Contact Categorization

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Categorization and Call Type

Categorization is the process of classifying a contact based on certain data associated with the contact. Through categorization, a script can determine the best way to process a contact.

When you create a routing script, you typically use the nodes available in Script Editor to define how the script is to categorize contacts. By categorizing contacts, a script can provide unique solutions for different customer's needs.

Categorization Through Scheduling Scripts by Call Type

Call types provide the first level of categorization for routing scripts. You schedule scripts by call type; therefore, the call type of a contact determines which script is run, enabling you to create different scripts for different types of contacts.

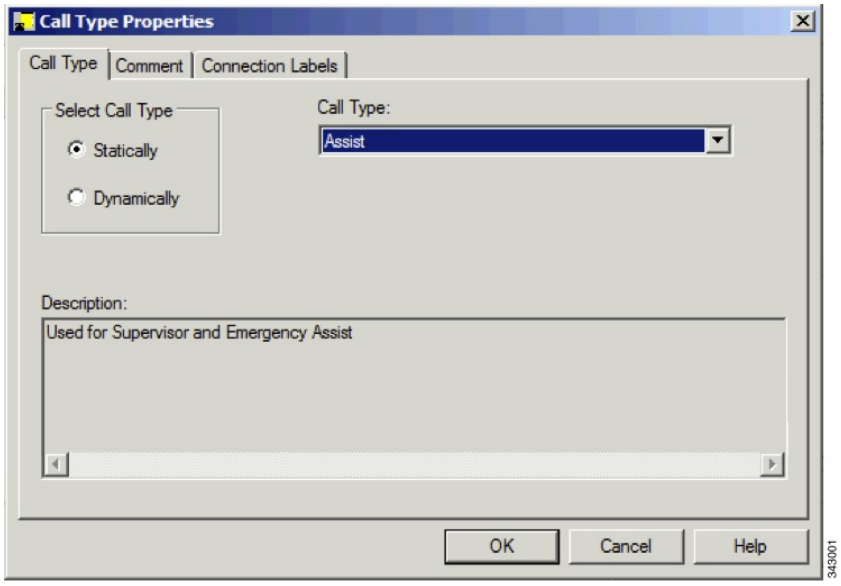
Change Call Type to Static

You can change the call type of a contact to static by using the Call Type node in a script. The Call Type node is in the Routing tab of the Palette.

Figure 1: The Call Type Icon

The following figure is the Call Type Properties dialog box of the Static Call Type node:

Figure 2: Call Type Properties Dialog Box - Static Call Type



To define a static call type node, complete the following steps.

Procedure

Step 1 In the Call Type tab, click the **Statically** radio button.

Step 2 From the Call Type list, click the call type to assign to the contact.

What to do next

Warning The Call Type node changes the call type and continues running the current script. The Requalify Call node stops running the current script and runs a new script associated with that call type.

Change Call Type to Dynamic

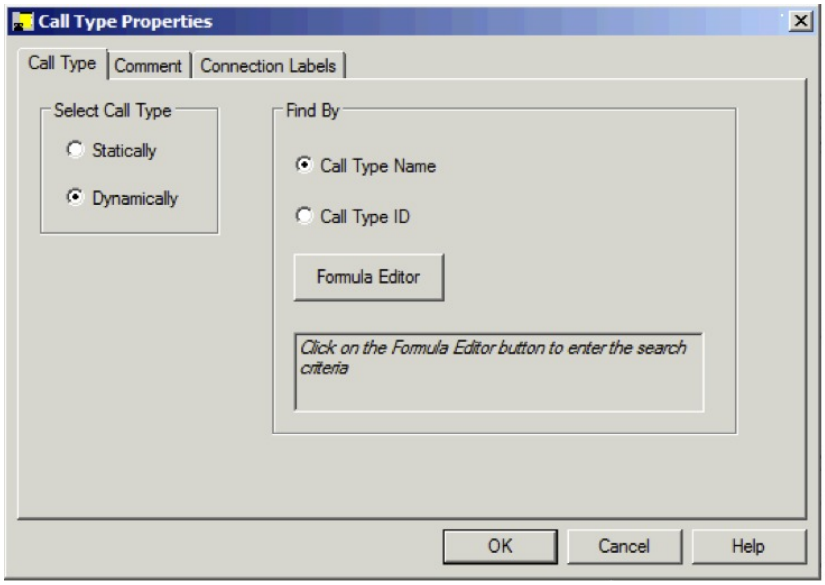
You can change the call type of a contact to dynamic by using the Call Type node in a script. The Call Type is on the Routing tab of the Palette.

Figure 3: Call Type Icon

Note Dynamic call type selection is not available when an External Authorization server is used with Internet Script Editor and will be grayed out in the interface.

The following figure is the Call Type Properties dialog box of a dynamic call type node:

Figure 4: Call Type Properties Dialog Box - Dynamic Call Type



To define a dynamic call type node, complete the following steps.

Procedure

Step 1 On the call type tab, select the **Dynamically** radio button.

Step 2 To dynamically change the call type of a contact by call type name, In the Find By section, select the **Call Type Name** radio button.

Step 3 To dynamically change the call type of a contact by call type ID, In the Find By section, select the **Call Type ID** radio button.

Step 4 To determine which call type name or ID to use to change the call type of a contact, click the Formula Editor button to create a formula.

What to do next

Warning The Call Type node changes the call type and continues the current script execution. The Requalify Call node terminates the current script execution and runs a new script associated with that call type.

