

IFS Customer Engagement 25R1 GA

CE Admin Portal Guide



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1

Updates in this release

Summary of documentation updates in this release.

Version	Changes
25R1 GA (6.9.0)	Report Designer : <ul style="list-style-type: none"> The Template label in the report designer's settings page now includes a tooltip notifying users of the supported file types.
25R1 (6.8.5)	The OpenAPI can now call actions using server URLs, hosts, and paths defined in the Swagger/OpenAPI metadata, not just the base URL from the credential object.
24R2 SU III (6.8.4)	-
24R2 SU II (6.8.3)	Configuring an SSO with a new IAM Client. See: Configuring SSO with a new IAM client
24R2 SU I (6.8.2)	<ul style="list-style-type: none"> Users can now attach the required SSH file and successfully schedule reports via SFTP It's now possible to create a Queue Progression flow in Email and Chat, utilizing the newly introduced 'Send WhatsApp Templated Message' node, which triggers a templated WhatsApp message when the script is executed.
24R2 GA (6.8.0)	<ul style="list-style-type: none"> Clarification of the file type to use when saving Excel spreadsheets as report templates. Explanation of how the setting Days to Wait Before reseeding Survey now works when sending scheduled survey invites. Creating a survey.

Version	Changes
24R2 EA (6.8.0-rc1)	<ul style="list-style-type: none"> Additional information on adding addresses, end users, and Twilio regulatory bundles. See Twilio regulatory requirements. Additional information on the retry count for surveys. See Creating a survey.
24R1 SU4 (6.7.4)	Updated information on setting the queue target when configuring campaigns.
24R1 SU3 (6.7.3)	<ul style="list-style-type: none"> Twilio regulatory requirements Correction to the SSML snippet shown in Text to speech API where a space is needed to separate the two parameters inside the speak tag.
24R1 SU2 (6.7.2)	Correction to the action filters shown on the Add global action set to get customer details page.
24R1 GA (6.7.0)	-
24R1 EA (6.7.0-rc1)	<ul style="list-style-type: none"> Different presentation modes for displaying the survey when configuring chat. See Add Survey Candidate. Configuring Last-Mile Customer Portals for Work Order Handling. See Last-Mile Customer Portal. Adding registered sites for use with the CAPTCHA element in Designer. Adding an SSL certificate and domain for a public portal. Consumption reports.

2

Samples

Download the examples described here from the Knowledge Base.

Chat Client

Note Fully-featured tenants only: [Download the example chat client](#)

IFS Customer Engagement provides an example chat client (web page). In addition, a built-in chat client for testing and debugging purposes is included with every chat service installation, and can be accessed by a user authenticated by logging onto either Admin Portal or Agent Desktop at

```
https://{data region FQDN}/tenant_name/ce/chat/main/index.html?chatdefinition={definition name}
```

For background information, see [Using the demo chat client](#).

Call backs

Note Fully-featured tenants only: [Download call backs example](#).

An example workflow definition for call backs is available. This is configured for the default Studio app for workflows. For background information on call backs, see [Configuring call backs](#).

Extract this from the zip file and import it into the Admin Portal using the option **Workflow Management > Import Workflow**.

Campaign calls

Note Fully-featured tenants only: [Download campaigns example](#)

An example workflow definition for making outbound campaign calls is available. This is configured for the default Studio app for Outbound Campaign Calls. For background information on campaigns, see [Outbound campaigns](#).

Extract this from the zip file and import it into the Admin Portal using the option **Workflow Management > Import Workflow**.

Automated outbound call dialing

Note Fully-featured tenants only: [Download example](#)

An example is available that shows how to make automated outbound calls.

To run this example, you need a workflow definition, a media queue progression script. For further details, see [Example of automated outbound call dialing](#).

Creating and managing work objects from chat or social media

Note Fully-featured tenants only: [Download example](#)

An example is available that shows how to create a work object from a chat session and then update the work object in a different chat session. The principles shown here apply to other media types.

To run this example, you need a workflow definition, a chat queue progression script and a global action set. For further details, see [Example of creating and managing work objects from chat or social media](#).

How to invoke a provider action from a workflow definitions

Note Fully-featured tenants only.

An example workflow definition showing how to configure the Invoke Provider work action is available [here](#).

Example rules for Last-Mile Customer Portal

Download example

Some example rules to show how rule configuration works in the Admin Portal. Import these on the **Last-Mile Technician Portals > Rule Configuration** page:

- Engineer allocated.json
- New engineer allocated to task.json
- ETA Change.json

Example of automated outbound call dialing

Download example

An example is available that shows how to make automated outbound calls:

Workflow definition	WorkflowDefinition-AutomatedOutboundCallExample-v1.json
Media queue progression script	Script-AutomatedOutboundCallExample-v1.json
A wav file to use as the greeting message	unattended-dialouts-greeting_en.wav

Follow these steps to configure your contact center to run this example:

1. Import the media queue progression script from the zip file:
 - a. On the **Media Management > Media Queue Progression** page, create a new media queue progression definition.
 - b. Click **Queue Progression**.
 - c. Enter a description.
 - d. Choose the script from the zip file and then click **Import**.
2. Import the wav file or create one yourself:
 - a. Go to **Contact Center > Voice Prompts**.
 - b. Select IVR Resource as the Prompt Type.
 - c. Select MediaQP as the IVR Type.
 - d. Select the imported script as the Media Queue Progression Definition.
 - e. Choose the wav file from the zip file.
3. Edit the imported queue progression script to use the wav file:
 - a. Go to the **Media Management > Media Queue Progression** page.
 - b. In the Queue Progression pane, expand the Call Answered event.
 - c. Select the Request Caller Data option.

- d. In the **Initial Prompt** field, select the wav file you imported.
- 4. Import the workflow definition:
 - a. Go to the **Workflow Management > Import Workflow** page.
 - b. Import the workflow definition from the zip file.

You now need to complete the configuration of the workflow definition.

 - c. Go to the **Workflow Management > Workflows** page.
 - d. Select the imported workflow definition.
 - e. From the **More** button, select Action.
 - f. Locate the E_POP event and in the **Queue Progression** field, select the queue progression script you imported.

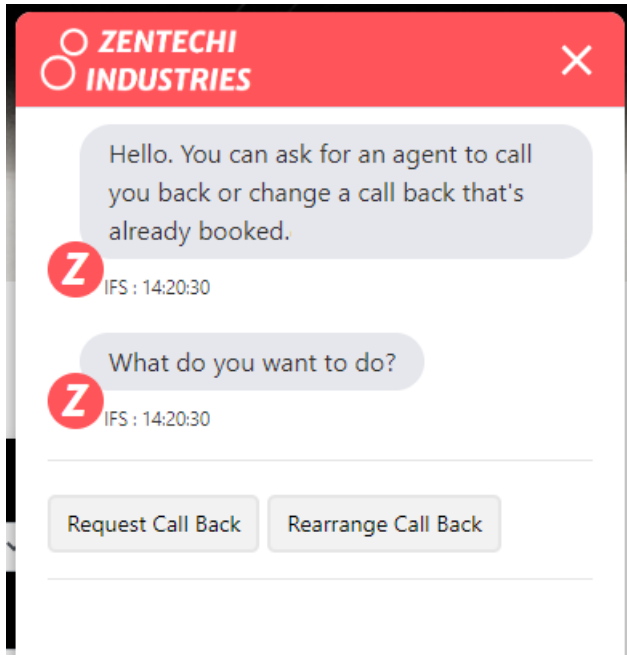
For further information about this example and how to run it, see [Workflows for automated outbound calls](#).

Example of creating and managing work objects from chat or social media

[Download example](#)

An example is available that shows how to create a work object from a chat session and then update the work object in a different chat session. The principles shown here apply to other media types.

A chat caller is given options to ask an agent to call them back (the call back) or to update an existing call back request. Requesting a call back, creates a work object. The work object uses the phone number as the reference to retrieve the work object again later.



Example chat script

To run this example, you need a workflow definition, a chat queue progression script and a global action set.

Import the files

1. Download the example (see above) and extract the files.
2. In the Admin Portal, go to the **Workflow Management > Import Workflow** page.
3. Import the workflow definition: `WorkflowDefinition-CreateCallback-Iss1.json`.
4. Go to the **Media Management > Chat** page.
5. Select a chat definition or create a new one.
6. Click **Queue Progression**.
7. Import the chat script: `Script-CreateCallback-Iss1.json`.

Set up the global action set

The queue progression script uses the option `Invoke Provider Action`. This is configured to find the work object using the phone number.

1. In CE Studio Designer, create a new global action set as shown below.







Global Action

Action Name IFS CE Workflow Provider WorkObjects GetTabularResponse

Parameter Mapping

Filters

☒ And ☐ Or Delete +

 WorkObjects	IsCompleted	Equals	 false
 WorkObjects	Reference	Equals	 PhoneNumber
 WorkObjects	Status	Equals	 Active

Note that WorkObjects | Reference is mapped to a placeholder called *PhoneNumber*.

Edit the imported queue progression script

You need to update the queue progression script to reference the imported workflow definition and your global action set:

1. In the **Functions** section of the imported script, find **CreateNewCallback()**.
2. Go to the Create Work Object option.
3. Set the workflow definition to the one you imported.
4. Map the following work elements as shown in the screenshot:

Initial State


Name	Value	Type
Use this if you need to link to the actual call record.	<input type="text"/>	<input type="button" value="⬆️⬆️"/>
8-character call reference	<input type="text"/>	<input type="button" value="⬆️⬆️"/>
Time in the queue before the call back is created.	<input type="text"/>	<input type="button" value="⬆️⬆️"/>
The number they are calling from.	<input type="text" value="phoneNumber"/>	<input type="button" value="📋"/>
The DDI number dialed by the user.	<input type="text"/>	<input type="button" value="⬆️⬆️"/>
The GUID for the skillset.	<input type="text"/>	<input type="button" value="⬆️⬆️"/>
The skillset name.	<input type="text"/>	<input type="button" value="⬆️⬆️"/>
The caller's first name.	<input type="text" value="firstName"/>	<input type="button" value="📋"/>
The caller's last name.	<input type="text" value="lastName"/>	<input type="button" value="📋"/>
Where the callback was created eg chat or social m	<input type="text" value="source"/>	<input type="button" value="📋"/>
The rescheduled time for the call back.	<input type="text"/>	<input type="button" value="⬆️⬆️"/>


Object ID Variable*


5. In **Functions**, find the `NewPhoneNumberHandler()`.
6. Go to the Post Work Event option and set the following as shown in the screenshot:
 - The workflow definition to the one you imported.
 - The workflow event to `E_RESCHEDULE`
 - Map the `W_CLI` work element to the `NewPhoneNumber` variable

Post Work Event

Description


Lock Id* 



Workflow Definition 

Workflow Event 

Auto Unlock*

Yes ☒ No ☐



Name	Value	Data Type
<input type="text" value="W_CLI"/>	<input type="text" value="NewPhoneNumber"/>	 

Test the example

1. Make the script live.
2. Test in your chat client.
3. Click **Request Callback** to create the call back. You can see the work object on the **Workflow Management > Work Objects** page. Edit the work object to see the data saved in the work object.
4. Start a new chat session to update the work object. Click **Rearrange Callback** to test this process.
5. Sign onto Agent Desktop to see the Work objects present to you. The activations use the IFS CE Callback Template, however, you cannot cancel or complete the work objects using this CE Studio app because the actions in the template are configured for a different workflow definition.

To create an app to handle these activations, you need to copy the IFS CE Callback Template and then modify the actions for the imported workflow definition.

Removing unwanted work objects

Follow these steps to remove unwanted work objects:

1. Go to the **Workflow Management > Work Objects** page.
2. Select the work object.

3. Click **Edit**.
4. In **Lock with Reason**, enter some text and then click **Lock**.
5. From the **State Change** list, select the cancelled or completed state and then click **Change**.

3

Configuring self-service tenants

You use the Admin Portal to complete the configuration of self-service tenants. Specifically to:

- Set up [credentials](#) for creating providers in CE Studio Designer.
- Set up [SMS-enabled phone numbers](#) for outbound SMS. You need to comply with Twilio regulatory requirements - see [Twilio regulatory requirements](#) for details.

For additional information on configuring SMS, see [SMS configuration](#).

- Set up response templates if using authentication for the public portal on the **Media Management > Response Templates** page. The language of the response templates is selected on the **Contact Center > Manage Language** page.
- Design custom reports in [Report Designer](#).
- Configure Last-Mile Customer Portal, including the survey.
- Add [users](#), such as Managers, Portal Users and Studio Administrators.
- Configure [user groups for SSO deployments](#), for example, for use with CE Studio providers.

Contact center and contact center unit

The main organizational unit for self-service tenants is referred to as a *contact center*. Self-service tenants don't have a contact center - this is just a convenient way to show basic information about the tenant:

- Organization's name is shown on the **Contact Center > Contact Centers** page. To change the name, raise a request in the IFS Service Center.
- Address and contact details are on the **Contact Center Unit > Contact Center Units** page. Any user with the Manager or Global Manager role can change these details.

Note Outbound email addresses and SMS numbers are grouped by contact center unit.

Tenant type and services

To change other details of your tenant, raise a request in the IFS Service Center. Use this to, for example, to change the maximum number of users allowed to access the portal at any one time.

Configuring trunk groups for SMS

Before you can use phone numbers on a Twilio or custom trunk group for SMS you need to update the trunk group to use one of your configured SMS providers.

Finding the trunk group for Twilio phone numbers

If you do not know which trunk group a Twilio phone number is on then follow these steps:

1. In the Admin Portal, go to the **Voice Service > Inbound Number Ranges** page.
2. Select the phone number that you want to configure for SMS.

The name of the trunk group is shown in the Inbound Number Range Detail pane.

Update the Twilio trunk group with an SMS provider

To update the trunk group with an SMS provider:

1. In the Admin Portal, go to the **Voice Service > Trunk Groups** page.
2. Select the trunk group.
3. In the trunk group detail area, select the provider from the **SMS Provider** list.

You can select Twilio as the provider or a custom provider if one is configured.

