Contact Sharing

Contact Sharing Overview

The Contact Sharing feature uses a Contact Director to distribute incoming contacts to up to 3 Unified CCE instances. The 3 instances can support a total of 24,000 active agents.

Contact Sharing uses extrapolation to distribute calls and increase the overall agent and call handling capacity. Contact Sharing enables customers with multiple Unified Contact Center Enterprise (Unified CCE) systems to distribute calls across those systems. The Contact Director (sometimes called an IVR ICM) acts as an initial entry point for the call. If the call needs agent attention, Contact Sharing decides where to route the call based on Live Data real-time state information from the Unified CCE target systems. You can configure Contact Sharing to base routing decisions on factors such as the number of calls in queue, agent availability, average handle time, and custom calculations.

Use Unified CCE Administration to create and maintain the Contact Sharing groups and rules. A group is a collection of skill groups and precision queues across target systems. Each group has a rule that defines the logic for selecting the best skill group or precision queue in that group for a routing request. Each group has an `Accept Queue If` condition to include or exclude the individual skill groups and precision queues from the group for the routing decision. You can then route the call to the Unified CCE target system whose precision queue or skill group is the best match for the group's rule. The target system's routing scripts determine the final method for handling the request.

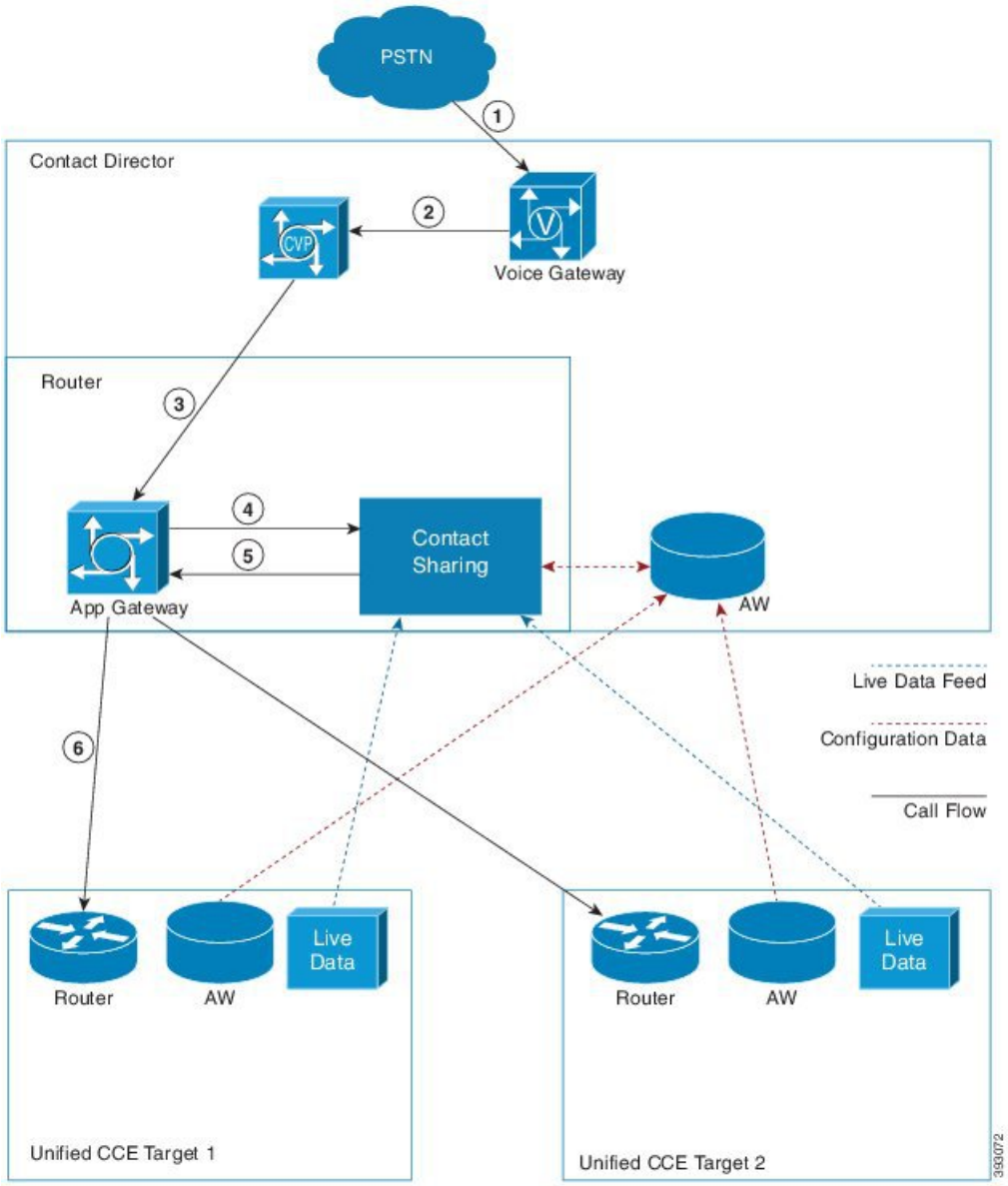
Note Contact Sharing gadgets are enabled only for the Contact Director deployment type.