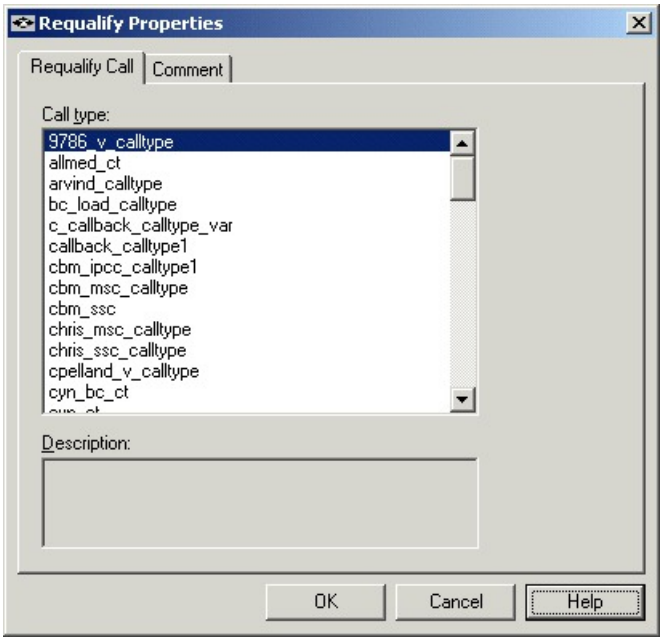
Change Call Type and Run a New Script

You can change the call type of a contact from within a script and run a new script associated with the call type by using the Requalify Call node (in the Routing tab of the Palette).

Figure 5: The Requalify Call Icon

Following is the Requalify Properties dialog box of the Requalify Call node:

Figure 6: The Requalify Properties - Requalify Call Tab



Define Requalify node properties as follows:

Procedure

Step 1 In the Requalify Call Tab, select the Call type to assign to the contact.

Step 2 Optionally, add comments.

What to do next

Warning The Call Type node changes the call type and continues running the current script. The Requalify Call node stops running the current script and runs a new script associated with that call type.

Categorization by Call Type Qualifiers

As described in the topic Call Types, Contact Data, and Scripting, a contact's call type is determined by three call type qualifiers:

- Dialed number
- Calling line ID (CLID)
- Caller-entered digits (CED)

When the system determines a contact's call type based on these qualifiers, it runs the associated script.

However, after the script is run, you can further categorize the contact based on the values of the call type qualifiers.

For example, a call type may be defined as having a calling line ID that includes calls from all area codes in New England states. When the script associated with that call type is run, it examines the specific area code in the calling line ID and branch differently depending on the value and therefore, treating calls from different area codes in New England differently.

You can categorize a contact based on its call type qualifiers by using one or more of the following nodes:

- Dialed Number (DN) Node
- Calling Line ID (CLID) Node
- Caller Entered Digits (CED) Node

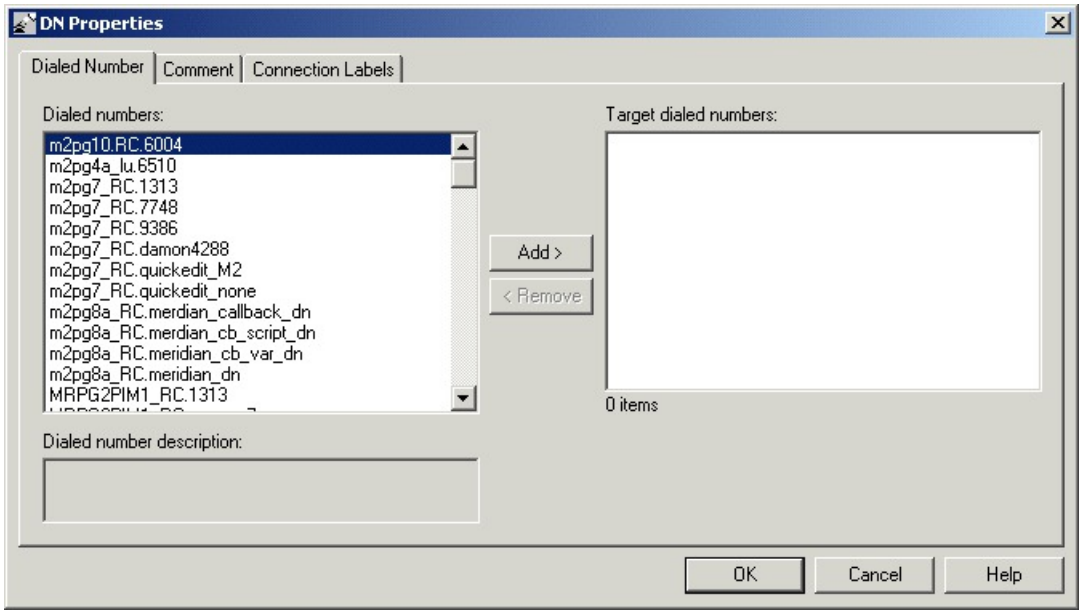
Categorize Contact by Dialed Number

You can categorize a contact based on its dialed number by using the Dialed Number (DN) node (in the Routing tab of the Palette).

Figure 7: The Dialed Number Icon

Following is the DN Properties dialog box of the Dialed Number node:

Figure 8: DN Properties - Dialed numbers Tab



You can define the Dialed Number node properties as follows:

Procedure

Step 1 Select one or more dialed numbers or Script Selectors from the Dialed numbers list and click **Add>** to move them to the Target dialed numbers list. If the current contact matches one of the selections in the Target dialed numbers list, processing continues on the node's success branch; otherwise, processing continues on the failure branch.

Step 2 Optionally, add comments and connection labels.

Categorize Contact by Calling Line ID

You can categorize a contact based on its Calling Line ID by using the CLID node (in the Routing tab of the Palette).

Figure 9: The CLID Icon

The CLID node tests the billing telephone number of the contact to see if it matches:

- A specific (CLID) that you provide (for example, a specific region, area code, or an area code plus a local exchange).
- A variable expression.

By default, Unified ICM compares the list of values against the calling line ID of the contact. However, you can specify another value or expression to be used instead of the CLID.

Note For Web Collaboration requests, the CLID maps to the applicationstring1 variable.