4. Save the trunk group.

Creating a custom trunk group for SMS

To create a custom trunk group for SMS that is not provided by Twilio:

1. In the Admin Portal, go to the **Voice Service > Trunk Groups** page.
2. Select the contact center that will use the trunk group.
3. Enter a unique name for the trunk group, such as `BulkSMS_EU`.
4. Leave the other fields empty.
5. Click **Save**.

There is a short delay while the custom trunk group is created for you.

6. Update the custom trunk group with an SMS provider as described above.

Configuring SMS numbers

Before you can send outbound SMS messages, you need to configure SMS-enabled phone numbers on the **Media Management > Social Media** page.

To create a social media definition for SMS:

1. In the Admin Portal, go to **Media Management > Social Media**.
2. In the Social Media Detail area, select the contact center and the contact center unit.
3. Enter the details of the social media definition:

Field	Description
Name	The internal name of the SMS definition.
Type	Select SMS.
Disabled	Select this option if you are not yet ready to allow traffic on this SMS number.
Description	Any notes that you want to enter, for internal use.
SMS Number	Select the SMS number you are configuring.

4. Click **Save**.

About the system email address

The system email address for the tenant is used to send outbound emails and system emails, such as automatically-generated reports.

To see the system email address:

1. In the Admin Portal, go to **Media Management > Emails**.
2. From the **Email Address** list, select the email address prefixed *System-ce*.

The **System Email** option is selected and this indicates the system email address. You cannot change this.

4

Configuring contact centers and units

Note The information in this section does not apply to self-service tenants.

The IFS Cloud Operations team create the contact centers. By default, each contact center has one contact center unit. You can configure the contact center, the default contact center unit and add additional contact center units at any time using the Admin Portal.

Configuring contact centers

You can't add or remove contact centers in the Admin Portal, but you can configure them, for example add system email addresses, set up auto answering for live callers and so on. You can also view details of the configuration, such as the storage areas and media hubs (for the media hubs, go to **Voice Service > Voice Services**).

Steps

1. In the Admin Portal, go to **Contact Center > Contact Centers**.
2. Select the contact center. You can set or modify the following options for the contact center.

Field	Description
Backup Contact Center	<p>Note Only available where the tenant has contact centers in different data regions.</p> <p>The cloud infrastructure provisioned for each contact center is highly available. This means that the associated server instance automatically fails over to a backup instance in the same media hub as necessary.</p> <p>However, although the cloud infrastructure is highly available, some businesses may require an additional layer of security. In this case, it is possible for a contact center to fail over to the media hubs of another contact center if there is an issue with their own.</p> <p>See also Disable Failback Processing.</p>
Require User Time Keeping	<p>By default, in Agent Desktop all agents must select give a reason for going into Do Not Disturb mode. The reason codes can then be reported on.</p> <p>Note You can also set this option on or off for individual users.</p>
Contact Center Unit for Logging Agent Calls	<p>If you have multiple contact center units, then when an inbound call is connected to an agent, the call is logged to the contact center unit you enter here. This makes it possible to identify inbound calls from other internal system calls.</p>
Default Contact Center Unit	<p>If you have multiple contact center units, and the agent does not explicitly select a contact center unit, then any calls they make will be logged against this one.</p>

3. If required, enable Call Auto Answer for the contact center.

Field	Description
Call Auto Answer Timeout	Automatic call answering for voice or chat takes over after the number of seconds entered here.
Call Auto Answer	Select Enabled if you want Agent Desktop to automatically answer inbound calls after the given number of seconds has lapsed. This means that the agent doesn't have to click to accept the call. This is required for campaigns in order to maximize call efficiency.

4. If required, specify how long you want to store call recordings and email attachments.

Field	Description
Percentage of Inbound Calls to Retain at Datacentre for Training Purpose	By default, if you choose to retain inbound calls for training purposes then all inbound calls are retained in a Cloud storage account specific to the tenant. You can choose to store a percentage of these if you wish. Default: 100.
Percentage of Outbound Calls to Retain at Datacentre for Training Purpose	Similar to Percentage of Inbound Calls to Retain at Datacentre for Training Purpose. Default: 100.
Maximum Number of Agents Allowed to be on 'Record All Calls' Setting	Leave this setting empty. It is not normally necessary to set any limit on the number of users on the Record All Calls setting. Default: 0.

The following fields at the bottom of the Contact Center Detail page show information about the storage areas for the tenant, and the length of time that call recordings are stored before being permanently deleted. The minimum storage period is 1 day.

Note Contact IFS Service Center if you require direct access to your storage accounts.

Field	Description
Call Recording Storage	<p>Shows the name of the account for storing for call recordings. All the contact center units for the contact center will use the same storage account.</p> <p>Calls are retained for the number of days set above.</p>
No of Days in Hot Tier	<p>By default, a call recording is stored for 1 day in the hot tier and then moved to the cool tier. You can download the recording on the Standard Reports > Inbound Call page. After 1 day, it is moved to the cool tier.</p> <p>Note The minimum storage period is 1 day (even if you enter 0 as the number of days).</p>
No of Days in Cool Tier	<p>By default, a call recording is stored for 365 days in the cool tier. You can download the recording on the Standard Reports > Inbound Call page. After 366 days, it is moved to the archive tier (that is 1 day in hot tier + 365 days in cool tier).</p>
No of Days in Archive Tier	<p>By default, a call recording is stored for 2100 days in the archive tier (5.7 years). The recording can still be downloaded but there will be a delay of 24 hours before the recording becomes available.</p> <p>Call recordings are automatically deleted after 2466 days (that is 1 day in hot tier + 365 days in cool tier + 2100 days in archive tier).</p> <p>Note The date shown on the Call Recording Detail page is the last date before the recording is deleted.</p>

Field	Description
Studio Application Storage	Shows the name of the account for storing any file attachments required for CE Studio applications. All the contact center units for the contact center use the same storage account. Note Currently email attachments are retained indefinitely.
Media Script Storage	Shows the name of the account for storing the queue progression scripts that handle interactions with clients through voice (IVR), email, chat and so on.

5. Set up the contact email addresses to be used. These are for the client's internal use.

Field	Description
Main Contact Email	<p>The email address that's used when no more specific email address is configured for the contact center. Typically, this is the email address of the person responsible for managing the contact center.</p> <p>For example, this address is used:</p> <ul style="list-style-type: none"> • When a call comes into the system but there's no one available to take it then a warning email is sent. • When an error occurs in a running IVR/queue progression script but there's no email address associated with the script. • When using workflow definitions. <p>Note You can add a different email address for each contact center unit.</p>
Main Contact Name	The name associated with the email address.

Field	Description
Support Email	The email address that's used when errors occur in a running IVR/queue progression script but there's no email address associated with the script. Note that trace logs are not sent to this email address.
Support Email Name	The name associated with the support email address.

6. Ignore the following fields which are intended for an on-premise exchange server:

- Inbound Email Server
- Email Public Folder
- Email Server Username
- Email Server Password

For details, see [Email configuration](#).

Configuring contact center units

By default, there is one contact center unit created for each contact center. You can configure this in the Admin Portal. You can also create additional contact center units.

Steps

1. In the Admin Portal, go to **Contact Center Unit > Contact Center Units**.
2. Select the contact center.
3. Enter the following details for the default contact center unit or click **New** to add another contact center unit to the selected contact center.

Field	Description
Number	The 6-digit number that identifies the contact center unit.
Name	Required – name that's unique to the tenant. You can change the name later if required.

Field	Description
Contact Center	<p>The unit belongs to this contact center. You can select a different contact center if required.</p> <div> <p>Note Since a contact center unit is a logical grouping you can always move it to a different contact center later. However, if you do this, you should review how the skillsets are set up in the new contact center.</p> </div>
Street, District, Town, County, Zipcode/ Postcode Contact Name, Telephone Number, Fax Number	<p>Optional.</p> <p>Additional contact details for the contact center unit.</p>
Email	<p>The contact email address that's used for activity specific to this contact center unit instead of the Main Contact Email address set for the contact center.</p> <p>Typically, this is the email address of the person responsible for managing the contact center unit. The emails are also sent to the email address in the Manager field.</p>
Manager	<p>Select the name of the user who is the manager for this contact center unit. Copies of email sent to the email address in the Email field are also sent to this user.</p> <p>The manager is the user who is listed on the User Management > User Contact Center Unit page.</p>

Field	Description
Status	<p>The contact center requires a status. Use either:</p> <ul style="list-style-type: none"> • Being Setup • Live <p>For example, select Live once configuration is complete and the contact center unit is ready to accept activations.</p> <p>See also Disabling a contact center unit.</p>
Public Holiday Zone	<p>There is no default setting. You need to set this up using Contact Center > Public Holiday Zones. See Public holidays and open hours.</p>
Disable Secondary Call Distribution	<p>If there are multiple contact centers then you can configure primary and secondary centers where activations coming into the primary center are distributed to the secondary centers according to the settings on the Contact Center Access page.</p> <p>Use this setting to disable this arrangement so that all inbound activations at the primary contact center remain at the primary contact center.</p> <p>See Sharing workload between contact centers for details.</p>

Field	Description
Disable Failback Processing	<p>This only applies to contact centers that have a backup contact center and covers backend processing for workflows.</p> <p>The main contact center performs backend processing for all workflows for the contact center. The backup contact center takes over backend processing if it detects that the main contact center is unavailable.</p> <p>The backup contact center relies on a communications link to detect the state of the main contact center. If, however, it's the link that is down and not the server itself then there is a risk that backend processing will be duplicated. For example, duplicate emails might be sent.</p> <p>Select this option to avoid this risk. This means that rather than duplicate backend processing, you delay processing instead.</p>
Timezone	Select the timezone for the contact center unit.

- The next step is to set the default priority for call, email, chat priority and to make the contact center unit live. See [Setting default activation priorities](#).

Setting default activation priorities

You can set the default priority for each of the different activation types when queuing for an agent at a contact center. Priority is a range from 1–9.

In the following example, chat at this contact center unit will always take priority over emails when queuing because chat has a higher priority than email:

- Default Call Priority: 6
- Default Chat Priority: 5
- Default Email Priority: 3
- Default Social Media Priority: 2

You can adjust the priority for a specific inbound number (DDI or DID), chat definition and so on as part of its configuration. For example, so that phone calls to a specific inbound number queue at a

higher priority to chat. You can also override the priority in the queue progression script based on other criteria.

Note If you change the priorities once the contact center unit is live then the changes take place in near real time but generally do not apply to items (calls, chat) already in the queue.

To set up the default priorities at a contact center unit:

1. In the Admin Portal go to **Contact Center Unit > Access to Contact Center**.
2. In **Primary Contact Center**, select the contact center.
3. If this is a new entry then:
 - In **Contact Center Unit**, select its contact center unit.
 - In **Secondary Contact Center**, select the same contact center that you selected in **Primary Contact Center**.
4. Set up default priorities as described below, ignoring the other fields on the page:

Note For details of the other fields on the page, see [Sharing workload between contact centers](#) and [Setting the queue quotas](#).

Field	Description
Default Call Priority	This sets the default priority for all voice calls at this contact center unit. You can adjust the priority for a specific inbound number as part of its configuration.
Default Chat Priority	This sets the default priority for a new chat session when queuing for an agent. You can adjust the priority for a specific chat definition as part of its configuration.
Default Email Priority	This sets the default priority for all inbound email addresses when queuing for an agent at this contact center unit. You can adjust the priority for a specific email address as part of its configuration.
Default Workflow Priority	This sets the default priority for the workflow objects such as call backs and campaign calls that use preview mode. You can adjust the priority for a specific workflow as part of the workflow definition.
Social Media Priority	This sets the default priority for all Facebook and Twitter messages.

Setting the queue quotas

You can set the maximum number of calls, emails, work objects and so on that are queued for agents at each contact center unit. For each activation type, you need to set a quota that's high enough to provide sufficient work for the number of available agents. If the quota is too low then some agents may be left in the idle state waiting for the next call, work object to arrive. You should aim to avoid the queue dropping to 0.

To set the queue quotas:

1. In the Admin Portal go to **Contact Center Unit > Access to Contact Center**.
2. In **Primary Contact Center**, select the contact center.
3. If this is a new entry then:
 - In **Contact Center Unit**, select its contact center unit.
 - In **Secondary Contact Center**, select the same contact center that you selected in **Primary Contact Center**.
4. Set up the queue quotas as described below, ignoring the other fields on the page:

Note For details of the other fields on the page, see [Sharing workload between contact centers](#).

Field	Description
Work Flow Queue Quota	<p>Maximum number of work objects that can be added to the queue at the contact center. For example, 100 work objects may exist in the system, but you don't want to add more than 10 to the queue at any one time.</p> <p>For campaigns, the quota should reflect the number of available agents. For example if there are 100 agents, then you may need a quota of 50. See Preparing to run campaigns.</p> <p>Default: 5.</p>
Email Queue Quota	<p>Maximum number of emails received at the contact center that can be on the queue at any one time.</p> <p>Default: 5.</p>

Quotas for the other media types are set separately in the Admin Portal:

- For each inbound number, on the **Media Management > Voice** page.
- For each chat definition, on the **Media Management > Chat** page.

- For each social media definition, on the **Media Management > Social Media** page.

Sharing workload between contact centers

Contact centers can cooperate with other contact centers to share the workload. This applies to all the tenant's communication channels, such as voice, email, chat.

For example, one contact center (referred to as the secondary center) might provide an out-of-hours service for another contact center (the primary center) or take calls for them when their agents are overloaded.

The Contact Center Access Detail page in the Admin Portal sets the access level for the secondary contact center and lets the secondary contact center prioritize the work or disable the call distribution altogether. The primary contact center disables call distribution on the Contact Center Unit page.

To set up workload distribution at each of the contact center units:

1. In the Admin Portal go to **Contact Center Unit > Access to Contact Center**.
2. Click **New** and select the contact center and unit:
 - In **Primary Contact Center**, select the primary contact center.
 - In **Contact Center Unit**, select the unit in the primary contact center that needs to distribute some of its workload.
 - In **Secondary Contact Center**, select the contact center and/or contact center unit that will accept the work.