For Contact Director configuration limits, see the chapter on configuration limits in 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.

Contact Sharing Call Flow

The basic Contact Sharing call flow runs as shown in this diagram:

Figure 1: Contact Sharing Call Flow



1. A call comes into the Voice Gateway on the Contact Director.
2. The Voice Gateway passes the call to CVP for VRU processing.
3. When the caller opts to speak to an agent, CVP passes the call data to the Router through the VRU PG.
4. The Router runs a script that assigns the call to a particular Contact Sharing Group. The Router sends the call data to the Application Gateway to pass to that Contact Sharing node.

5. The Contact Sharing node uses the Group Rule to determine which skill group or precision queue in its Queue should get the call. The node passes the selected target instance and its extrapolated guess of the best skill group or precision queue back to the Application Gateway.
6. The Application Gateway passes the information to the Router which routes the call to the selected target instance.

Failover for Contact Sharing

Like all the main components in Unified CCE, Contact Sharing nodes run in redundant pairs. The redundant pair operates in hot-standby mode. Side B's data is kept in sync with Side A to ensure minimum failover time.

When the Side A process fails over, Side B takes over routing. Because the nodes operate in hot-standby mode, Side B does not reread Queues from the database. Side B requests a snapshot from Live Data. Until the snapshot arrives, Side B continues routing based on the last available Live Data modified by the current extrapolated data.

During failover, some route requests may receive an error. Error handling sends those requests to the default route. When Side A comes back online, it does not take over immediately. Side A remains in a ready state until Side B fails over.

The Contact Sharing process monitors the AW to see whether it has the latest configuration changes. If the AW configuration database does not have those changes or is not accessible, the Contact Sharing process switches to the alternate AW configuration data source.

When core components fail over on a target instance, reporting data can occasionally zero out. In that case, the Contact Sharing routing sends calls to the instance with reported resources. If Live Data does not zero out reporting data, then Contact Sharing continues to route on stale data until the snapshot information begins to arrive. If the active Contact Sharing side loses both Live Data connections, that side goes inactive and fails over to other side.

Contact Director Installation and Setup

Contact Sharing runs on a Contact Director that you connect with up to three target Unified CCE deployments. You configure the Contact Director to monitor the Live Data feed from the targets. The task flow for installing a Contact Director is as follows:

Task	See
Ensure that virtual machines are ready for installation.	*Cisco Unified Contact Center Enterprise Installation and Upgrade Guide*
Install Unified Communications Manager.	*Installation Guide for Cisco Unified Communications Manager and IM and Presence Service*
Install Unified CCE components (Router, Logger, Administration & Data Servers, peripherals).	*Cisco Unified Contact Center Enterprise Installation and Upgrade Guide*
Optionally, install Cisco Unified Intelligence Center.	*Installation and Upgrade Guide for Cisco Unified Intelligence Center*

Task	See
Install Unified CVP.	*Installation and Upgrade Guide for Cisco Unified Customer Voice Portal*

Install Unified CCE

This section expands the installation process outlined in the *Cisco Unified Contact Center Enterprise Installation and Upgrade Guide* at https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-installation-guides-list.html.

After setting up the VMs for the Contact Director, you install the Unified CCE components. The install and configuration of a Contact Director varies slightly from a Unified CCE deployment. The following table lists the applicable parts of the Unified CCE install procedures with any necessary changes for the Contact Director:

Task	Steps	Contact Director Notes
Install Unified CCE Component Software (running the ICM-CCEInstaller)	—	—
Set up Organizational Units	Add a Domain	—
	Add Organizational Units	—
	Add Users to Security Groups	—
Set Up Unified CCE Central Controller Components	Add Unified CCE Instance	—
	Create Logger Database	Select **NAM**.
	Create HDS Database	—
	Add Logger Component to Instance	Choose **Hosted** > **Network Application Manager (NAM)** for the **Logger Type**.
	Add Router Component to Instance	Set the following values for a Contact Director: • Check **Enable Remote Network Routing**. • Set the **NAM ID**. • Check **Contact Sharing** when you create the Router.
	Add Administration & Data Server Component to Instance	For a Contact Director, choose **Hosted** > **Network Administration & Data Server for Network Application Manager (NAM)** for the **Deployment Type**.

