Advanced Call Router™

Manual

MAX Communication Server
Release 8.6.1

October 2019

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TRADEMARKS

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Contents

Advanced Call Router

Advanced Call Router is the standard AltiGen Call Router application plus call router service. Advanced Call Router requires the purchase and activation of an Advanced Call Router license.

Note: The workgroup to which incoming trunk calls will be routed via Call Router must be assigned to the auto attendant whose Action is set to "Adv - Advanced Call Router," with **Ext Num** set to the virtual extension you use to configure Call Router. For information on configuring auto attendants, refer to the Auto Attendant Configuration chapter of the *MAXCS Administration Manual*.

Requirements

Supported Operating systems:

- Windows Server 2008 SP2 (32-bit)
- Windows Server 2008 R2 SP1 (64-bit)
- Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019
- Windows 7 (32-bit and 64-bit)
- Windows 10

Minimum system requirements:

- Intel 2GHz Pentium 4 or equivalent
- 40GB available hard drive disk space
- 1GB RAM

32-Bit ODBC

If you plan to use Advanced Call Router with a database, you will need to create a 32-bit ODBC connection on the MaxCS system. The ODBC is used to connect to a database at your SQL system.

To create a 32-bit ODBC connection on a 64-bit OS system,

1. Run `C:\Windows\SysWOW64\odbcad32.exe`.

2. Create an ODBC data source in System DSN to access your SQL database. Select **SQL Authentication** and test the database connection.

3. Use the same SQL authentication information in Advanced Call Router configuration.

Installation

To install Advanced Call Router,

4. Run the .exe file from the folder in the installation media.

5. Setup will confirm the destination for the Call Router application (the default is C:\Program Files\AltiGen\Call Router).

    To select a different location, use the **Browse** button to choose the new location.

6. Click **Next** to proceed.

Note: **Advanced Call Router** Service requires the purchase and activation of the Advanced Call Router license.

Configure/Run Advanced Call Router

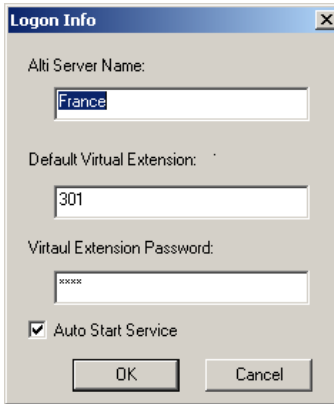1. Launch Call Router from the Windows **Start** menu.
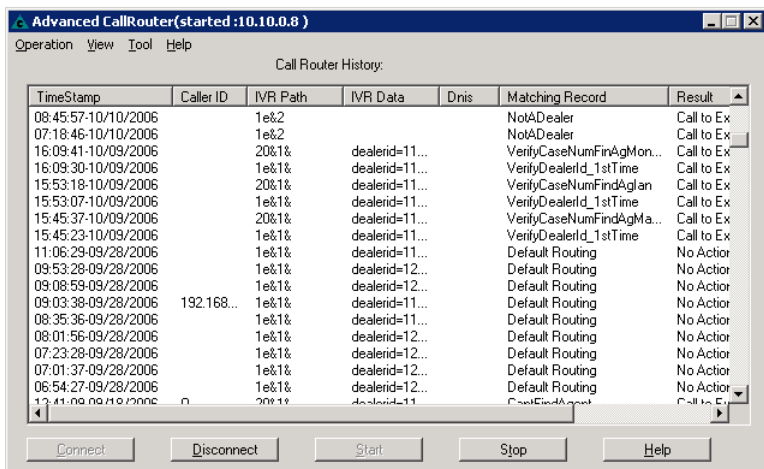
2. Click the **Connect** button to enter the Call Router Server Name or IP address to connect to, then click **OK**.

To disconnect from this server, click the **Disconnect** button.

3. Select **Operation** > **Logon Info**.

4. In the **Logon Info** window, enter the **Server Name** that Advanced Call Router will connect to, along with the **Default Virtual Extension** and **Password** then click **OK**.

    (Optional) Check **Auto Start Service** to have Advanced Call Router start routing calls automatically, after the system restarts or after Advanced Call Router service has been stopped and restarted.

    Note: Up to 8 login attempts are allowed, after which login will be disabled from 1 to 24 hours (depending on the setting in MaxAdministrator).

5. Click **Start** to run Advanced Call Router. When Advanced Call Router is stopped, you can configure the server and login information.