Notice that you cannot change this once you have saved the configuration.

3. Set up options that apply to the primary contact center:

Field	Description
Access Level	<p>The level of control that the primary contact center gives to the secondary contact center to set its own priority and quotas. For example:</p> <ul style="list-style-type: none"> • Operator – secondary contact center cannot set its own priority and quotas • Manager – can set priority and quotas

4. Set up the options that apply to the secondary contact center. These options are typically set by the secondary contact center to meet their own requirements:

Field	Description
Is Live	Whether work is currently being distributed: <ul style="list-style-type: none"> • Yes – the secondary contact center is available to accept work from the primary center. • No – the secondary contact center is not able to accept any work.
Default Call Priority Default Chat Priority Default Email Priority Default Workflow Priority	When sharing is live then activations are queued at the secondary contact center at the default priorities for the secondary contact center as set here. For details of how the default priority is used, see Setting default activation priorities .
Secondary Call Distribution Priority	Use this field to ensure that agents at the secondary contact center answer local calls before calls from the primary center. To achieve this, give calls from the primary center a lower priority than local ones.
Secondary Call Distribution Delay	The secondary contact center adds the call to its queue only after it has queued for the number of seconds set here. For example, calls might queue at the primary contact center for 60 seconds, after which they are added to the queue at another center. Where there are multiple centers sharing the workload then you might stagger the distribution delay so the call queues first at the nearest secondary center and then later at one further away.
External Programs	Legacy option. Leave this field empty.

Field	Description
Work Flow Queue Quota	Number of work objects from the primary contact center, such as call back requests, in the queue at the secondary center. For example, the system might transfer 100 work objects, but you don't want to add more than 10 to the queue at any one time. Default: unlimited.
Email Queue Quota	Number of emails received at the primary center that can be on the queue at the secondary center. Default: unlimited.
SCD Quota	Number of calls (Secondary Call Distribution) that the secondary contact center can accept at any one time. Default: unlimited.
Auto Answer Setting	Select <ul style="list-style-type: none"> • Default to use the Call Auto Answer setting configured in the contact center. • Disable to turn off Call Auto Answer. • Custom to change the timeout period.
Auto Answer Custom Setting	Automatic call answering takes over after the timeout entered here. This overrides the timeout set for the secondary contact center.

5. Once the contact center is ready to accept calls then make it live:

Field	Description
Is Live	Whether the secondary contact center is ready to take calls: <ul style="list-style-type: none"> • Yes – the contact center unit is available to take calls. • No – the secondary contact center is not able to accept any calls.

Disabling a contact center unit

You can disable a contact center unit to prevent the unit from receiving any activations, including calls to any of its inbound numbers (DDI or DID). You cannot disable a contact center.

Note You can also disable individual inbound phone numbers. See [Disabling inbound numbers](#).

Changing the Live status of the contact center unit

To change its Live status while preserving the contact center unit's configuration:

1. In the Admin Portal, go to **Contact Center Unit > Access to Contact Center**.
2. Locate the contact center and the unit.
3. On the Contact Center Access Detail pane, set the **Is Live** field to **No**. Set this to **Yes** to re-enable it later.

Suspending or terminating the contact center unit

To disable a contact center unit:

1. In the Admin Portal, go to **Contact Center Unit > Contact Center Units**.
2. Locate the contact center unit.
3. On the Contact Center Unit Detail pane, set the **Status** field to **Suspended - Deny Calls** or **Terminated**.

Status option	Description
Suspended – Deny Calls	<p>Suspends all activations for this contact center unit. For example, callers will hear an engaged tone.</p> <p>This status reserves the resources used by the contact center unit allowing you to switch on the contact center unit later.</p>
Terminated	<p>This status releases the resources used by this contact center unit, such as inbound phone numbers and email addresses so that they can be used elsewhere.</p> <p>You could switch on the contact center unit later, but it would probably require additional configuration as the same phone numbers, for example, might not be available anymore.</p>

Public holidays and open hours

This topic includes the coverage plans that determine when a contact center unit is open.

Public holidays and open hours are used to determine call routing behavior on week days that are not normal working days for the contact center unit. You may also need to use these later when scripting queue progression where a calculation is required for a day.

Because public holidays are not the same in all countries, you need to set up public holiday zones. Depending on the location of the contact centers, it is possible that some of the public holidays are the same in all the geographies covered by the tenant. Where this is the case, you can set up public holidays that will apply globally.

Coverage plans are used to determine what is in and out of hours for a contact center unit when scripting queue progression (using the `IsOpen` action).

Note You need to be an administrator with Global Operator status to manage public holidays and coverage plans.

Configuring public holidays

There are two types of public holiday:

- Dates that apply to all the tenant's contact centers without any exceptions — these are global holidays.
- Additional dates that apply to individual contact centers. For example, because there are different national holidays, or where there are other events such as training days that need to be handled.

Global holidays will apply to all the contact centers belonging to the tenant. These dates are in addition to any dates that you might add to the public holiday zones belonging to the contact centers.

To add global public holidays

There are two steps. First create a public holiday zone and then add the dates:

1. In the Admin Portal, go to **Contact Center > Public Holiday Zones** and set up a zone:
 - a. Click **New**.
 - b. In Public Holiday Zone Detail, make sure that nothing is selected in the **Contact Center** field.
 - c. Enter the name of the zone. For example, `Global`.
 - d. Click **Save**.

Note To list the new global public holiday zone, make sure that the **Contact Center** field in the **List** area is empty.

2. Go to the **Contact Center > Public Holidays** page and add the global public holidays:
 - a. Click **New**.
 - b. On the **Public Holiday Detail** area, make sure that **Contact Center** is empty.
 - c. In **Zone**, select the global zone you created above.
 - d. Enter the name of the holiday.
 - e. Select the date of the holiday from the date picker. Using the date picker, ensures you enter the date in the right format.
 - f. Click **Save**.
 - g. Repeat these steps for other public holidays that apply to all the tenant's contact centers.

Note To list the global public holidays, make sure that the **Contact Center** field in the **List** area is empty.

To add national or regional public holidays

These are the public holidays that are the exception to the global public holidays. For example, a tenant with UK and US offices will need separate public holiday zones to record national holidays. Each contact center has its own public holiday zone and will inherit all the global public holidays.

Note For example, if there are two contact centers in the US and one in the UK then you need to create two US public holiday zones and one UK zone.

There are two steps. First create a public holiday zone for the contact center and then add the dates:

1. In the Admin Portal, go to **Contact Center > Public Holiday Zones** and set up a zone:
 - a. Click **New**.
 - b. Select the contact center.
 - c. Enter a name for the public holiday zone.
 - d. Click **Save**.
2. Go to the **Contact Center > Public Holidays** page and set up the public holidays that are specific to the selected contact center:
 - a. Click **New**.
 - b. Select the contact center, for example the US contact center.

- c. Select the zone you created above. The zone appears in the list because it is already assigned to the contact center.
- d. Enter the holiday name.
- e. Enter the date.
- f. Click **Save**.
- g. Repeat these steps to add additional dates for this contact center.

Note To list the public holidays for this contact center, select the contact center in the Public Holiday List. Note that the global holidays aren't listed when a contact center is selected.

Configuring open hours

Coverage plans are used to determine what is in and out of hours for a contact center unit when configuring media scripts (using the IsOpen action or timer events).

About the default coverage plans

When the tenant is created, a set of coverage plans with different open hours is automatically created for you.

Listing the default coverage plans

1. In the Admin Portal, go to **Contact Center > Coverage Plans**.
2. In the Coverage Plan List area, make sure that the **Contact Center** field is empty.
Deselecting the contact center will list all the default plans.
3. Review the coverage plan descriptions. There may be a coverage plan with open hours that is suitable or which could be modified.

Where a coverage plan excludes public holidays then the public holidays are:

- The global public holidays set on the **Contact Center > Public Holidays** page
- Plus any other public holidays set up for the contact center units

Note You can modify a default coverage plan and assign it to one of your contact center units, but you cannot add or modify default coverage plans.

Modifying a default coverage plan

1. Select the plan from the Coverage Plan list.

2. In the Coverage Plan Detail area, select the contact center that will use this plan.
3. Modify the name, description and regular expression if required.

For an explanation of a regular expression example, see [Adding or modifying a coverage plan](#).

Assigning a coverage plan to a contact center unit

1. In the Admin Portal, go to **Media Management > Advanced Settings**.
2. Select the contact center unit.
3. In the **Coverage Plan** field select the coverage plan with the required open hours.

Adding or modifying a coverage plan

To add or modify the open hours in a coverage plan:

1. In the Admin Portal, go to **Contact Center > Coverage Plans**.
2. You can do one of the following:
 - To create a new plan from scratch, click **New**.
 - To modify an existing plan, in the Coverage Plan List area, deselect the contact center and then select an existing coverage plan from the list.
3. In **Contact Center**, select the contact center that will use this coverage plan.
4. Enter a descriptive name for the plan. You will use this to identify the coverage plan later.
5. Enter a description of the hours that the plan covers. This will help someone else understand the regular expression.
6. Using a regular expression, enter the active hours. Note that formatting of this rule is important.

Regular expression: working weekdays rule

The following example defines a rule active on working weekdays between 08:30 and 17:00.

```
0 [1-5] ...../.../.. (08\[3-5]\d|09\:\d\d|1[0-6]\:\d\d)
```

Here is a breakdown of same expression with an explanation.

0	<p>The number 0 is used to determine whether the rule is applied on a public holiday. If = 0, the rule is not applied to public holidays, if = 1, then it is. For both, enter 01.</p> <p>Public holidays are determined by the public holiday zones set up for the tenant.</p>
---	--

[1-5]	<p>Looks at the days of the week the rule is to be applied to. Days run from 0-6 with 0=Sunday and 6=Saturday.</p> <p>By placing the section in square brackets, we can look at a range of numbers, so [1-5] is equal to Monday to Friday.</p> <p>If I wanted a rule to just run on a Sunday I could dispense with the brackets and state 6.</p>
.... / ... / ...	<p>Specifies the date when the rule applies in YYYY/MM/DD format. In this case we want the rule to apply on all dates, so it is set to blank, expressed as / ... / ...</p>
(08 \	<p>From here we move on to specifying the time of day and using round brackets we can specify more than one parameter to match. In this case we are looking for a match for 08 before the colon in the time. This is for the hour.</p>
: [3-5]	<p>After the colon in we are looking for a match in a range of numbers between 3 and 5, so a square bracket is used for the range, containing 3-5. This is for the minutes.</p> <p>Note, it is only looking for a match in the number immediately after the colon, like hh: 3m -</p>
\d	<p>\d denotes it is disregarding the last digit, or to be more specific any digit here will be a match. So because the first part of the minute match was [3-5], and we're accepting a match to any digit next, the rule will apply from 08:30 to 08:59.</p>
	<p>The pipe character is used to allow for another match, if the first part does not find a match.</p>
09 \	<p>Now we're looking for a match where the hours are equal to 09.</p>
: \d \d	<p>We want the rule to apply throughout the hour, so minutes are matched as \d \d</p>
	<p>Another pipe to continue the query.</p>
1 \	<p>Now we're looking for a match where the time contains 1 in the first digit, so 1h:mm</p>
[0-6]	<p>Looking at the second digit of the time, square brackets are used again to specify a range of numbers, so with the first digit matched, it will find a match with any number between 10 and 16.</p>

\: \d\d	Looking for a match with any digit in the minutes, so /d/d is used.
)	A round bracket is used to close the query.

So, the following string in date/time will provide a true or false value

```
0 0 2011/12/04 10:00 – FALSE
0 1 2011/12/05 10:00 – TRUE
1 1 2011/12/05 10:00 – FALSE
0 1 2011/12/05 17:00 – FALSE
```

Regular expression: different time pattern for Saturdays

The times in the above example could be extended by enclosing the original expression in brackets and a second one also in brackets. You need an OR (|) between the two expressions.

The expression below would return a value of true for hours of operation 08:30 to 16:59 Monday to Friday and 08:30 to 12:59 on a Saturday.

```
(0 [1-5] .... / .. / .. (08\: [3-5] \d | 09\: \d \d | 1[0-6] \: \d \d))
| (0 6 .... / .. / .. (08\: [3-5] \d | 09\: \d \d | 1[0-2] \: \d \d))
```

Note If you copy and paste the above expression to use it in the Admin Portal then you must remove the line break.

Skills and skills-based routing

Skillsets act as hunt groups, seeking out the best agent to handle a voice call, email or chat. Each skillset has at least one required skill and optionally one or more preferred skills. When seeking the best available agent, the skills in the skillset are matched against the skills assigned to users. The skillset to be used is determined by the skillset assigned to each activation type (inbound number, email address, chat), and optionally by the default skillset assigned to the contact center unit.

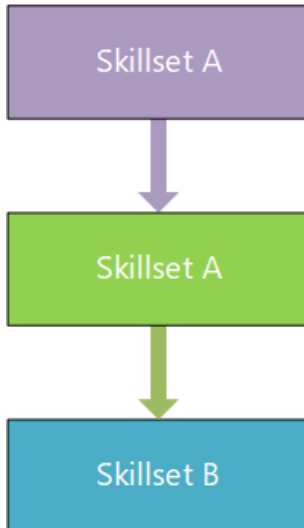
Skills overview

Skillsets act as hunt groups, seeking out the best agent to take calls. All skillsets should contain at least one required skill and could also contain a preferred skill. After a period, if the communication is still in the queue, the system can also seek out agents with the skills from an overflow skillset.