Task	Steps	Contact Director Notes
Set up Peripheral Gateways	Configure Peripheral Gateways	—
	Add Peripherals to Peripheral Gateways	—
	Set Up Peripheral Gateways	—
After completing the standard installation, perform these Contact Director-specific setup procedures.		
Application Gateway Access Between Systems	Create Unified ICM Application Gateway	—
	Create an INCRP on Each Target Instance	—
	Set Application Gateway Default Values	—

Application Gateway Access Between Systems

The Contact Director uses a type of Unified ICM Application Gateway to access a target instance. After adding the components to the target instance, set up a Unified ICM Application Gateway in the Configuration Manager on the Administration & Data Server.

After setting up the Unified ICM Application Gateway, you can reference it with a Unified ICM Remote ICM node in a routing script on the Contact Director.

Create Unified ICM Application Gateway

This procedure creates a Unified ICM Application Gateway on the Contact Director. You also need an application gateway on each target Unified CCE system.

Step 1 Open the **Configuration Manager** on an Administration & Data Server that your Contact Director uses.

Step 2 Select **Tools** > **List Tools** > **Application Gateway List**.
The **Application Gateway List** window appears.

Step 3 Click **Retrieve**.

Step 4 Click **Add**.
The **Attributes** tab appears.

Step 5 Specify the following values on the **Attributes** tab:

Field	Description
Name	A name for the Unified ICM Application Gateway
Type	Select **Remote ICM**.
Preferred Side	Indicates the preferred side of the Application Gateway to use when both are available. If only one side is available, that side is always used. This option applies only for

Field	Description
	Custom Gateways. For Remote ICM systems, a suffix on the connection address indicates the preference.
Encryption	Indicates whether requests to the Application Gateway are encrypted. Select **None**.
Fault Tolerance	Specify the fault-tolerance strategy that the Application Gateway uses.
Connection	Select **Duplex**.
Description	Any additional information about the Unified ICM Application Gateway.

Step 6 Save your changes to create the Unified ICM Application Gateway.

Note Copy down the Unified ICM Application Gateway ID value. You use the ID when you set up the INCRP NIC on the target instance.

Step 7 Select either of the **Connection** tabs to set the connection information.

Step 8 Click **Enter Address**.
The **Enter Contact Director Address** dialog appears.

Step 9 Specify the following information:

Field	Description
IP Address/Name	Enter the Public (high priority) IP address of the target instance. Alternatively, You can use the SAN with assistance from your Cisco certified partner or TAC. Use the *same address* that you specified for the INCRP NIC on the target instance. You can use the hostname in place of the address.
Instance Number	Enter the number of the customer ICM on the target instance (0 — 24).
Side	Indicate which side of the Contact Director prefers this connection: • **Side A**—Contact Director Side A prefers to use this connection. • **Side B**—Contact Director Side B prefers to use this connection. • **None**—Neither side of the Contact Director prefers to use this connection. • **Both Side A and B**—Both sides of the Contact Director prefer to use this connection. **Note** Use this setting to avoid unnecessary WAN traffic. For example, if you collocate Contact Director Side A with target instance Side A, this correct choice avoids WAN traffic to the other side.

Note The **Enter Contact Director Address** dialog displays different fields depending on the type of Application Gateway chosen.

Step 10 Repeat this process for the other side of the redundant pair.

Step 11 Save your work and exit the dialog.

Create an INCRP on Each Target Instance

The Contact Director communicates with the target instance by an INCRP NIC. Perform this procedure on each target instance.

Step 1 From the Configuration Manager menu on the target instance, select **Tools > Explorer Tools > NIC Explorer**. The **NIC Explorer** window appears.

Step 2 In the **Select Filter Data** box, click **Retrieve**.

Step 3 Select a NIC or click the **Add NIC** button to create a new NIC.

Step 4 Specify the following values on the **Logical Interface Controller** tab:

Field	Description
Name	An enterprise name that serves as the NIC name.
Client Type	Select **INCRP**.

Step 5 Click the **Add Physical Interface Controller** button.
The Physical Interface Controller dialog displays.

Step 6 Specify an **Enterprise Name** and click **OK**.

Step 7 In the NIC tree window, click the routing client for your newly created NIC.