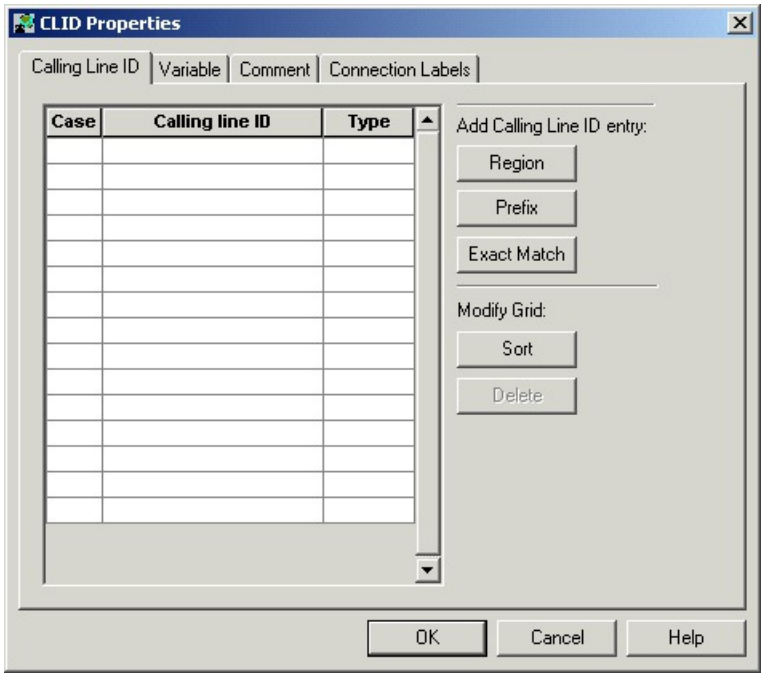
Before defining CLID node properties, insert one or more targets and connections from the CLID node.

Define CLID node properties as follows:

Procedure

Step 1 In the Calling Line ID tab:

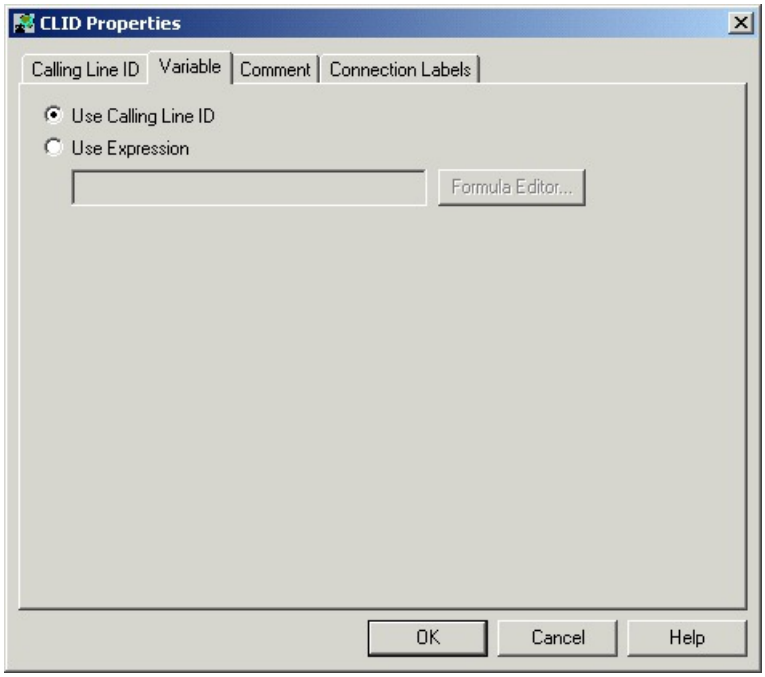
Figure 10: CLID Properties - Calling Line ID



a) For each branch to a different target, select the Case (the number displayed on each success connection branch); for example, 1, 2, and 3.
b) For each Case, select the Type of match. Click **Region**, **Prefix**, or **Exact Match**.
c) For each Case, enter the Calling line ID to match. If you selected Region, choose a region from the drop-down list; for example, California. If you selected Prefix, enter the Prefix number. If you selected Exact Match, enter the Calling line ID to match.
d) To sort the list by case, click **Sort**.
e) To delete a row, select the row and click **Delete**.

Step 2 In the Variable tab:

Figure 11: CLID Properties - Variable Tab



a) By default, **Use Calling Line ID** is selected to have Unified ICM compare the list of values you define in the Calling Line ID tab against the calling line ID of the contact.
b) To have Unified ICM use the value of an expression instead of the Calling Line ID, select **Use Expression** and enter the expression directly or click **Formula Editor** to use a formula to define the expression.

Step 3 Optionally, add comments and connection labels.

What to do next

Note If you delete a connection associated with a Case, the Case information you specified in the Properties dialog box is also deleted.

Categorize Contact by Caller-Entered Digits (CED)

You can categorize a contact based on the Caller-Entered Digits by using the CED Node (in the Routing tab of the Palette).

Figure 12: CED Properties Icon

For example, you can define the CED node to send contacts to:

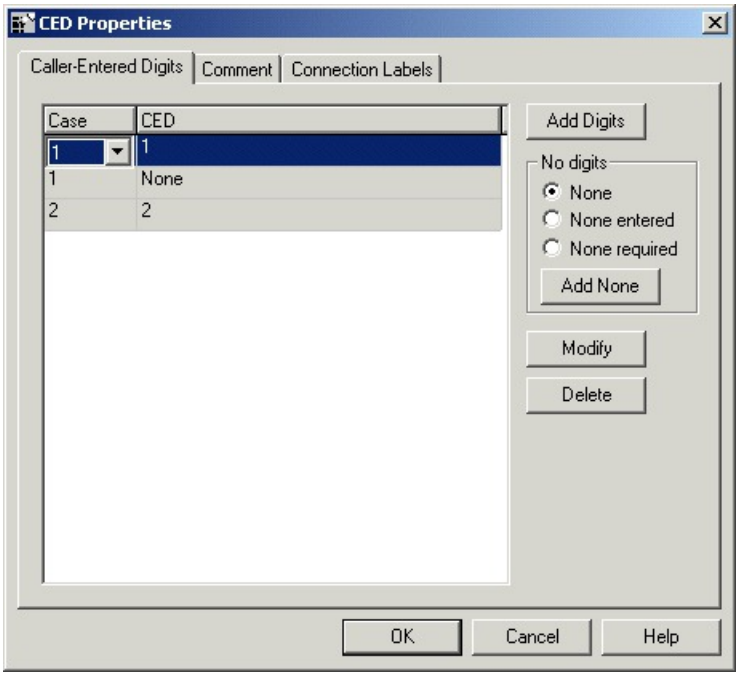
- SkillGroupA if the Caller-Entered Digits match a specific string