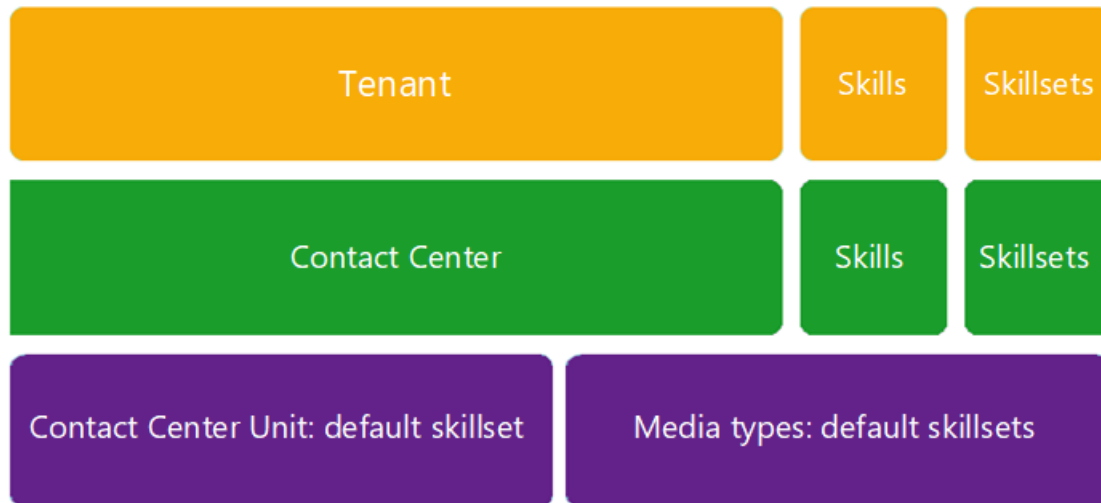
The required, preferred and overflow skills in a skillset

Skillsets are used to move calls around a contact center, changing the profile of agents sought as a communication remains in a queue for longer. Typically, this is done by widening the pool of agents able to take the call, email or chat. First CE seeks out agents with both the required and preferred skills and then if no one is available it seeks agents with the required skill.



How the search for an agent with suitable skills widens

When you set up skills and skillsets, you set them up for the tenant. If needed you can also set up additional skills and skillsets for a contact center. You then assign a default skillset to the contact center unit and to each media type: voice call, inbound email, chat or work object.



Setting up skillsets for the tenant and optionally for contact centers

Note Queue progression rules let you change the skillset required to handle a call, email or chat before or after adding it to the queue.

Note You can add skillsets to control who has access to the reports that are configured in Report Designer.

Routing activations to agents

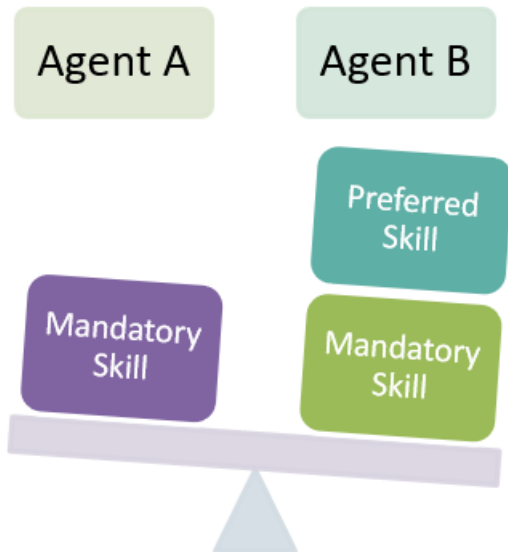
For the purposes of this section, an activation is defined as any inbound call, email, chat or work object. To receive an activation, an agent must be both idle and logged in (not in Do Not Disturb mode).

Skills are weighted on a scale 1 through 10, where 10 is the highest.

Note For details of how to test this, see [Testing skills-based routing](#).

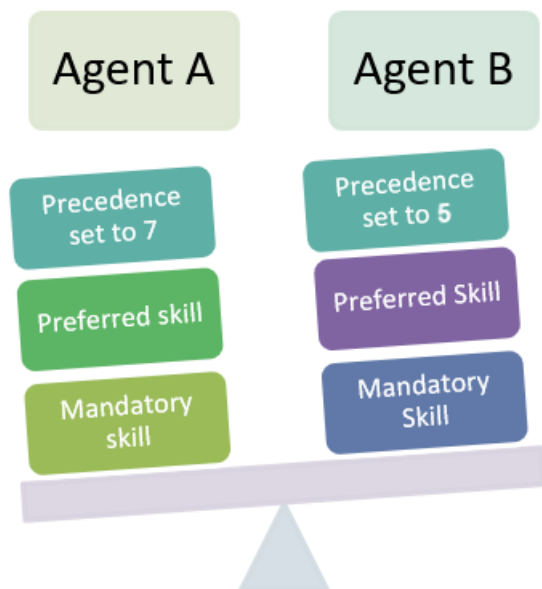
Routing to preferred skill

Where a skillset is defined as having a preferred skill the activation will always seek out a preferred agent first.



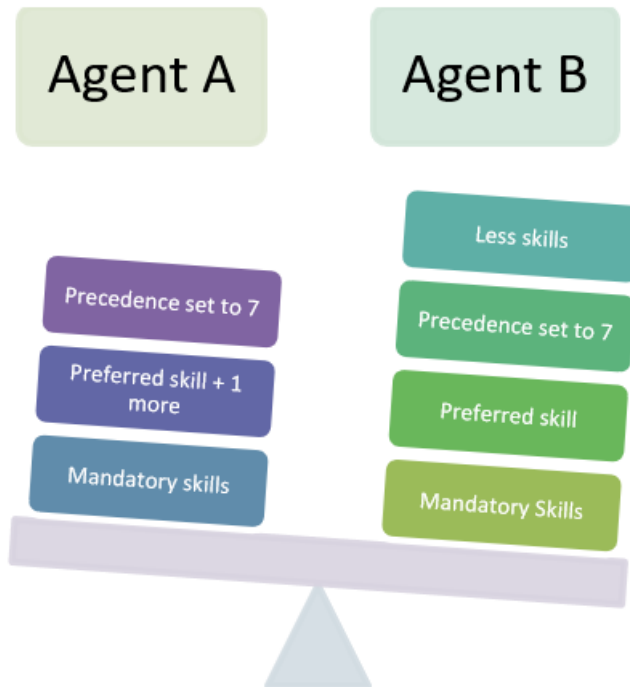
Routing to agent with higher precedence

In the agent profile (User Skill) it is possible to set one agent with a higher precedence than another. So, whilst two agents may both have exactly the same skills one may still be weighted above another and this agent will be presented with the activation first.



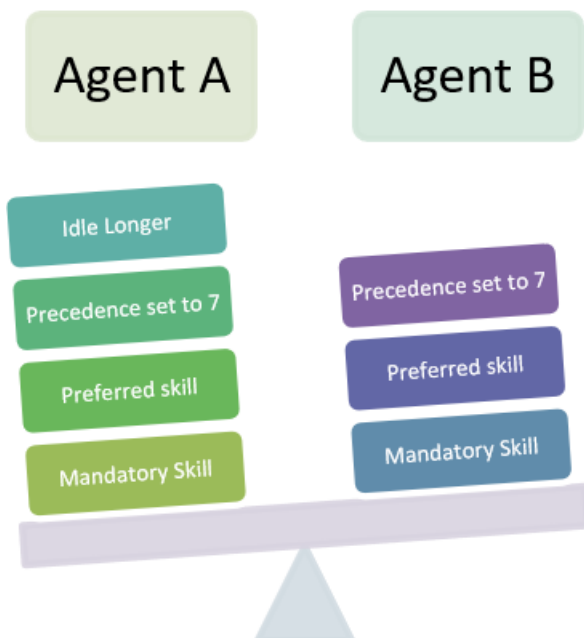
Routing by number of skills

Where two agents have same required skill, preferred skill and same precedence level, the system will check which agent has the least skills and present to that agent, as the agent with more skills may match the profile of the next (unknown) call.



Routing to agent by idle time

Where all other factors fail to produce a suitable agent, the activation will present to whichever agent has been idle longer.



Adding skills

You set up the skills required by the tenant and/or contact center and group them into sets. You also need to assign the skills to users (agents).

Adding skills

To add a skill:

1. In the Admin Portal go to **Contact Center > Skills**.
2. In **Skill Detail** pane, leave the contact center empty if you want to set up a global skill or select the contact center if this skill is specific to one contact center.
3. Enter the name of the skill. For example,
 - A specific skill such as *Customer Services*, *Dispute Handling*, *Speaks Spanish* and so on.
 - Personal skill for a user. The name should match the user's User ID. This allows you to route an activation, such as a work object, directly to an individual.
4. Click **Save**.

Adding skills to skillsets

You need to group skills into skillsets.

Creating a new skillset

1. In the Admin Portal go to **Contact Center > Skillsets**.
Enter the details of the new skillset in the Skillset Detail pane.
2. Leave the contact center empty if you want to set up a global skillset or select the contact center if this skillset is specific to one contact center.
3. Enter the details of the skillset.

Field	Description
Skillset Name	The name of the skillset.
Skillset Minimum Preferred skill weighting	For a skillset with preferred skills, the threshold that must be met for an agent to be found. See the example below for details of how to use this.

Field	Description
Transferable	<p>Voice calls can be transferred by agents to a skillset: in Agent Desktop go to Address Book > Queues.</p> <p>This is intended for use in contact centers with clearly defined teams. To allow the agent to select the skillset to make an outbound call or transfer the call, select the Transferable option.</p> <p>The agents will only be able to dial from idle if the agent has a default associated contact center unit.</p>
Skillset Overflow Timeout	The number of seconds after which the activation will also begin to queue for agents with skills in the overflow skillset.
Overflow Skillset	Activations will overflow to this skillset if they are still on the queue after the timeout set above.
Relative Priority	<p>When the overflow timeout occurs, you can increase or decrease the priority of an activation in the queue. For example:</p> <ul style="list-style-type: none"> • High increases the priority of the activation in the queue by 1 • Low lowers its priority in the queue by 1 <p>See below for an example of how to use this.</p>

4. Select the skills for the skillset. For each skill, enter the following details and then click **Add Skill**:

Field	Description
Name	Select a skill to add to the skillset.

Field	Description
Type	<p>Decide whether the skill is:</p> <ul style="list-style-type: none"> • Required: A required skill forms the minimum requirement. • Preferred: A preferred skill is a desirable requirement. The activation will be presented to agents with this additional skill before presenting it to agents with only the required skill. Enter the weighting for this preferred skill. <p>See below for an example that explains the difference between required and preferred.</p>
Weighting Factor	See below for details of how you can use this.

5. Click **Save** to save the skillset.

Required and preferred skill example

For example, a skillset has the following skills:

Skill	Type	Weighting Factor
Customer Services	Required	0 (required skills aren't weighted)
Spanish	Preferred	2
Dispute Resolution	Preferred	1
Authorize Refunds	Preferred	1

In the above example, there are various ways of setting the threshold in the **Skillset Minimum Preferred skill weighting** field depending on what you want to achieve. For example, entering:

Weighting Factor	Result
2	<p>The system will find:</p> <ul style="list-style-type: none"> • EITHER an agent who speaks Spanish • OR an agent who has both the Dispute Resolution and Authorize Refunds skills
3	The system will find an agent who speaks Spanish AND has one of the other two skills.
4	The system will find an agent who has all three of the preferred skills.

Overflow threshold, skillset and relative priority example

For example, if you have a Service Level Agreement that requires support emails to be answered within 10 hours, then you might:

1. Set the **Skillset Overflow Timeout** to 28,800 seconds (8 hours). This means that after 8 hours in the queue, the activation will escalate to someone with the skills in the overflow skillset.
2. Set the **Overflow Skillset** to a suitable skillset.
3. Set the **Relative Priority** to increase the priority of the activation in the queue. For example, to **Highest**.

You can also set a timeout, overflow skillset and relative priority on the overflow skillset itself.

Assigning skills to agents

Note For background information on how skills work in CE, see [Skills overview](#).

To select a user, click the user
and then click **Add**
The user is moved to the
righthand column

Selected users – to deselect a user,
click the user and then click **Remove**
The user is moved to the left hand
column

The screenshot shows the 'User Skill Detail' interface. At the top right are buttons 'Add and Update Selected' and 'Delete Selected'. Below these are two main sections: 'User' and 'Skill'. Each section has an 'Add' button with a right arrow and a 'Remove' button with a left arrow. Under the 'User' section, there are two columns of user names. An arrow points from the text 'To select a user, click the user and then click Add' to the 'Add' button. Another arrow points from 'Selected users – to deselect a user, click the user and then click Remove' to the 'Remove' button. Under the 'Skill' section, there are two columns of skill names. An arrow points from 'Available skills' to the 'Add' button. Another arrow points from 'These two skills will be added to the selected users if you click Add and Update Selected' to the 'Add and Update Selected' button at the top right. At the bottom, there is a 'Precedence' dropdown menu with the value '5'.

Available skills
To select a skill, click it and then
click **Add**

These two skills will be added to the
selected users if you click **Add and
Update Selected**

Overview of the User Skills page

Listing users and their skills

1. In the Admin Portal go to **Users > User Skills**.
2. Go to the **User List** area.
3. List all the users and their skills by selecting **Select an option** in the User list.
4. Click a column heading to sort the information by user, skill or precedence.

Assigning skills to users

You can use these steps to assign skills to a single user or to many users.

1. In the Admin Portal go to **Users > User Skills**.
2. Go to the **User Skill Detail** area.

To clear this area, you may need to click **New**.

3. In the **User** table, select the user(s) who requires the skill. Hold down the **Ctrl** or **Shift** keys to select multiple users.

4. Click **Add**.

The users listed in the **Remove** column will be assigned the selected skill(s).

5. In the **Skill** table, select the skill(s). Hold down the **Ctrl** or **Shift** keys to select multiple skills.
6. Click **Add**.

The skills listed in the **Remove** column will be assigned to the selected user(s).

7. In **Precedence**, enter the additional weighting that you want to give to the selected user(s). This is used when several agents have the same required and preferred skills. The activation will present to the user with the highest precedence:
 - 5 is the default precedence
 - 10 is the highest precedence
 - 1 is the lowest precedence

Copying the skills assigned to one user to other users

If you have a user who already has the right combination of skills then you can *copy* that set of skills to one or more other users.

