machine).

The following is an example of such an If node.

Figure 14: BAResponse If Node



- Step 3** Create a VRU script. (Be aware that this script is different from a reservation script.) The VRU script contains a list of commands that tell the VRU what type of information to play to the customer, such as a prerecorded message using a .wav file. The VRU script can also collect survey information by requesting the customer press specific numbers. Consult your Unified CVP, IP/IVR, or documentation for your other third-party VRU for more information.
- Step 4** Associate the reservation script with the call type and dialed number configured for the campaign.

Related Topics

[Map Scripts, Call Types, and Dialed Numbers](#), on page 86

Set Up an Administrative Script

Use the Script Editor application to create an administrative script for each skill group to set the OutboundControl variable and the skill group reservation percentage. The Outbound Option Dialer uses the value of this variable to determine which mode each skill group uses.



-
- Note**
- If the script does not set the OutboundControl variable, the skill group defaults to inbound.
 - Make sure that the routing client for the translation route labels is Unified CM, which makes the outgoing call.
-

Perform the following steps to create the administrative script:

Procedure

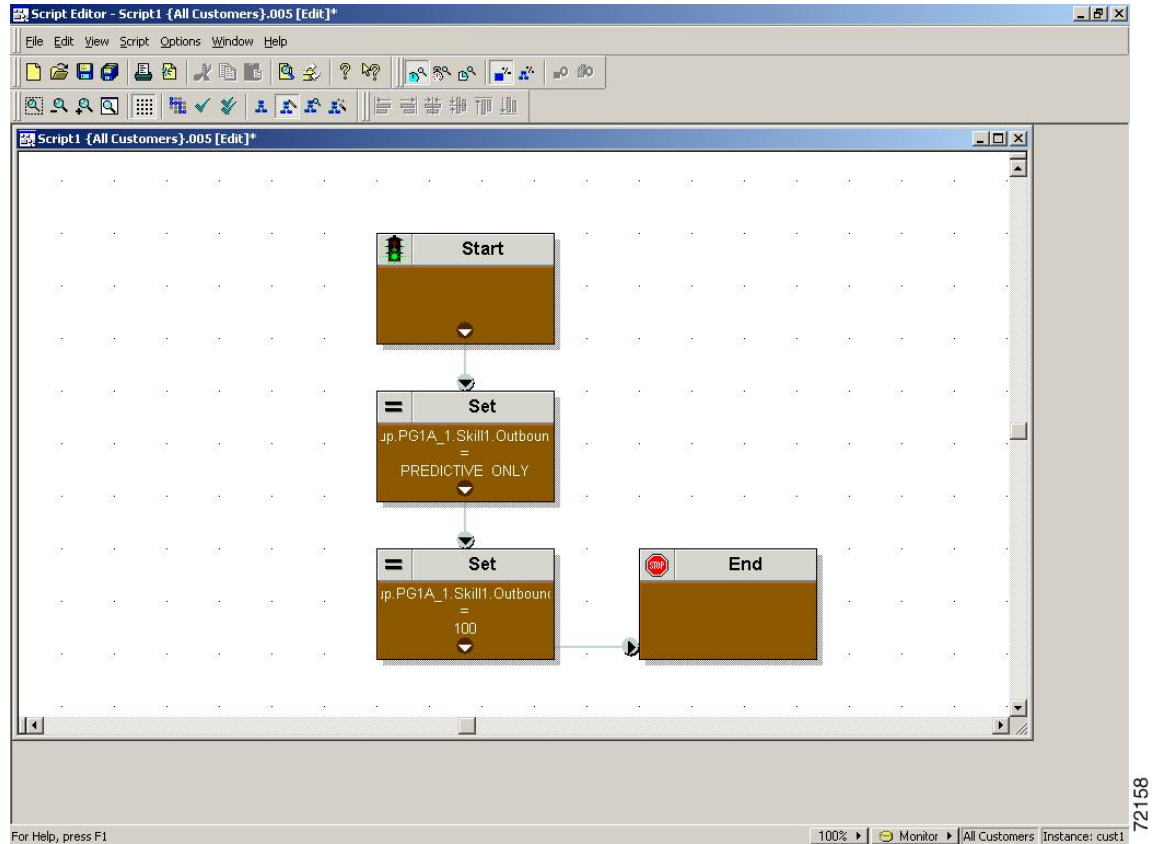
- Step 1** Open the Script Editor application.
- Step 2** Select **File > New > Administrative Script**.
- Step 3** Create an administrative script.

You can use one script to control all Outbound Option skill groups or multiple scripts to control multiple Outbound Option skill groups. If you want to control skill groups at different times of the day, you need multiple administrative scripts. But, if you are going to initialize the groups all in the same way, you need only one script with multiple Set nodes.

- Step 4** Set up the script with the following required nodes: Start, Set Variable, and End.

The following diagram displays a simple administrative script that sets both the OutboundControl variable and the outbound percentage for a skill group. A script in a production call center is typically more complex, perhaps changing these variables due to time of day or service level.

Figure 15: Sample Administrative Script



Note A transfer to VRU requires an IF node in the administrative script to disable it if the VRU is not available. Also, to ensure timely responses to VRU outages, set the administrative script to run every minute.

Step 5 Set the OutboundControl variable. Setting this variable enables contact center managers to control the agent mode. Set this variable to one of the values listed in the following table.

Note You can set a default for the skill group dialing mode and reservation percentage in the **Skill Group Selection** dialog. A Set node in the administrative script can override these settings.

Table 8: OutboundControl Variable Values

Value String	Description
INBOUND	Agents take inbound calls only. The skill group cannot do Outbound Option dialing.
PREDICTIVE_ONLY	Agents in the skill group only take outbound Predictive calls.
PREVIEW_ONLY	Agents in the skill group only take outbound Preview calls.
PROGRESSIVE_ONLY	Agents in the skill group only take outbound Progressive calls.

Value String	Description
PREVIEW_DIRECT_ONLY	Agents only place outbound calls and hear ringtones, such as phone ringing or busy signal.
PREDICTIVE_BLENDED	Agents in the skill group can take inbound calls and also take calls for a predictive campaign.
PREVIEW_BLENDED	Agents in the skill group can take inbound calls and also take calls for a preview campaign.
PROGRESSIVE_BLENDED	Agents in the skill group can take inbound calls and also take calls for a progressive campaign.
PREVIEW_DIRECT_BLENDED	Agents in the skill group can take inbound calls and also take calls for a preview direct campaign.

Note If you remove a Set node from the administrative script, the OutboundControl variable maintains the value from the last time that the script ran. However, when the Central Controller restarts, the value resets to INBOUND.

Step 6 Set the OutboundPercent variable in the same administrative script. Select the OutboundPercent variable in the Set Properties window and enter the agent percentage in the Value field. This variable controls the percentage of active agents in the skill group to use for Outbound Option dialing. For example, for an OutboundPercent of 50% with 100 active agents in the skill group, the system allocates 50 agents for Outbound Option dialing. You can use the rest of the agents for inbound or other active campaigns.

Note

- The OutboundPercent variable also applies to Transfer To VRU campaigns, by controlling the percentage of VRU Ports that are considered for the campaign skill group.
- This variable does not allocate specific agents for Outbound Option dialing, just a total percentage. The default is 0%.

Step 7 Schedule the script.

- Select **Script > Administrative Manager**. An Administrative Manager dialog box appears.
- Click **Add**.
- On the Script tab, select the administrative script.
- On the Period tab, specify the run frequency of the script. (Guideline for frequency is every minute of every day.)
- Optionally, enter a description on the Description tab.
- Click **OK** to close the Add Administrative Schedule dialog box.
- Click **OK** to close the Administrative Manager.

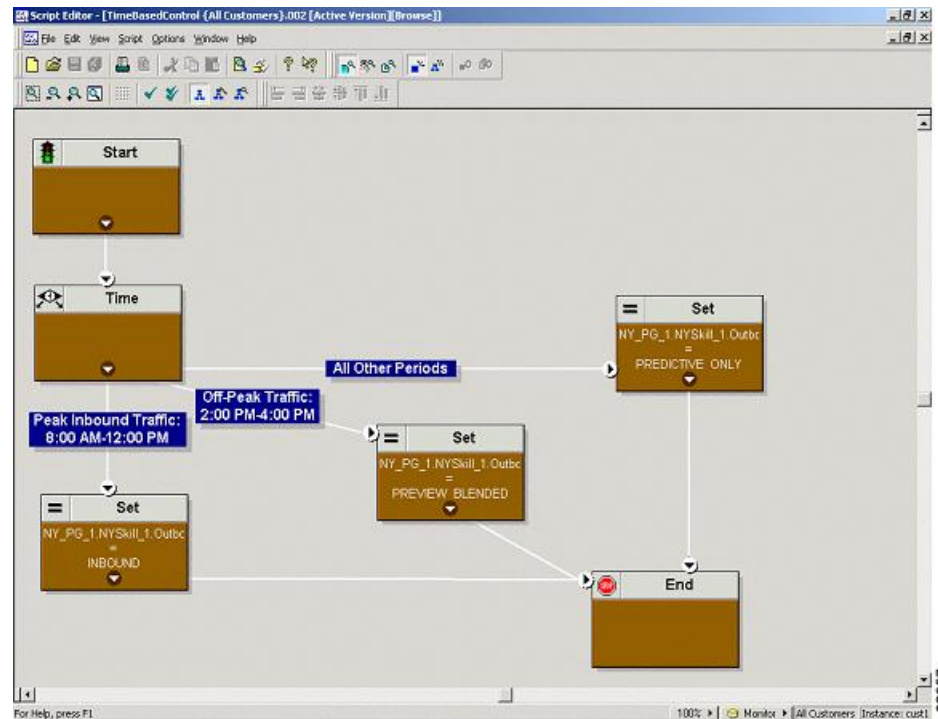
Sample Administrative Scripts

The following sections describe sample administrative scripts.

Administrative Script: TimeBasedControl

The following figure is a simple example of setting skill group modes for maximizing the resource utilization in a call center based on time of day.

Figure 16: TimeBasedControl Script



This script divides the day into three parts:

- **Peak Inbound Traffic Period (8:00 AM to 12:00 PM):** During this time, the skill group variable is set to INBOUND only, because more agents are required to handle inbound calls.
- **Off-Peak Traffic Period (2:00PM to 4:00PM):** During this time, the skill group variable is set to PREVIEW_BLENDED, so that when an agent is not on an inbound call, Outbound Option presents the agent with Preview calls. While the agent is reviewing the calls and when the agent is on a Preview outbound call, Unified ICM software does not route an inbound call to that agent. As soon as the agent is finished with the Preview call, Unified ICM software routes an inbound call to the agent. If there are no inbound calls, Outbound Option reserves the agent for another outbound call.
- **All Other Periods:** For the rest of the day, the skill group variable is set to PREDICTIVE_ONLY so that if any agents are logged-in, Outbound Option immediately reserves the agents for outbound calls.

Administrative Script: Transfer to VRU Campaign

A Transfer to VRU campaign sample script is similar to the sample script for TimeBasedControl. The only skill group modes allowed for Transfer to VRU campaign, however, are PREDICTIVE_ONLY or PROGRESSIVE_ONLY.

Related Topics

[Administrative Script: TimeBasedControl](#), on page 93

(Optional) Configure Personal Callbacks

Personal Callback is an optional feature in Outbound Option. Personal Callback enables an agent to schedule a callback to a customer for a specific date and time. A personal callback connects the agent who originally spoke to the customer back to the customer at the customer-requested time.

This section describes how to configure your system to handle personal callbacks. When you create campaigns, you enable the callback feature individually for each campaign.

You configure some personal callback options through the registry. If a personal callback record is not associated with a campaign, the record follows the rules configured within the registry.

Procedure

Step 1 In the **Unified CCE Configuration Manager**, select **Outbound Option**.

Step 2 In the **Campaign** tool, select the **Campaign General** tab.

Step 3 Open a predefined campaign.

Step 4 Check **personal callback**.

Personal callback is now enabled. Next, you configure the personal callback registry entries.

Step 5 Configure a call type for personal callback.

For information about creating call types, see the administration documentation.

Step 6 Create a dialed number with the name PersonalCallback on the outbound routing client.

For information about configuring dialed numbers, see the administration documentation.

Step 7 Open **regedit** on Logger Side A and Logger Side B.

Step 8 Navigate to the following locations: HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM*instance name*\LoggerA\BlendedAgent\CurrentVersion and HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM*instance name*\LoggerB\BlendedAgent\CurrentVersion in the Outbound Option registry.

Step 9 Configure the personal callback registry entries listed in the following table. (Enter the values in decimal format.)

Note Outbound Option enforces at runtime the minimum and maximum values in the table. The registry does not validate the values.

Name	Default Value (integers)	Description
CallbackTimeLimit	15	Calculates the callback time range, in minutes, for each personal callback. Outbound Option queries the Personal Callback List for callback records, where the CallbackDateTime value is between the current time and the CallbackTimeLimit.