- SkillGroupB if there are no Caller-Entered Digits

Note For Enterprise Chat and Email requests, the CED maps to the applicationstring2 variable.

Following is the CED Properties dialog box of the CED node:

Figure 13: CED Properties



You must insert targets and connections from the Caller-Entered-Digits node before you can define the node's properties.

Then define CLID node properties as follows:

Procedure

Step 1 Click **Add Digits** to add a new CED value for a branch. In the new row, add a CED value and select the branch number. You can associate one or more CED values with each connection. Valid characters are: digits 0 through 9, asterisk (*), and number sign (#).

Step 2 Click **Add None** to add the value of None to a connection, specifying that it matches only those cases where no digits are entered or where no digits are required. When you specify **None**, you can select the following options:

a) None, to include both None Entered and None Required situations.
b) None Entered, to apply when the caller was prompted for digits but did not enter any.
c) None Required, to apply when the caller was not prompted for digits.

What to do next

Note If you delete a connection associated with a Case, the Case information you specified in the Properties dialog box is also deleted.

Categorization by Time and Date

You schedule a script by associating it with a call type. When a contact of a certain call type is received, the associated script runs for that contact.

However, after the script is run, you can further categorize the contact based on the time and day of week. This categorization refines the schedule.

Note The time and day of the week are determined by the settings on the Central Controller VM.

For example, a call type named "CHAT_CT" may be defined to include all chat web requests. A script named "CHAT_SCRIPT" runs every time a contact with the call type "CHAT_CT" is received. Typically, this script instructs Enterprise Chat and Email to assign the request to the longest available agent in the "Chat" skill group. However, the contact center is staffed differently over the weekend and the supervisor wants to report to improved weekend activity. Therefore, for chat web requests received on Saturday or Sunday, the script branches differently and instructs Enterprise Chat and Email to assign the request to the longest available agent in the "WKEND_SUPPORT" skill group.

As another example, for a contact center where no phone support is available during night hours or weekends, you may choose to design a script that routes a phone call to an announcement instead to an agent, during the off hours.

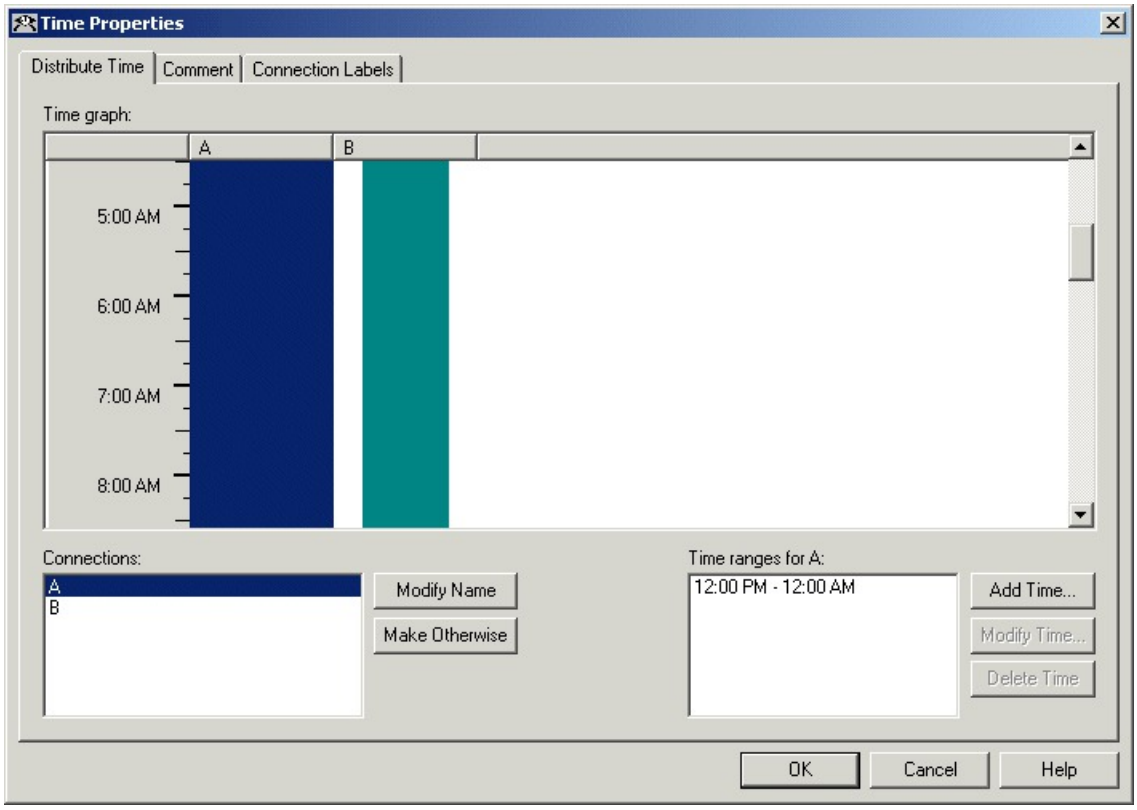
Categorize Contact by Date and Time

You use the Time node (in the General tab of the Palette) to choose from among several paths within the script based on the current time at Unified ICM Central Controller. Following is the Time Properties dialog box of the Time node.