1. In the Admin Portal go to **Users > User Skills**.
2. Begin by selecting the user who has the right combination of skills:
 - a. In the **User List** area, select the user who has the right skills.
 - b. Select the option **Load All Skills of Selected User**.

The user's skills are listed below.

- c. Click on any of their skills.

The selected user and all their skills are displayed in the **Remove** columns in the **User Skill Detail** area.

3. Now select the other users that require these skills:
 - a. Go to the **User Skill Detail** area.
 - b. In the **User** table, click the user who requires these skills. Hold down the **Ctrl** key or **Shift** key to select multiple users.
 - c. Click **Add**.

All the users listed in the **Remove** column will be assigned the selected skill(s).

At this stage, you could add or remove skills if you wanted. Any changes you make to the selected skills will affect *all* the users listed in the **Remove** column of the **User** table.

The same applies to the precedence. The precedence shown in the **Precedence** field will apply to all the selected users and skills.

- d. Click the **Add and Update Selected** button to apply your changes.

Modifying and deleting the skills for a single user

In the **User List** area, you can add, modify and delete the skills for a single user:

1. In the Admin Portal go to **Users > User Skills**.
2. In the **User List** area, select the user:
 - To delete a skill, select it and click **Delete**
 - To modify a single skill, select it and then select a different value from the **Precedence** list (on the right)
 - To add a skill, follow the steps in *Assigning skills to users* above

Deleting skills from one or more users

1. In the Admin Portal go to **Users > User Skills**.
2. Go to the **User Skill Detail** area.
3. Select the users who have the skill(s) that you want to delete. Hold down the **Ctrl** key or **Shift** key to select multiple users.
4. In the **Skill** table, select the skill(s) that you want to delete and then click **Add**.

The selected skills will be deleted from the users listed in the **Remove** column.

5. Click **Delete Selected**.

The selected skills are deleted from the users.

Setting default skillsets

You can set a default skillset for a contact center unit in the Admin Portal, on the **Media Management > Advanced Settings** page.

When skills based routing is used, then eventually an activation will be routed to someone with a skill in this default skillset if no more qualified person is available. This allows, for example, someone from IFS Support to investigate an issue without needing to change the configuration elsewhere.

Default skillsets for each media type are set in their respective definitions. For example, you can:

- Set a default skillset for each workflow definition listed on the **Workflow Management > Workflows** page. This skillset becomes the default for all work objects or campaigns created from the workflow definition.
- Set a default skillset for each phone number listed on the **Media Management > Voice** page. This skillset becomes the default for all calls to and from that number.

Testing skills-based routing

You can test skills-based routing with a minimal number of users. In this example, there is:

- One skillset called Testing which contains one required skill called Testing.
- There are two users who have the Testing skill (and no other skills).
- One user has the Testing skill with a high precedence of 8 and the other user has the same skill but with a low precedence of 2.

You set this up, in the Admin Portal, on the **Users > User Skills** page.

- The skillset is assigned to an inbound number on the **Media Management > Voice** page.

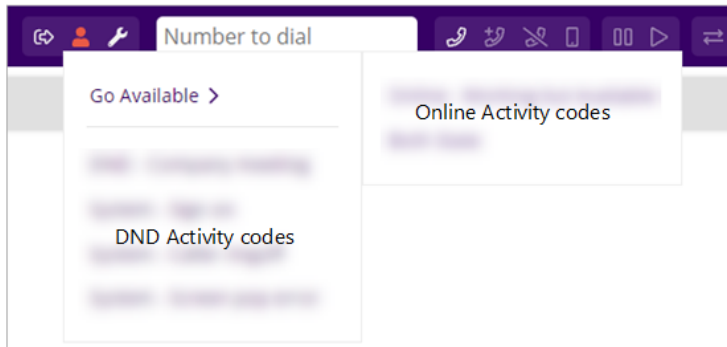
To test the skills-based routing of activations:

1. Both users sign on to Agent Desktop and stay in DND mode.
2. Go to the Monitoring page. Notice that you are on different iMedia instances (for example, station 1 and 501).
3. You must both be on the same iMedia instance. To do this, one of you monitors the other user:
 - a. On the Monitoring page, click the other user.
 - b. Click **Monitor** and then **Stop**.
 - c. Refresh the Monitoring page - you are now both on the same instance (for example, stations 1 and 2).
4. The person with the lowest precedence goes available first.
5. The other person then goes available.
6. Dial the number.
7. The call goes to the person with the highest precedence and not the person who was idle the longest.

For an explanation of this, see [Routing activations to agents](#).

Time recording in Agent Desktop

You can define the reason codes that agents select when they switch between activities in Agent Desktop. The reason codes are shown on the Monitoring page in Agent Desktop and in reports configured in Report Designer (using the Agent Time Recording report module). Agents must sign out and in again to see changes to the default time codes.



Selecting a reason code in Agent Desktop

Note The reason codes apply only to agents who have **Require Time Keeping** selected in their user account.

About the activity types

You can define any combination of Online Activity and DND Activity codes to replace the default reason codes:

Online Activity	<p>Use this type for any activity performed by agents where agents remain available to take calls and so on.</p> <p>For example, a CE Studio app presents agents with a list of tasks to perform (emails, social media) in between handling live callers. By selecting an Online Activity code, the agents categorize their available time.</p> <p>Selecting an Online Activity is optional since agents can leave themselves in Available mode.</p>
DND Activity	<p>Use this type for any activity performed by agents where they are not available to take calls, and need to place themselves in Do Not Disturb mode.</p> <p>Selecting a DND Activity is mandatory for agents wanting to go to Do Not Disturb mode.</p>
Both	<p>Use this type for any activity that could be done while agents are either Available or in Do Not Disturb mode.</p>

You can configure reason codes for use by all the contact centers (global reason codes) or specific reason codes for a single contact center. A contact center that has no reason codes defined for it, will use the global reason codes. If there are no global reason codes then all contact centers will use the defaults.

Configuring time recording states (reason codes)

To configure the time recording states (reason codes):

1. In the Admin Portal, go to the **Contact Center > Time Recording State** page.
2. Click **New** to add a new state.
3. Select the contact center if required or leave it blank if you are defining reason codes that will be used by all contact centers.
4. Fill out the details:

Field	Details
State	The name that you want to display in Agent Desktop and in reports.
Activity Type	<p>The activity type is one of the following:</p> <ul style="list-style-type: none"> • DND activity: activities where agents are not available to receive calls and so on. • Online activity: activities where agents remain available to receive calls and so on. • Both: activities where agents can choose to remain available or put themselves into Do Not Disturb mode. • Deleted: for time recording states that you no longer require.
System use only	Select this when creating time recording states that you do not want to show in Agent Desktop, such as Signing on, Ring Timeout, Tel delivery error, Caller ringoffs, and Screen-pop error. This will then be included in the standard reports.
Signing on	When agents sign on, they are automatically put into Do Not Disturb mode. No reason is recorded for this event. Define a Signing on code if you to report on this event type.
Ring Timeout	<p>When agents fail to accept the activation presented to them:</p> <ul style="list-style-type: none"> • They are automatically put into Do Not Disturb mode. • No time recording code is assigned to this event. <p>Define a Ring Timeout code if you want to report on this event type.</p>
Tel delivery error	<p>When a call cannot be delivered to the agent:</p> <ul style="list-style-type: none"> • They are automatically put into Do Not Disturb mode. • No time recording code is assigned to this event. <p>Define a Tel delivery error code if you want to report on this event type.</p>

Field	Details
Caller ringoffs	<p>Typically, occurs when there is a long ring timeout configured, and the caller hangs up before the agent picks up. When this occurs, the system retrieves the call and makes the agent available again. If this happens 3 times in a row then the agent is automatically put into Do Not Disturb mode. By default, no time recording code is assigned to this type of event.</p> <p>Define a Caller ringoffs code if you want to report on this event type.</p>
Screen-pop error	<p>For example, occurs when the agent is still signed on but their Agent Desktop session is disconnected. By default, no time recording code is assigned to this type of event.</p> <p>Define a Screen-pop error code if you want to report on this event type.</p>

Twilio regulatory requirements

From June 2024, Twilio requires tenants purchasing phone numbers to verify themselves with Twilio and create a regulatory bundle for any mobile and local phone numbers that they want to purchase.

IFS Support can purchase phone numbers on your behalf after Twilio approves the regulatory bundle.

To find out more about the regulatory requirements for your country, please go this website: <https://www.twilio.com/en-us/guidelines/regulatory>.

Adding addresses to Twilio

The first step is to add the required addresses. This must be an address associated with the business and in the same country as the phone numbers you want to purchase.

In the Admin Portal, go to the **Twilio > Tenant Address** page and enter the required details.

Note Select the **Suggest Valid Address** check box in order to let Twilio auto-correct the address you enter. If using this feature, please check that the updated address is correct.

Scroll the list of addresses on the right of the Tenant Address page to see whether Twilio has validated the address.

Note In countries that require valid addresses, an invalid address will not be accepted.

- *true* indicates the address has been checked.
- *false* indicates the country doesn't require validation or the address is not valid.

Adding Twilio end users

To meet the Twilio regulatory requirements for purchasing phone numbers, you need to enter the details of the authorized user who manages phone numbers for your business.

In the Admin Portal, go to **Twilio > Twilio End User** page and enter the required details. The details depend on the country, and the tooltip associated with each field tells you what is required. If there are any errors in the end user details then these are reported when you create and save the Twilio regulatory bundle in the next step.

Creating Twilio regulatory bundles

Once you have created an address, and a Twilio end user for each type of number you want to purchase (such as mobile or local), then you can create the regulatory bundle. It is at this stage that the end user details are checked by Twilio.

1. In the Admin Portal, go to the **Twilio > Twilio Regulatory Bundle** page.
2. Enter the name you want to use. Names can contain spaces and you can change the name later.
3. Enter the details required to create the bundle.

You must select an emergency address, however, this is only used if the address is configured as an emergency address. Raise a Service Now request to ask for this additional configuration.

4. On saving, the selected end user and selected address is validated by Twilio:
 - After saving, the bundle has in-review status. Acknowledgment and status emails are sent to the email address you entered.
 - If any errors are reported, edit the Twilio end user details and then come back to current page to amend the bundle details. The bundle has Draft status while you do this.

Once approved, the status moves to twilio-approved. You can now request IFS Service Now to purchase phone numbers from Twilio on your behalf.

Call routing rules

Important You require an understanding of the tenant's telephony infrastructure before you can configure the call routing rules. Incorrect configuration may prevent calls into and out of the tenant's servers. You also need to be familiar with regular expressions.

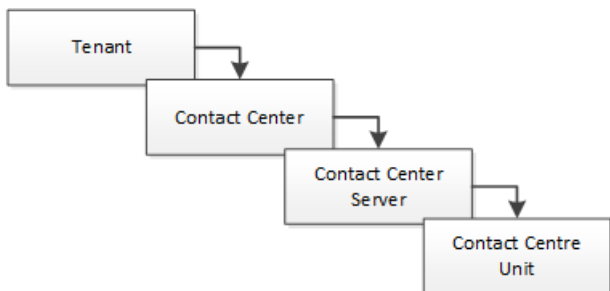
Note You need to be an administrator with Technical status to manage call routing rules.

Call routing rules are used to modify the behavior and/or presentation of telephone numbers passing into or out of the tenant's servers. A typical example is to reformat a telephone number from a convention used for international numbers such as +44 (0) 115 96500 to one that can be dialed over the PSTN such as 00441159658600.

A tenant has some predefined call routing rules, which are described in this section.

Hierarchy of call routing rules

Rules will be applied in the order displayed below. The hierarchy used allows for subtle application of the rules in a multi-site contact center.



How call routing rules are applied

For example, call routing rules configured at the contact center unit level are the most specific and will override other rules of the same type configured at a higher level.

Here are a few examples of how rules might be used at different scopes.

Contact center rules	For example, use these rules to allow agents to dial local numbers and translate that into a full number before presenting the number to the PSTN.
----------------------	--

Server rules	<p>These rules apply to one of the server instances. For example, use these to define what inbound number ranges are accepted into the server.</p> <div> <p>Note Not suitable for a cloud deployment where the servers operate in a load-balanced cluster.</p> </div>
Tenant rules	<p>These are global rules. For example, use these convert all dialed numbers from +441159658600 to 00441159658600 before presenting to the PSTN.</p>

Tenant-level call routing rules

This section describes the predefined call routing rules that apply globally to the tenant. If required, you can edit these or add these to a contact center and then edit them.

To view the predefined rules:

1. In the Admin Portal, go to **Contact Center > Call Routing Rules**.
2. In the Call Routing Rule List, make sure that the **Contact Center** field is empty.

The first 6 rules use a To Match Pattern and therefore apply to outbound calls. This rule make it easier for agents to dial. See [Adding a call routing rule](#) for an explanation of match patterns:

Priority	Feature	To match pattern	To deploy format	
1	2 Translate	<code>[-\(\)\s]+(.*)</code>	\$1	Strip formatting characters at the start of the To number
2	2 Translate	<code>(.+)\(\d\)(.+)</code>	\$1\$2	Remove the national break-out/trunk code for international numbers if it is enclosed in brackets - e.g., +44 (0)1926 623500
3	2 Translate	<code>([d\+ *#].*)[-\(\)\s]+(.*)</code>	\$1\$2	Strip formatting characters from the middle or end of the To number
4	2 Translate	<code>0([1-9]\d{7,9})</code>	+44\$1	Convert UK national number to international format

Priority	Feature	To match pattern	To deploy format	
5	2	Translate	(00 011)(\d{9,})	+\$2 Replace the common international break-out/exit codes with a generic +
6	2	Translate	141(.*)	\$1 Support dial prefix to withhold called ID

The next 6 rules use a From Match Pattern and therefore apply to inbound calls.