6. Route Rules and Show Monitor can be configured after Advanced Call Router is started.

Advanced Call Router Route Rules

To create route rules that will be used to route calls, select **Operation** >
Route Rule to open the **Route Rule List** window. This window also allows
you to view existing route rules, and modify and delete route rules.
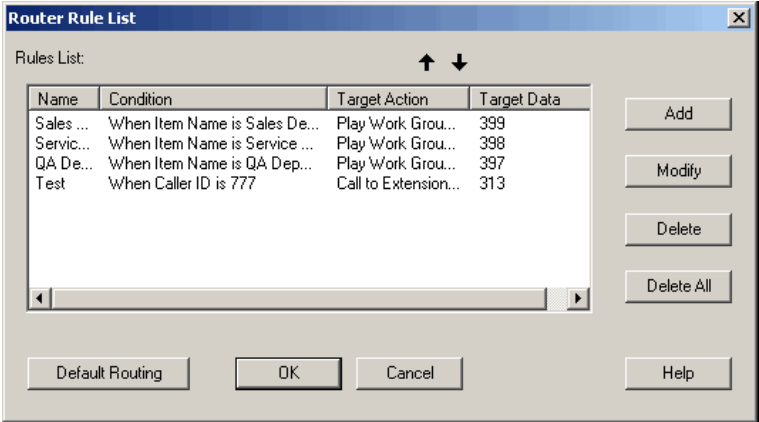
- **Add** – opens a Custom Record dialog box, where you can create a new
  record and build the conditions for the record.

- **Modify** – opens the Customer Record dialog box to modify the record
  selected in the Record List.

- **Delete** – deletes the record selected in the Record List.

- **Delete All** – deletes all records in the Record List.

- The **Default Routing** button opens a **Default Routing Rule** dialog box,
  where you can specify the action for Call Router to take if no match is
  found in the rules or in the database.

Default Routing Rule dialog box

Default Routing Action options: No Action, Goto Top Level, Repeat Current Level, Call to Extension/Workgroup, Call to Operator, Dial by Name, Collect Extension, Directory Service, Record Message (specify target data in accompanying text box), Mailbox Access, Disconnect, System Callback, Collect Digits (specify fields in accompanying Collect Digit dialog box), Other DDR Application (specify target data in accompanying text box), Play WG Queue Status (specify target data in accompanying text box).

Creating Route Rules

To create a route rule,

1. Select **Operation** > **Route Rule**.
2. Click the **Add** button to open a new Route Rule or **Modify** to modify an existing rule in the **Rules List** dialog box.
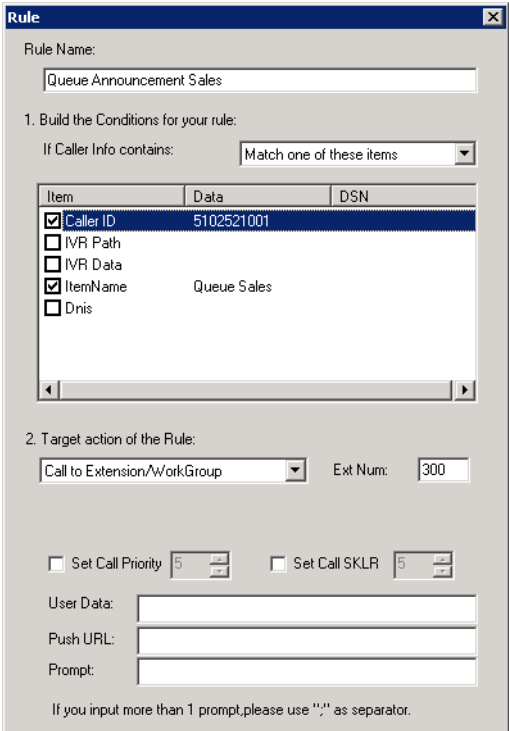
3. In the **Rule Name** field, enter or modify the rule name.

4. Select the data to match against routing rules.

    •   **If Caller Info contains** - lets you select Call Route Request data to match against the customer record.

        a) Select "**Match one**" or "**Match all**" from the drop-down list.

        b) Select the items you want.

        c) Click in the **Data** column and type to specify the data.

    To manually specify data for an item, right-click the item, select **Input data** and enter information in the column.

    •   Caller Entered Digits must be numeric only.

    •   You can enter "*" as a wildcard character for any length of digits, or "?" for a single digit.

        For example, if you specify Call ID Data "510252*," this will match all Caller IDs 510-252-xxxx. If you specify Call ID Data "510252????," this will match all Caller IDs 510 252-xxxx.