Step 8 Specify the following values on the **Routing Client** tab:

Option	Description
Name	An enterprise name that serves as the Routing Client name.
Configuration Parameters	`/customerID <RCID>` where <RCID> is the Routing Client ID of the matching routing client on the Contact Director.
Network Routing Client	The same value as the **Name** field.

Step 9 Click **Save**.
The newly defined NIC is saved in the database. A **Physical Controller ID** is assigned, and the **To Be Inserted** icon is removed from the tree window.

Set Application Gateway Default Values

If you see performance issues, the Cisco Technical Assistance Center might advise you to change some of the application gateway's default values. Use the following procedure to change these values.

Step 1 In the **Configuration Manager**, select **Enterprise** > **System Information** > **System Information**. The **System Information** dialog appears.

Step 2 In the **Application Gateway** section, select **Remote ICM**.

Step 3 Use the other tabs to set the default values for the Unified ICM Application Gateway connections. Take account of the Contact Director NIC settings for timeout, late, and so on as you set the Unified ICM Application Gateway timeout settings for a target Unified CCE system.

Step 4 Click **OK** and close the dialog.

Install Cisco Unified Intelligence Center (Optional)

To run the Contact Sharing reports at the Contact Director site, you can install Cisco Unified Intelligence Center there. For installation procedures, see the *Installation and Upgrade Guide for Cisco Unified Intelligence Center* at https://www.cisco.com/c/en/us/support/customer-collaboration/unified-intelligence-center/products-installation-guides-list.html.

Install Unified CVP

The Contact Director uses Unified CVP for VRU processing of the incoming calls. For installation procedures, see the *Installation and Upgrade Guide for Cisco Unified Customer Voice Portal* at https://www.cisco.com/c/en/us/support/customer-collaboration/unified-customer-voice-portal/products-installation-guides-list.html.

Note The Unified CCE Reference Designs specify that you use Unified CVP. In a non-Reference Design deployment, you can alternately use Unified IP IVR or a third-party VRU.

Set Up Contact Sharing

After installing the Contact Director and connecting the Contact Director to the target Unified CCE instances, you set up the contact sharing feature as follows:

Task	See this Topic
Set up the contact sharing node on the Contact Director.	Set Up a Contact Sharing Node
Set up the machine inventory for the contact sharing node.	Set up Contact Sharing Machine Inventory
Add contact sharing rules.	Add and Maintain Rules
Add contact sharing groups.	Add and Maintain Groups

Note Your solution can only have one contact sharing node.

Set Up a Contact Sharing Node

You set up a contact sharing node, as opposed to the target instances, with the same procedure for setting up an application gateway.

Step 1 In the Configuration Manager, select **Tools** > **List Tools** > **Application Gateway List**. The **Application Gateway List** window appears.

Step 2 To enable **Add**, click **Retrieve**.

Step 3 Click **Add**. The **Attributes** tab appears.

Step 4 Fill out the **Attributes** tab as follows:

Option	Description
Name	Name of your contact sharing node
Type	Contact Share

Note The remaining fields are preset and cannot be modified.

Step 5 On the **Connection Side A** tab, set the **Address** field to the router's IP address. The default port is 5070.

Step 6 On the **Connection Side B** tab, set the **Address** field to the router's IP address. The default port is 5070.

Step 7 Click **Save** to create the contact sharing node.

Set up Contact Sharing Machine Inventory

You set up the machine inventory for contact sharing through the `icm/bin/csMachineInventory.csv` file. Changes to the machine inventory do not take effect until the router restarts.

Step 1 Open your machine inventory file for contact sharing, by default `csMachineInventory.csv`.

Step 2 Follow the instructions for editing the `csMachineInventory.csv` file. The instructions are contained within the file.

Step 3 Run the following command:

csMachineInventory.bat *[options] username password inputfile*
options: /list, /help, /config

/list - This option lists the contact sharing machine inventory.

/help - This option displays the usage of the tool.

/config - This option configures the contact sharing machine inventory based on the input file.

username

Username for the REST API request

password

Password for the REST API request.

inputfile

Machine inventory file, including the path, for contact sharing, by default `csMachineInventory.csv`

What to do next

If the router has already started, restart the router after setting up the machine inventory.

Add and Maintain Rules

Note Contact Sharing comes with a default rule that cannot be deleted or modified. The name of this rule is **DefaultRule**.

Step 1 Navigate to **CCE Web Administration** > **Feature** > **Contact Share Rules**.

Step 2 Click **New** to open the **New Rule** window, or click an existing rule to open the **Edit Rule** window.