Priority	Feature	From match pattern	From deploy format	
7	2	Translate	[-\(\)\s]+(.*)	\$1 Strip formatting characters from the start of the caller ID
8	2	Translate	([\d\+].*)[-\(\)\s]+(.*)	\$1\$2 Remove formatting characters for the middle or end of the caller ID
9	2	Translate	0?([1-9]\d{7,9})	+44\$1 Convert UK national caller ID to international format
10	2	Translate	(user ss ivr):.*	\$2 Strip the caller ID for internal user and skillset calls
11	2	Translate	(00 011)(\d{9,})	+\$2 Replace the common international breakout/exit codes with the generic +

The next 3 rules apply to features in Agent Desktop:

Priority	Feature	Notes	
12	6	Invoke User	Matches on <code>user:.*</code> Allow users to be dialed directly internally by user ID or user name
13	7	InvokeSkillset	Matches on <code>skillset:ss:.*</code> Allow skillsets to be dialed directly internally

Priority	Feature		Notes	
14	2	Translate	<ul style="list-style-type: none"> To match pattern: (12678 162 166 1840) (.*) To deploy format: \$2 Prefix match pattern: ^\$ Prefix deploy format: \$\$1 	Strip explicitly supplied LCR access codes for Gemini, Callstream, Worldcom and Opal respectively from the start of the dialed number and add it to the prefix

Contact center-level call routing rules

This section describes the call routing rules that relate to the contact center's trunk groups. To view these rules:

1. In the Admin Portal, go to **Contact Center > Call Routing Rules**.
2. In the Call Routing Rule List, select a contact center from the **Contact Center** list and leave the **Server** field empty.

Priority	Feature		To match pattern	Notes
1	4	InvokeDDI	\+(.*)	Invoke DDI Rule, PSTN trunk group
2	4	InvokeDDI	SCD.*	Invoke SCD DDI, SCD trunk group
10	1	Dial	SCD.*	Dial SCD prefix numbers
11	1	Dial	SCD.*	Dial SCD prefix numbers Failover rule (targets a different SIP Border Gateway)
15	1	Dial	TD.*	Dial TD prefix numbers, for agent delivery (targets any of the SIP Border Gateways)
20	1	Dial		Dial PSTN numbers
21	1	Dial	141(.*)	Dial PSTN numbers Failover rule (targets a different SIP Border Gateway)

Adding a call routing rule

To add a call routing rule:

1. In the Admin Portal, go to **Contact Center > Call Routing Rules**.
2. Click **New**.
3. Decide on the scope of the rule:

Field	Description
Global	<p>Select Global to add a rule with global scope. You can add global rules for reject, translate and invoke but not for dialing.</p> <p>Important Do not configure global rules for dialing. The system must be able to match the rule to the trunk group and trunk groups are specific to a contact center.</p>
Server	<p>Note Not suitable for a cloud deployment where the servers operate in a load-balanced cluster.</p> <p>Select a server instance if you want to add a rule that applies to one of the servers:</p> <ul style="list-style-type: none"> • <i><tenant>hub</i>: the pair of server instances on which the MediaHub service runs. These servers are responsible for call distribution within the center. • <i><tenant>im</i>: the instance that handles inbound, outbound and transferred calls.
Contact Center	To add a rule with a more specific scope, select the contact center.
Contact Center Unit	To add a rule that's restricted to one of the contact center units, select the contact center unit.
User	Use this scope when you want to, for example, prevent an agent from dialing a specific number.

4. In **Feature**, choose the rule type. See [Examples of call routing rules](#).
5. In **Priority**, enter a numerical value that determines the order in which the rule is applied, where 1 is the first rule to be applied. To make it easier to insert additional rules later, you can leave gaps in the sequence of priority numbers.

Note You cannot add a rule with an existing priority. For instance, where rules exist with priority 1, 2, 3 already then you cannot add another rule with priority 3.

6. For a rule that checks dates and times, set up the following:

Field	Description
Public Holiday Zone	If time of day patterns are used, then select the public holiday zone that determines the public holidays.
Time of Day Pattern	Enter a regular expression to set the active times for the rule. For an example of a regular expression, see Regular expression: working weekdays rule .

7. Use the following for a rule that needs to match and change patterns on inbound and outbound calls:

Field	Description
From Match Pattern (inbound calls)	Used to find matches on inbound calls, via the use of regular expressions. In this example: <code>[-\(\)\s]+(. *)</code> the regular expression is used on a translate rule to match incoming calls that contain – or + at the start and strip the character from the number. The position it is stripped from is denoted in the Deploy format field.
From Deploy Pattern (inbound calls)	Indicates the part of the string to which the From Match Pattern formatting is to be applied. This could be: <ul style="list-style-type: none"> • \$0 for all the string • \$1 for first part • \$2 for second part • A combination of \$1\$2 • Other combinations, like \$\$ or \$\$1

Field	Description
Store Unmasked CLI	<p>Select this to encrypt and then save the original phone number. In reports, authorized users see the original phone numbers in the Restricted Caller Id column, while unauthorized users see the masked phone numbers as transformed by the rule.</p> <div> Note Where there are multiple translate rules then you need to select this option on the first translate rule that is applied. </div>
To Match Pattern (outbound calls)	<p>Used to find matches on outbound calls, via the use of regular expressions, similar to From Match Pattern.</p> <p>Particularly useful if agents are dialing out from data which includes formats like +44 (0) 1159658600 to reformat the number before call is placed to match international breakout codes for the country the agent works in.</p>
Suppress Overflow Match Pattern	<p>Use this to suppress specific codes that result in unwanted calls, for example when calls are redialed when they shouldn't be.</p> <p>The Outbound Call report shows which codes are returned by the provider. They are listed in the Clear Code column.</p> <p>You should not need to do this if your telephony provider uses the standard codes.</p>
To Deploy Format (outbound calls)	Same as From Deploy Pattern .

Field	Description
Prefix Match Pattern	<p>Allows for a prefix already accounted for by another rule, but explicitly entered by an agent on dialing out to be stripped from the number when dialing and placed back into the number.</p> <p>For example, a rule uses least cost routing to prefix all number with 641. If this rule is <i>not</i> in place then an agent dialing: 64101159658600 will end up dialing:</p> <p>64164101159658600</p>
Prefix Deploy Formats	Indicates the part of the string to which the Prefix Match Pattern formatting is to be applied.

8. If required set the following options. Not all options apply to all the rule types.

Field	Description
Sending Complete	<p>Filtering criteria relating to overlap dialing. Can be set as</p> <ul style="list-style-type: none"> • Ignore • Match only if sending complete • Match only if sending incomplete
Call Direction	A filtering criteria that allows a rule to target just inbound or outbound calls.
Rematch From Top	Allows you to reapply the rule to the resulting inbound number. For example, after mapping a number to a new number, you might need to reapply the rule to the new number rather than continue matching from the next rule onwards.
Set Sending Complete	Select the check box to indicate that the rule is to be actioned once sending is complete in overlap dialing.

Field	Description
Target Trunk Group Associated Inbound Number	In Dial rules, allow outbound calls to be placed on a specific trunk group and/or an inbound number.
Associated Trunk Group	<p>A filtering criteria for inbound calls that allows a rule to be associated with a particular trunk group.</p> <p>Note Relevant in deployments with multiple PSTN trunk groups.</p>
Channel Allocation Order	<p>Allows rules to be applied in a particular order on the trunk (bottom up or top down). On inbound calls this is done by default on a top down basis, outbound dial rules should use bottom up to prevent call collision.</p> <p>Note Relevant in deployments with infrastructure that uses time division (TDM) multiplexing.</p>
Failover Rule	<p>Only really applicable to dial rules, this allows for a failover rule to be set if the first rule fails for some reason.</p> <p>Existing rules are listed by priority and the description entered in the Notes field.</p>
VOIP Codec	<p>Allows one or more VOIP codecs to be set for a dial rule.</p> <p>Where more than one codec is specified, they will be used in the order in which they are listed. This means that the first codec will be used and, if this cannot be used, the second one will be used and so on.</p>
Target Address	Allows you to specify a SIP trunk address. For example, when using a skype trunk along with others.

9. In the **Notes** field, we strongly recommend that you add details about how the rule works. This is for the benefit of others administrating the system and makes it easier to select a failover rule (where the note will be used as a description).

Examples of call routing rules

- [Dial rule example](#)
- [Translate rule example](#)
- [Reject rule example](#)
- [InvokeUser rule example](#)
- [InvokeSkillset rule example](#)
- [InvokeDDI rule example](#)
- [WaitForMoreDigits rule example](#)

Dial rule example

Dial rules allow systems to make calls out and specify which trunk group outbound calls are made through.

In this server-level example:

- The **To Match Pattern** determines which trunk group outbound calls will be made through
- The target trunk group specifies which trunk calls will be made through according to the number dialed (To match pattern).
- The channel allocation specifies in which order the channels are used, in this case bottom up to allow inbound calls to use the trunk from the top down. The reason is to prevent call collision.

Feature:	Dial - Place an outbound call via the specified trunk group ▼		
Priority:	1		
Bank Holiday Zone:	▼		
Time Of Day Pattern:			
From Match Pattern:			
From Deploy Format:			
To Match Pattern:	5[0-2]\d		
To Deploy Format:			
Prefix Match Pattern:			
Prefix Deploy Format:			
Sending Complete:	Ignore ▼		
Call Direction:	Match Outbound Only ▼		
Set Sending Complete:	<input type="checkbox"/>		
Target Trunk Group:	PBX - WARDEV001 ▼		
Associated Trunk Group:	Select An Item ▼		
Channel Allocation Order:	Bottom Up ▼		
Failover Rule:	Select An Item		
VOIP Codec:	<div> <div>G711</div> <div>iLBC</div> <div>GSM_FR</div> <div>G729</div> <div>G723</div> <div>G729A</div> <div>G726</div> </div> <div> <div>▲</div> <div>☰</div> <div>▼</div> </div> <div> <div>></div> <div><</div> </div>		<div>Up</div> <div>Down</div>
Target Address:	<div>PBX DDI range 500..529</div>		
Notes:			

For example, if using E1 connection, it has 30 channels, inbound calls are presented to a specific channel by the network and normally present from lowest number channel. Making outbound calls through highest numbered channels prevents call collision in all but the most exception circumstances when trunk is full.

Translate rule example

Use translate rules to modify the dialed number and rematch using the translated number, that is to change the number before it is presented to the PSTN.

Translate rule to strip characters

This example strips all formatting characters from the outbound numbers entered by the agent, before the number is block dialed.

Feature:	Translate - Modify the dialled number and rematch using the translated number
Priority:	2
Bank Holiday Zone:	
Time Of Day Pattern:	
From Match Pattern:	
From Deploy Format:	
To Match Pattern:	(.+)\\(\\d\\)(.*)
To Deploy Format:	\$1\$2
Prefix Match Pattern:	
Prefix Deploy Format:	
Sending Complete:	Ignore
Call Direction:	Match Outbound Only
Rematch From Top:	<input type="checkbox"/>
Set Sending Complete:	<input type="checkbox"/>
Failover Rule:	Select An Item
Notes:	Remove the national break-out/trunk code for international numbers if it is enclosed in brackets - e.g., +44 (0)1926 623500

- The **To Match Pattern** contains a regular expression specifying the characters to remove.
- The **To Deploy Format** indicates which part of the number are to be stripped (\$1, first, \$2 second).

Translate rule to add a prefix

This server-level example adds a prefix to telephone numbers dialed by agents to make use of a least cost routing facility. A regular expression defines the active times and days of week and the prefixes to match. The actual prefix is determined in the **Prefix Deploy Format** field.

Feature:	Translate - Modify the dialled number and rematch using the translated number
Priority:	9
Bank Holiday Zone:	
Time Of Day Pattern:	0 [1-5]/... (09\;\d\d 1[0-6]\;\d\d 17\:[0-2]\d)
From Match Pattern:	
From Deploy Format:	
To Match Pattern:	
To Deploy Format:	
Prefix Match Pattern:	^\$
Prefix Deploy Format:	162
Sending Complete:	Ignore
Call Direction:	Match Outbound Only
Rematch From Top:	<input type="checkbox"/>
Set Sending Complete:	<input type="checkbox"/>
Failover Rule:	Select An Item
Notes:	Add Callstream LCR prefix code on weekdays between 09:00 and 17:30

Reject rule example

Reject rules can perform blacklisting, either by blocking calls coming into the contact center unit or by preventing agents from dialing out to particular numbers.

Note The DoNotReject rule allows for exceptions to be built into the Reject rule. So where Reject rules are used at global level, exceptions could be configured at a lower level to allow an exception.

This example sets a rule against a contact center unit to prevent agents from dialing the speaking clock (in the UK this is done by dialing 123).

Feature:	Reject - Hang-up the call
Priority:	1
Bank Holiday Zone:	<input type="text"/>
Time Of Day Pattern:	<input type="text"/>
From Match Pattern:	<input type="text"/>
From Deploy Format:	<input type="text"/>
To Match Pattern:	123
To Deploy Format:	<input type="text"/>
Sending Complete:	Ignore
Call Direction:	Match Outbound Only
Set Sending Complete:	<input type="checkbox"/>
Failover Rule:	Select An Item

InvokeUser rule example

Note This example is one of the predefined rules set at tenant level. Where this feature is used, it should always be configured in the manner described here because this is the required format for Agent Desktop.

Invoke User rules allow calls to be passed internally from one agent to another by dialing a unique identifier for the agent. (GUID, username, name or initials). As the GUID is the one item guaranteed to be unique, this is the method used by Agent Desktop built-in controls. If, for example, initials are used to dial and two agents share the same initials, it simply won't work.

Feature:	InvokeUser - Terminate call internally and deliver to the user specified by the translated number ▼		
Priority:	11		
Bank Holiday Zone:	▼		
Time Of Day Pattern:			
From Match Pattern:			
From Deploy Format:			
To Match Pattern:	user:.*		
To Deploy Format:			
Prefix Match Pattern:			
Prefix Deploy Format:			
Sending Complete:	Ignore ▼		
Call Direction:	Match Outbound Only ▼		
Rematch From Top:	<input type="checkbox"/>		
Set Sending Complete:	<input type="checkbox"/>		
Failover Rule:	Select An Item		
VOIP Codec:	<div> <div>G711</div> <div>iLBC</div> <div>GSM_FR</div> <div>G729</div> <div>G723</div> <div>G729A</div> <div>G726</div> </div> <div> <div>▶</div> <div><</div> </div>		<div>Up</div> <div>Down</div>
Notes:	<div>Allow users to be dialled directly internally</div>		

In this example a regular expression passes the agent's details as the dialed number.