Figure 14: Time Icon

Following is the Properties dialog box of the Time node:

Figure 15: Time Properties



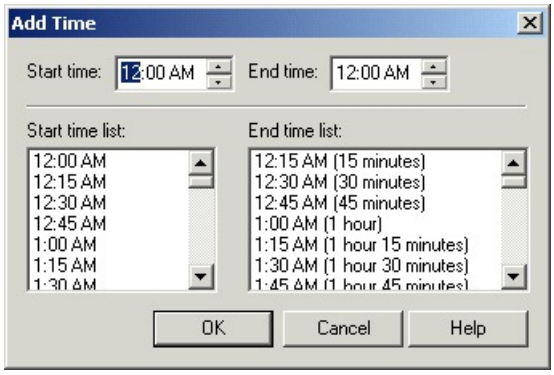
You must insert targets and connections from the Time node before you can define the node's properties.

Then define Time node properties as follows:

Procedure

Step 1 For each branch listed in the Connections list, define a Time Range. You can define multiple time ranges for a single branch. Click **Add Time** to add a new time range to the branch, or select a time range listed and click **Modify Time** to modify it. A dialog box opens in which you can define the time range (the Add Time dialog box is shown below; the Modify Time dialog box looks and functions similarly):

Figure 16: Add Time Dialog



Step 2 To delete a time associated with the branch, select the time and click **Delete Time**.

Step 3 You can define a branch as Otherwise by selecting the branch and clicking **Make Otherwise**. Execution follows this branch if none of the specified time ranges apply. You can specify only one Otherwise branch for the node. If you do not want to define the branch as **Otherwise**, select the branch and click **Delete Otherwise**.

Step 4 Optionally, add comments and connection labels.

What to do next

Note If you delete a connection, the time-range information you specified in the Properties dialog box is also deleted.

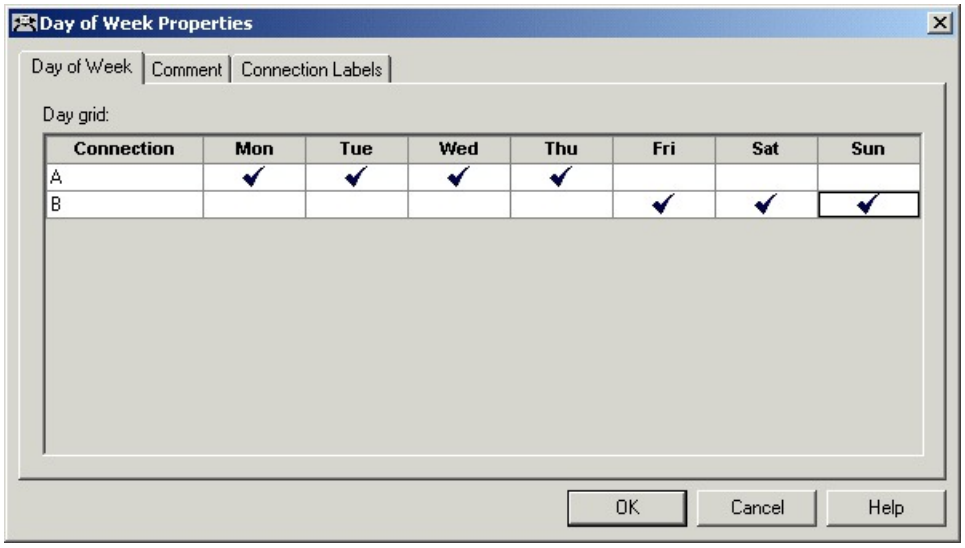
Categorize Contact by the Day of Week

You use the Day of Week node (in the General tab of the Palette) to transfer control to one of several branches depending on the current day of week (Sunday, Monday, etc.).

Figure 17: Day of Week Icon

Following is the Properties dialog box of the Day of Week node:

Figure 18: Day of Week Properties



You can define multiple output connections from the Day of Week node and associate each with one or more days of the week.

You must insert targets and connections from the Day of Week node before you can define the node's properties.

Define Day of Week node properties as follows:

Procedure

Step 1 For each branch listed in the Connection list, check the days of the week in which processing should continue on that branch. To check the day for that connection, left-click in a spot in the grid corresponding to that connection and day. A check mark appears in the grid. You can associate each day of week with one connection. However, you can associate each connection with one or more days of the week.

Step 2 Optionally, add comments and connection labels.

What to do next

Note If you delete a connection, the day of the week information you specified in the Properties dialog box is also deleted.

Categorization by Branching

Within a script, you can create multiple branches to direct script processing based on certain conditions. Branching allows you to use a single script that processes contacts differently, depending on data associated with the contact, or on conditions at the contact center.

Run a Different Script

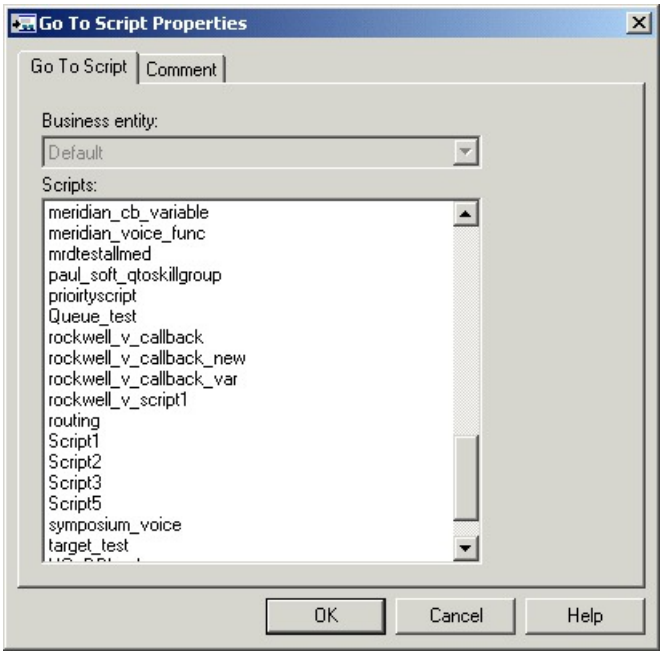
You use the **Go To Script** node (in the General tab of the Palette) to direct contact processing to another script without changing the call type. When Unified ICM encounters a Go To Script node, it stops running the current script and starts the script indicated in the node.