- To specify data from an existing database, right-click the item, select **From user database**, and enter information in the **DataSource** dialog box.

5. Select a **Target action** for Call Router to perform when Call Route Request data matches this record.

    Target action options: No Action, Goto Top Level, Repeat Current Level, Call to Extension/Workgroup, Call to Operator, Dial by Name, Collect Extension, Directory Service, Record Message (specify target data in accompanying text box), Mailbox Access, Disconnect, System Callback, Collect Digits (specify fields in accompanying Collect Digit dialog box; see below), Other DDR Application (specify target data in accompanying text box), Play WG Queue Status (specify target data in accompanying text box; see **Note** below), Route by Query Result.

    ### Collect Digit Dialog Box

    - **Tag name** - for example, "password" (gathered from a response to an Auto Attendant prompt or another AltiLink Plus application)
    - **Minimum Digits** and **Maximum Digits** to collect
    - **PSTN** and **Web Timeout** values

    Note: **Play WG Queue Status** - if you select "Play WG Queue Status," Advanced Call Router must log on as a workgroup extension with password (**View > Show Workgroup Status > Add**) and Call Router's virtual extension and password. (The virtual extension that Call Router uses does not have to be a member of the workgroup.) Specify this workgroup extension in the textbox that appears when you select **Play WG Queue Status**. (See "Queue Announcements" on page 13.)

    If you want to apply the "**Play WG Queue Status**" Target action to several different workgroups, you must create separate rules for each.

6. Enter optional data to match against the routing rule, and click **OK**.

- **Set Call Priority** – Check the box and choose a call priority level.
- **Set Call SKLR** – Check the box and choose an SKLR level.
- **User Data -** Gathered from a response to an Auto Attendant prompt or another AltiLink Plus application, or the text an agent typed in the User Data dialog box using the method DISP=
- **Push URL** (AltiWeb only).
- **Prompt** – The prompt to play to the callee.

Viewing Advanced Call Router History Menu

The Advanced Call Router window gives a history of all incoming trunk calls to Advanced Call Router.

To specify Call Router History window content,

1. Choose **View** > **Select Column**.
2. Select the following columns to display in the Call Router history window:
   - Caller ID
   - IVR Path
   - IVR data
   - DNIS
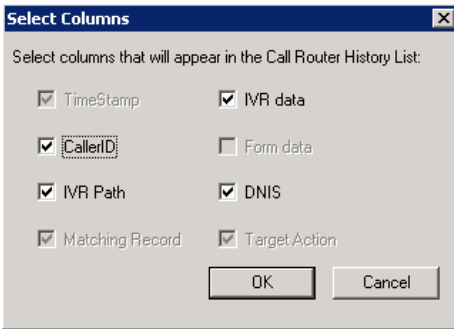
Call Route Request Data

The "Call Router Request" message sent by MAXCS to Call Router contains data about the incoming call, which Call Router attempts to match against your routing rules. Call Route Request data consists of Caller ID, IVR Path, IVR data and DNIS, all collected via real-time monitoring.

Note: IVR Path shows the Auto Attendant assignment for the workgroup that receives the call. If the workgroup's AA assignment is 5, this item shows "0 & 5"; if the AA assignment is 3, the item shows "0 & 3," and so on. The "0" indicates transfer to an Auto Attendant.

Call Route Response Data

The "Call Route Response" message, sent from Call Router to MAXCS, contains the search results of the Call Route Request Message. In the Call Router History window, this data shows how Call Router handled each call. Call Route Response data includes Matching Record (routing rule Call Router referred to for call routing) and Result (how and where the call was routed), all collected via real-time monitoring.

Note: If no match is found between the Call Route Request Data and the routing rules, the call is routed according to the business rules that check monitored workgroups for the longest available agent, maximum service level, and minimum expected delay.

Show Workgroup Status

To view real-time data on incoming trunks to workgroup, select **View > Show Workgroup Status**.
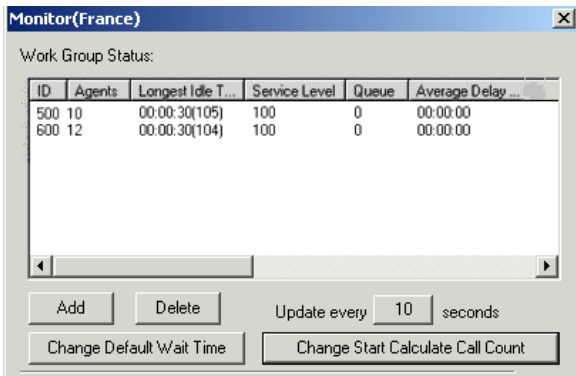
- The main window box displays the following workgroup fields: **ID**, **Agents**, **Longest Idle Time**, **Service Level**, **Queue**, **Average Delay** and **Default Wait Time**.