InvokeSkillset rule example

Note This example is one of the predefined rules set at tenant level. Where this feature is used, it should always be configured in the manner described here because this is the format expected by Agent Desktop.

InvokeSkillset rules allow calls to be passed internally from one agent to a skillset. When using Agent Desktop the method uses the skillset GUID, although the agent could dial using the skillset name.

Feature:	InvokeSkillset - Terminate call internally and deliver according to the skillset specified by the translated number ▼		
Priority:	12		
Bank Holiday Zone:	▼		
Time Of Day Pattern:			
From Match Pattern:			
From Deploy Format:			
To Match Pattern:	ss:.*		
To Deploy Format:			
Prefix Match Pattern:			
Prefix Deploy Format:			
Sending Complete:	Ignore ▼		
Call Direction:	Match Outbound Only ▼		
Rematch From Top:	<input type="checkbox"/>		
Set Sending Complete:	<input type="checkbox"/>		
Failover Rule:	Select An Item		
VOIP Codec:	<div> <div>G711</div> <div>iLBC</div> <div>GSM_FR</div> <div>G729</div> <div>G723</div> <div>G729A</div> <div>G726</div> </div> <div> <div>▲</div> <div>☰</div> <div>▼</div> </div> <div> <div>></div> <div><</div> </div> <div> <div>Up</div> <div>Down</div> </div>		
Notes:	<div>Allow skillsets to be dialled directly internally</div> <div>▲</div> <div>▼</div>		

This example uses a regular expression to pass the skillset's GUID or name as the dialed number.

InvokeDDI rule example

InvokeDDI rules allow inbound calls to be passed into the server via the specified method (that is from the PSTN, PBX or internally).

Example 1

In this example

- The regular expression in **To Match Pattern** specifies the available inbound number range.
- The regular expression in **To Deploy Format** specifies a prefix to add to the inbound number as calls come in, so they will be shown as +4419264827nn rather than 4827nn.
- The target trunk group specifies the trunk to be used for this rule.

Feature:	InvokeDDI - Terminate call internally according to the DDI specified by the trunk group and the translated number ▼
Priority:	2
Bank Holiday Zone:	▼
Time Of Day Pattern:	
From Match Pattern:	
From Deploy Format:	
To Match Pattern:	4827[2-8]\d
To Deploy Format:	+441926\$0
Prefix Match Pattern:	
Prefix Deploy Format:	
Sending Complete:	Ignore ▼
Call Direction:	Ignore ▼
Set Sending Complete:	<input type="checkbox"/>
Target Trunk Group:	PSTN - WARDEV001 ▼
Associated DDI:	Select An Item ▼
Associated Trunk Group:	Select An Item ▼
Failover Rule:	Select An Item
Notes:	PSTN DDI Range +44 1926 482720..482789

This is a server level example.

Example 2

This example doesn't use a regular expression. The target trunk, associated inbound number and associated trunk group are used to pass calls from PBX to the PSTN.

Feature:	InvokeDDI - Terminate call internally according to the DDI specified by the trunk group and the translated number ▼
Priority:	7
Bank Holiday Zone:	▼
Time Of Day Pattern:	
From Match Pattern:	
From Deploy Format:	
To Match Pattern:	
To Deploy Format:	
Prefix Match Pattern:	
Prefix Deploy Format:	
Sending Complete:	Ignore ▼
Call Direction:	Match Inbound Only ▼
Set Sending Complete:	<input type="checkbox"/>
Target Trunk Group:	PSTN - WARDEV001 ▼
Associated DDI:	Internal - 610 ▼
Associated Trunk Group:	PBX - WARDEV001 ▼
Failover Rule:	Select An Item
	Forward calls from the PBX to the PSTN ▲▼
Notes:	

The example shown below is the reverse (PSTN to PBX):

Target Trunk Group:	PBX - WARDEV001 ▼
Associated DDI:	Internal - 610 ▼
Associated Trunk Group:	PSTN - WARDEV001 ▼

WaitForMoreDigits rule example

WaitForMoreDigits rules allow for overlap dialing. These rules are used in environments where iMedia is interfaced with a local PBX that uses overlap dialing as opposed to block dialling, where all the numbers to be dialed are presented at once.

This example uses the **To Match Pattern** field to specify a number of inbound number ranges that could be dialed by an agent to an internal inbound number (hence call direction of inbound) and tells the system to wait for more digits before attempting to call.

Feature:	WaitForMoreDigits - There are insufficient digits in the number to route the call, so wait for more digits or sending complete ▼
Priority:	6
Bank Holiday Zone:	▼
Time Of Day Pattern:	
From Match Pattern:	
From Deploy Format:	
To Match Pattern:	^\$[50? 48? 6[0-4]? 50[0-2] 482 4827[2-9]?
To Deploy Format:	
Prefix Match Pattern:	
Prefix Deploy Format:	
Call Direction:	Match Inbound Only ▼
Set Sending Complete:	<input type="checkbox"/>
Associated Trunk Group:	Select An Item ▼
Notes:	<div>If overlap-sending is in progress, wait if further digits could result in matching one of the following DDI ranges: 5000..5029, 482720..482799, or 600..649</div>

5

Credentials, certificates and domains

You can configure the credentials needed to connect to a specific environment (endpoint) in the Admin Portal on the **Credentials Manager > Manage Credentials** page. You then use these credentials in CE Studio Designer when creating providers. This removes the need for users in CE Studio Designer to know the endpoint URLs and what's required to authenticate.

On the Manage Credentials page, you can:

- Save the endpoint and the authentication details for the target environments.
- Change the endpoint, for example, when there is a metadata change. When this happens, you can trigger automatic creation of new versions in CE Studio Designer.
- You don't need to create new provider versions when the password changes (as previously).
- Set default credentials to use when importing CE Studio apps from the Central Template Repository. Each default applies to either IFS Cloud and a specific endpoint, or to Field Service Management.


See also [Adding credentials for Last-Mile Customer Portal](#).

Adding credentials

To add new credentials for an environment that will be used in CE Studio Designer to create providers:

1. In the Admin Portal go to **Credentials Manager > Manage Credentials**.
2. Enter the details:

Field	Description
Contact Center	<p>Leave this field empty if creating credentials for portal and public portal apps, or if you want to create a credential with global access.</p> <p>Select a contact center only if the environment and credentials are specific to a contact center.</p>
Contact Center Unit	<p>Leave this field empty if creating credentials for portal and public portal apps, or if you want to create a credential with global access.</p> <p>Select a contact center unit only if the environment and credentials are specific to a contact center unit.</p>
Name	A name to identify this environment and its credentials.
Description	Additional information about these credentials.
Endpoint	<p>The URL of the endpoint without the service name.</p> <p>For IFS Cloud:</p> <p><code>https://<environment>.ifs.com/main/ifsapplications/projection/v1/</code></p> <p>where <code>MainCaseHandling.svc</code> is an example of a service name.</p> <p>For IFS Field Service Management: <code>http://<environment>/metrixintegrationservice/M5WebService.asmx/</code></p> <p>where <code>ProcessXML</code> is an example of a service name.</p>
Provider Type	The supported provider types. The required fields for the authentication are only displayed when you select both the provider type and the authentication scheme.
Authentication Scheme	<p>The supported authentication schemes for the selected provider type.</p> <div> <p>Note Not all endpoints require authentication, for example, the readonly Northwind service. However, you still to select an authentication scheme and then leave the credentials empty.</p> </div>
Default Credential	In 6.7 and later, select this if the credential is to be used when importing CE Studio apps from the Central Template Repository. There is a single default credential for IFS Cloud and another for FSM.

3. Fill in the required credentials. For **Custom** authentication schemes, you need to click the  button to add each required property as a key-value pair:

Authentication scheme	Required credentials
FSM Custom	<ul style="list-style-type: none"> • Username • Password • ClientId (optional)
PSO Custom	<ul style="list-style-type: none"> • Username • Password

4. Save the credentials. This makes the credentials available in CE Studio Designer.

Note Users need to refresh CE Studio Designer to see any credentials added after they started CE Studio Designer.

Updating credentials

You can edit the credentials for an environment to:

- Change the authentication credentials, such as username, password, secret, token.
- Change the endpoint when there is a metadata update.
- Change the authentication scheme, such as change from OAuth 2.0 to SSO.

To edit existing credentials for an environment:

1. In the Admin Portal go to **Credentials Manager > Manage Credentials**.
2. Select the credentials you want to update.

Update the credential

You can update the credential on the Manage Credentials page whenever the credentials for a target environment changes. You do not need to do anything else. It is not necessary to create new provider versions.

Update the metadata

Existing providers will continue to use the metadata associated with the previous version of the credentials. This is because the metadata is part of the provider. When you are ready, you can push the metadata change to the providers and trigger a new provider version to be created. This will create a new version in any provider that uses these credentials.

1. Change the endpoint in the credentials.

2. Save the credentials.
3. Click **Update Metadata**. This will create a new version in any provider that uses these credentials, with a note "Metadata updated from Admin portal".

Configuring Captcha type and keys

Customer Engagement uses Google reCAPTCHA. reCAPTCHA uses an advanced risk analysis engine and adaptive challenges to keep malicious software from engaging in abusive activities on your website.

You need to register a site on Google reCAPTCHA at [reCAPTCHA \(google.com\)](https://www.google.com/recaptcha).

You use the Admin Portal to set up a list of Captcha sites which will then be utilized on Studio Designer.

The Captcha element uses three different types: Score Based, Challenge Checkbox and Challenge Badge.

To record a site that you have already registered:

1. In the Admin Portal, go to the **Studio > Manage Captcha** page.
2. On the Captcha detail tab, enter the necessary details and click **Save**.

Domain	The domain of the website
Captcha Type	<p>Select the Captcha type. You can change this later if required. In CE Studio apps, you can add:</p> <ul style="list-style-type: none"> • One scorebased element • A checkbox or badge element • Multiple checkbox and badge elements <p>If adding both checkbox and badge elements then you need a site key that is configured for both types.</p>
Site Key	Enter the site key from your site registration.
Secret Key	Enter the secret key from your site registration.

Certificates and domains

You need to purchase an SSL certificate to cover the domain you want for your public portal.

For example, to access the public portal at:

`https://ce.ventechi.com/`

you need a certificate such as `https://ce.ventechi.com` or `*.ventechi.com`. The customer must also configure their system to add the required DNS records.

Note You can only configure one domain per public portal.

Uploading the SSL certificate for the tenant's public portal

In the Admin Portal, on the **Contact Center > Certificates** page, you can upload a .pfx file that contains the SSL certificate (public key), the private key, and the Certificate Chain information. If the .pfx file is protected by a password, you will need to enter the password as well.

Once you have uploaded the SSL certificate, you can configure a dedicated domain for your public portal.

Configuring the domain for the tenant's public portal

Important The domain is owned by the customer and the customer must configure their system, ie add the DNS records for the domain, referencing the correct cluster cname. Until this is done, the public portal is inaccessible.

In the Admin Portal, on the **Contact Center > Domains** page, you can configure the domain that you want to use for the public portal.

Domain Name*	ce.zentechi.com
Region	UK South 1
Type*	Dedicated
Contact Center	Dev Test 1 - (00)
Resource	Public Portal
Certificate*	ce.zentechi.com
DNS Record	CNAME ce.zentechi.com ce-uksouth1.ifsce-test.com

6

Voice configuration

How to configure a contact center unit for voice calls.

Important The information in this section applies to fully-featured tenants only.

There are three levels of configuration in the Admin Portal:

- For the contact center – settings for Automatic Call Answering.
- For the contact center unit – you configure a media script for managing inbound calls, for example, you can configure a menu of options to direct calls to the right place, and determine what happens while the caller is waiting in the queue.
- For each inbound number (DDI or DID) – some of these settings can override what's set for the contact center unit. You can also configure a different media script for each number.

You require a CE Studio app for voice calls. This is what the agent uses when they accept a voice call in Agent Desktop.

In addition, you can set up:

- [Call backs](#), for example, when someone hangs up before connecting to an agent. This requires a workflow definition and a different type of CE Studio app. When someone hangs up while in the queue, the caller's details are captured, the system generates a work object which is added to the queue for an agent, and the agent can then make the call.
- [Automated outbound phone calls](#), for example, using pre-recorded messages. This requires a workflow definition and a standalone media script.

Introduction to voice calls configuration in CE

When a customer phones a CE contact center, their call can be:

- Handled automatically by configuring an IVR system (Interactive Voice Response). You can use the same system for all the inbound phone numbers or you can configure a different system for specific phone numbers.
- Added to a queue if no agents are available in Agent Desktop. Calls progress through the queue depending on the type of inbound number, and how queue progression is configured.
- A combination of the above.

The two different inbound number types are IVR and Customer:

- **IVR** – for this type of phone number you use an IVR script. You can set up a default IVR queue for all inbound numbers of the IVR type, or script a different queue for each number. This requires a media script.
- **Customer** – for this type of inbound number you can configure a simple queue where messages are periodically played to the caller. No media script is required.

The call details are saved and you can run standard and custom reports on inbound and outbound calls. You can mask phone numbers to protect the identity of the caller. See [Masking phone numbers](#) for details.

Standard queue progression

This controls how inbound phone calls are placed on the queue when there is no IVR to control the flow of calls and all agents are busy.

When you configure a contact center unit, you can set options to change the configuration of the standard call queue. The options are described in [Configuring voice settings for the contact center unit](#).

Overriding standard queue progression with custom IVR queues

You can configure an alternative call queue (IVR) in the Media Script Editor. For this type of queue progression, you disable Automatic Call Answer. This leaves the media script to handle any preprocessing that's required before the call is added to the queue.

See [Configuring voice \(IVR\) queue progression](#) for further details.

