Precision Routing

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Capabilities

Precision Queues

Precision routing offers a multidimensional alternative to skill group routing: using Unified CCE scripting, you can dynamically map the precision queues to direct a call to the agent who best matches the caller's precise needs. Precision queues are the key components of precision routing.

To configure Precision Routing, you must do the following:

1. Create attributes. Attributes are characteristics that can be assigned a True | False value or a Proficiency rating from 1 to 10.
2. Assign attributes to agents.
3. Create precision queues.
4. Create routing scripts.

There is no need to add an agent to a precision queue; agents become members of precision queues automatically based on their attributes. If a precision queue requires an agent who lives in Boston, who speaks fluent Spanish, and who is proficient in troubleshooting a specific piece of equipment, an agent with the attributes Boston = True, Spanish = True, and Repair = 10 is automatically part of the precision queue. A Spanish caller in Boston who needs help with equipment is routed to that agent.

A precision queue includes:

- Terms--A term compares an attribute against a value. For example, you can create the following term: Spanish == 10. The term of the attribute is the highest proficiency in Spanish.

Each precision queue can have multiple attributes, and these attributes can be used in multiple terms. For example, to select an agent with a Spanish proficiency value between 5 and 10, you would create one term for Spanish > 5 and another for Spanish < 10.
Expressions--An expression is a collection of one or more terms. The terms in an expression must share the same operator—they must all be AND or must all be OR relationships.

Steps--A precision queue step is a time-based routing point within the precision queue. A step is a collection of one or more expressions.

A step may also include wait time and a Consider If formula. Use wait time to assign a maximum amount of time to wait for an available agent. Use a Consider If formula to evaluate the step against predefined criteria, for example, another queue.

Navigate to Unified CCE Administration Manage > Agent > Precision Queues to configure precision queues.

Depending on their role and the departments they administer, Administrators have full permission to configure precision queues. Supervisors have display-only access to the Precision Queues tool. Global supervisors can see all precision queues. Departmental supervisors can see global precision queues and precision queues in their department.

Skill Groups or Precision Queues?

Should you use skill groups or precision queues for the routing needs of your organization? This section distinguishes the two methods.

Use a Skill Group

A skill group represents a competency or responsibility. For example, it could be a predefined collection of traits, such as salespeople who are in charge of selling to England. The skill group could be called "English sales". If you wanted to divide the agents in this group into two types of proficiencies (perhaps based on experience), you would need to set up two separate skill groups; for example, English Sales 1 and English Sales 2. You would then associate an agent with one of them, based on the agent's proficiency. Do this by accessing the skill group and locating the agent that you want to add to it (or add that skill group to the agent). To summarize, creating a skill group involves first building a concept of what combinations of traits you want for each agent, like English Sales 2.

Use a Precision Queue

In contrast to skill groups, a precision queue breaks down attribute definitions to form a collection of agents at an attribute level. The agents that match the attribute level of the precision queue become associated with that precision queue.
With precision queues, the preceding English sales example involves defining the attributes English and Sales, and associating agents that have those traits to them. The precision queue English Sales would dynamically map all those agents that had those traits to the precision queue. In addition, you can define more complex proficiency attributes to associate with those agents. This would allow you to build, in a single precision queue, multiple proficiency searches like English language proficiency 10 and sales proficiency 5.

To break down the precision queue example into skill groups, you would need to set up two separate skill groups: English language proficiency 10 and sales proficiency 5. With precision queues, you can refine agents by attributes. With skill groups, you define a skill group and then assign agents to it.

**Decide on Skill Groups or a Precision Queue**

Precision routing enhances and can replace traditional routing. Traditional routing looks at all of the skill groups to which an agent belongs and defines the hierarchy of skills to map business needs. However, traditional routing is restricted by its single-dimensional nature.

Precision routing provides multidimensional routing with simple configuration, scripting, and reporting. Agents are represented through multiple attributes with proficiencies so that the capabilities of each agent are accurately exposed, bringing more value to the business.

If your routing needs are not too complex, consider using one or two skill groups. However, if you want to conduct a search involving as many as ten different proficiency levels in one easily managed queue, use precision queues.

**Attributes**

Attributes identify a call routing requirement, such as language, location, or agent expertise. You can create two types of attributes: Boolean or Proficiency.