Figure 19: Go To Script Icon

For example, you might have several scripts that check for exception conditions and, if none are found, run a standard subroutine. Instead of including that subroutine as a branch from the failure output terminal of each of the exception conditions, you could use a Go To Script node pointing to a separate script containing the subroutine.

Following is the Properties dialog box of the Go To Script node:

Figure 20: Go To Script Properties



Define "Go to Script" node properties as follows:

Procedure

Step 1 Select the Business entity that owns the script that the node should run. By default, Unified ICM consists of one business entity. Multiple business entities are allowed only if you enable partitioning. For more information about partitioning, 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.

Step 2 Select a script from the Scripts list. From within an administrative script, you can only go to another administrative script. Within a routing script, you can only go to another routing script.

Step 3 Optionally, add comments and connection labels.

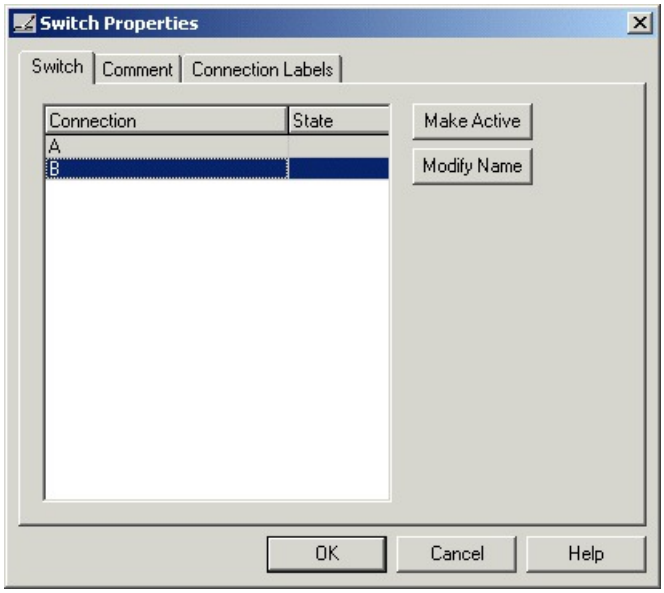
Direct Script Execution to a Specific Branch

You use the Switch node (in the General tab of the Palette) to direct script execution to its active output connection. You can define multiple output connections from the Switch node; you must specify one of them as the active connection.

Figure 21: Switch Icon

Following is the Properties dialog box of the Switch node:

Figure 22: Switch Properties



You must insert targets and connections from the Switch node before you can define the node's properties.

Then define Switch node properties as follows:

Procedure

Step 1 By default, Connections are labeled "A", "B", etc. To re-label a Connection, click **Modify Name** and make changes to the name.

Step 2 To make a connection active, select a connection and click **Make Active**.

Note Only one connection can be active at any time. To change the active branch, you must re-edit the script and create a new script version.

Step 3 Optionally, add comments and connection labels.

Direct Script Execution to Different Branches by Percentage

You can direct specific percentages of contacts to different branches in a script by using the Percent Allocation node (in the General tab of the Palette).

Figure 23: Percent Allocation Icon

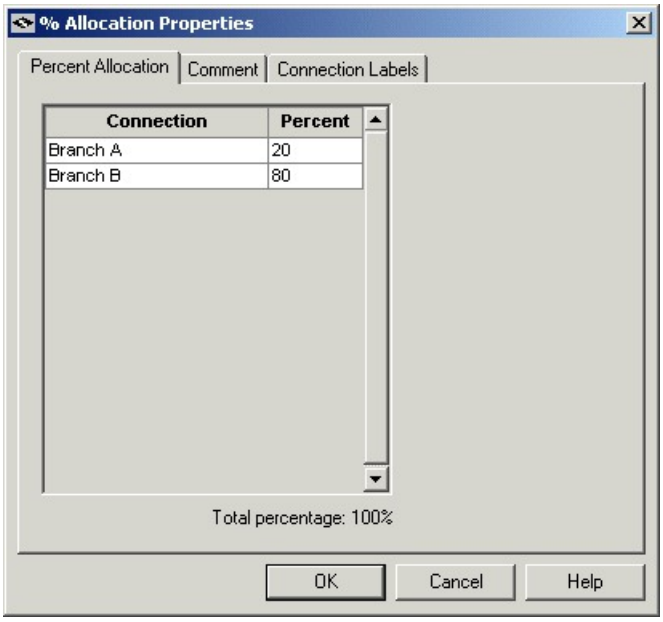
Each branch may lead directly to a target, or may include additional processing. Because contacts are distributed by percentage and without tests of the targets' data, distributing by percentage never fails.

For example, in a geographically diverse environment, you can create a script that sends 10% of contacts to Boston, 5% to Chicago, and distributes the remaining 85% to another set of targets.

Warning Unlike selecting targets by rules or distributing contacts to targets, distributing contacts does not consider real-time contact center conditions and therefore may lead to load imbalances.

Following is the Properties dialog box of the Percent Allocation node:

Figure 24: % Allocation Properties



Define Percent Allocation node properties as follows:

Procedure

Step 1 In the Percent column for each connection, enter a percent number for the percentage of contacts to process on that branch.

Note The percent total for all rows must equal 100.

Step 2 Optionally, modify the Connection name. Changes appear in the connector labels when you save the properties and view the script.

Step 3 Optionally, add comments and connection labels.