Name	Default Value (integers)	Description
PersonalCallbackTimeToRetryBusy	1	Sets the amount of time, in minutes, that the Outbound Option Dialer waits before retrying a personal callback to a busy number. The valid range is from 1 to 10.
PersonalCallbackTimeToRetryNoAnswer	20	Sets the amount of time, in minutes, that the Outbound Option Dialer waits before retrying an unanswered personal callback. The valid range is from 5 to 60.
PersonalCallbackTimeToRetryReservation	5	Sets the amount of time, in minutes, that the Outbound Option Dialer waits before retrying to reserve an unavailable agent. The valid range is from 1 to 10.
PersonalCallbackMaxAttemptsDefault	5	Sets the maximum number of times a personal callback is attempted. The valid range is from 1 to 10. When the maximum attempts reach 0, the record is not tried again and the status is set to “M” (maxed out).
PersonalCallbackTimeToCheckForRecords	5	The interval time, in minutes, at which the Outbound Option Dialer checks the Campaign Manager for personal callback records. The valid range is from 1 to 30.
PersonalCallbackDaysToPurgeOldRecords	5	The number of days after the personal callback was scheduled (CallbackDateTime) to keep the record before purging it. The valid range is from 1 to 30.
PersonalCallbackRecordsToCache	20	The number of personal callback records to send to the Outbound Option Dialer at one time. The valid range is from 5 to 200.
PersonalCallbackSaturdayAllowed	0	Indicates whether personal callbacks are allowed on Saturdays: <ul style="list-style-type: none"> • 0: Personal callbacks are not allowed on Saturdays and are rescheduled for the next allowable day. • 1: Personal callbacks are allowed on Saturdays.
PersonalCallbackSundayAllowed	0	Indicates whether personal callbacks are allowed on Sundays: <ul style="list-style-type: none"> • 0: Personal callbacks are not allowed on Sundays and are rescheduled for the next allowable day. • 1: Personal callbacks are allowed on Sundays.

Name	Default Value (integers)	Description
PersonalCallbackCallStatusToPurge	C, M	<p>If needed, create this registry entry.</p> <p>String containing the call status types to consider when purging old personal callback records. For example, if the string contains “C,M,F,L,I,” all calls with these call statuses are purged from the database. (If the registry entry is missing, the default is assumed.)</p> <p>Note The call status values can optionally be delimited using a comma, a hyphen, a semicolon, or a colon. For more information about call status values, see the <i>Database Schema Handbook for Cisco Unified Contact Center Enterprise</i> at https://www.cisco.com/en/US/products/sw/custcosw/ps1844/prod_technical_reference_list.html.</p>
PersonalCallbackNoAnswerRingLimit	4	<p>If needed, create this registry entry.</p> <p>The number of times a customer phone rings before classifying the call as an unanswered. The valid range is from 2 to 10.</p>

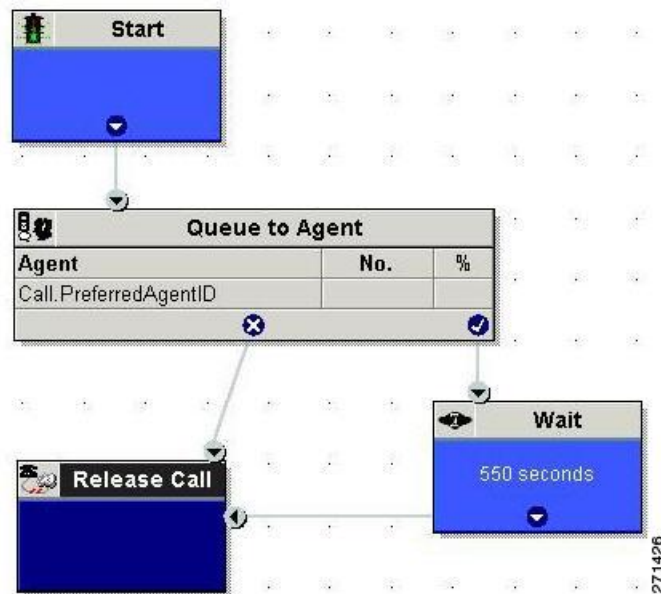
Step 10 Create an enterprise skill group and an enterprise route.

Step 11 In Script Editor, create a routing script that sets up the Personal Callback reservation.

Include the following nodes:

- Add a queue-to-agent node.
- Add a Wait node after the Queue to Agent node. Use a value that is less than the TimeToWaitForMRIResponse Dialer registry setting. The default value is 600 seconds.
- End the script in a Release Node, instead of an End Node, to limit “No Default Label” errors in the Router Log Viewer.

Figure 17: Personal Callback Reservation Script



Step 12 Configure the Queue to Agent node.

Create an Enterprise Skill Group

To use the Personal Callback feature, create the enterprise skill group for the agent using the **Enterprise Skill Group List** tool.

Procedure

- Step 1** In the **List** tools, open the **Enterprise Skill Group List** tool.
- Step 2** Create an enterprise skill group:
 - a) In the **Add Name** field, type the enterprise name.
 - b) Click **Add**.
 - c) Select the skill group, and then click **Save**.
- Step 3** In the **Attributes** tab, click **Add** to add the skill group or groups.
- Step 4** Click **Save**.

Create an Enterprise Route

After you create the enterprise skill group for the agent, create an enterprise route. This route targets the enterprise skill group.

Procedure

- Step 1** In the **List** tools, open the **Enterprise Route List** tool.
- Step 2** Create an enterprise route:
- In the **Name** field, type the enterprise route.
 - Click **Add**.
 - Select the route, and click **Save**.
- Step 3** In the **Attributes** tab, add the route.
- Step 4** Click **Save**.
-

Configure Queue to Agent Node

Procedure

- Step 1** In **Script Editor**, double-click the **Queue to Agent** node.
- Step 2** Press **Change** in the **Queue to agent type** section.
- Step 3** Click **Lookup agent reference by expression**, then click **OK**.
- Step 4** In the **Agent Expression** column, enter **Call.PreferredAgentID**.
- Step 5** Select the enterprise skill group.
- Step 6** Select the enterprise route.
- Step 7** Confirm that the **Peripheral** column is left blank.
- Step 8** Click **OK** to save the **Queue to Agent** node.
- Step 9** Save and then schedule the script. When scheduling the script, use the call type that is configured for personal callback.
-

Related Topics

[Create an Enterprise Route](#), on page 97

[Create an Enterprise Skill Group](#), on page 97

Final Configuration and Verification

Configure Translation Route for Use with SIP Dialer

Configure the translation route for the transfer-to-IVR campaign or the agent campaign to transfer a connected outbound call with ECC call variables from the SIP Dialer to a VRU Peripheral.

You need configure the network VRU as Type 2 for IP IVR, or as Type 10 for CVP.

For more information about configuring the translation routes, see the Translation Route Wizard online help and *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/c/en/>

[us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html](https://support/customer-collaboration/unified-contact-center-enterprise/products-installation-and-configuration-guides-list.html).

Multi-Tenant Customer Instances Configuration

Outbound Option Multi-Tenant is no longer supported beginning with Release 9.0(1).

SIP Dialer Recording Parameters Configuration

When recording is enabled in a campaign on the SIP dialer, the number of recording files that result can be large. The following table lists registry settings that you can adjust to regulate the number of recording sessions and the maximum recording file size.

Registry Setting	Default Setting	Description
MaxAllRecordFiles	500,000,000	The maximum recording file size (in bytes) of all recording files. per SIP Dialer.
MaxMediaTerminationSessions	200	The maximum number of media termination sessions per SIP Dialer if recording is enabled in the Campaign configuration.
MaxPurgeRecordFiles	100,000,000	The maximum recording file size (in bytes) that the SIP Dialer deletes when the total recording file size, MaxAllRecordFiles, is reached.
MaxRecordingSessions	100	The maximum number of recording sessions per SIP Dialer if recording is enabled in the Campaign configuration.

Recording files are in the `HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM\customer instance\Dialer` directory.



Note Only the G.711 codec is supported for recording. To record outbound calls, configure the G.711 on the voice gateway.

Verification of Dialed Number DN/Script Selector Configuration

Outbound Option places agents in the Reserved state before using them for an outbound call. The dialer uses the dialed number to route to an agent. The following procedure describes how to verify that this mechanism works properly.

Verify DN/Script Selector Configuration

When an Outbound Option Dialer is installed in a Unified CCE environment, the dialer uses the dialed number to make routing requests through the Media Routing (MR) Peripheral Gateway. The following verification steps assume that you have completed all the applicable configuration and reservation script generation.

Procedure

- Step 1** Log in an agent to a skill group participating in an outbound campaign, and make the agent available. (Note the dialed number, which was configured in the Skill Group Selection tab in the Campaign component.) If a different dialed number is used for predictive and preview calls, make sure to verify both dialed numbers.
- Step 2** Run the Script Editor application and select the **Call Tracer** utility from the **Script > Call Tracer** menu. Select the routing client that is associated with the MR PG and select the Dialed Number.
- Step 3** Press **Send Call** to simulate a route request and note the results. If a label was returned for the agent who was logged in above, the reservation script is working properly and the dialer can reserve agents through this script.
-

Verify Campaign Configuration

As a final step to verify that you configured your Outbound Option campaign correctly, create a small campaign of one or two entries that dial work phones or your mobile phone.



CHAPTER 6

Administrative and Supervisory Tasks

- [Agent Management](#), on page 101
- [Campaign Management](#), on page 102
- [SIP Dialer Voice Gateway Over-capacity Errors](#), on page 107
- [Update the North American Numbering Plan Data](#) , on page 108
- [Reports](#), on page 109

Agent Management

In addition to reviewing the following sections, note that the following table lists agent tasks and their documentation references.

Task	Where Discussed/Notes
Adding agents	<i>Cisco Unified Contact Center Enterprise Installation and Upgrade Guide</i>
Dedicating agent to Outbound Option campaigns	<i>Cisco Unified Contact Center Enterprise Installation and Upgrade Guide</i> ; assign the agent only to campaign skill groups
Re-skilling agents	CCE Web Administration Application Online Help

Agent Addition

You assign agents to skill groups to map them to campaigns and to skill the agents for multiple active campaigns.



Note An agent can be assigned to multiple campaigns.

Agents Dedicated to Only Outbound Option Campaigns

There is no setting to restrict a particular agent to only Outbound Option campaigns. If you want to dedicate a particular agent, associate the agent only with Outbound Option campaign skill groups.

Agent Re-skilling

The Unified CCE Web Administration application allows supervisors to sign-in and change the skill groups for agents they manage. CCE Web Administration is a browser-based application for use by call-center supervisors. You can change the skill group designations of agents on your team and quickly view skill group members and details about individual agents. Changes you make to an agent's skill group membership take place immediately without the need for the agent to exit and re-enter the system.

See the CCE Web Administration Application online help for information about using the agent re-skilling feature.

See the *Administration Guide for Cisco Unified Contact Center Enterprise* for detailed instructions on how to re-skill agents.

Campaign Management

To manage your campaigns most efficiently, use multiple query rules instead of using multiple campaigns.

Single Campaign Versus Multiple Campaigns

You might choose to run multiple campaigns because of different calling policies (for example, time rules) or to run different outbound modes simultaneously.

From the perspective of dialer port allocation, running fewer campaigns with a larger agent pool is more efficient. Dialer ports are allocated based on the number of agents assigned and the current number of lines per agent to dial. The more campaigns you have that are active, the more the ports are distributed across the campaigns, which affects overall efficiency.

Use query rules to break down a campaign into smaller requirements. These rules can be enabled based on penetration or scheduled times. Campaign reports are available on a query rule level.



Note In multiple campaigns, the skill groups of agents handling the calls must be the same as those of a single campaign.

Results from Individual Customers

After running a campaign, you can generate a list of customers who were reached, not reached, or have invalid phone numbers.

The following are options for how to receive this information from the Outbound Option solution.

Interpret Information from Dialer_Detail Table

The Dialer_Detail table is a single table that contains the customer call results for all campaigns. When you view the Dialer_Detail table, note that each attempted Outbound Option call is recorded as an entry in the table. Each entry lists the number called and which numbers are invalid.

For more information, see the appendix on the Dialer Detail Table.

Dialing List

You can also review the Dialing List in the Campaign Manager's private database on the Logger Side A for customer call information. However, using this source has several drawbacks when compared to the Dialer_Detail table:

- You must avoid querying this table while campaigns are in progress. Excessive activity on this table slows the performance of the real-time processes running on Logger Side A, particularly the Campaign Manager. This can lead to interruptions in dialing and long idle times for agents.
- There is a different dialing list table for every campaign query rule. You must look in multiple locations as opposed to looking in the one Dialer_Detail table.

Use the Dialer_Detail table for customer call information whenever possible.

Management of Campaign Manager Database Tables

The Campaign Manager tables, Dialing_List and Personal_Callback_List can grow to be large. If the database size grows too large, Campaign Manager performance can significantly slow down. To limit the size of the Outbound Option database, a stored procedure is run daily at midnight to purge records that are no longer needed.

By default, records are removed from the Personal_Callback_List table when the record's **CallStatus** is either C, M, or D, and the **CallbackDateTime** for the record is more than five days old. In the Dialing_List table, records are removed by default when **CallStatusZone1** has a value of either C, M, or D, and **ImportRuleDate** is more than five days old.

You can change the status and age of the records to be removed by modifying the Campaign Manager registry values on the Logger machine. The registry settings are located in HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM\<instance name>\LoggerA\BlendedAgent\CurrentVersion in the Outbound Option registry.

- To specify the records to remove from the Personal_Callback_List table, set **PersonalCallbackCallStatusToPurge** and **PersonalCallbackDaysToPurgeOldRecords**.



Note **PersonalCallbackCallStatusToPurge** is not added by default. To change the call status of the records to remove, create this registry setting manually.

- To specify the records to remove from the Dialing_List table, set **DialingListCallStatusToPurge** and **DialingListDaysToPurgeOldRecords**.



Note **DialingListCallStatusToPurge** is not added by default. To change the call status of the records to remove, create this registry setting manually.

To specify the age of the records to be removed, set **PersonalCallbackDaysToPurgeOldRecords** or **DialingListDaysToPurgeOldRecords** to specify the number of days to keep the record before it is removed. For the Personal Callback list, this value is the number of days after the personal callback is scheduled (CallbackDateTime). For the Dialing List, this value is the number of days after the record is imported

(ImportRuleDate). The default is 5. The valid range is 1 to 30. If the value is not set or set to 0, the automated purge is disabled.

To set the call status of the records to be removed, set **PersonalCallbackCallStatusToPurge** or **DialingListCallStatusToPurge** to a string containing the call status types to apply when purging personal callback or dialing list records. For example, if the string contains “C,M,F,L,I,” all records with these call statuses, that are also older than the number of days specified by **PersonalCallbackDaysToPurgeOldRecords** or **DialingListDaysToPurgeOldRecords**, are removed from the database.