- Use Boolean attributes to identify an agent attribute value as true or false. For example, you can create a Boston attribute that specifies that the agent assigned to this attribute must be located in Boston. An agent in Boston would have `Boston = True` as the term for that attribute.

- Use Proficiency attributes to establish a level of expertise in a range from 1 to 10, with 10 being the highest level of expertise. For a Spanish language attribute, for example, a native speaker would have the attribute `Proficiency = 10`.

When you create a precision queue, you identify which attributes are part of that queue and then implement the queue in a script. When you assign a new attribute to an agent and the attribute value matches the precision queue criteria, the agent is automatically associated with the precision queue.

**Precision Queue Call Flow Example**

At a high level, consider a 5-step precision queue with a Consider If formula for `Caller is Premium Member` attached to the Step 1:

- Step 1 - Attribute: Skill > 8 - Consider If: Caller is Premium Member
- Step 2 - Attribute: Skill > 6
- Step 3 - Attribute: Skill > 4
- Step 4 - Attribute: Skill > 3
• Step 5 - Attribute: Skill >= 1

Caller John, who is not a premium customer, calls 1-800-repairs. John's call is routed to this precision queue.

• Since John is not a premium customer, he is immediately routed out of Step 1 (because of the Consider If on Step 1) and into Step 2 where he waits for his call to be answered.

• After the Step 2 wait time has expired, John's call moves to Step 3 to wait for an agent.

• After the Step 3 wait time has expired, John's call moves to Step 4 to wait for an agent.

• When it arrives at Step 5, John's call will wait indefinitely for an available agent. This step cannot be avoided by any call because there is no routing logic past this.

The overarching idea is that customer will use each successive step to expand the pool of available agents. Eventually, when you reach the "last" step (the step with the highest number), the call is waiting in a potentially very large pool of agents. With each extra step, the chances of the call being handled increase. This also puts the most valuable and skilled agents in the earlier precision queue steps. Calls come to them first before moving on the less appropriate agents in later steps.

Scripts for Precision Queues

To implement Precision Routing in your contact center, you must create scripts.

You can create and use configured (static) and dynamic precision queue nodes in your scripts.

• Static precision queue nodes target a single, configured precision queue. When the script utilizes a single precision queue, use static precision queues.

• Dynamic precision queue nodes are used to target one or more previously configured precision queues. Use dynamic precision queues when you want a single routing script for multiple precision queues (for example, when the overall call treatment does not vary from one precision queue to another). Dynamic precision queues can simplify and reduce the overall number of routing scripts in the system.

Precision Queue Script Node

Use the Precision Queue script node to queue a call based on caller requirements until an agent with desired proficiency become available. This node contains multiple agent selection criteria which are separated into steps.

A single call can be queued on multiple precision queues. If an agent becomes available in one of the precision queues, the call is routed to that resource. You cannot reference multiple precision queues with a single Precision Queue node. However, you can execute multiple Precision Queue nodes sequentially to achieve this.

The Precision Queue node includes a Priority field, which sets the initial queuing priority for the calls processed through this node versus other calls queued to the other targets using different nodes. The priority is expressed as an integer from 1 (top priority) to 10 (least priority). The default value is 5.

If more than one call is queued to a precision queue when an agent becomes available, the queued call with the lowest priority number is routed to the target first. For example, assume an agent in a precision queue becomes available and two calls are queued to that precision queue. If one call has priority 3 and the other has priority 5, the call with priority 3, the lower value, is routed to the precision queue while the other call continues to wait. If the priorities of the two calls are same, then the call queued first is routed first.
VRU (voice response unit) script instructions are not sent to the VRU. If a call enters the precision queue node and no resource is available, the call is queued to the precision queue and the node transfers the call to the default VRU, if the call is not already on a VRU. The script flow then exits immediately through the success branch. The script should then continue with a run external script node to instruct the VRU what to do while holding the call until an agent becomes available. Typically, this invokes a network VRU script that plays music-on-hold, possibly interrupted on a regular basis with an announcement. The script flow can also use other queuing nodes to queue the same call to other targets, for example, Queue to Skill Group and Queue to Agent.

**Queuing Behavior of the Precision Queue Node**

Precision queues internally are configured with one or more time-based steps, each with a configured wait time. After a call is queued, the first step begins and the timer starts. This occurs although the execution path of the script exited the success node and a new node may be targeted (for example, Run Ext. Script).