Categorize Contact Based on a Condition

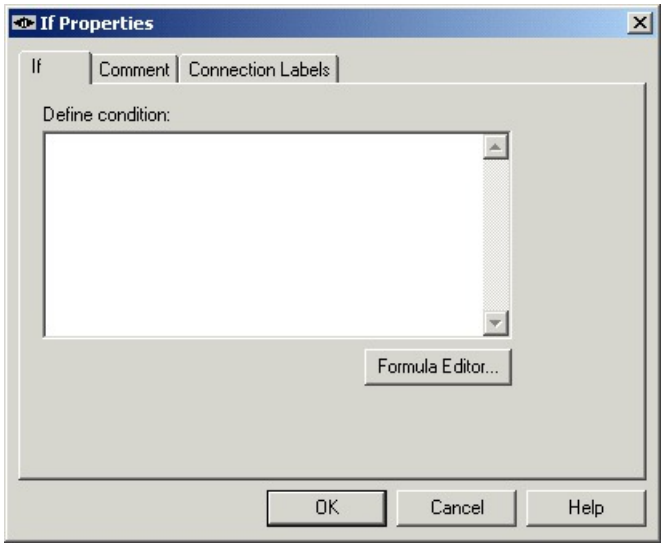
You use the **If** node (in the General tab in the Palette) to direct script execution to one of two branches based on the result of an evaluation. You can use formulas to define the If node.

Figure 25: If Icon

When the system runs an If node, it first evaluates the condition specified in the node Properties dialog box Define condition field. If the system determines that the condition is true, control flows through the success output terminal; if it determines the condition is false, control flows through the failure output terminal.

Following is the Properties dialog box of the If node:

Figure 26: If Properties



Define If node properties as follows:

Procedure

Step 1 In the Define condition field, enter a condition or use the Formula Editor to create a formula.

Step 2 Optionally, add comments and connection labels.

Categorize a Contact Based on Its Media Routing Domain

You use the Media Routing Domain node to categorize contacts based on their media routing domains. This node is described in the Universal Queue section of this document.

Categorization by External Data

Scripts can categorize a contact based on data stored in a database that is not part of Unified ICM, such as a Customer Relationship Management (CRM) system.

For example, a script that processes incoming phone calls can query a CRM using the CLID to determine if the customer should receive Premium or Standard phone support. The records for the customer with the phone number matching the CLID are retrieved, and the value of the Support column is returned to the script. If the value indicates that the customer has paid for Premium support, script processing continues down one branch that assigns the phone call to a skill group dedicated to responding to Premium customers; otherwise, script processing continues down another branch that assigns the phone call to a more general skill group, where the wait time is expected to be longer.

Note You must use Unified ICM Configuration Manager to define the external database table and the columns that are to be referenced in scripts. For more information, 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.

You can categorize a contact by retrieving external data with the DB Lookup node, then referencing the retrieved external data on the DB Lookup node success branch.

Modify CallRouter Registry to Provide for Database Lookup Authentication

When attempting to access the remote database, the call router authenticates using external database lookup SQLLogin registry value. For more information, see **Configure External DBLookUp Registry Value using CCEDataProtect Tool** procedure in 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

You must configure the database paths to Side A and Side B in the DB Lookup Explorer and the CallRouter Registry for Database Lookup Authentication.

Note The database paths in the DB Lookup tool and the CallRouter Registry must be the same. Use either hostname or IP addresses in the DB Lookup Explorer and the CallRouter Registry. If you use hostname in the DB Lookup Explorer tool, use hostname in CallRouter Registry as well. If you use IP Address in the DB Lookup Explorer tool, use IP Address in CallRouter Registry as well.

Note If the external remote database is on SQL Server 2017 version, you have to install the ODBC Driver 17 manually on the server hosting the external database. Download the ODBC Driver 17 from Microsoft.

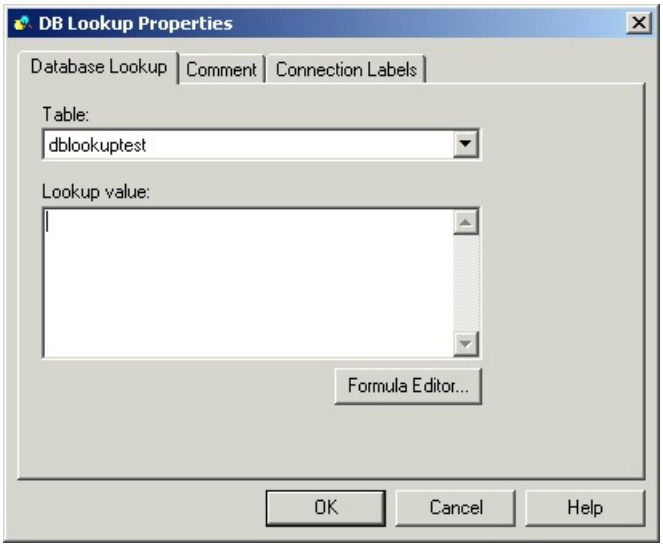
Categorize Contact by External Data

You use the DB Lookup node (in the General tab of the Palette) to query a specific row of data from an external database. You can then reference columns from that row in other nodes like an If node.

Figure 27: DB Lookup Icon

Following is the Properties dialog box of the DB Lookup node:

Figure 28: DB Lookup Properties



Define the DB Lookup node properties as follows:

Procedure

Step 1 Select the database table you want to query. (The drop-down list contains the enterprise names of all lookup tables defined in Unified ICM.)

Note Define all integer fields in tables accessed by a DBLookup node as NOT NULL. Only the following data types are supported for SQL databases: SQLINT1 (tinyint), SQLINT2 (smallint), SQLINT4 (int), SQLCHAR (char), SQLVARCHAR (varchar), SQLFLT4DBFLT4 (real), SQLFLT8DBFLT8 (float), and SQLDATETIME (datetime). You must define all fields except SQLDATETIME, SQLVARCHAR, and SQLCHAR as NOT NULL fields. You can define these three fields as NULL.