- **Add** button – Click **Add** to log on to a workgroup whose incoming trunk call data you want to monitor.
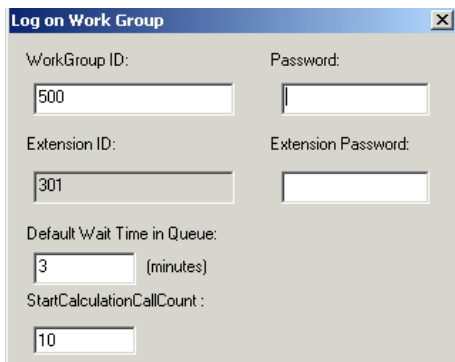
Enter the workgroup extension as the **WorkGroup ID** and **password**, and enter the virtual extension's **password**. In the field for **Default Wait Time in Queue**, type in the desired minutes. (By default, the **Extension ID** field is grayed out.)

- **Delete** button – click **Delete** to remove the selected workgroup from the display.

- **Change Default Wait Time** – click this button to change the default anticipated wait time associated with the workgroup queue.

Note: The workgroup to which incoming trunk calls will be routed via Call Router must be assigned to the Auto Attendant whose **Action** is set to "Avd - Advanced Call Router," with **Ext Num** set to the virtual extension you use to start Call Router. For information on configuring Auto Attendants, refer to the "Auto Attendant Configuration" chapter of the *MAXCS Admin Manual*.

If you want to announce queue status to callers (**Target action** of any routing rule is "Play WG Queue Status,") complete the **Virtual Extension ID** and **Virtual Extension** password fields using the workgroup agent extension (and its password) specified in the rule.

To log on to multiple workgroups:

- Click **Add** again and enter the next Workgroup ID and Password.

- **Change Start Calculate Call Count** – click this button to change the starting point for the number of calls to be reached for Call Router to start calculating call data.

Clearing Advanced Call Router History Data

To clear data from the Advanced Call Router History window,

1. Go to the directory "Program Files\AltiGen\Call Router" and locate the **Call Router.csv** file.

2. Open **Call Router.csv** and delete all contents.

Note: Use Notepad to make this change. Do not use Microsoft Excel, because deleting data and saving the file using Excel will not save the file in the correct format.
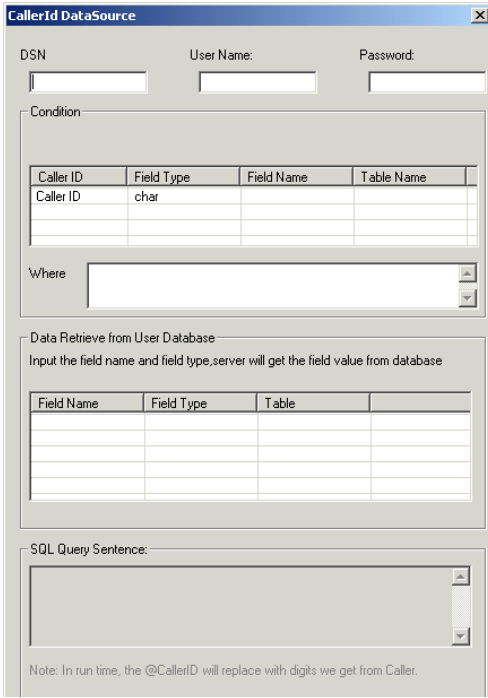
3. Save and close **Call Router.csv**.

Additional Advanced Call Router Features

Building SQL Queries

To build an SQL query that Call Router will send to your database, use the **CallerId Datasource** dialog box. The customer information retrieved from your database will be used in the routing rule.

To open the Datasource dialog box, right-click on a data **Item** you want to specify using information from an existing database. Select **From user database**:

To build a SQL query:

1. Enter User Name and Password information for the database.

2. Enter information for the database you are querying against. For example:

   DSN – BankAccount

   Table Name – AccountBalance

   Matched Field Name – CustomerPhoneNumber

   Matched Field Data Type – char

   Note: as you build the query, the **SQL query sentence** will appear in the window at the bottom.