If the timer for the first step expires, control moves to the second step (assuming one exists), and so on. As long as the call remains in queue and there are steps left to execute, the call internally continues to move between steps regardless of the path the call takes after it leaves the precision queue node. If a call is queued to two or more precision queues, the call internally walks through the steps for each precision queue in parallel. After the call reaches the last step on a precision queue, it remains queued on that step until the call is routed, abandoned, or ended.

**Initial setup**

**Add Attributes**

**Procedure**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Navigate to Unified CCE Administration Manage &gt; Agent &gt; Attributes.</td>
</tr>
<tr>
<td>Step 2</td>
<td>In the List of Attributes window, click New.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Complete the following fields.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field</th>
<th>Required?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>yes</td>
<td>A departmental administrator must select one department from the departments popup list to associate with this attribute. The list shows all of this administrator's departments. A global administrator can leave this field set to the default, which sets the attribute as global (belonging to no departments). A global administrator can also select a department for this attribute.</td>
</tr>
</tbody>
</table>
Step 4 Click Save.

### Search for Agents

The Search field in the Agents tool offers an advanced and flexible search.

Click the + icon at the far right of the Search field to open a popup window, where you can:

- Select to search for agents only, supervisors only, or both.
- Enter a username, agent ID, first or last name, or description to search for that string.
- Enter one or more team names separated by spaces. (Team is an OR search--the agent or supervisor must be a member of one of the teams.)
- Enter one or more attribute names separated by spaces. (Attributes is an AND search--the agent or supervisor must have all attributes.)
- Enter one or more skill group names separated by spaces. (Skill Groups is an AND search.)
- Select departments, with options for **Globals and Departments**, **Globals only**, or **Departments only**. Selecting **Globals and Departments** or **Departments only** enables an input field where you can enter a space-separated list of department names. (Departments is an OR search.)

**Note** Search by department is enabled only when departments are configured.
Assign Attributes to Agents

Procedure

Step 1  With the selected agent displayed, click the Attributes tab.

Step 2  Complete the Attributes tab:

This tab shows the attributes associated with this agent and their current values. If the agent has no attributes, the Name field shows "No Items Found" and "No Items".

Click Add to open a popup list of all attributes, showing the name and current default value for each.

a) Click the attributes you want to add for this agent.
b) Set the attribute value as appropriate for this agent.
c) Click Save to return to the List window, where a message confirms the successful creation of the agent.

To enter or change fields in the other tabs, click those tabs.

Add precision queue

Procedure

Step 1  Navigate to Unified CCE Administration Manage > Agent > Precision Queues. This opens a List of Precision Queues window showing all precision queues that are currently configured.

Step 2  Click New to open the New Precision Queue window. Complete the fields.
A departmental administrator must select one department from the department popup list to associate with this precision queue. The list shows all of this administrator's departments. A global administrator can leave this field set to the default, which establishes the precision queue as global (belonging to no departments). A global administrator can also select a department for this precision queue. When an administrator selects a department for the precision queue, the popup lists for attributes and bucket intervals show global objects and objects in that department. When an administrator changes the precision queue department, selections for bucket intervals and attributes are cleared if the selections do not belong to the new department or the global department.

<table>
<thead>
<tr>
<th>Name</th>
<th>Required?</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>yes (for department administrators only)</td>
<td>A departmental administrator must select one department from the department popup list to associate with this precision queue. The list shows all of this administrator's departments. A global administrator can leave this field set to the default, which establishes the precision queue as global (belonging to no departments). A global administrator can also select a department for this precision queue. When an administrator selects a department for the precision queue, the popup lists for attributes and bucket intervals show global objects and objects in that department. When an administrator changes the precision queue department, selections for bucket intervals and attributes are cleared if the selections do not belong to the new department or the global department.</td>
</tr>
<tr>
<td>Description</td>
<td>no</td>
<td>Enter up to 255 characters to describe the precision queue.</td>
</tr>
</tbody>
</table>
### Service Level Type

Select the service level type used for reporting on your service level agreement. Service level type indicates how calls that are abandoned before the service level threshold affect the service level calculation. This is a drop-down menu that defaults to **Ignore Abandoned Calls**, and includes these options:

- **Ignore Abandoned Calls**: Select this option if you want to exclude abandoned calls from the service level calculation.
- **Abandoned Calls have Negative Impact**: Select this option if you want only those calls that are answered within the service level threshold time to be counted as treated calls. The service level is negatively affected by calls that abandon within the service level threshold time.
- **Abandoned Calls have Positive Impact**: Select this option if you consider a call that is abandoned within the service level threshold time as a treated call. With this configuration, abandoned calls have a positive impact on the service level.