You can specify the following call status values:

Value	Description
U	Unknown
F	Fax
I	Invalid Number
O	Operator
L	Not Allocated
X	Agent Not Available
C	Closed
M	Max Calls
D	Dialed

Management of Predictive Campaigns

The following sections provide guidelines to follow when working with predictive campaigns.

Initial Values for Lines per Agent

Determining the initial value for the number of lines per agent is not as simple as inverting the hit rate. If a campaign has a 20% hit rate, you cannot assume that five lines per agent is the applicable initial value for the campaign if you are targeting a 3% abandon rate. The opportunity for abandoned calls increases geometrically as the lines per agent increases; therefore, set the initial value conservatively in the campaign configuration.

If the reports show that the abandon rate is below target and does not come back in line very quickly, modify the initial value in the campaign configuration to immediately correct the lines per agent being dialed.

End-of-Day Calculation for Abandon Rate

It is not unusual for a campaign to be over the abandon rate target for any given 30 minute period. The dialer examines the end-of-day rate when managing the abandon rate. If the overall abandon rate is over target for the day, the system targets a lower abandon rate for remaining calls until the average abandon rate falls into line. This end-of-day calculation cannot work until after the campaign has been running for one hour. Small sample sizes due to short campaigns or campaigns with fewer agents might not give the dialer enough time to recover from an initial value that is too high.

Similarly, if the campaign is significantly under the target abandon rate, it might begin dialing more frequently with an abandon rate over target for a while to compensate in the abandon rate.

Transfer of Answering Machine Detection Calls to Agents

When enabling the Transfer AMD (Answering Machine Detection) to agent option for an agent campaign or enabling the Transfer AMD to IVR option for an IVR campaign, consider the increase in calls to the target resources (agents or IVR) when determining the initial value. If the expectation is that the AMD rate and the live voice rate are over 50%, perhaps start out with an initial value of 1.1 or even one line per agent to stay under a 3% abandon rate.

Parameter Tuning

The Voice Calls Per Adjustment and Gain parameters are settings in the Advanced Users configuration tab used to control the way the predictive dialing behaves. Do not modify the default values unless you understand the parameters and the possible risks incurred when changing the pacing.

- The Voice Calls Per Adjustment parameter is a count of the number of live voice connections that are required to trigger a correction. (The default value is 70 voice calls.) If the abandon rate exceeds the target by a significant margin, the dialer can make corrections before collecting 70 calls.
- The Gain parameter controls the size of the Lines per agent corrections.

Setting the Voice Calls Per Adjustment parameter to a smaller setting leads to larger fluctuations in the measured Abandon Rate because the sample size is less significant. This results in less change in the Lines per agent value over time.



Caution

Be careful when modifying both parameters (Gain and Voice Calls Per Adjustment) at the same time. For example, increasing the Gain while decreasing the Voice Calls Per Adjustment results in larger changes in the “Lines per agent correction rate,” which might overcorrect changes in measured values.

Decreasing the Gain while increasing the Voice Calls Per Adjustment can similarly cause too slow of a change to underlying changes in the hit-and-abandon-rates. A campaign that is reaching more than 20 live voice customers every minute (600 per half hour) might benefit from reducing the Gain, but a lower Gain becomes less effective as the number of agents in the campaign dwindles or the hit rate changes rapidly.

Management of Agent Idle Time

One of the key reporting metrics for administrators managing campaigns is the amount of time agents spend idle between calls.

There are many possible reasons for longer idle times, such as a combination of one or more of the following:

- A dialing list with a low hit rate. The solution is to create an improved list.
- A small agent pool results in fewer calls, resulting in slower adjustments. One solution is to add more agents to the pool.
- Shorter average handle times means agents become available more frequently. A shorter handle time means that the agent idle time percentage will climb.
- Not enough dialer ports deployed or too many agents. Deploy more ports or use fewer agents.

- A large number of retry attempts at the beginning of a day when running with append imports resulting in lower hit rates. Prioritize pending over retries.
- Modifying the maximum number of attempts up or down in an active campaign. This activity can interrupt the Campaign Manager's processing of dialer requests for records, as mentioned earlier in this chapter. One solution is to perform the activity during off hours.
- Running out of records to dial. Import new records.

Enhanced Predictive Dialing, is a new registry setting with the controlled feature. This setting is an attempt to reduce the idle time when there is a low hit rate for voice customers, and also when there's a long idle agent time. This change adapts to the dialing rate more aggressively, and it may not respect the configured abandon limit. This feature is disabled by default.

Enabling the *reclassifytransferfailures* registry setting reduces the agent idle time and will also improve the predictive dialing. For more information see, [Dialer Registry Settings, on page 122](#)

Sources of Higher Idle Times in Reports

The following Outbound Option reports provide information regarding sources of higher idle times:

- Campaign Consolidated Reports: These reports provide a very useful overview of a campaign by combining campaign and agent skill group statistics into a single report. They provide average idle time, campaign hit rate, the number of agents working on the campaign, as well as their Average Handle Time per call. Low hit rates and low average handle times result in more work for the dialer to keep those agents busy.
- Dialer Capacity Reports: These reports show how busy the dialers are and how much time was spent at full capacity when the dialer was out of ports. They also provide the average reservation call time as well as the average time each dialer port spent contacting customers.

Dialer Saturation

If both Dialers have relatively low idle times and high all ports busy times, then it is likely the Dialers have been oversubscribed. The combination of number of agents, Dialing List hit rate, and average handle time are likely more than the deployed number of ports the Dialer can handle.

To solve this problem, perform one of the following actions:

- Reduce the number of agents working on the campaign.
- Move a campaign to a skill group on another agent PG.
- Add more Dialer ports to the solution, possibly on another agent PG.

Few Available Records

Call Summary Count reports show how many records in the aggregate campaign dialing lists have been closed and how many are still available to dial.

Retry Records in Append Campaigns

Running campaigns with an append import and maximum number of attempts greater than one can result in a large number of retries at the beginning of the next day. As a general rule, retries usually have a lower hit rate than pending records. Longer idle times for agents might result until the first group of retries are called

because retry records usually have priority over pending records by default. The number of records increase as you increase the retry time.

There are a few ways to manage this situation:

- Shorten the retry times to reduce the number of retries that are scheduled at the end of the day.
- Change the Campaign Manager priority scheme so all numbers and records are tried once before any retries are attempted. Set the PendingOverRetryEnabled registry key to **1** in the Campaign Manager.



Note See the appendix on Registry settings for detailed information about the PendingOverRetryEnabled registry setting.

- Modify the campaign import to use the **Overwrite** option instead of the **Append** option and import new records daily.

SIP Dialer Voice Gateway Over-capacity Errors

If your network monitoring tool receives an alarm in the SIP dialer about being over capacity, you can ignore the alarm unless it becomes an ongoing issue. This section describes the source of the alarm and remedial actions associated.

If the Voice Gateway in a SIP dialer implementation is over dialed or over capacity, the SIP Dialer receives one of the following messages:

- SIP 503 messages if the SIP Dialer is deployed with Voice Gateway only
- SIP 502 messages if the SIP Dialer is deployed with SIP Proxy

If the percentage of SIP 502 or SIP 503 messages reaches 1% of all messages, the SIP dialer raises an alarm.

Use one of the following measures to attempt to remedy the problem if Voice Gateway capacity becomes an ongoing issue:

- Check the Voice Gateway configuration. If there are errors, fix them and reset Port Throttle to its original value. Port Throttle (the calls-per-second rate at which the dialer dials outbound calls) is set on the Dialer General tab in the Configuration Manager.
- Check the sizing information. Adjust the value of Port Throttle according to the documented guidelines.
- Enable the auto-throttle mechanism by setting the Dialer registry setting **EnableThrottleDown** to 1.

To set **EnableThrottleDown**, open the Registry Editor (regedit.exe) on the PG machine and navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM\<customerinstance>\Dialer`.

The SIP dialer performs an automatic throttle down when the percentage of SIP 502 or SIP 503 messages reaches 2% of all messages, if the auto-throttle mechanism is enabled. This throttle down means that the SIP dialer decreases the configured value of Port Throttle by approximately 10%.

If one throttle down does not correct the problem, the SIP dialer performs more throttle downs until either the problem is corrected or the value of Port Throttle is throttled down to 50% of the originally configured value.

For each automatic throttle down, alarm and trace messages clearly provide detailed information about the adjusted port throttle value, configured port throttle value, and time duration.

Even after the problem is corrected, the dialer does not automatically throttle back to the configured value. To increase the throttle back to the configured value, run the **updateportthrottle /portthrottle <configured value>** command using the process monitoring tool Procmon.

Update the North American Numbering Plan Data

The Regional Prefix Update Tool (RPUT) is used to update the Unified CCE database to the latest North American Local Exchange NPA NXX Database (NALENND).

- If Unified CCE ICM is using the North American Numbering Plan.
- On an Administration & Data Server that includes **Real-time Data Server** as part of its role.

The RPUT is composed of the following two files (installed in the `ICM\bin` directory on the Unified CCE AW-HDS-DDS server):

- `region_prefix_data.txt` (or the `<DatafileName>`)
Contains the data this tool uses to update the region prefix table in the Unified CCE database. Note that you should change paths to the `ICM\bin` directory.
- `regionfix.exe`
This executable reads the `region_prefix_data.txt` data file and updates the region prefix table.

The RPUT is run from the command line as described in the following procedure.

Procedure

-
- Step 1** Open a command prompt (Select **Start** > **Run**, and enter `cmd`, then click **OK**).
- Step 2** Change the path to `ICM\bin`.
- Step 3** Enter the following at the prompt: `regionfix.exe <DatafileName>` (where `<DatafileName>` is the name of the data file).
- The Regional Prefix Update Tool then shows the version of the input data file and asks if you want to proceed. If you proceed, the tool connects to the Unified CCE database. The number of records that are to be updated, deleted, and inserted appear. These records are put into three different files:
- `region_prefix_update.txt` (which includes preserved Custom Region Prefixes)
 - `region_prefix_new.txt`
 - `region_prefix_delete.txt`
- Step 4** You can either delete or retain the entries present in the `region_prefix_delete.txt` file while performing the insertions and updates. To retain the entries, type **No** when the tool prompts you to delete the entries. Type **Yes** to delete the entries.
- Step 5** Check the contents of the files before proceeding.
- Step 6** Answer **Yes** to proceed with the update.

When the update is complete, the tool displays the following message:

```
Your region prefix table has been successfully updated.
```

Reports

This section provides an overview of the Outbound Option reports available in the Cisco Unified Intelligence Center.

For complete information about using Unified Intelligence Center, how to download and import report bundles, and detailed descriptions of the templates for the reports mentioned here, see Cisco Unified Contact Center Enterprise Reporting User Guide at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-user-guide-list.html>.

Outbound Option Reports

This section describes the Outbound Option reports, created using the Unified Intelligence Center.

- [Outbound Historical Reports Bundle, on page 110](#)
- [Outbound Realtime Reports Bundle, on page 111](#)
- [Agent Reports, on page 111](#)
- [Campaign and Dialer Reports, on page 112](#)
- [Skill Group Reports, on page 114](#)
- [Import Rule Reports, on page 114](#)
- [Dialer Reports, on page 113](#)



Note All Outbound Option reports are voice-only reports and can be used in Unified CCE environments.

The Outbound Option reports are distributed in two report bundles: Realtime Outbound and Historical Outbound. The report bundles are available as downloads from Cisco.com <https://software.cisco.com/download/type.html?mdfid=282163829&catid=null>. Click the Intelligence Center Reports link to view the available report bundles. Depending on how it was deployed, your installation of Unified Intelligence Center may include all or a subset of these reports.

Additionally, sample custom report templates are available from the Cisco Developer Network (<https://developer.cisco.com/web/ccr/documentation>.)

For information on importing report bundles or custom reports to the Cisco Unified Intelligence Center, see *Cisco Unified Contact Center Enterprise Installation and Upgrade Guide* .



Note Call Type reporting can be used on Outbound Option reservation calls and transfer to VRU calls. Call Type reporting is not applicable for outbound customer calls because a routing script is not used.

Outbound Historical Reports Bundle

The Outbound Options Historical reports receive data from the historical data source. Reports are populated with interval data that has a default refresh rate of 15 minutes.

Half-hour/Daily: Provides statistics for each half-hour period. Many of the half-hour reports are also available in a daily report format.

The Outbound Historical bundle contains the following reports:

Report	Description
Attempts per Campaign Daily	Shows the status (summary and percentage) of each campaign for the selected time period and the breakdown of attempts (in percentage) of each campaign for the selected time period.
Campaign Consolidated Daily	Shows the daily activity and performance of the selected campaigns and their skill groups for the selected time period and provides analysis of the actual customer calls (outbound calls which reached live voice, inbound calls, or calls transferred to the campaign's skill group) for the selected campaigns and their skill groups for the selected time period.
Campaign Consolidated Half Hour	Shows the list of Consolidated Calls and Agent Statistics per Campaign by Half Hour and Breakdown of completed calls.
Campaign Half Hour Summary	Shows the status for all campaigns for the selected time period, the status (summary and percentage) of each campaign for the selected time period and the breakdown of attempts (in percentage) of each campaign for the selected time period.
Dialer Call Result Summary Half Hour Dialer Capacity Daily Dialer Capacity Half Hour	Shows the status of each dialer for the selected time period.
Import Rule	Shows the status of imported records for the selected time period.
Query Rule Within Campaign Daily	Shows the breakdown of attempts (in percentage) of each campaign for the selected time period and the status (summary and percentage) of each campaign for the selected time period.
Query Rule Within Campaign Half Hour	Shows the breakdown of attempts (in percentage) of each campaign for the selected time period, the status (summary and percentage) of each campaign for the selected time period and the status for each Query rule within a campaign for the selected time interval.