3. Specify the condition for this query.

a. Select the **Caller Match Item** data for this query – **Caller ID**, **IVR Path**, **DNIS**, **Item name** or **IVR data**.

b. Add any additional condition. For example Where - && Balance>1000

4. Click **OK**. You will be returned to the **Rule** dialog box, where the SQL query will be shown in the **Data** column and the database will be shown in the **DSN** column.

Queue Announcements

Note: Queue announcements can now be done directly through MAXCS. Or you may use Advanced Call router for this function if you want.

If you use Advanced Call Router to inform callers of their position in a workgroup queue, there are two requirements:

1. In Call Router, you must create a rule with Target action "Play WG Queue Status." In addition, enter an Item Name that matches the name of the Auto Attendant's "Advanced Call Routing" name. The workgroup extension information you specify in the rule must also be entered when Call Router logs on in the Monitor window. Thus, it is a **requirement** to use the same virtual agent extension if you are writing several different queue announcement rules.

2. In MaxAdministrator, you must configure one of the Auto Attendant numbers to which Call Router is assigned to "Advanced Call Router." 1) Enter the same "Item Name" you use in the rule discussed immediately above. 2) Replace the "No Action" level with "Call – to Ext./Workgroup," and enter the workgroup extension number. For further information on configuring Auto Attendants, see the *MAXCS Admin Manual* and the *AltiAPI Programmer Guide*.

If your organization has multiple workgroups and you want queue announcement for several or all of them, you must create separate rules for each, with workgroup extension information pertinent to each workgroup.

Example:

Suppose you use virtual extension 700 to log in to Call Router, and you have two workgroups, Sales and Support, with the following agent and workgroup extensions:

	Sales	Support
Workgroup extension number	500	600
Call Router virtual extension number	700	700

For both workgroups, you want Call Router to check incoming calls for Caller ID and IVR Path, and to play the WG queue status if a match is found and all agents are busy.

In MaxAdministrator, you configure the Auto Attendant to which Call Router is assigned as shown below. (The example uses Auto Attendant 2.) Note that you must enter a different Item Name for each level.
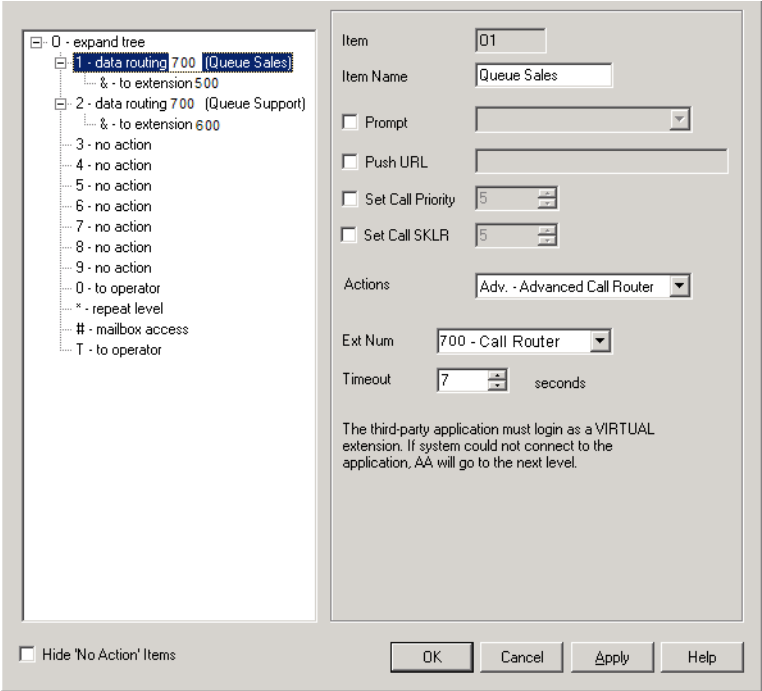
For Sales, you create a rule as shown below.

Similarly, for Support, you create a rule as shown below.

In the Monitor window, click **Add** to log on to Sales, entering both the workgroup extension & password and the virtual extension & password you specified in the "Auto Attendant Sales Queue Announcement" rule:

Monitor(France)

Work Group Status:

ID	Agents	Longest Idle T...	Service Level	Queue	Average Delay ...
500	10	00:00:30(105)	100	0	00:00:00
600	12	00:00:30(104)	100	0	00:00:00

Add   Delete   Update every   10   seconds

Change Default Wait Time   Change Start Calculate Call Count

Hide   Help

Log on Work Group

WorkGroup ID: Password:

600

Extension ID: Extension Password:

301

Default Wait Time in Queue:

3   (minutes)