### Service Level Threshold

Enter the time in seconds that calls are to be answered based on your service level agreement. The time that you enter in this field is used to report on service level agreements and does not affect how long a call remains in a precision queue. The length of time a call remains in a step is determined by the wait time for each individual step.
Select an option to determine which agents receive calls from this queue.

The ordering of agents does not dictate the agents who are selected into a Precision Queue step. Agents are included or excluded based on the conditions specified for the step.

- **Longest Available Agent** (default): The default method of agent ordering for a precision queue. The call is delivered to the agent who has been in the available (or ready) state the longest.

- **Most Skilled Agent**: The call is delivered to the agent who has the highest competency sum from all the attributes pertinent to the Precision Queue step. In an agent-rich environment, this can mean that more competent agents would be utilized more than less competent agents.

- **Least Skilled Agent**: The call is delivered to the agent who has the lowest competency sum from all the attributes pertinent to the Precision Queue step.

Select the bucket interval whose bounds are to be used to measure the time slot in which calls are answered.

To select a different bucket interval:

1. Click the magnifying glass icon to display **Select Bucket Intervals**.
2. Click a link to make a selection and close the list.

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<tr>
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</thead>
<tbody>
<tr>
<td>Agent Order</td>
<td>yes</td>
<td>Select an option to determine which agents receive calls from this queue.</td>
</tr>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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<td>specified for the step.</td>
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<tr>
<td></td>
<td></td>
<td>Queue step.</td>
</tr>
<tr>
<td>Bucket Intervals</td>
<td>no</td>
<td>Select the bucket interval whose bounds are to be used to measure the time</td>
</tr>
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</tr>
<tr>
<td></td>
<td></td>
<td>2. Click a link to make a selection and close the list.</td>
</tr>
</tbody>
</table>
**Step 3**  Click the numbered Step Builder link (Step 1, Step 2, and so on) to open the **Step Builder** popup window.

**Step 4**  When you have finished adding, click **Save**.

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**Consider If Formula for Precision Queue**

If you are not on the last step of the precision queue, then you can enter a **Consider If** formula for that step. A Consider If formula evaluates a call (within a step) against additional criteria. Each time a call reaches a step with a Consider If expression, the expression is evaluated. If the value for the expression returns as true, the call is considered for the step. If the value returns as false, the call moves to the next step. If no expression is provided for a step, the step is always considered for calls.

To add a Consider If formula, type the formula into the **Consider If** box. Alternatively, you can use the Script Editor to build the formula and then copy and paste it into the **Consider If** box. Objects used in Consider If formulas are case-sensitive. All Consider If formulas that you add to a precision queue must be valid. If you add an invalid formula, you cannot save the precision queue. To ensure that the formula is valid, use Script Editor to build and validate the formula.

Only the following scripting objects are valid in a Consider If formula:

- Call
- PQ
- Skillgroup
- ECC
- PQ Step
- Call Type
- Custom Functions (You can create custom functions in Script Editor.)

It is possible that a valid Consider If formula can become invalid. For example, if you delete an object used in the formula after you create or update the precision queue, the formula is no longer valid.

**Consider If Formula Examples**

- **PQ.PQ1.LoggedOn > 1** -- Evaluates whether there is more than one agent logged in to this queue.
- **CallType.CallType1.CallsRoutedToday > 100** -- Evaluates whether more than 100 calls of this call type were routed today.
- **PQStep.PQ1.1.RouterAgentsLoggedIn > 1** -- Evaluates whether there is more than one router agent logged in to this queue for Step 1.
- **CustomFunction(Call.PeripheralVariable1) > 10** -- Evaluates whether this formula using a custom function returns a value greater than 10.
Build Precision Queue Steps

Every precision queue must have a step, and every step must have an Expression. An Expression is a collection of attribute terms.