Step 3 Complete the following fields:

Field	Required	Description
Name	Yes	Enter a name using up to 32 alphanumeric characters, periods (.), and underscores (_). The name must start with an alphanumeric character.
Expression	Yes	Enter a formula that the Contact Share server uses to select the skill group or precision queue from a Contact Sharing group for a routing request.
Description	No	Enter up to 255 characters to describe the rule.

Step 4 Click **Save** to return to the List window.

Step 5 To delete a rule, do one of the following:

- To delete a single rule, hover over the row for that rule and click the **trash can** icon at the end of the row.
- To delete up to 50 rules, check the check box for each rule that you want to delete. To select all rules in a list, check the **Select All** check box in the list header. Click **Delete**.

Deleting a rule is permanent.

Add a New Rule by Copying an Existing Rule

You can also create a new rule by copying an existing rule. The **Description** and **Expression** fields are copied to the new rule.

Step 1 Navigate to **Unified CCE Administration** > **Feature** > **Contact Share Rules**.

Step 2 Either:

- Click the rule you want to copy, and then click the **Copy** button in the **Edit Rule** window.
- Hover over the row for that rule, and click the **copy** icon that appears at the end of the row.

The **New Rule** window opens.

Step 3 Enter a **Name** for the rule, using up to 32 alphanumeric characters, periods (.), and underscores (_). The name must start with an alphanumeric character.

Step 4 Review **Description** and **Expression** fields that were copied from the original rule, and make any necessary changes.

Step 5 Click **Save**.

Add and Maintain Groups

Before you begin

Ensure that the Live Data connection is active before you configure Groups.

Step 1 Navigate to **CCE Web Administration** > **Feature** > **Contact Share Groups**.

Step 2 Click **New** to open the **New Group** window, or click an existing group to open the **Edit Group** window.

Step 3 Complete the following fields:

Field	Required	Description
Name	Yes	Enter a name using up to 32 alphanumeric characters, periods (.), and underscores (_). The name must start with an alphanumeric character.
Description	No	Enter up to 255 characters to describe the group.
Rule	Yes	Select a rule that defines the logic for selecting a skill group or precision queue in this group for a routing request: **a.** Click the **magnifying glass** icon to display the **Select Rule** window. **b.** Click the row to select a rule.
Accept Queue If	No	Enter a logical expression to determine if the individual skill groups and precision queues in the group can be included in the routing decision.

Step 4 Complete the Queues tab:

This tab shows the list of queues for this group.

a) Click **Add** to open **Add Queues**.
b) Click the queues you want to add to this group. The queues you chose appear on the **List of Queues**.
c) Close **Add Queues**.
d) Click **Save** on this tab to return to the List window.

Note The maximum number of queues is 100.

Step 5 To delete a group, do one of the following:

- To delete a single group, hover over the row for that group and click the **trash can** icon at the end of the row.

• To select all groups in a list, check the **Select All** check box in the list header. Click **Delete**.

Deleting a group is permanent.

Scripting for Contact Sharing

Expression Formula for Contact Sharing

About Contact Sharing Expression Formula

You can enter expressions for the following fields:

Field	Description
Accept Queue If for a group	A logical expression to determine whether to include the individual skill groups or precision queues in the Contact Sharing group in the routing decision. The field is a freeform editor with a maximum length of 512 characters. Any result except zero evaluates as TRUE. There is an implicit **Accept Queue If** of `Queue.*.LoggedOn > 0`. You cannot override this implicit check.
Expression for a rule	A formula that the Contact Share server uses to calculate the value to be considered against other queues in a Contact Sharing group. The expression always selects the queue with the minimum value. The field is a freeform editor with a maximum length of 512 characters.

Contact Sharing Expression Format

To evaluate all the skill groups and precision queues in a Contact Sharing group, use this syntax:

```
Queue.*.<FieldName>
```

Where *FieldName* is the name of the field that the expression evaluates, for example, `Ready`.

To evaluate a specific skill group or precision queue, use this syntax:

```
<ObjectType>.<InstanceName>/<TargetQueueName>.<FieldName>
```

- *ObjectType* must be SkillGroup or PrecisionQueue.
- *InstanceName* is the application gateway name.
- *TargetQueueName* is the enterprise name of the skill group or precision queue in the target system.
- *FieldName* is the name of the field that the expression evaluates.

Contact Sharing Expression Examples

The following examples demonstrate some basic Contact Sharing expressions.

Expression for a Group

A Contact Sharing group can take an Accept Queue If expression. The expression determines whether to include specific skill groups and precision queues in the group in the routing decision.

```
Queue.*.Avail > 5
```

This expression accepts all queues with more than five agents that are available.