StartCalculationCallCount :

10
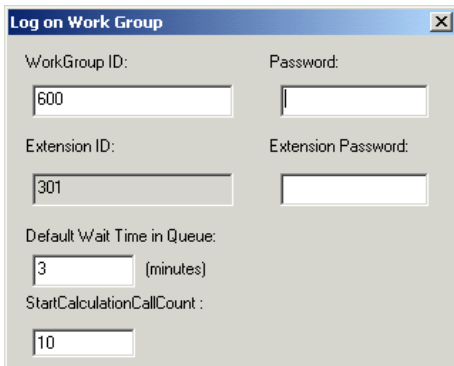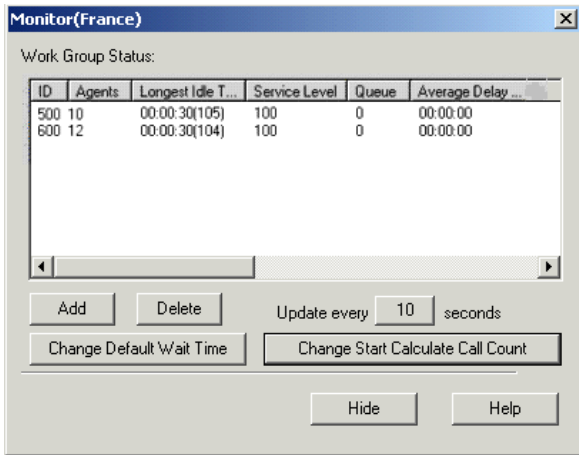
In the Monitor window, click **Add** to log on to Support, entering both the workgroup extension & password and the virtual extension & password you specified in the "Auto Attendant Sales Queue Announcement" rule:

The Monitor window shows that Call Router is logged on to both workgroups. Calls to each workgroup will be checked against the rules and will trigger a queue announcement if a match is found and all agents are busy.

Testing Call Router

To test the performance of Call Router, you can access a test tool from the Call Router main menu. Call Router must be stopped in order to run the test.

To test Call Router,

1. With Call Router function stopped, go to **Test** in the Tool drop-down list of the Call Router main menu for the **Test** dialog box.

2. In the **Configuration** fields, you can input the following test parameters:

   • **Number of concurrent calls**

   • **Interval between calls**

   • **Number of test cycles**

   For example, inputting **5** for *concurrent calls*, **3** for *interval between calls*, and **4** for *test cycles* means that every 3 seconds, there will be 5 concurrent call requests to Call Router. Total cycles of concurrent requests will be 4 times.

3. After inputting the test parameters, click **Start**. During the test, you can click **Stop** to stop the test. The title of the **Test** dialog box will be shown as "*Test(Started)*" while running.
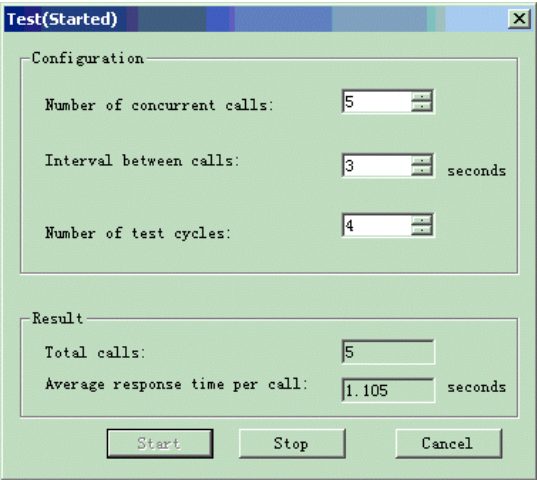
The total calls processed and average time per call will be updated in real-time during the test. You will know how many calls were processed and the average response time per call at that time.

4. After the test has finished, the title of the **Test** dialog box will be shown as "*Test(Stopped)*."
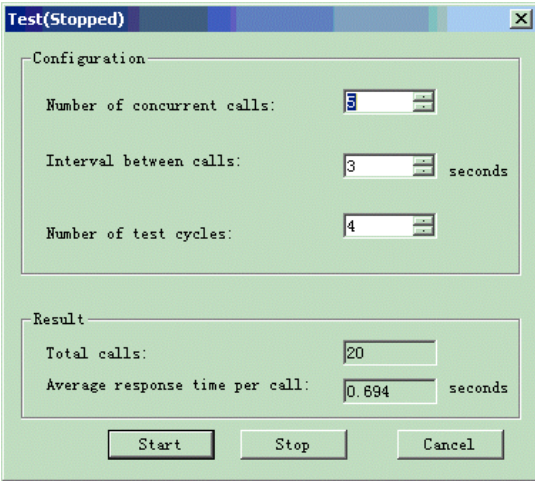
5. The **Total calls** that Call Router processed and **Average response time per call** of this test will be shown in the **Result** fields.