Outbound Realtime Reports Bundle

The Outbound Option Real Time reports display current information about a system entity; for example, the number of tasks an agent is currently working on or the number of agents currently logged in to a skill group. By default, the reports automatically query the Admin Workstation database on the distributor every 15 seconds. The data is written to the database by the Router almost every 10 seconds.

The Outbound Real Time Reports Bundle contains the following reports:

Report	Description
Call Summary Count per Campaign Real Time	Shows the status of each query rule within a campaign, status of all campaign records, and the currently valid campaign dialing times.
Dialer Real Time	Shows the status of each dialer, including the number of contacts dialed today and the result of each attempt.
Import Status Real Time	Shows the status of Outbound Option import records.
Query Rule Within Campaign Real Time	Shows the status of all campaign records, dialing times, and query rule within a campaign.

Agent Reports

In addition to the reports contained in the Outbound Reports bundles, other Agent reports also provide information about Outbound activities:

Report	Outbound Option Fields
Agent Queue Real-Time Agent Real-Time Agent Skill Group Real-Time Agent Team Real-Time	The Direction field indicates the direction of the call that the agent is currently working on including Other Out/Outbound Direct Preview, Outbound Reserve, Outbound Preview, or Outbound Predictive/Progressive. The Destination field indicates the type of outbound task on which the agent is currently working.
Agent Team State Counts	The Active Out field shows the number of agents currently working on outbound tasks.
Agent State Real Time Graph	For agents handling Outbound Option calls, the Hold state indicates that the agent has been reserved for a call. The Outbound Dialer puts the agent on hold while connecting the call.

Interpreting agent data for Outbound Option tasks, requires understanding how Outbound Option reserves agents, reports calls that are connected to agents, and handles calls that are dropped by customers before the calls are connected.

Outbound Option is automatically enabled at setup. It provides automatic outbound dialing capability.

The Outbound Option Dialer assigns and connects calls differently than regular contact center enterprise routing. Report data for agents handling Outbound Option calls therefore differs from data for agents handling typical voice calls and multichannel tasks.

When the Outbound Dialer calls a customer, it reserves the agent to handle the call. The Dialer places a reservation call to the agent and changes the agent's state to Hold. This reservation call is reported as a Direct In call to the agent.

For typical calls, the agent is placed into Reserved state when the contact center reserves the agent to handle a call. For Outbound Option calls, reports show the agent in Hold state when reserved for a call and the time that agent spends reserved is reported as Hold Time.

When the customer answers the call, the Outbound Option Dialer transfers the call to an agent. The call is now reported as a Transfer In call to the agent. When the customer call is transferred to the agent, the Dialer drops the reservation call and classifies it as Abandon on Hold.

The abandoned call wait time, set in the Campaign Configuration screen, determines how calls are reported if the caller ends the call. Calls are counted in the Customer Abandon field in both Real Time and Historical campaign query templates only if the customer ends the call before the abandoned call wait time is reached.

For agent reporting per campaign, Outbound Option provides reports that accurately represent the Outbound Option agent activity for a contact center, including information grouped by skill group.

The following list describes the data that are presented in the agent reports.

- A real-time table that shows Outbound Option agent activity that is related to Outbound Option calls.
- A historical table that shows agent daily performance for Outbound Option predictive calls, by skill group.
- A historical table that shows agent daily performance for Outbound Option preview calls, by skill group.
- A historical table that shows agent daily performance for Outbound Option reservation calls, by skill group.

Campaign and Dialer Reports

Outbound Option provides a campaign report template that describes the effectiveness of a campaign and the dialer. This list can be used for Agent and VRU campaigns.

Observe the following guidelines when using the campaign reports:

- Campaign Real Time reports describe how many records are left in the campaign dialing list.
- Both Campaign and Dialer Half Hour reports provide the call result counts.
- Dialer utilization fields in the Dialer Half Hour report are unaffected, although the Half Hour record might be missing if the Campaign Manager was inactive during the half-hour boundary. When the Dialer restarts, only the Dialer Utilization fields are affected; therefore, the Dialer Utilization only captures port status since the Dialer restarted during that half hour. Some records might be left in an active state for a short period of time after the Dialer or Campaign Manager restarts, but the Campaign Manager has a mechanism to reclaim those records.



Note Campaign Real Time reports capture call results since the last Campaign Manager restart only. If the Campaign Manager restarts, data collected before the restart is lost.



Note When the active Campaign Manager fails over, partial campaign interval reports are generated for the relevant interval based on the data that was available after failover. Some of the campaign statistics collected prior to failover will be missing.

The campaign interval tables used in Reporting are impacted due to this scenario.

The following list describes the data that is presented in the campaign reports.

- A summary of call results for query rules within a campaign since the beginning of the day.
- A summary of call results for a campaign since the beginning of the day. It includes a summary of all query rules within the campaign.
- A view of what is configured for valid campaign calling times for zone1 and zone2 for selected campaigns. The times are relative to the customer's time zone.
- A view of what is configured for valid campaign calling times for zone1 and zone2 for selected campaign query rules. The zone times are relative to the customer's time zone. The query rule start and stop times are relative to the Central Controller time.
- How many records for selected query rules have been dialed to completion, and how many records remain.
- How many records for selected campaigns have been dialed to completion, and how many records remain.
- A summary of call results for selected campaign query rules for selected half-hour intervals.
- A summary of call results for all query rules for selected campaigns for selected half-hour intervals.
- A historical table by half-hour/daily report that shows the status (summary and percentage) of each campaign for the selected time period.
- A historical table by breakdown of attempts (in percentage) of each campaign for the selected time period.
- A historical table by half-hour/daily report that shows the status (summary and percentage) per query rule of each campaign for the selected time period.
- A historical table by breakdown of attempts (in percentage) per query rule of each campaign for the selected time period.
- A summary half-hour/daily report that shows activity and performance of the selected campaigns and their skill group for the selected time period, including abandon rate, hit rate, and agent idle times.
- A historical table by breakdown of actual customer calls (outbound calls which reached live voice, inbound calls, or calls transferred to the campaign skill group) for the selected campaigns and their skill groups for the selected time period.

Dialer Reports

The Outbound Option Dialer reports provide information about the dialer. These reports include information about performance and resource usage. The templates also enable you to determine whether you need more dialer ports to support more outbound calls.

The following list describes the data presented in the Outbound Option Dialer reports:

- A real-time table that shows contact, busy, voice, answering machine, and special information tone (SIT) detection for each dialer. A SIT consists of three rising tones indicating a call has failed.
- An historical table that records contact, busy, voice, answering machine, and SIT Tone detection for each dialer by half-hour intervals.
- Displays information about the amount of time the dialer was idle or had all ports busy.
- Displays Dialer status on a port-by-port basis used for troubleshooting. If this report does not display any records, then the data feed is disabled by default. It is only enabled for troubleshooting purposes.

Skill Group Reports

For skill group reporting per campaign, Outbound Option provides reports that represent the skill group activity for a contact center.

The following list describes the data presented in the skill group reports:

- A real-time table that shows all skill groups and their associated Outbound Option status.
- A historical table that records Outbound Option counts for the agent states *signed on*, *handle*, *talk*, and *hold* by half-hour intervals.

Import Rule Reports

Outbound Option reports also enable you to view the success of record imports. Using the Import Rule templates, you can monitor whether records are being added successfully (good records) or are failing (bad records), and how long it takes to import the records.

The same import rule reports are used for Do Not Call and Contact List imports. The reports display a historical view of when the imports were done, the number of records imported, and the number of records that were considered invalid because of length constraints or improper formatting.

For contact list imports, the reports also provide insight into the number of contacts that were assigned with the default time zone information for the campaign, as well as the number of contacts that were imported into the dialing list after the query rule and format validation was performed.

The following information is available in the Import Rule reports:

- Number of successful, unsuccessful, and total records imported by time range
- Current import status
- A real-time table that shows the number of successful, unsuccessful, and total records imported or to be imported.
- A historical table that shows the number of successful, unsuccessful, and total records imported by time range. The Total Records column indicates the total number of records available in the import file.



Note Import Rule reporting data is not populated for Outbound API-based imports. However, you can get this data directly from the API.



CHAPTER 7

Graceful Shutdown

- [Dialer Behavior During Graceful Shutdown, on page 115](#)

Dialer Behavior During Graceful Shutdown

The graceful shutdown feature allows you to perform firmware upgrades, apply security patches, and apply engineering specials (ES) without the need for a maintenance window. With this feature, actively used processes can be brought down while the backup processes take over, with minimal impact to the contact center. When you place the Unified CCE Outbound Option Dialer into maintenance mode, dialer calls and reporting are not impacted.

When you place the Dialer into maintenance mode, it temporarily pauses new dialing while it transitions responsibility to the standby dialer. The standby dialer activates when all calls ringing at the customer have been transferred to an agent or IVR, or terminated due to customer busy or no answer. The amount of time it takes for the active dialer to shut down is generally the time configured for the longest Ring No Answer.

For predictive and progressive campaigns, any reserved agents are unreserved after the dialer attempts in progress are completed or transferred to agents or IVR.

For preview campaigns or personal callbacks, the dialer waits for agents to accept or reject the last contact in progress.

The maintenance mode dialer continues to monitor dialer calls that are connected to agents until completion, for up to 90 minutes. After the calls are complete, the maintenance mode dialer shuts down.

When the Unified CCE Enterprise Media Routing PG or Agent PG is placed into maintenance mode and shuts down, dialer calls and reporting are not impacted. For more information, see the *Administration Guide for Cisco Unified Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-maintenance-guides-list.html>.



APPENDIX A

Registry Settings

- [Campaign Manager Registry Settings, on page 117](#)
- [Dialer Registry Settings, on page 122](#)

Campaign Manager Registry Settings

The following registry settings modify the behavior of the Campaign Manager:

Registry Setting	Default Setting	Description
BADBDriveFreeSpaceThreshold	20% free.	Indicates the percentage of free space left on the Microsoft SQL Server drive where the Outbound Option database is installed before an alarm is raised.
BADbFreeSpaceThresholdInPercent.	20% free.	Indicates the percentage of free space left on the Outbound Option database before an alarm is raised.
CallbackTimeLimit (Campaign Manager only)	15 minutes	Calculates the callback time range for each personal and regular callback in minutes. The Campaign Manager queries the Personal or Regular Callback List for callback records, where the CallbackDateTime database column value is between the current time and current time minus the CallbackTimeLimit. For example, if the current time is 3:00 PM and the CallbackTimeLimit is 15 minutes, the query to retrieve Personal Callback records is “where CallbackDateTime >= 2:45 PM and CallbackDateTime <= 3:00 PM.” This column is also used to control how long a Personal or Regular Callback is retried after it is sent to a dialer. If the CallbackTimeLimit is set to 15 minutes, the Dialer keeps reserving the agent and calling the customer for 15 minutes before giving up for that day. For Personal Callbacks, the Dialer re-reserves the agent based on the PersonalCallbackTimeToRetryReservation registry entry.
ContactTableImportThreshold	Default Value is 1 million, and if the value is set to 0 you will not receive the SNMP trap.	This is a threshold for number of records in a contact table. If number of records go beyond this threshold value, SNMP trap will be generated corresponding to that contact table after every successful import.

Registry Setting	Default Setting	Description
DialerDetailBufferSize	20	Describes how many dialer detail records should be buffered before sending to the Central Controller database.
DialerDetailBufferTimeout	5	Describes how long to wait before sending dialer detail records to the Central Controller database when the DialerDetailBufferSize is not reached.
DialerDetailEnabled	TRUE	When set to 0, dialer detail records are not sent from campaign manager. All Dialer Detail records are disabled.
DialingListCallStatusToPurge	If the registry entry is missing, the default values are C,M, and D.	<p>A string containing the call status types of records in the Dialing_list table to be included in the automated purge. The types specified are compared with the value of CallStatusZone1. For example, if the string contains "C,M,F,L,I," any calls with these call statuses are purged from the database.</p> <p>This registry setting is not added by default; it must be added manually.</p> <p>To be purged, records must also be older than the number of days set in DialingListDaysToPurgeOldRecords.</p> <p>Note The call status values can optionally be delimited using a comma, a hyphen, a semi-colon, or a colon.</p>
DialingListDaysToPurgeOldRecords	Minimum value is 1; maximum value is 30; default is 5 days	<p>The number of days after the record is imported before it is included in the automated purge of the Dialing_list table. This value is compared with ImportRuleDate.</p> <p>To be purged, records must also have a call status that is set in DialingListCallStatusToPurge.</p>
DNCDBPollingInSec	Minimum value is 10 seconds; maximum value is 600 seconds; default value is 60 seconds.	Do Not Call Records are loaded into the Campaign Manager by the Campaign Manager's periodic reading of the Do_Not_Call table. The polling frequency of this operation is determined by this registry key in seconds.
EMTClientTimeoutToFailover	Default value: 60 seconds	<p>The interval time, in seconds, at which the active Campaign Manager sends the failover message to the router if the Dialer or BAImport do not connect with the Campaign Manager.</p> <p>Set this registry value. If it is not set, the default value of 60 seconds is used.</p>
EMTHeartBeat (Outbound Option Import only)	500 milliseconds	Outbound Option Import sends a heartbeat message to Campaign Manager every n milliseconds to indicate that it is still alive.