Procedure

**Step 1** Enter all required fields for the new precision queue.

**Step 2** Click the numbered step link in the Steps panel (Step 1, Step 2, and so on). This opens a step number window.

**Step 3** Build the first step as follows.

a) Bypass the Consider if and Wait for fields. They are display-only on the first and last step of a precision queue. As soon as you create a second step, you can return to the first step and enter values for Consider if and Wait for.

b) Click the magnifying glass icon to the right of the Select Attribute field in the Expression 1 panel.

c) Select an attribute from the list.

d) Use the two Select fields to establish the terms of the attribute. Click the first Select field to choose an operator.

   • For Boolean attributes, choices are the operators for Equal and Not Equal.

   • For Proficiency attributes, choices are the operators for True, False, Less Than, Less Than or Equal To, Greater Than, and Greater Than or Equal To.

e) Click the second Select field to choose a value.

   • For Boolean attributes, values are True and False.
• For Proficiency attributes, values are numbers from 1 to 10.

Your selection creates an attribute term for the Expression. At this point, the term will appear in the precision queue similar to this: [[Spanish == 10]]. The term is a requirement that the agent must be fluent in Spanish.

**Step 4**  
To add a second attribute to the first Expression, click **Add Attribute** in the **Expression 1** row.  

a) Select **AND** or **OR** to establish the relationship between the first and second attributes.

b) Repeat steps 3b, 3c, and 3d.

**Step 5**  
Continue to add attributes to Expression 1.  
All attributes within an expression must be joined by the same logical operator. They must all be ANDs, or they must all be ORs.

**Step 6**  
To add a second Expression, click the **Add Attribute** drop-down in the **Expression 1** row and select **Add Expression**.

**Step 7**  
Select **AND** or **OR** to establish the relationship between the first and second Expressions.

**Step 8**  
Add attributes to Expression 2.

**Step 9**  
Continue to add Expressions as needed.
In this example, a Spanish caller located in the Boston area needs an onsite visit from a technician to repair his ServerXYZ. An ideal agent should be fluent in Spanish and have the highest proficiency in ServerXYZ. This can be seen in Expression 1. Expression 2 allows us to specify that the selected agent must also be from either Boston or the New England area.

**Step 10** When you have completed the step, click OK to add it to the precision queue.

**Step 11** To build the next step, click the numbered step link in the Steps panel (Step 1). Each successive step is prepopulated with the Expressions and attributes of its predecessor. Decrease the attribute qualifications and competencies in successive steps to lower the bar such that the pool of acceptable agents increases.

**Step 12** When you have created all steps, you can open any step except the last and enter values in the Consider if and Wait for fields.

- **Consider if** is a formula that evaluates a call within a step against additional criteria.
- **Wait for** is a value in seconds to wait for an available agent. A call will queue at a particular step and wait for an available agent matching that step criteria until the number of seconds specified. A blank wait time indicates that the call will proceed immediately to the next step if no available agents match the step criteria. Wait time defaults to 0 and can take a value up to 2147483647.
Configure a Static Precision Queue

**Procedure**

**Step 1** In the Precision Queue Properties dialog box, select the **Statically** option.

**Step 2** From the list, select a precision queue to which to route all calls that enter this node.

**Step 3** In the Priority selection box, select the initial queuing priority for calls processed through this node. You can select from 1 - 10. The default is 5.

**Step 4** Check the Enable target requery check box to enable the requery feature for calls processed through this node. The requery behavior for the Precision Queue node is to be determined.

**Step 5** To edit a precision queue, select a precision queue from the list, and then click **Edit Precision Queue**.

Configure a Dynamic Precision Queue

**Procedure**

**Step 1** In the Precision Queue Properties dialog box, select the **Dynamically** option.

**Step 2** In the Priority selection section, select the initial queuing priority for calls processed through this node. You can select from 1 - 10. The default is 5.

**Step 3** Check the Enable target requery check box to enable the requery feature for calls processed through this node. The requery behavior for the precision queue node is to be determined.

**Step 4** Select a queue option:

- To dynamically route calls that enter this node to a precision queue name, select the **Precision Queue Name** option.

- To dynamically route calls that enter this node to a precision queue ID, select the **Precision Queue ID** option.

**Step 5** Click **Formula Editor** to create a formula that determines the precision queue name or ID to which to route calls.