Route By Query Result

The routing target information can be retrieved from the database record. This means that customers need to create (and maintain) far fewer rules to process calls.

To accomplish this, rules have an additional Target action, *Route by Query Result*, as shown in the following figure.

Some additional fields will need to be configured in the *Data Source* panel when using this Target action.

A new column, *Purpose*, is now included, to retrieve data for multiple data fields. It offers four options:

- **Target** – Retrieves data for the call routing target (an extension number or group number); this option is required for the *Route by Query Result* action.

- **Priority** – Retrieves data for the call priority value (optional)

- **Skill** – Retrieves data for the call skill value (optional)

- **UserData** – Retrieves data from the SQL query result and assigns that data to the UserData field. UserData can be displayed in MaxAgent and can be used by the SDK.

With these new options, Advanced Call Router can retrieve data from the database to set the call transfer target, priority, skill level, and user data, so that one rule can perform multiple actions.

When Advanced Call Router uses call information (Caller ID, IVR input, ItemName, or DNIS) to query the database, it can receive one of the following results:

- No match – No matching records are found; Advanced Call Router will continue to the next rule.

- One match – One matching record is found; Advanced Call Router will set the call properties (Priority, Skill, and UserData) if configured, and then will route the call according to the target number in the record.

- Mutliple matches – More than one matching record was found; Advanced Call Router will set the call properties (Priority, Skill, and UserData) if configured, and route the call according to the target number in the *first record*.

While configuring rules, be aware of the following behavior:

- If the target extension does not exist, then Advanced Call Router will behave as if no match was found, and continue to the next rule.

- If the Priority or Skill value is out of range (1-9), then the priority and skill level will not be set. Instead, the original priority and skill level will be used for the call.

- If the query statement or the next rule is configured incorrectly, then Advanced Call Router will behave as if no match was found and will continue to the next routing rule. If the last rule is reached and no match is found, then the default route will be used.

The next figure shows an example where calls come in with different IVR tags. Advanced Call Router searches the database and then retrieves *Target field* data for the destination extension.
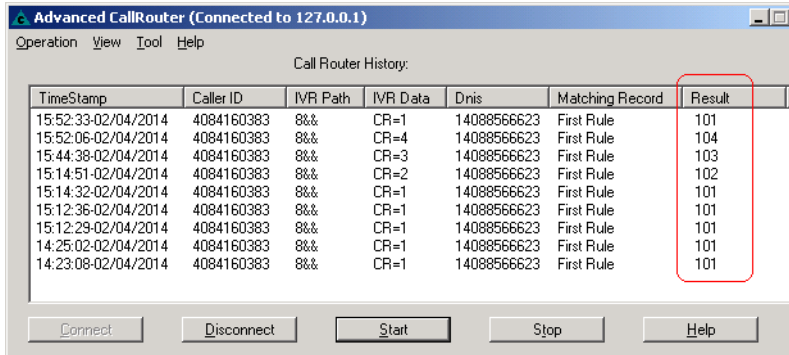
Routing Configuration Examples

This section contains three examples:

- "Example: Single Table, Single Purpose Field" on page 23
- "Example: Single Table, Multiple Purpose Fields" on page 25
- "Example: Multiple Tables" on page 27

Example: Single Table, Single Purpose Field

This example illustrates a configuration for a single table, which is designed as follows:

Field Name	Field Type	Description
ProductNumber	Text	Source data that Advanced Call Router will search for. The caller could enter this string through the Auto Attendant.
Extension	Text	The destination extension to which the call will be routed.

Here is an example of the data in this table (the table name is *RouteTable*):

Product Number	Extension
5001	101
5002	102
5003	103

In this scenario, the call router data source could be configured as shown in the following figure:

1 – Use "ProductID" for the IVR tag. Advanced Call Router uses this IVR input data as the source to search the database.

2 – Use "productnumber" for the Product Number field value. The first record that matches the entered product number will be used.

3 – Use "extension" for the routing target. This tells Advanced Call Router to retrieve this field from the matching record and use that data as the call's routing target.