Registry Setting	Default Setting	Description
ImportAreaCodeProcDisable (Outbound Option Import only)	0, enabled	<p>When set to 0, this setting performs standard region_prefix matching. When set to 1, the GMT time zones are always set to the local time zone of the ICM Logger.</p> <p>If there is a prefix match, the GMT time zones for each customer record are retrieved from the Region_Prefix table.</p> <p>Note Time zones are selected based on the data in the Region_Prefix database. When contacts are imported, the phone number is assigned a time zone based on the information in the region prefix table. Each prefix has settings for the time zone and daylight savings observation. If the prefix of the contact number does not match any of the prefixes listed in the region prefix table, then the contact number is assigned the time zone listed in the campaign configuration tool Call Target Tab.</p> <p>Note If this registry setting changes, the ICM Logger must be restarted before the new values take effect. Alternatively, restart the Outbound Option Import process by closing its console window.</p>
ImportRegLocalNumberSize (Outbound Option Import only)	7 digits	<p>The number of digits in a phone number must be greater than this registry entry to perform a search of the region_prefix table.</p> <p>Note If this registry setting changes, the ICM Logger must be restarted before the new values take effect. Alternatively, restart the Outbound Option Import process by closing its console window.</p>
MinimumCallsForHitRate (Campaign Manager only)	30 calls	Specifies the minimum number of calls that have to be attempted before the hit-rate percentage calculation begins for a campaign query rule.
PendingOverRetryEnabled	0	When set to 1, pending records get priority over retry records for all campaigns.
PersonalCallbackNoAnswerRingLimit (Campaign Manager only)	Minimum value is 2; maximum value is 10; default is 4 rings	The number of times a customer phone rings before being classified as an unanswered call.
PersonalCallbackCallStatusToPurge (Campaign Manager only)	If the registry entry is missing, the default values are C,M,D.	<p>A string containing the call status types of records in the Personal_Callback_List table to be included in the automated purge. For example, if the string contains “C,M,F,L,I,” all calls with these call statuses are purged from the database.</p> <p>This registry setting is not added by default; it must be added manually.</p> <p>Note The call status values can optionally be delimited using a comma, a hyphen, a semi-colon, or a colon.</p>

Registry Setting	Default Setting	Description
PersonalCallbackDaysToPurgeOldRecords (Campaign Manager only)	Minimum value is 1; maximum value is 30; default is 5 days	The number of days after the personal callback has been scheduled to keep the record before it is purged.
PersonalCallbackDisableViaQueryRule (Campaign Manager only)	0	This registry key determines if the Callback has to be enabled if the query rule is disabled.
PersonalCallbackMaxAttemptsDefault (Campaign Manager only)	5	Sets the maximum number of times a personal callback is attempted (minimum value is 1; maximum value is 20). When the number of maximum attempts reaches 0, the record is not tried again and the status is set to M (maxed out).
PersonalCallbackMode	1	Not used.
PersonalCallbackRecordsToCache (Campaign Manager only)	Minimum value is 5; maximum value is 200; default is 20	The number of personal callback records to send to the Outbound Option Dialer at one time.
PersonalCallbackSaturdayAllowed (Campaign Manager only)	0	Indicates whether personal callbacks are allowed on Saturdays. <ul style="list-style-type: none"> • 0: Personal callbacks are not allowed on Saturdays and are scheduled for the next allowable day. For example, a personal callback which fails to reach the customer on a Friday is rescheduled for the following Monday. • 1: Personal callbacks are allowed on Saturdays.
PersonalCallbackSundayAllowed (Campaign Manager only)	0	Indicates whether personal callbacks are allowed on Sundays. <ul style="list-style-type: none"> • 0: Personal callbacks are not allowed on Sundays and are scheduled for the next allowable day. For example, a personal callback which fails to reach the customer on a Friday or Saturday is rescheduled for the following Monday. • 1: Personal callbacks are allowed on Sundays.
PersonalCallbackTimeToCheckForRecords (Campaign Manager only)	Minimum value is 1; maximum value is 30; default is 1 minute	The interval time, in minutes, at which the Outbound Option Dialer checks the Campaign Manager for personal callback records.
PersonalCallbackTimeToRetryBusy (Campaign Manager only)	Minimum value is 1; maximum value is 10; default is 1 minute	Sets the amount of time, in minutes, that the Outbound Option Dialer waits before retrying a personal callback when the customer's phone is busy.
PersonalCallbackTimeToRetryNoAnswer (Campaign Manager only)	Minimum value is 5; maximum value is 60; default is 20 minutes	Sets the amount of time, in minutes, that the Outbound Option Dialer waits before retrying a personal callback when the customer does not answer the phone.
PersonalCallbackTimeToRetryReservation (Campaign Manager only)	Minimum value is 1; maximum value is 10; default is 1 minute	Sets the amount of time, in minutes, that the Outbound Option Dialer waits before retrying to reserve an agent if the agent is not available.

Registry Setting	Default Setting	Description
ReplicationExpirationThreshold	600 seconds	Controls the expiration threshold for replication. If the data is not replicated within this threshold, an EMS Report Event is signaled periodically until the condition has improved.
RescheduleCallbacks (Campaign Manager only)	1	Boolean value. Controls how to handle contacts that were requested to be called back at a particular time, but were left out in Pending call status 'P', for whatever reason. <ul style="list-style-type: none"> • 0: Pending dialing records are not rescheduled or purged. • 1: Pending dialing records are scheduled for retry at the next valid time.
SQLServer (Campaign Manager and Outbound Option Import)	null	Not used.
TCD_DBComputerName_A	""	Not used.
TCD_DBComputerName_B	""	Not used.
TCD_DBDatabaseName_A	""	Not used.
TCD_DBDatabaseName_B	""	Not used.
TCDCopyPendingEnabled	0	Not used.
TCDEnabled	0	Not used.
TCDKeepDays	30	Not used.
TimeToResetDailyStats (Campaign Manager only)	30 minutes after midnight (“00:30”)	Specifies the time of day (in 24-hour format: hh:mm) when the real-time statistics for DialerRealTime and CampaignQueryRealTime are reset.
UnknownCallStatusResetTime (Campaign Manager only)	60 minutes	The interval time, in minutes, at which the Campaign Manager resets the contact records in Unknown status to Pending status (available for reuse). Note Contact records are marked Unknown if they are in the Active state when the Campaign Manager is initialized or if the Outbound Option Dialer dialing those (Active) records disconnects from the Campaign Manager due to network or Outbound Option Dialer failure.
EnableMaxAttemptsPerNumber	0	Enable the maximum attempts per phone number in a record. For example: If every phone number has to be dialed only once then configure MaxAttempts to 1 and set EnableMaxAttemptsPerNumber to 1.

Registry Setting	Default Setting	Description
BAReplDriveFreeSpaceThreshold	15 Seconds	Represents the percentage of free Logger drive space allowed before outbound option replication stops and the databases are no longer in sync.
ReplicationFileSwitchDuration	15 Seconds	Represents the amount of time before temporary files are renamed to replication files. This registry also provides information to the standby Campaign Manager if it were to observe a temporary file remaining open for longer than this duration.

Dialer Registry Settings

The following registry settings modify the behavior of the Outbound Option Dialer. To specify the exact path, modify the registry path for the dialer to **HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM\<instance name>\Dialer** instead of **HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\Dialer**.

Registry Setting	Default Setting	Description
AnswerTransferUsingAgentPhone	1	When enabled (1), dialer automatically answers customer calls transferred to agent phones.
AutoAnswerCall	1	This registry key is not created until the process starts up. It controls whether the Dialer auto-answers the call or not. The guideline is to disable this and use the auto-answer in Unified CM if you want zip tone.
Ca_cnosig	20 seconds	Amount of silence before no ringback is returned, in seconds. If ringback is not detected within this time limit, the call is dropped. Note Changes made to this setting take effect after the Outbound Option Dialer is cycled.

Registry Setting	Default Setting	Description
CancelDialingCalls	0	<p>Controls behavior when started call attempts can be canceled once all agents are occupied and abandon to IVR is not configured. Setting to 0 never cancels calls after they have been started. Setting to 1 always cancels calls after they have been started once no agents are available. A value of 100 cancels all ringing calls that are less than 100 milliseconds after the dialing was started (that is, line went off hook).</p> <p>Note</p> <ol style="list-style-type: none"> 1. When CancelDialingCalls = 0, it cancels calls not confirmed to reach customer (which means SIP progress messages of 180, 181, 182, or 183 not yet received). The abandon to IVR configuration is ignored for canceling in this case. 2. When CancelDialingCalls > 0, and abandon to IVR configuration is enabled, the only calls that have not yet been started while waiting in the Port Throttle queue, are canceled.
CaptureEnabled	0	When set to 0, packet capturing is disabled; when set to 1, packet capturing is enabled.
CaptureOptions	-i 2 -tt -C 20 -s 0 -W 20 -w DialerCapture	<p>Options associated with packet capture:</p> <ul style="list-style-type: none"> • -i <iface>: Interface name to capture on • -tt : Print an unformatted time stamp on each dump line. • -w <filename>: Capture directly to file in pcap format, file can be opened with Wireshark. • -C <file_size>: The maximum size of a capture file. The units of file_size are millions of bytes (1,000,000 bytes, not 1,048,576 bytes). • -W <filecount>: The number of files created. The capture files are overwritten from the beginning, thus creating a rotating buffer. Capture files after the first capture file have the name specified with the -w flag, with a number after it, starting at 1 and continuing upward. • -s : Snarf <code>snaplen</code> bytes of data from each packet rather than the default of 68. Setting <code>snaplen</code> to 0 means use the required length to catch whole packets.
CaptureType	1	When set to 1, capture SIP packets only. When set to 2, capture the entire data payload on the Dialer host machine.
CCMTransferDelay	0	Not used.

Registry Setting	Default Setting	Description
CMServerA	NA	The hostname or IP address of the Campaign Manager on Side A.
CMServerB	NA	The hostname or IP address of the Campaign Manager on Side B.
ConsecutiveNoDialToneEvents	3	Not used.
CPAActiveThreshold	32	Signal must exceed CPAActiveThreshold*noiseThreshold to be considered active. For example, 32 is $10 * \log(32) = 15$ dB.
CPAJitterBufferDelay	150	The jitter buffer delay (in mS).
CPAMaxNoiseFloor	10000	Maximum Noise floor possible. Used to restrict noise floor measurement.
CPAMinNoiseFloor	1000	Minimum Noise floor possible. Used to restrict noise floor measurement.
CPAMaxToneSTDEV	0.600000	Standard deviation of zero crossing rate per block. Values lower than this and CPAMaxEnergySTDev are considered tones.
CPANoiseThresholdPeriod	100ms	The amount of time to wait for initial voice. The CPAAnalysisPeriod starts once the system detects speech.
CPARecordWaveFile	0 (off)	Setting this entry to 1 enables recording of the CPA period to assist in troubleshooting. The key must be added to be enabled.
CTIServerA	""	The machine name where CTI Server-Side A resides.
CTIServerB	""	The machine name where CTI Server-Side B resides.
CTIServerPortA	""	The TCP port number where CTI Server-Side A listens.
CTIServerPortB	""	The TCP port number where CTI Server-Side B listens.
CustRecReadyRequestToServer	30 seconds	Describes the polling interval when the campaign is enabled, agents are available, and the Dialer needs more records from the Campaign Manager. The first request is sent when the Dialer notices that it is low on records. Subsequent requests are sent after the TimeToWaitForRecord times out, based on this polling interval until more records are received.
DirectAgentDial	0	Not used.
DisableIPCPA	0	Disables call progress analysis for this Dialer.
EMTHeartBeat	500 milliseconds	Dialer sends a heartbeat message to the Campaign Manager every n millisecond to indicate that it is still alive.

Registry Setting	Default Setting	Description
EnhancedPredictiveDialing	N/A (Manual Registry)	<p>If there is no registry value or if the registry value is set as zero, Unified CCE uses the existing predictive algorithm.</p> <p>If the registry value is set to 1, Unified CCE uses the Enhanced Predictive Algorithm.</p> <p>Note Enable this registry only when there is low hit rate with long idle agent times. This change adjusts dialing rate more aggressively, so it may not respect the configured abandon limit.</p>
EnableAutoAcceptFeature	0	<p>Generally, an agent must respond to the Preview dialog when a reservation call is placed. With the implementation of the Auto Accept feature, the Outbound Option Dialer implements the Auto-Accept functionality. It causes the Dialer to Auto-ACCEPT the preview call in n seconds if the agent fails to respond to the preview dialog. The same applies to Personal Callback calls.</p> <p>This feature is disabled by default and the registry key must be set to one (1) to enable the feature.</p> <p>The PreviewReservationTimeout registry key is used to configure the auto-accept timer value.</p>
EnableHeartbeat	1 (enabled)	<p>EnableHeartbeat registry is used to enable heartbeats on the dialer. When this flag is enabled, the dialer sends heartbeats (SIP OPTIONS request message) to the SIP server - Proxy or Gateway.</p> <p>If there is no response from the SIP server, the dialer marks itself as not ready and inform the same to the campaign manager.</p> <p>If this registry is disabled, there is no indication if the SIP server goes down.</p>
HBInterval	5 seconds	The time between heartbeats.
HBNumTries	1	The number of times a timeout occurs before the SIP Dialer identifies the SIP Gateway or SIP Proxy as down.
LongDistancePrefix	“1”	Not used.
MaxAllRecordFiles	500,000,000	The maximum recording file size (in bytes) per SIP Dialer.
MaxMediaTerminationSessions	200	The maximum number of media termination sessions per SIP Dialer if recording is enabled in the Campaign configuration.
MaxPortCapacityReachedCount	30	The number of failed attempts to reserve a port before the Dialer logs a warning. The message states that the Dialer has reached maximum port capacity. The counter resets to 0 after logging the message.