Expression for a Skill Group

```
SkillGroup.<InstanceName>/<TargetQueueName>.Avail > 5
```

This expression accepts the named skill group if it has more than five agents available.

Expression for a Precision Queue

```
PrecisionQueue.<InstanceName>/<TargetQueueName>.Avail > 5
```

This expression accepts the named precision queue if it has more than five agents available.

Expression for a Rule

A rule must take an expression. The expression selects a skill group or precision queue from a Contact Sharing group.

```
-1 * (Queue.*.Avail)
```

This expression selects the queue with the most available agents.

Expression for MED Only

This expression calculates the Minimum Expected Delay (MED) to determine which target system receives the call for routing.

```
(Queue.*.QueuedNow+1)*(Queue.*.AvgHandledCallsTimeToInterval>0?
Queue.*.AvgHandledCallsTimeToInterval: 120) / (Queue.*.Ready>0?Queue.*.Ready:1)
```

The Default Rule

Contact Sharing comes with a default rule. You cannot modify or delete the default rule. The default rule combines a MED calculation with an Agent Occupancy calculation to determine which target system receives the call for routing.

If there are calls in queue,

```
Queue.*.QueuedNow > 0?
```

Then use the MED calculation:

```
((Queue.*.QueuedNow+1)*(Queue.*.AvgHandledCallsTimeToInterval>0?
 Queue.*.AvgHandledCallsTimeToInterval: 120)/(Queue.*.Ready>0?Queue.*.Ready:1)):
```

Otherwise, use the Agent Occupancy calculation:

```
(((Queue.*.LoggedOnTimeToInterval - Queue.*.NotReadyTimeToInterval)==0
||(Queue.*.AvailTimeToInterval <= 10 * Queue.*.XAvail) )?
0: -1*(Queue.*.AvailTimeToInterval-10 * Queue.*.XAvail)/
(Queue.*.LoggedOnTimeToInterval - Queue.*.NotReadyTimeToInterval))
```

This expression chooses a queue on the target instance with the least occupied agents or the least queued calls.

Note The default rule is only an example. Customize the rule to match your needs or write your own rules.

Contact Sharing Expression Reference

Supported Operations

The following table lists the supported operations:

Type of Operation	Operator	Description
Conditional	&&	Conditional-AND
	||	Conditional-OR
	? :	Ternary (shorthand for if-then-else statement) ex. A **?** B **:** C If A, then B, otherwise C.
Relational	==	Equal to
	!=	Not equal to
	>	Greater than
	>=	Greater than or equal to
	<	Less than
	<=	Less than or equal to
Bitwise and Bit Shift	~	Unary bitwise complement
	<<	Signed left shift
	>>	Signed right shift
	&	Bitwise AND, for strings, also used for string concatenation
	^	Bitwise exclusive OR
	|	Bitwise inclusive OR
Arithmetic	+	Addition
	-	Subtraction
	*	Multiplication
	/	Division
	%	Percentage

Type of Operation	Operator	Description
Prefix	+	Unary plus operator; indicates positive value
	-	Unary minus operator; negates an expression
	!	Logical complement operator; inverts the value of a boolean
Wildcard	*	Wildcard support similar to the expression used in router. For example, in `SkillGroup.*.Ready`, the actual target replaces the asterisk when applying the expression.

Supported Objects and Fields

The following table lists the fields available from the Live Data feed or calculated by Contact Sharing for use in Contact Sharing expressions:

Field Name	Description
ApplicationAvailable	The number of agents belonging to this Queue who are currently ApplicationAvailable for the MRD to which the Queue belongs. An agent is Application available if the agent is Not Routable and Available for the MRD.
Avail	The extrapolated number of agents in the READY state for this Queue. The extrapolation is as follows: (The number of agents that Live Data reports in READY state) - XAvail If the extrapolation results in a negative number, Contact Sharing sets this field to zero.
AvailTimeToInterval	Total seconds agents in the Queue have been in the READY state during the current interval.
AvgHandledCallsTimeToInterval	Average handle time in seconds for calls counted as handled by the Queue during the interval.
BusyOther	Number of agents currently in the BusyOther state for this Queue.
CallsHandledToInterval	Calls that by been answered and have completed wrap-up by the Queue during the interval.
Hold	The number of agents that have all active calls on hold.
ICMAvailable	The number of agents belonging to this Queue who are currently ICMAvailable for the MRD to which the Queue belongs. An agent is ICM available if the agent is Routable and Available for the MRD.
LoggedOn	Number of agents that are currently logged on to the Queue.
LoggedOnTimeToInterval	Total time, in seconds, agents were logged on to the Queue during the current interval.