Advanced Call Router will use the IVR tag name called *ProductID* to search the *ProductNumber* field in the *RouteTable* table. When a matching record is found, Advanced Call Router will use the data in the *Extension* field as the call's routing target. In this scenario, the automated SQL query statement suffices; no additional search criteria are needed for the target information.

Example: Single Table, Multiple Purpose Fields

In this example, assume we have a single table, designed as follows:

Field Name	Field Type	Description
ProductNumber	Text	Source data that Advanced Call Router will search for. The caller could enter this string through the Auto Attendant.
Extension	Text	The destination extension to which the call will be routed.
Priority	Number	The call priority.
Skill	Number	The required skill level for the agent.

Here is an example of the data in this table (the table name is *RouteTable*):

Product Number	Extension	Priority	Skill
5001	101	1	4
5002	102	3	5
5003	103	5	6

The call router data source could be configured as shown in the following figure:

1 – Use "ProductID" for the IVR tag. Advanced Call Router uses this IVR input data as the source to search the database.

2 – Use "productnumber" for the Product Number field value. The first record that matches the entered product number will be used.

3 – Use "extension" for the routing target, "skill" for the call skill level, and "priority" for the call priority. Advanced Call Router retrieves these values from the matched record and uses the values to route the call and set call properties.

In this case, the program-generated query statement is enough; no additional search criteria are needed.

Example: Multiple Tables

In this example, assume we have two tables: *RouteTable* for route information and *AgentTable* for agent information. Here are the fields in the *RouteTable* table:

Field Name	Field Type	Description
ProductNumber	Text	Source data that Advanced Call Router will search for. The caller could enter this string through the Auto Attendant.
Destination	Text	The destination to which the call will be routed.

Here is an example of the data in this table:

Product Number	Destination
5001	1001
5002	1002
5003	1003

Here are the fields in the *AgentTable* table:

Field Name	Field Type	Description
Destination	Text	The transfer destination.
Extension	Text	The destination extension number.
Priority	Number	The call priority.
Skill	Number	The required skill level for the agent.

Here is an example of the data in this table:

Destination	Extension	Priority	Skill
1001	101	1	4
1002	102	3	5
1003	103	5	6

Both tables have a "Destination" field, which will be used to link records of the two tables.

The call router data source could be configured as follows:

1 – Use "routetable" in the Match Conditions list. Advanced Call Router will search IVR data from this table.

2 – Use "agenttable" in the Data Retrieve from User Database list. This specifies the data to be retrieved from the second table.

3 – Enter additional search criteria in the "Where" clause. This will be used to link AgentTable with RouteTable.

Note: You can also create a view, to make the SQL query simpler.

Route by Query Results Limitation

When using *Route by Query Result*, multiple match conditions (IVR data, caller ID, DNIS, etc) are not supported.

Testing SQL Server Database

To test SQL server database access performance of Call Router:

1. Add a database for the SQL server.

    For example, for a database "calldb" and table name "RTMCALL", 10,000 records are added to the table.

Note: Because the data of DDR request has been hard coded, if you want a rule match, you need to add the record to the table. The caller ID of test request will be "1039470405." IVR Path of test request will be "0&9."

To use the "SessionId" field in the table to match caller ID of the request, you must add a record to the table and set the SessionId

value to "1039470405". Then during match process, the matched result will be true.

2. Add a data source to "ODBC" configuration in Windows.
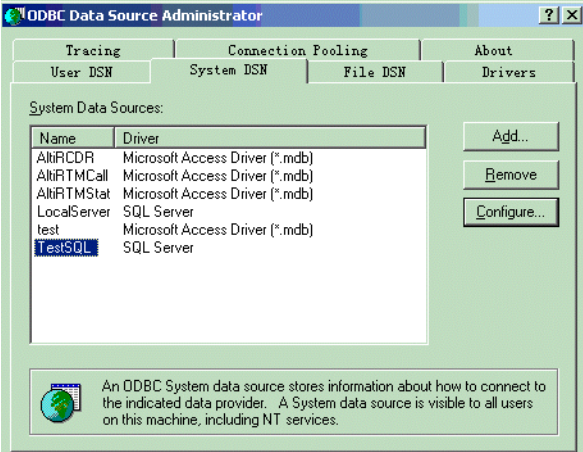
The "TestSQL" is the newly added data source. This data source is connected to the SQL server's "calldb" database.

3. In Call Router, add a rule to access database.

You can change the rule configuration to fit your own conditions.

During the test, Call Router will use this rule to match the DDR request. When using this rule, Call Router will access the SQL server to execute the SQL query.

Testing SQL Server Database