Registry Setting	Default Setting	Description
MaxPurgeRecordFiles	100,000,000	The maximum recording file size (in bytes) that the SIP Dialer deletes when the total recording file size, MaxAllRecordFiles, is reached.
MaxRecordingSessions	100	The maximum number of recording sessions per SIP Dialer if recording is enabled in the Campaign configuration.
MRPort	38001	The connection port for the MR PIM.
OptimizeAgentAvailability	0	This registry entry is reserved for future use. Leave the value of this parameter at 0.
OverrideNetworkTones	0	Not used.
PersonalCallbackDN	“PersonalCallback”	Contains a script name that the MR PIM receives as a dialed number when personal callback calls require to reserve agents.
PersonalCallbackReattempt	1	Indicates whether the Dialer must retry or redial failed outbound personal callbacks. When set to 1 (default key value), the Dialer immediately redials failed personal callback numbers with dialing errors (where the CallResult value is 2) until maximum attempts are reached. To disable the Dialer from redialing personal callbacks, set the registry key value to 0.
PreviewReservationTimeout	600	Number of seconds to wait before canceling a preview agent’s reservation call. This key is automatically created when the Dialer starts. If a preview agent does not accept or reject a call within this time period, the agent’s reservation call is dropped and the record is marked as rejected. Note This registry setting also works with Direct Preview mode, and applies to the regular callback calls in both Preview mode and Direct Preview mode.
ReclassifyTransferFailures	0	When set to 1, answering machine calls that are abandoned due to lack of agent or IVR resources are not counted as abandoned voice calls. They will be counted as answering machine calls. This registry is also enabled by default on fresh installs, and disabled in upgraded systems.
RTPortFeedDisable	1	When set, real-time dialer port messages are disabled for this dialer. Enabling the Real-Time Port Feed by setting to 0 causes the dialpr01 report to populate, but this can cause impacts to the Outbound Campaign in delays in getting records.

Registry Setting	Default Setting	Description
SetAgentsReadyOnResvDrop	1	<p>When set to 1, the Outbound Option Dialer automatically sets manual IN agents to the Ready state, if the reservation call is dropped due to any reason other than transfer of a live customer call.</p> <p>If this value is set to 0, then manual IN agents assume the After Call Work (ACW) state at the end of each reservation call and manually become ready to receive another call.</p> <p>Note SetAgentsReadyOnResvDrop is applicable only for TDM dialer.</p>
SIPDialerPortBaseNumber	58800	This key specifies the port number used by the dialer to communicate with the SIP server. This registry is created by default when the dialer machine is installed.
SIPServerAddress	NULL	The IP address or DNS hostname of the SIP Proxy or SIP Gateway that this Dialer connects to, as specified during setup.
SIPServerPortNumber	5060	The port number that the SIP Dialer uses to communicate with the server.
SIPServerTransportType	1	<p>The transport type used to communicate with the gateway/CUSP.</p> <p>A setting of 1 indicates that the transport type is UDP, and a setting of 2 indicates that the transport type is TCP. Currently, only UDP is supported.</p> <p>Note Incoming transport time accepts TCP and UDP. The trunk accepts traffic from the Gateway in TCP or UDP.</p>
SkillGroupQueryDelay	1 second	The amount of time, in seconds, to wait between CTI Server skill group query requests.
SwitchPrefix	""	Dialing prefix prepended to every phone number; for example, this entry could be used to dial an outside line access number, such as 9.
TalkTimeAvg	60 seconds	The amount of time an average customer call takes. (Seed value for talk time, which is adjusted as a moving average as the system is used.)
TestNumberMaxDigits	5	Maximum length for test phone numbers. Test phone numbers do not receive any prefixes added by the Dialer.
TFTPServer	""	The name of the Unified CM TFTP server. This server is usually located on the Publisher Unified CM.
TimeToCTIBeginCall	7 seconds	The amount of time, in seconds, to wait for the CTI begin call event before canceling call.

Registry Setting	Default Setting	Description
TimeToFreeStuckCall	7200 seconds, which is 2 hours	The amount of time, in seconds, before a customer call is declared stuck and dropped.
TimeToFreeStuckPort	7200 seconds, which is 2 hours	The amount of time, in seconds, to wait before releasing a stuck port.
TimeToHoldCustomer	1 second	The amount of time, in seconds, to wait before abandoning a customer call due to lack of agents. If abandon to IVR is enabled for campaigns, this value should be set to 0 to reduce transfer delays.
TimeToReserve	10 seconds	The amount of time, in seconds, to wait before dropping a reservation call.
TimeToRetryCustomerRequest	30 seconds	The amount of time, in seconds, to wait before retrying a close customer record request to the Campaign Manager. When the Outbound Option Dialer finishes with a customer record, it sends a close customer record request message to the Campaign Manager. If this message is not sent, the Outbound Option Dialer retries the call based on the configured timeout.
TimeToRingCustomer	8 seconds	The amount of time, in seconds, each customer ring takes. For example, if this entry is set to 8 and the no-answer configuration in the campaign is set to 3 rings, then the Dialer classifies the call as no-answer within 3*8 (24) seconds.
TimeToTransfer	7 seconds	The amount of time, in seconds, to wait before dropping a call being transferred.
TimeToWaitForCTIResp	3 seconds	The amount of time, in seconds, to wait for the CTI Server to respond to a request before dropping the call.
TimeToWaitForIPDialTone	10 seconds	The amount of time, in seconds, to wait for the Unified CM dial tone.
TimeToWaitForMRIResponse	600 seconds (10 minutes)	The amount of time, in seconds, to wait for the MR PIM to respond to a new task request before canceling the request.
TimeToWaitForRecord	5 seconds	The amount of time, in seconds, to wait for customer records from the Campaign Manager before declaring the skill group disabled. Once a skill group has been disabled, the Dialer begins polling the Campaign Manager every <CustRecReadyRequestToServer> second for additional records.



APPENDIX **B**

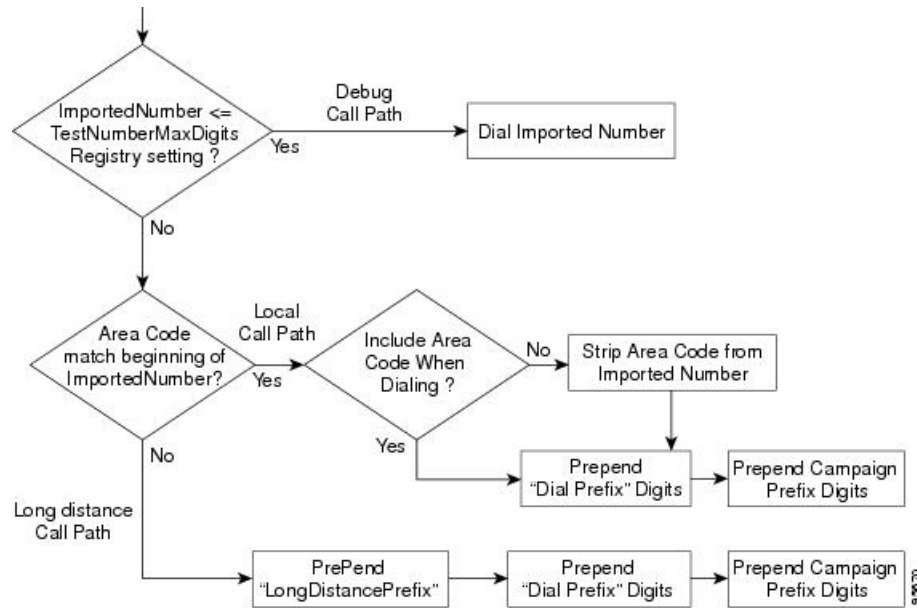
Long Distance Digit Prefix Logic

- Transformation of Imported Numbers, on page 129
- Dialer Configuration Fields and Registry Settings, on page 130

Transformation of Imported Numbers

The following example displays an Outbound Option call route that provides information about how imported numbers are transformed for the Outbound Option call.

Figure 18: How Imported Numbers Are Transformed



Call Item	Outbound Option Configuration Field	Description
ImportedNumber <= TestNumberMaxDigits Registry setting		Final dialing number transferred to either the ACD or Unified CM (used for debugging/lab purposes only)

Call Item	Outbound Option Configuration Field	Description
Area Code match beginning of ImportedNumber	Local area code	Area/city code used at your location, which is configured in the Dialer Configuration Component
Include Area Code When Dialing	Local area code	Includes the area code for a long distance call or removes the area code for a local call
PrePend "LongDistancePrefix"	Long distance prefix	Includes the pre-pended value for a long distance call, which is configured in the Dialer Configuration Component
PrePend "Dial Prefix" Digits	Dial prefix	Include the dialing prefix required by your location or by your campaign, which is configured in the Dialer Configuration Component

Dialer Configuration Fields and Registry Settings

The following example displays the Dialer configuration fields and Registry settings from the Dumpconf Procmon command that are used in an outbound call.

```
C:\>procmon ipccd dialer badialer >>>>dumpconf Dialer Config
----- DialerID : [5006] PeripheralID : [5000] ActiveDialers : [1] LocalAreaCode
: [978]
  <--- area code DialToneDetectEnabled : [0] HangupTime : [1] TenDigitDialEnabled : [0]
  <--- Include area code when dialing PrefixDigits : [] <--- Dial prefix digits
  LongDistancePrefix : [1] <---- "Long distance prefix" Callback config has not been
received
  yet ----- Configured Skill Groups
-----
  ----- SkillGroupID : [11988] VDN : [11988] PeripheralNumber : [890]
SkillGroupEnableStatus:
  [0] CampaignName : [DialAgents] ModeName : [N] TypeName : [I] Customer Count : [0]
Customer
  Count (idle) : [0] RecordsToCache : [20] PredictiveExt : [890] PreviewExt : [890]
  *PortsPerAgent : [1.500000] AgentPercentage : [100] AgentsLoggedIn : [0] AgentsAvailable
: [0]
  AgentsTalking : [0] *PortsAllocated : [0] AgentsReadyIn8Secs : [0] TalkTimeAverage :
[60]
  *AgentsToReserveDelta : [0] *PortsUsedToDialDelta : [0] OverflowAgents : [0]
  AutoAnswerReservation : [0] AbandonRate : [2] MaximumLinesPerAgent : [2.000000]
  NoAnswerRingLimit : [4] MinimumCallDuration : [1] PreReservedRecordCount: [0]
IVRPortCount :
  [0] TransferToIVREnabled : [N] TransferAnsMachine : [Y] IVRExt : [] -----
SkillGroupID :
  [-1] VDN : [-1] PeripheralNumber : [0] SkillGroupEnableStatus: [0] CampaignName :
[Callback]
  ModeName : [A] TypeName : [0] Customer Count : [0] Customer Count (idle) : [0]
RecordsToCache :
  [0] PredictiveExt : [] PreviewExt : [] *PortsPerAgent : [1.500000] AgentPercentage :
[100]
  AgentsLoggedIn : [0] AgentsAvailable : [0] AgentsTalking : [0] *PortsAllocated : [0]
  AgentsReadyIn8Secs : [0] TalkTimeAverage : [0] *AgentsToReserveDelta : [0]
  *PortsUsedToDialDelta : [0] OverflowAgents : [0] AutoAnswerReservation : [1] AbandonRate
: [1]
  MaximumLinesPerAgent : [3.000000] NoAnswerRingLimit : [3] MinimumCallDuration : [0]
  PreReservedRecordCount: [0] IVRPortCount : [0] TransferToIVREnabled : [N]
```



```

TransferAnsMachine :
  [N] IVRExt : [] ----- SkillGroupID : [11965] VDN : [11965] PeripheralNumber : [889]

  SkillGroupEnableStatus: [0] CampaignName : [TT_ISN] ModeName : [R] TypeName : [0]
Customer
  Count : [0] Customer Count (idle) : [0] RecordsToCache : [20] PredictiveExt : [12345]
  PreviewExt : [12345] *PortsPerAgent : [1.500000] AgentPercentage : [100] AgentsLoggedIn
  : [60]
  AgentsAvailable : [60] AgentsTalking : [0] *PortsAllocated : [0] AgentsReadyIn8Secs :
  [0]
  TalkTimeAverage : [60] *AgentsToReserveDelta : [0] *PortsUsedToDialDelta : [0]
OverflowAgents :
  [0] AutoAnswerReservation : [0] AbandonRate : [3] MaximumLinesPerAgent : [2.500000]
  NoAnswerRingLimit : [4] MinimumCallDuration : [1] PreReservedRecordCount: [0]
IVRPortCount :
  [60] TransferToIVREnabled : [Y] TransferAnsMachine : [Y] IVRExt : [90001] Port Map
Config
----- Port: [000], Station: [30100] Port: [015], Station: [30115] Port:
[081],
  Station: [30181] Port: [082], Station: [30182] Port: [083], Station: [30183] Port:
[016],
  Station: [30116] Port: [031], Station: [30131] Port: [087], Station: [30187] Port:
[023],
  Station: [30123] Port: [071], Station: [30171] Port: [095], Station: [30195] Port:
[063],
  Station: [30163] Port: [055], Station: [30155] Port: [047], Station: [30147] Port:
[039],
  Station: [30139] Port: [008], Station: [30108] Port: [032], Station: [30132] Port:
[024],
  Station: [30124] Port: [088], Station: [30188] Port: [072], Station: [30172] Port:
[064],
  Station: [30164] Port: [048], Station: [30148] Port: [040], Station: [30140] Port:
[001],
  Station: [30101] Port: [009], Station: [30109] Port: [033], Station: [30133] Port:
[017],
  Station: [30117] Port: [025], Station: [30125] Port: [089], Station: [30189] Port:
[065],
  Station: [30165] Port: [073], Station: [30173] Port: [049], Station: [30149] Port:
[041],
  Station: [30141] Port: [002], Station: [30102] Port: [018], Station: [30118] Port:
[026],
  Station: [30126] Port: [090], Station: [30190] Port: [066], Station: [30166] Port:
[074],
  Station: [30174] Port: [050], Station: [30150] Port: [042], Station: [30142] Port:
[003],
  Station: [30103] Port: [027], Station: [30127] Port: [019], Station: [30119] Port:
[091],
  Station: [30191] Port: [075], Station: [30175] Port: [067], Station: [30167] Port:
[059],
  Station: [30159] Port: [051], Station: [30151] Port: [043], Station: [30143] Port:
[004],
  Station: [30104] Port: [020], Station: [30120] Port: [028], Station: [30128] Port:
[092],
  Station: [30192] Port: [084], Station: [30184] Port: [076], Station: [30176] Port:
[060],
  Station: [30160] Port: [068], Station: [30168] Port: [052], Station: [30152] Port:
[036],
  Station: [30136] Port: [021], Station: [30121] Port: [044], Station: [30144] Port:
[093],
  Station: [30193] Port: [005], Station: [30105] Port: [029], Station: [30129] Port:
[085],
  Station: [30185] Port: [069], Station: [30169] Port: [077], Station: [30177] Port:
[061],
  Station: [30161] Port: [053], Station: [30153] Port: [037], Station: [30137] Port:

```

```

[045],
  Station: [30145] Port: [014], Station: [30114] Port: [038], Station: [30138] Port:
[079],
  Station: [30179] Port: [010], Station: [30110] Port: [056], Station: [30156] Port:
[034],
  Station: [30134] Port: [080], Station: [30180] Port: [057], Station: [30157] Port:
[058],
  Station: [30158] Port: [022], Station: [30122] Port: [006], Station: [30106] Port:
[030],
  Station: [30130] Port: [011], Station: [30111] Port: [035], Station: [30135] Port:
[012],
  Station: [30112] Port: [013], Station: [30113] Port: [086], Station: [30186] Port:
[070],
  Station: [30170] Port: [094], Station: [30194] Port: [078], Station: [30178] Port:
[062],
  Station: [30162] Port: [046], Station: [30146] Port: [054], Station: [30154] Port:
[007],
  Station: [30107] Registry Config Values ----- TimeToCTIBeginCall :
[7]
  TimeToRingCustomer : [8] TimeToHoldCustomer : [1] TimeToReserve : [10] TimeToTransfer
: [7]
  TimeToFreeStuckPort : [7200] TimeToFreeStuckCall : [7200] SwitchPrefix : []
  TimeToRetryCustomerRequest : [30] TimeToWaitForRecord : [5] TimeToWaitForCTIResp : [3]

  TalkTimeAvg : [60] CustRecReadyRequestToServer:[30] TestNumberMaxDigits : [5] <-----
"Test
  Number Max digits" ca_cnosig : [20] PortThrottleTime : [2] PortThrottleCount : [20]
  OptimizeAgentAvailability : [0] RTPortFeedDisable : [1] SkillGroupQueryDelay : [1]
  ReclassifyTransferFailures : [0] SetAgentsReadyOnResvDrop : [1] DirectAgentDial : [0]
  OverrideNetworkTones : [0] AnswrTrnsfrUsingAgentPhone : [1] </end>>>>

```



APPENDIX **C**

Dialer Detail Table

- [About the Dialer_Detail Table, on page 133](#)
- [Dialer_Detail Table Database Fields and Descriptions, on page 134](#)

About the Dialer_Detail Table

The Dialer_Detail table is a historical table that is present in the Unified CCE database in Releases 7.2(2) and later. Its purpose is to allow detailed dialer records to be written to the Logger databases and replicated to each HDS database.

This table can become very large. Running custom reporting queries against it while it is on the HDS can degrade performance. To optimize performance, extract the data from the HDS into your own custom database on a separate server (one that is not used for other CCE components). Use only DBDateTime (date and time of the record that was written to the HDSdatabase) to perform the extraction. The table on the custom database can be indexed according to the custom reporting needs.

Advantages

Data stored in this table helps in managing the system and generating custom reports.

For example, the table stores the following information:

- The Account Number for the contact and the Call Result, so that the last termination code can be obtained for each contact.
- An identifier for the Agent so that callbacks scheduled by each agent can be determined.
- Additional data for troubleshooting of Outbound Dialer attempts, such as the CallID that was used to place the call.

Data Flow

1. After making an attempt to contact a customer, the Dialer sends the results to the Campaign Manager in a CloseCustomerRecord message.

Results for Personal Callback attempts are sent to the Campaign Manager using a ClosePersonalCallbackRecord message.

2. Campaign Manager then sends a Dialer Detail record to the Router.

At this point, the message flow is identical to all other historical data in the system.

3. The Router passes the historical data information to the Historical Logger process.
4. The Historical Logger process commits the data to the Logger database.
5. The Replication process on the Logger passes the historical data to the Replication process on the Historical Data Server (HDS).
6. The Replication process on the HDS commits the data to the HDS database.

Fault Tolerance

When the Router is down or the Campaign Manager loses the connection to the Router, the Campaign Manager stores Dialer_Detail records in a file on the server where Campaign Manager is running. All the Dialer_Detail records in the cached file are sent to the Router when the connection is restored.

Dialer_Detail Table Database Fields and Descriptions

For a full description of the database fields for the Dialer_Detail table, see the *Database Schema Handbook for Cisco Unified Contact Center Enterprise*.

CallResult Codes and Values

The CallResult field can be populated with the following values:

Table 9: CallResult Codes and Values

Value	Description
0	Dialer has not yet attempted to contact that customer record
2	Error condition while dialing
3	Number reported not in service by network
4	No ringback from network when dial attempted
5	Operator intercept returned from network when dial attempted
6	No dial tone when dialer port went off hook
7	Number reported as invalid by the network
8	Customer phone did not answer
9	Customer phone was busy
10	Customer answered and was connected to agent
11	Fax machine detected

Value	Description
12	Answering machine detected
13	Dialer stopped dialing customer due to lack of agents or network stopped dialing before it was complete
14	Customer requested callback
15	Answering machine requested callback
16	Call was abandoned by the dialer due to lack of agents
17	Failed to reserve agent for personal callback.
18	Agent rejected a preview call or personal callback call.
19	Agent rejected a preview call with the close option.
20	Customer has been abandoned to an IVR
21	Customer dropped call within configured abandoned time
22	In Unified CCE, the call result indicates an answering machine detection which did not meet termination conditions. One such example is a network voicemail message indicating a mailbox is full or not setup properly. In TDM switches, it indicates a network answering machine detection, such as a network voicemail.
23	Number successfully contacted but wrong number
24	Number successfully contacted but reached the wrong person
25	The following circumstances are reported where a call record is returned from the dialer without being attempted: <ul style="list-style-type: none"> • The campaign is disabled. • The outbound percentage for the campaign skill group is set to zero in an admin script. • With personal callback in certain situations where the agent is logged out or not available before the configured CallbackTimeLimit is exceeded.
26	The number was on the do not call list
27	Call disconnected by the carrier or the network while ringing
28	Dead air or low voice volume call
29	SIP message received from dialer is not supported by voice gateway.
30	SIP message received from dialer is not authorized by voice gateway.
31	Invalid sip message sent by dialer to voice gateway.
32	Call cancelled because the dialer lost connection with the Campaign Manager.

Value	Description
33	Agent timed-out accepting preview or personal callback call. Note This Call Result is supported from 12.0 ES33 onwards.

CallStatusZone Values

The CallStatusZone1 and CallStatusZone2 fields can be populated with the following values that show the current status of the customer record for the zone.



Note For campaigns created using API, CallStatusZone2 is not applicable.

The values are:

Table 10: CallStatusZone Values

Value	Description
A	Active: Stored in CallStatusZoneX (1 or 2). A zone is set to active when it has been sent to a dialer for dialing.
B	A callback was requested. Stored in CallStatusZone1 and CallStatusZone2 field when a regular callback (non personal callback) has been scheduled. The Callback time itself is stored in both the CallbackDateTimeZone1 and CallbackDateTimeZone2 columns since the callback overrides the individual zones.
C	Closed: Record has been closed for that particular zone, so the record will not be retried again for that zone (zone1 or zone2).
D	Dialed. Record has been dialed for that particular zone.
F	F= Fax Machine. Stored in CallStatusZoneX (1 or 2)
L	L = Not Allocated. Invalid number used for a Personal Callback.
J	Agent rejected (closed out the record)
M	The maximum number of attempts has been reached. Stored in both CallStatusZone1 and CallStatusZone2. A record is set to "M" when it has dialed the maximum times as specified in the campaign and will not be retried again. Both zones are set to "M" to indicate no further calling in either zone.
P	Pending. Stored in CallStatusZoneX (1 or 2). This is the initial state of a record before any dialing has taken place. The record remains in the pending state for a particular zone until all of the numbers specified for that zone are dialed. A pending contact which has already dialed at least one dialer from its sequence will have at least one CallBackDateTimeXX column filled in with a retry time.

Value	Description
R	<p>Retry. Stored in CallStatusZoneX (1 or 2) for the zone where the Retry is scheduled. The retry time itself is stored in the CallbackDateTimeZoneX (1 or 2) as well as in the individual number column CallbackDateTimeXX, where XX is the number to be retried (01 - 10). Call can be retried for a variety of reasons, including receiving a busy or no answer result.</p> <p>This value will be updated once all phones of the record are dialed out.</p>
S	A personal callback was requested. Stored in both CallStatusZone1 and CallStatusZone2. A record is set to "S" when it has been scheduled for a personal callback. Both zones are set to "S" to indicate that the record has been moved to the personal callback list.
U	Unknown: Stored in CallStatusZone1 and CallStatusZone2. A record is set to Unknown if its status was Active when the Campaign Manager started or the Dialer re-started. The record will stay in the Unknown state until it gets an update. If the Campaign Manager fails to get an update within sixty minutes, it will return the record to Pending.
X	For a personal callback, the agent is not available, and the reschedule mode is Abandon. (This value is used for CallStatusZone1 only.)

DialingMode Values

The DialingMode field can be populated with the following values that show the campaign mode for the call. This field is NULL for Do Not Call entries.

Values are shown in the following table.

Table 11: DialingMode Values

Value	Description
1	Predictive only
2	Predictive blended
3	Preview only
4	Preview blended
5	Progressive only
6	Progressive blended
7	Direct preview only
8	Direct preview blended

Mode types and definitions

The following table lists the mode definitions:

Table 12: Mode definitions

Mode	Definition
N	None
P	Preview
D	Preview Direct
R	Predictive
G	Progressive
A	Callback

CallResults Table

The following CallResults table maps the call result to the campaign call report.

Table 13: CallResults Table

Call Result	Description	Reporting Column	Counted as Attempt?	Detected Live Voice?	Retry Action
2	Error condition while dialing	None	No	No	Regular outbound calls are not retried and are returned to the closed state. Callback calls are retried as Dialer Abandoned.
3	Number reported not in service by network	None	Yes	No	None
4	No ringback from network when dial attempted	NoRingBack	No	No	No answer
5	Operator intercept returned from network when dial attempted	SITtone	Yes	No	None
6	No dial tone when dialer port went off hook	NoDialTone	Yes	No	No answer

Call Result	Description	Reporting Column	Counted as Attempt?	Detected Live Voice?	Retry Action
7	Number reported as invalid by the network	SITtone	Yes	No	None
8	Customer phone did not answer	NoAnswer	No	No	No answer
9	Customer phone was busy	Busy	Yes	No	Busy
10	Customer answered and was connected to agent	Voice	Yes	Yes	None
11	Fax machine detected	Fax	Yes	No	None
12	Answering machine detected	AnsweringMachine	Yes	No, but transfer to agent possible	Answering Machine, if needed
13	Dialer stopped dialing customer due to lack of agents or network stopped dialing before it was complete.	Cancelled	Yes	No	Dialer Abandoned
14	Customer requested callback	Callback & PersonalCallback	Yes	Yes	None
15	Answering machine requested callback	Callback & PersonalCallback	Yes	No	None
16	Call was abandoned by the dialer due to lack of agents	Abandon	Yes	Yes	Dialer Abandoned
17	Failed to reserve agent for personal callback	None	No	No	Based on the callback mode configuration. For more details, see About Personal Callbacks, on page 7

Call Result	Description	Reporting Column	Counted as Attempt?	Detected Live Voice?	Retry Action
18	Agent has rejected a preview call or personal callback call	AgentRejected	No	No	For Preview calls: No Answer. For Personal Callback calls: None.
19	Agent has rejected a preview call with the close option	AgentClosed	No	No	None
20	Customer has been abandoned to an IVR	AbandonToIVR	Yes	Yes	Dialer Abandoned, if needed
21	Customer dropped call within configured abandoned time	CustomerAbandon	Yes	Yes	Customer Abandoned
22	Mostly used with TDM switches - network answering machine, such as a network voicemail	NetworkAnsMachine	Yes	No	Answering Machine, if needed
23	Number successfully contacted but wrong number	WrongNumber	Yes	Yes	None
24	Number successfully contacted but reached the wrong person	CustomerNotHome	Yes	Yes	Customer not home

Call Result	Description	Reporting Column	Counted as Attempt?	Detected Live Voice?	Retry Action
25	<p>The following circumstances are reported where a call record is returned from the dialer without being attempted:</p> <ul style="list-style-type: none"> • The campaign is disabled. • The outbound percentage for the campaign skill group is set to zero in an admin script. • With personal callback in certain situations where the agent is logged out or not available before the configured CallbackTimeLimit is exceeded. 	None	No	No	None, but returned to the pending state
26	The number was on the do not call list	None	No	No	None
27	Network disconnected while alerting	NoRingBack	No	No	No answer
28	Low Energy or Dead Air call detected by CPA	NoRingBack	No	No	No answer
29	SIP message received from dialer is not supported by voice gateway				
30	SIP message received from dialer is not authorized by voice gateway				
31	Invalid sip message sent by dialer to voice gateway				
32	Call cancelled because the dialer lost connection with the Campaign Manager	Cancelled	Yes	No	None

Call Result	Description	Reporting Column	Counted as Attempt?	Detected Live Voice?	Retry Action
33	Agent timed-out accepting preview or personal callback call Note This Call Result is supported from 12.0 ES33 onwards.	None	No	No	No Answer

Outbound dialer call result for combinations of PSTN and status code

The following dialer call results corresponds to the combinations of PSTN cause code and Status code specified in the Dialer_Detail table.

Status code: Status code is a 3-digit integer result code that indicates the outcome of an attempt to understand and satisfy a SIP request.

PSTN cause code: In signaling context, PSTN cause codes are used to indicate certain events or conditions in the network.