Field Name	Description
NotReady	Number of agents in the Not Ready state for the Queue.
NotReadyTimeToInterval	Total seconds agents in the Queue have been in the Not Ready state during the interval.
QueuedNow	The extrapolated number of calls currently queued to this Queue. The extrapolation is as follows: (The number of calls that Live Data reports queued to the Queue) + XQueuedNow
Ready	The number of agents who are Routable for the MRD associated with this Queue, and whose state for this Queue is not currently NOT_READY or WORK_NOT_READY.
ReseveredAgents	The number of agents for the Queue currently in the Reserved state.
TalkingAutoOut	The number of agents in the Queue currently talking on AutoOut (predictive) calls.
TalkingIn	The number of agents in the Queue currently talking on inbound calls.
TalkingOther	The number of agents in the Queue currently talking on internal calls, rather than inbound or outbound calls. Examples of other calls include agent-to-agent transfers and supervisor calls.
TalkingOut	The number of agents in the Queue currently talking on outbound calls.
TalkingPreview	The number of agents in the Queue currently talking on outbound Preview calls.
TalkingReserve	The number of agents in the Queue currently talking on agent reservation calls.
WorkNotReady	The number of agents in the Queue in the Work Not Ready state.
WorkReady	The number of agents in the Queue in the Work Ready state.
XAvail	The number of Contact Sharing requests assigned to the available agent count for this Queue during the extrapolation period. The extrapolation period defaults to 10 seconds. Contact Sharing request increments this field when QueuedNow = 0 and Avail > 0.

Field Name	Description
XQueuedNow	The number of Contact Sharing requests assigned to the queued call count for this Queue during the extrapolation period. The extrapolation period defaults to 10 seconds. Contact Sharing request increments this field when one of the following conditions apply: • QueuedNow = 0 and Avail = 0 • QueuedNow > 0 and Avail = 0 • QueuedNow > 0 and Avail > 0

The following table lists the Call Variables that are available for use in Contact Sharing expressions:

Call Variable Name	Description
CallerEnteredDigits	Digits caller entered in response to prompts.
CallingLineID	Billing phone number of the caller. (Commonly referred to as CLID).
CustomerProvidedDigits	Digits to be passed to the call recipient.
DialedNumberString	Phone number dialed by the caller.
PeripheralVariable1 through 10	Value passed to and from the peripheral.
RouterCallDay	An encoded value that indicates the date on which the software processes the call.
RouterCallKey	A value that is unique among all calls the software has processed since midnight. RouterCallDay and RouterCallKey combine to form a unique call identifier.
RoutingClient	Name of the routing client making the route request.

Routing and Scripting for Contact Sharing

Contact Sharing uses two non-persistent call variables, `Call.ContactShareStatus` and `Call.ContactShareTarget`.

A successful route request returns `Call.ContactShareStatus` populated with the application gateway selected to receive the call. Use the call variable to route the call to the target Unified CCE instance.

`Call.ContactShareTarget` is populated only when the Gateway node takes a success path. The variable contains the target queue type and the target queue id. The target queue id is the Skill Group ID or Precision Queue ID on the target instance. The format is "Target Type, Target Queue ID". For example, "SG,5000 or PQ,5005". You can pass this data to the target instance in a call or ECC variable. Then, you have the Contact Sharing result available to use in scripting on the target instance.

Error Handling for Contact Sharing

If a Contact Share route request fails, the router populates `Call.ContactShareStatus` with the following error codes. The call flow takes the failure branch out of the Gateway node. The error codes appear in the RCD table.

Status Variable	Description
CS_NOT_CONNECTED (2)	No connection to the contact share process.
CS_TIMED_OUT (3)	Request to the contact share process failed.
CS_CONFIG_ERROR (4)	Contact share process encountered a configuration related error.
CS_EXECUTION_ERROR (5)	Contact share process encountered an expression execution related error.
CS_APPGTW_ERROR (8)	Unable to lookup the application gateway with the code that the contact share process returned.
CS_UNKNOWN_ERROR (9)	Contact sharing encountered an unknown error.