Step 2 In the Lookup value field, define constant or expression to match the primary key value in the row you want to retrieve. The lookup value must be of the appropriate data type to match the primary key field in the table. You can use formulas to define the expression. For example, if phone_number is the primary key field in the database table, you might use Call.CallingLineID as the Lookup Value.

Step 3 Optionally, add comments and connection labels.

Reference Retrieved External Data

To access retrieved data, you use the following syntax in nodes that reference a column:

```
Database.table-name.column-name
```

Where:

Procedure

- `table-name` is the enterprise name of the table as defined through the Configuration Manager.
- `column-name` is the name of the column from the table, which is also defined through the Unified ICM Configuration Manager.

What to do next

For example, if the table Customers contains a column named Priority, you would reference that column in an If expression as follows:

```
Database.Customers.Priority = 1
```

For more information, see the chapter Use of Formulas.

Categorize by External Applications

You can categorize a contact based on data returned from an application external to Unified ICM by using the Application Gateway node (in the General tab of the Palette).

Figure 29: Gateway Icon

For example, a script that processes incoming phone calls can send the caller's account number to an external application, which returns to the script the caller's account balance. The script can then branch on the value of the account balance, providing premium service to callers with higher account balances.

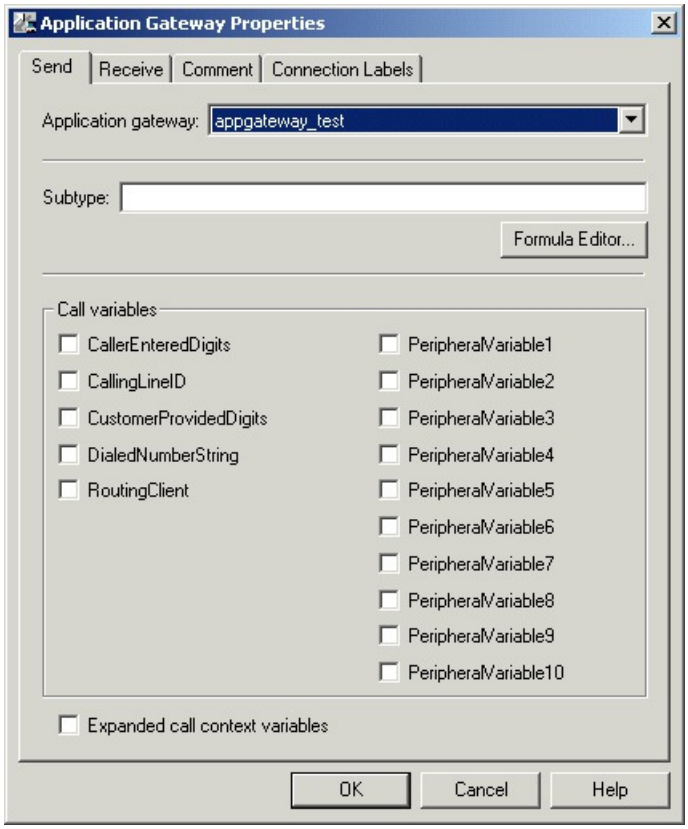
Note You must use Unified ICM Configuration Manager to define the external application. For more information, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise*.

Define the Application Gateway properties as follows:

Procedure

Step 1 In the Send tab:

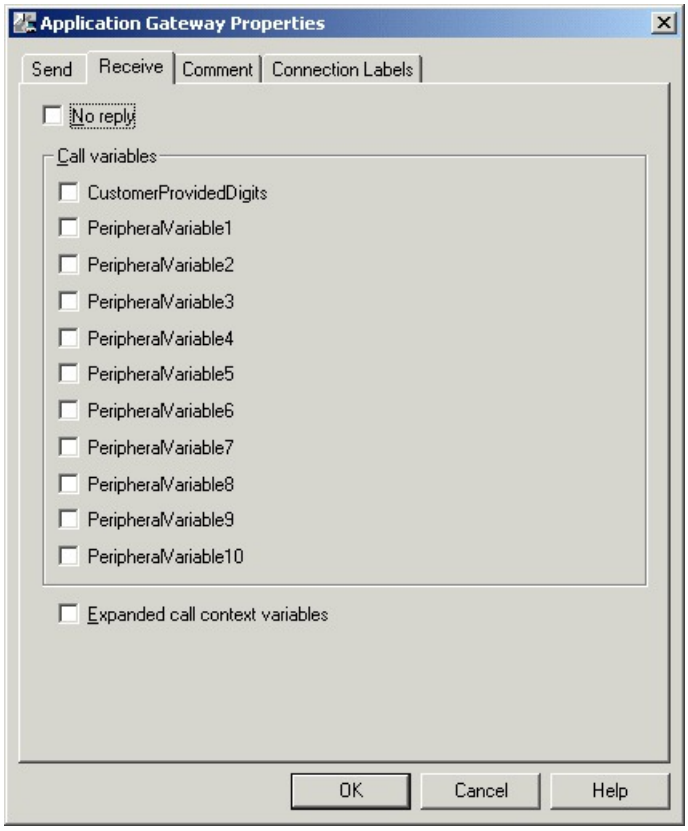
Figure 30: App Gateway Properties - Send



a) Choose the gateway from the Application Gateway drop-down list.
b) In the Subtype field, enter the string that is to be sent to the external application, or use the Formula Editor to write an expression that evaluates to a string.
c) In the Call variables list, check the call variables to send to the external application.
d) To send expanded call variables to the external application, check **Expanded call context variables**.

Step 2 In the Receive tab:

Figure 31: App Gateway Properties - Receive



a) Select **No Reply** if the external application is not to return data to the script.

Note If you select this option, Unified ICM cannot retrieve any data from the external application.

b) In the Call variables list, check variables that the external application may modify.
c) Select Expanded call context variables if the external application modifies and returns values for the expanded call variables.

Step 3 Optionally, add comments and connection labels.