CheckCallState: Indicates whether the call is active or not . TRUE value implies that the call is active.

CallState: Indicates the intermediate call state. When a call is active, it can have any one of the following values - CS_INITIATED, CS_ALERTED, and CS_CONNECTED.

DialerCallResult: Indicates the SIP Dialer call result for the respective SIP status code and PSTN cause code.

Table 14: Outbound Dialer Call Result for PSTN and status code combinations

StatusCode	PSTNCauseCode	CheckCallState	CallState	DialerCallResult	System Type Values (from Dialer detail: CallResult)
400	41	FALSE	CS_NONE	INVALID_NETWORK_MSG	31
401	57	FALSE	CS_NONE	NOT_AUTHORIZED	30
403	57	FALSE	CS_NONE	NOT_IN_SERVICE	3
404	0	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
404	1	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
404	31	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
404	20	FALSE	CS_NONE	NOT_IN_SERVICE	3
405	63	FALSE	CS_NONE	NOT_IN_SERVICE	3
406	88	FALSE	CS_NONE	NOT_SUPPORTED	29

StatusCode	PSTNCauseCode	CheckCallState	CallState	DialerCallResult	System Type Values (from Dialer detail: CallResult)
407	57	FALSE	CS_NONE	NOT_AUTHORIZED	30
408	120	FALSE	CS_NONE	NO_DIALTONE	6
409	47	FALSE	CS_NONE	NOT_SUPPORTED	29
410	22	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
411	47	FALSE	CS_NONE	NOT_SUPPORTED	29
412	38	FALSE	CS_NONE	NOT_AUTHORIZED	30
413	127	FALSE	CS_NONE	NOT_SUPPORTED	29
415	47	FALSE	CS_NONE	NOT_SUPPORTED	29
417	47	FALSE	CS_NONE	NOT_SUPPORTED	29
420	95	FALSE	CS_NONE	INVALID_NETWORK_MSG	31
421	95	FALSE	CS_NONE	NOT_SUPPORTED	29
422	100	FALSE	CS_NONE	NOT_SUPPORTED	29
422	100	FALSE	CS_NONE	STOPPED	13
422	100	TRUE	CS_CONNECTED	STOPPED	13
423	47	FALSE	CS_NONE	NOT_SUPPORTED	29
424	41	FALSE	CS_NONE	INVALID_NETWORK_MSG	31
428	41	FALSE	CS_NONE	NOT_SUPPORTED	29
429	41	FALSE	CS_NONE	NOT_SUPPORTED	29
430	127	FALSE	CS_NONE	INVALID_NETWORK_MSG	31
433	57	FALSE	CS_NONE	NOT_SUPPORTED	29
436	41	FALSE	CS_NONE	NOT_SUPPORTED	29
437	41	FALSE	CS_NONE	NOT_SUPPORTED	29
438	41	FALSE	CS_NONE	INVALID_NETWORK_MSG	31
439	88	FALSE	CS_NONE	NOT_SUPPORTED	29
470	41	FALSE	CS_NONE	NOT_AUTHORIZED	30
480	18	TRUE	CS_INITIATED	NO_RINGBACK	4
480	18	TRUE	CS_ALERTED	NO_ANSWER	8
480	19	FALSE	CS_NONE	NO_ANSWER	8
480	20	TRUE	CS_INITIATED	NO_RINGBACK	4
480	20	TRUE	CS_ALERTED	NO_RINGBACK	4

StatusCode	PSTNCauseCode	CheckCallState	CallState	DialerCallResult	System Type Values (from Dialer detail: CallResult)
480	20	TRUE	CS_CONNECTED	CUSTOMER_ABANDONED	21
480	20	TRUE	CS_NONE	NO_RINGBACK	4
481	127	FALSE	CS_NONE	CUSTOMER_ABANDONED	21
482	25	FALSE	CS_NONE	STOPPED	13
482	25	TRUE	CS_INITIATED	STOPPED	13
482	25	TRUE	CS_ALERTED	STOPPED	13
482	25	TRUE	CS_CONNECTED	STOPPED	13
484	28	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
485	1	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
486	0	FALSE	CS_NONE	BUSY	9
486	17	FALSE	CS_NONE	BUSY	9
487	127	TRUE	CS_NONE	NO_DIALTONE	6
487	127	TRUE	CS_INITIATED	NO_RINGBACK	4
487	127	TRUE	CS_ALERTED	NO_ANSWER	8
488	47	FALSE	CS_NONE	NOT_SUPPORTED	29
489	41	FALSE	CS_NONE	NOT_SUPPORTED	29
491	31	FALSE	CS_NONE	ABANDON	16
491	31	TRUE	CS_CONNECTED	ABANDON	16
493	97	FALSE	CS_NONE	NOT_SUPPORTED	29
494	57	FALSE	CS_NONE	NOT_AUTHORIZED	30
500	4	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
500	5	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
500	6	FALSE	CS_NONE	NO_DIALTONE	6
500	44	FALSE	CS_NONE	NO_DIALTONE	6
500	8	TRUE	CS_INITIATED	NO_RINGBACK	4
500	9	TRUE	CS_INITIATED	NO_RINGBACK	4
500	39	TRUE	CS_INITIATED	NO_RINGBACK	4
500	16	TRUE	CS_INITIATED	NO_RINGBACK	4
500	16	TRUE	CS_ALERTED	NO_ANSWER	8
500	16	TRUE	CS_CONNECTED	CUSTOMER_ABANDONED	21

StatusCode	PSTNCauseCode	CheckCallState	CallState	DialerCallResult	System Type Values (from Dialer detail: CallResult)
500	44	FALSE	CS_NONE	NO_DIALTONE	6
500	46	FALSE	CS_NONE	BUSY	9
500	63	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
500	86	FALSE	CS_NONE	CUSTOMER_ABANDONED	21
501	79	FALSE	CS_NONE	NOT_SUPPORTED	29
502	38	FALSE	CS_NONE	NO_DIALTONE	6
502	0	FALSE	CS_NONE	NO_DIALTONE	6
503	0	FALSE	CS_NONE	NO_DIALTONE	6
503	34	FALSE	CS_NONE	NO_DIALTONE	6
503	41	FALSE	CS_NONE	NO_DIALTONE	6
503	42	FALSE	CS_NONE	NO_DIALTONE	6
503	47	FALSE	CS_NONE	NO_DIALTONE	6
503	87	FALSE	CS_NONE	NO_DIALTONE	6
504	102	FALSE	CS_NONE	NOT_SUPPORTED	29
505	127	FALSE	CS_NONE	NOT_SUPPORTED	29
513	100	FALSE	CS_NONE	NOT_SUPPORTED	29
580	47	FALSE	CS_NONE	NO_DIALTONE	6
604	1	FALSE	CS_NONE	NUMBER_NOT_ALLOCATED	7
600	17	FALSE	CS_NONE	BUSY	9



APPENDIX **D**

Dialing List Table

- [Dialing_List Table Columns, on page 147](#)

Dialing_List Table Columns

The following table displays the Dialing_List table column names and their description.

Table 15: Dialing_List Table Columns for Release 7.0(0)

Column Name	Type	Description
Phone01 through Phone10	VARCHAR20	The phone number imported into Phone01 through Phone 10 standard column.
PhoneExt01 through PhoneExt10	VARCHAR8	The phone number extensions imported into PhoneExt01 through PhoneExt10 standard column. Note Although the phone number extensions are imported into the table, they are currently not used for any dialing operations.
CallbackNumber	VARCHAR20	Phone number to be used for a regular callback it can be supplied by the agent.
CallResult	SMALLINT	The call result from the last call placed for this record (see Call Result definitions).
CallResult01 through CallResult10	SMALLINT	The call result from the last time Phone01 through Phone10 was called (see Call Result definitions). CallResult01 captures the results of all requested regular callback calls for Phone01 to Phone10.
DialingList ID	IDENTITY	Unique identifier for each record in this table. The identity seed value on Side A is (1,1) and on Side B is (-2147483648, 1).

Column Name	Type	Description
LastZoneDialed	SMALLINT	The last zone that was dialed (0 indicates zone1, 1 indicates zone2).
LastNumberDialedZone1	SMALLINT	The last number dialed in zone1 (1 for phone01, 2 for phone02, and so on)
LastNumberDialedZone2	SMALLINT	The last number dialed in zone2 (1 for phone01, 2 for phone02, and so on)
CallsMadeToZone1	SMALLINT	The number of calls made to numbers in zone 1 Note For a call which an Outbound Option Agent has scheduled a callback, the CallResult resets to 0.
CallsMadeToZone2	SMALLINT	The number of calls made to numbers in zone 2 Note For a call which an Outbound Option Agent has scheduled a callback, the CallResult resets to 0.
CallbackDateTimeZone1	DATETIME	The date or time when the next call to this zone will occur.
CallbackDateTimeZone2	DATETIME	The number of calls made to numbers in zone 2.
CallbackDateTime01 through CallbackDateTime010	DATETIME	The date or time when the next call to this phone number will occur.
GMTPhone01 through GMTPhone10	SMALLINT	The time zone where this phone number is located.
DSTPhone01 through DSTPhone10	SMALLINT	Is DST observed at this phone number (boolean).
CallStatusZone1 and CallStatusZone2	CHAR(1)	The call status (pending, retry, callback, and so forth) for this zone.
AccountNumber	VARCHAR30	The account number of the customer.
LastName	VARCHAR50	The last name of the customer.
FirstName	VARCHAR50	The first name of the customer.
ImportRuleDate	DATETIME	The date or time when the record was imported.



APPENDIX **E**

Personal Callback List Table

- [Personal_Callback_List Table, on page 149](#)

Personal_Callback_List Table

The following table documents all the columns in the personal callback table.



Note If Outbound Option High Availability is enabled, you must use the Personal_Callback API to insert data into the Personal_Callback_List table.

Table 16: Personal Callback Table Columns

Column Name	Type	Description
PersonalCallbackListID	IDENTITY	Unique identifier for each record in this table. The identity seed value on side A is (1,1) and on side B is (-2147483648, 1)
DialingListID	INT	Cross-references a record that has been moved from the contact_list to this table.
CampaignID	INT	Campaign ID (if the record was originally dialed as part of a campaign).
PeripheralID	INT	Peripheral ID for the peripheral where the agent would be available.
AgentID	INT	Agent to which the call has to be connected.
CampaignDN	VARCHAR	Dialed number (DN) to use (if the original agent is unavailable). Length is 12.

Column Name	Type	Description
GMTZone	SMALLINT	<p>GMT of the customer number (if NULL, the local GMT zone is assumed). If this value is provided, it must always be a positive value from 0 to 23. Convert all negative GMT values using the following formula: $24 + (\text{negative GMT value})$. For example, the US eastern time zone is -5, so the value stored in this column is $24 + (-5) = 19$.</p> <p>This column is not currently being used. It is reserved for future use.</p>
Phone	VARCHAR	Phone number to call back. Length is 20.
AccountNumber	VARCHAR	Customer account number. Length is 32.
MaxAttempts	INT	<p>Maximum number of times a call is attempted (decrements at each attempt). An "attempt" is defined as the Outbound Option Dialer's attempt to reserve the agent and make the customer call. Since the Outbound Option Dialer places multiple customer call attempts (busy, no answer), the actual individual call attempts are not tracked here; only the result at the end of the callback time range.</p> <p>Note Once this column is set to 0, no more attempts are made.</p>
CallbackDateTime	DATETIME	<p>Time to attempt customer callback is normalized to the logger GMT zone; for example, if the Campaign Manager is in Boston and the customer is in California and wished to be contacted at 3:00 PM, the time in this column would be 6:00 PM.</p> <p>NULL columns will be allowed for the single agent campaigns</p>
CallStatus	CHAR	<p>Current status of the callback record, such as 'P' for pending or 'C' for closed.</p> <p>Note New records must be set to 'P.'</p>
CallResult	SMALLINT	Telephony call result (busy, no answer, and so on) or agent reservation attempt result (Agent Rejected Call, Unable to reserve, and so on).
LastName	CHAR	Last name of the customer. Length is 50.
FirstName	CHAR	First name of the customer. Length is 50.

Column Name	Type	Description
InsertedIntoDBDateTime	DATETIME	<p>The date and time that the personal callback record was inserted into the database.</p> <p>Note The Campaign Manager sets this value when an agent schedules a personal callback. Customers, partners, or 3rd-party applications that insert new records into this table must populate the InsertedIntoDBDateTime column with the current date and time.</p>
SentToDialerDateTime	DATETIME	<p>The date and time that the personal callback record was sent to the dialer and inserted into the dialer cache for processing.</p> <p>Note This date and time is set by the Campaign Manager. Do not modify this value.</p>



APPENDIX F

Do Not Call Table

- [Do_Not_Call Table](#) , on page 153

Do_Not_Call Table

The Do_Not_Call table includes all the phone numbers and extensions that, when matched exactly, are not dialed during an Outbound Option campaign.

The following table lists the Do_Not_Call table column names and provides their descriptions.

Column Name	Type	Description
Phone	VARCHAR(20)	The Do Not Call phone number.
PhoneExt	VARCHAR(8)	The extension for the Do Not Call phone number. Note Although the phone number extension is imported into the table, it is currently not used for any dialing operations.
DoNotCallID	IDENTITY	Unique identifier for each record in this table. The identity seed value on side A is (1,1) and on side B is (-2147483648, 1)

Do Not Call Considerations

Consider the following for the Do Not Call feature:

- When you upgrade to or downgrade from Cisco Unified CCE, Release 11.6(1), the Do Not Call table is not available. Therefore, import the Do Not Call table again after upgrade or downgrade.
- Do not configure multiple Do Not Call import rules.
- A customer number is dialed even if the number is listed in the Do Not Call table. This occurs when:
 - the Campaign Manager restarts.
 - one of the routers is not available during the import of the Do Not Call records.

- Do not perform manual operations on database including database replication.