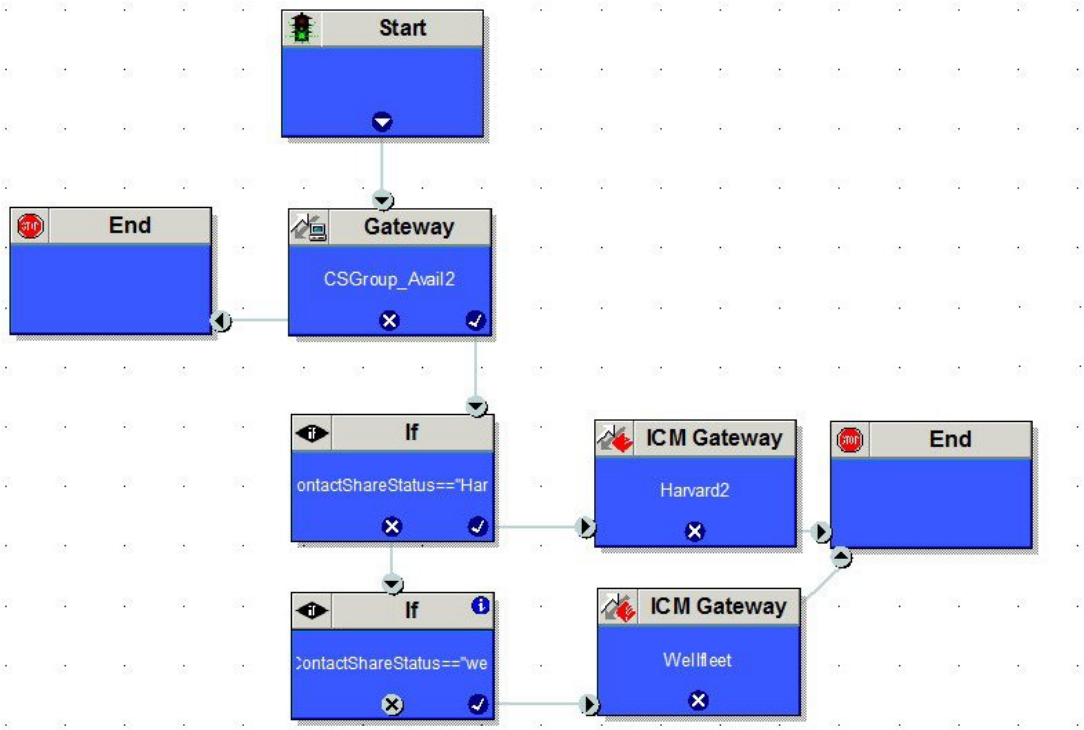
The following error messages can also appear:

Status Variable	Description
ERROR_CONTACT_SHARE_GROUP_NOT_FOUND (1)	The Contact Share Group with the listed ID was not found.
ERROR_CONTACT_SHARE_RULE_NOT_FOUND (2)	The Contact Share Rule with the listed ID was not found.
ERROR_CONTACT_SHARE_RULE_EXPRESSION_INVALID (3)	The Contact Share Rule has an invalid rule expression.
ERROR_CONTACT_SHARE_GROUP_CONSIDERIF_EXPRESSION_INVALID (4)	The Contact Share Rule has an invalid AcceptQueueIf expression.
ERROR_CONTACT_SHARE_GROUP_NO_QUEUE_CONFIGURED (5)	There are no queues configured for the Contact Share Group.
ERROR_CONTACT_SHARE_ROUTING_EXCEPTION (6)	The route request failed for an unspecified reason.
ERROR_CONTACT_SHARE_ROUTING_NO_ELIGIBLE_TARGET (7)	No eligible queue was found for the route request.
ERROR_CONTACT_SHARE_ROUTING_TARGET_CONGESTED (8)	No eligible queue was found for the route request because of congestion control.

Other Scripting Considerations

A simple Contact Sharing script looks like the following:

Figure 2: Sample Contact Sharing Script



Consider the following points when you create Contact Sharing scripts:

- Always double check the logic in the routing to the Contact Sharing node.

Tip If you see all calls routing to one target system, check the IP Addresses in the machine inventory table and your script. The relationship between the Application Gateway ID and the IP Addresses might be wrong.

- Use Call Tracer to test your call flows.
- Never put two Contact Sharing nodes in the same path of your script.
- To search for a particular Contact Sharing node, use the string selection type to search for the Contact Sharing Group name.
- Contact Sharing returns the current Application Gateway name, not the ID. If you change the Application Gateway name for one of your target systems, change your scripts to match the new name.

Script with Extrapolation in Mind

Contact Sharing's extrapolation assumes that the target systems route calls within the same Contact Sharing Group that the Contact Director used. If the target system's router does not follow this assumption, Contact Sharing's extrapolated data gets out of sync.

For Contact Sharing, have the target system route by one of the following methods:

- Route to the skill group or precision queue specified in `Call.ContactShareTarget`. You can pass the value from the Contact Director to the target system in a call or ECC variable.
- Route only among the same skill groups and precision queues that are part of the Contact Sharing Group that the Contact Director used.