Disabling queue progression so calls go straight to an agent

You can also disable Automatic Call Answering for an inbound number so the call goes straight through to an agent (if one is available). To do this:

1. For the contact center unit, set the option **Enable Automated Call Answer** to **No**.
2. When setting up the inbound number, select the **Customer** type.

Purchasing phone numbers

You either need to purchase the phone numbers that will be used by the contact center or you need to add your existing phone numbers.

Twilio	<p>Your tenant uses Twilio as the SIP provider unless your organization has existing telephony infrastructure.</p> <p>You can purchase phone numbers for voice and/or SMS through the IFS Service Center after you have verified your business with Twilio. See Twilio regulatory requirements.</p> <p>You can configure additional providers for SMS. See Configuring SMS providers for details.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note A SIP trunk provider such as Twilio connects VoIP calls to the PSTN phone lines. Each contact center has a separate trunk group. Where there is no existing telephony infrastructure then your tenant is configured to use Twilio as the SIP trunk provider.</p> </div> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note You can request the IFS Service Center to delete unwanted Twilio phone numbers. Deleting the phone number will automatically delete any configuration for this number in the Admin Portal.</p> </div>
Existing infrastructure	<p>If your tenant has existing telephony infrastructure then you can add the existing phone numbers that you want to use in the Admin Portal, on the Media Management > Custom Trunk Group DDI Ranges page. See Adding custom inbound numbers.</p> <p>You can also configure additional providers for SMS.</p>

Adding custom inbound numbers

When the tenant has its own telephony infrastructure or uses a different SIP trunk provider then you need to record the details of the existing voice and/or SMS numbers provided by that trunk group. These will be phone numbers from the tenant's PBX system or an alternative SIP provider.

To add existing voice and/or SMS numbers to a contact center:

1. In the Admin Portal, go to **Contact Center > Custom Trunk Group DDI Ranges** page.
2. Click **New**.
3. In the Custom Trunk Group Detail pane:
 - a. Select the trunk group.

- b. Select the type of phone number depending on what the phone number supports.
 - c. In **DDI Range Start**, enter the phone number — you always configure one phone number at a time.
 - d. In **Count**, enter 1 — you always configure one phone number at a time.
4. Click **Save**.
 5. The next step is to configure the inbound number for voice or for use with SMS. You can configure the same number for both voice and SMS. See:
 - [Configuring an inbound number](#)
 - [Creating SMS definitions](#)

Configuring voice settings for the contact center unit

This topic describes how to configure a contact center unit for voice calls. Further configuration is needed for individual inbound numbers.

Steps

1. In the Admin Portal, go to **Media Management > Advanced Settings**.
2. Select the contact center and then the contact center unit.

Note Fields that aren't relevant to voice calls can be left at their default settings until you are ready to configure email and chat. General settings for the contact center unit are described in [Configuring contact center units](#). Other settings for configuring chat and SMS are described separately.

3. If required, disable patch through for agents in Agent Desktop.

Field	Description
Allow Patch Through	By default, all agents can transfer a call to someone else. In Agent Desktop this lets the agent make an outbound call, connect the inbound call to that person, and then leave the call. Select No to disable this feature.

4. If using standard queue handling, configure Automated Call Answer — you should disable this for IVR queues:

Note For details of the standard queue progression for voice calls, see [Introduction to voice calls configuration in CE](#).

You can record custom messages on the **Contact Center > Voice Prompts** page.

Field	Description
Enable Automated Call Answer	<p>By default, Automated Call Answer is used for voice and chat.</p> <p>Select No if you not want Automated Call Answer. This means that calls to the contact center unit are not automatically answered. If required, you can configure a Call Answer Timeout as part of an agent's user account.</p> <div> <p>Note The network eventually disconnects unanswered calls. The cut-off is determined by local regulations.</p> </div>
Seconds Between Courtesy Message	When using Automated Call Answer, the number of seconds to wait before playing the next message to the caller.

5. **Important:** The **Disable Caller CLI Forward** field is selected by default. We recommend that you do not change its setting. See below for details.

Field	Description
Disable Caller ID Forward	<p>By default, the use of Caller ID (caller line identification) numbers when forwarding calls to agents is disabled.</p> <div> <p>Important We recommend that you do not to change this setting as you may prevent the dialing of outbound calls.</p> <ul style="list-style-type: none"> • Disable this setting for Cloud deployments where there isn't a direct connection to the private network (PBX), and you need to dial numbers on the public network. The virtual connection to the public network uses Twilio to provide the lines. This does not support Caller IDs. • You can enable this setting for phones where the number is dialed over the public network (PSDN). • This setting doesn't apply when using a soft phone (VoIP) embedded in the Chrome browser because there's no restriction on what is passed. </div>

6. The following fields provide additional options for how inbound calls are handled when added to the standard queue for any of the inbound numbers, and whether contact center agents can dial.

Field	Description
Outbound Call Ring Timeout	<p>The number of seconds to allow the outbound call to ring before disconnecting it.</p> <p>Note that the initial outbound call will retry the phone number if the line is busy for the time period configured here. The number is retried only when the outbound call is made using the CE Studio app. The number is <i>not</i> retried if the outbound call is made using the Agent Desktop toolbar.</p> <p>To disable this feature for the contact center, raise a request in IFS Service Center.</p> <p>Default: 30 seconds</p>
Disable Manual Dialling	<p>By default, agents in Agent Desktop can dial any numbers using the keypad. Select this option to restrict agents to selecting only from the numbers in the Agent Desktop phonebook.</p>
Enable Ability to Abort Outbound Calls	<p>By default, agents cannot disconnect a call before it reaches the timeout. Select this option if you want to let agents disconnect calls earlier.</p>

Field	Description
Answer Call and Play Ringtone	<p>Select this option if you want callers to always hear a ringtone. For example:</p> <ul style="list-style-type: none"> For calls from non-geographic landline numbers where the call is disconnected and redialed if it isn't answered within a time period. When the system answers the call, but you want the ringtone to play for a while longer (before the voice menu is played). <p>This is a UK ringtone.</p> <div> Important Calls are charged from the point you answer the call. Consider the regulatory impact of this. </div>
Record Patch Through Call	<p>By default, only the conversation with the caller is recorded but select this option to also record the part of the conversation where the call is transferred.</p>
Play Comfort Message	<div> Note Applies to standard queues. </div> <p>By default, no comfort message is played to callers waiting in the queue. Select this option to play a standard message.</p> <p>You can record a custom message on the Contact Center > Voice Prompts page.</p>

Field	Description
Allow Caller ID Black/White Listing	<p>Whether the contact center unit uses the:</p> <ul style="list-style-type: none"> • Blacklist for calls from blocked phone numbers. • Whitelist for calls to allow. For example, to allow calls from local area numbers when national dialing codes are blocked. <p>This applies to the phone numbers added to the Media Management > Voice Blacklist and Voice Whitelist options.</p> <div> <p>Note If you only allow whitelisted numbers then calls from non-whitelisted numbers will get an engaged tone.</p> </div>

7. If required, you can set the options for voice mail, such as the Voice Mail PIN.
8. Set up the phone number that customers will see for outbound calls:

Important You must enter a Caller ID number here. It is not possible to dial out using a number that is unknown to the system.

Field	Description
Default Outbound Caller ID	<p>The first inbound number that's set up in the system is automatically inserted here.</p> <p>You can change the number that's displayed. For example, you may need to present a non-geographic number instead of the actual number. If you change the number to one that is not one of your inbound numbers then you will need to request that the number is verified as belonging to you.</p> <div> <p>Note Contact IFS Services to request verification.</p> </div>

Field	Description
Abandoned Call Workflow Definition, Abandoned Call Threshold	See the next step for details of this field.
Use Agent Caller ID for Outbound Calls	If required, you can assign agents their own external inbound numbers, as part of their user account. Select this option if you want this direct number to be exposed.

9. Specify how you want to handle abandoned calls.

Field	Description
Abandoned Call Workflow Definition	<p>You can configure the standard call queue for an inbound number to create a work object for you. See also Create Work Object if Caller Rings Off.</p> <p>You will need to create a work definition for abandoned calls, and then select it there.</p> <p>See Configuring call backs.</p>
Abandoned Call Threshold	<p>By default, call back requests (also known as ring back or Auto Redial) are generated for all abandoned calls regardless of the length of the call. Use this option to set a minimum call length.</p> <p>For example, if you want call back requests to be generated for calls that end after 5 or more seconds then set the threshold to 5.</p>

10. Click **Save**.

Configuring an inbound number

You can configure an inbound number (DDI or DID) on the **Media Management > Voice** page. You define the type of number, such as IVR or Customer and whether a queue progression script is needed.

Steps

1. In the Admin Portal, go to **Media Management > Voice**.
2. Select the contact center and the contact center unit.

3. Click **New**.
4. Select the inbound number prefix and number from the list of numbers for the contact center.
5. Select the inbound number type. For general purposes the type is either **Customer** or **IVR**. Use the other types for special cases, for example, when the number is temporarily unavailable:

Inbound Number Type	Purpose
Busy	The number when dialed will return an engaged tone.
Play	Plays a recorded message (once only). To record the welcome message go to Contact Center > Voice Prompts .
Customer	Puts the call through to an agent if one is available or places the call on the standard queue. For details of what is meant by the standard queue, see Introduction to voice calls configuration in CE .
IVR	Preprocess the call or automate the call handling depending on the media script. This may include putting the call through to an agent if one is available or places the call on a custom IVR queue. Either the IVR queue defined for the inbound number or the default queue.
Queue Progression Script	Associates the inbound number with a media script that you already defined. See How to configure standalone media scripts for voice .
Retrieval	Used for customers (not agents) to retrieve voice mail.
Office Closed	Plays an office closed message. To record a message go to Contact Center > Voice Prompts .
Play [Repeat]	Plays the recorded message on a loop.
Divert+	Diverts the incoming call to a different number. Enter the number below in the Divert Number field.

6. Specify how this number will be used, and how calls to this number will be handled on the standard queue. Some of these settings will not apply if you are planning to create a custom IVR queue.

Field	Description
Mailbox	Leave this empty.
Inbound Number Name/Ref	The friendly name for this inbound number, for use in reporting.
Quota	<p>The maximum number of concurrent calls to this number. For example, if the tenant has 100 agent licenses, then set the quota to 50 to reserve 50 concurrent calls for other numbers.</p> <div> <p>Note Leaving Quota empty sets the maximum number to 100% of the agent licenses.</p> </div>
Priority	<p>The priority to give to calls on this number when added to the queue. Priority is a value in the range 0–10 where:</p> <ul style="list-style-type: none"> • 9 is the highest priority • 5 is the default priority • 2 is the lowest priority <p>In the standard queue, for example, calls to a number with a priority of 5 will go ahead of calls to a number with the priority of 2.</p>
Divert Number	<p>There are two uses for the divert number:</p> <ul style="list-style-type: none"> • Where the Inbound Number Type is Divert+ then this is the number to divert to. • Where the Inbound Number Type is Customer then this is the fallback number as described below. You also need to select Use Divert Number as Fallback.

Field	Description
Use Divert Number as Fallback	Select this option to use the above fallback number when there's an incoming call to this number but there isn't a suitably skilled agent available. Instead of putting the call back on the queue, divert the call.
Enable Pre Queue Announcement Message	<p>Note Does not apply to the IVR inbound number type.</p> <p>This is an additional in-built message that can be played to the caller. You can record a custom message on the Contact Center > Voice Prompts page.</p>
Use Source Unit Details for Internal Calls	When calls are diverted to this inbound number, or agents transfer the call to this number, then log the call to the original contact center unit.
Create Work Object if Caller Rings Off	<p>Select this option to automatically create a standard work object whenever a caller abandons their call. You require a workflow definition for this. See Configuring call backs.</p> <p>See Abandoned Call WD if you require a custom work object.</p>
Disable auto answer for IVR calls	<p>Note Applies to the IVR number type.</p> <p>You should always select this option for inbound numbers where Inbound Number Type is set to IVR. It disables the standard queue processing and passes the call straight to the IVR queue.</p>

Field	Description
Allow Black/White Listing	<p>By default, inbound calls to this number are not checked against the contact center's blacklist and/or whitelist.</p> <p>Select an option to enable checking. For example choosing Blacklist and Whitelist allows calls from both blacklisted and whitelisted numbers. The numbers must be entered on the Media Management > Voice Blacklist or Voice Whitelist pages.</p>
Disabled Call Recording	When the contact center uses call recording, then calls to all inbound numbers are recorded. Use this to exclude this number from call recording.
Voicemail when Queuing, Voicemail when Close	See Configuring voicemail .
Disabled	See Disabling inbound numbers .
Greeting	When an agent accepts a call, they will immediately hear the caller and see the CE Studio app for voice calls. This field provides the agent with a welcome message to use while reviewing what's shown in Agent Desktop.
Skillset	Select the skillset required to handle calls to this number. Optional. For details of skills and skillsets, see Skills and skills-based routing .

- For inbound numbers that are configured as the **IVR** number type, then you can configure where the error logs generated by the running IVR script are sent.

Field	Description
Script Trace Emails, Max Trace Level	<p>You can configure the media definition to send an email with the debugging information. The trace level sets the event that triggers email sending. For example, during development you might want to receive an email every time the script runs but later change the script trace level to only send an email when an error occurs.</p> <p>You can send the log to one or more email addresses. Enter the email addresses as a semi colon-separated list.</p> <p>Note: The <i>From:</i> email address for script emails is either the email address given as the Main Contact Email for the contact center or, if that is empty, the Support Email for the contact center. If neither of these are set up, then it is sent from the system mailbox for the tenant.</p>

8. Click **Save**.

For inbound numbers that are configured as the **IVR** number type, the next step could be to configure queue progression for all your inbound numbers for the contact center unit (the default queue progression) or just for this inbound number. See [Configuring voice \(IVR\) queue progression](#).

Disabling inbound numbers

Follow these steps to quickly block calls to an inbound number (DDI or DID) while preserving all existing settings.

Steps

1. In the Admin Portal, go to **Media Management > Voice**.
2. Locate the inbound number.
3. On the Inbound Number Details pane, set the **Disabled** field to **Yes**.

You could also:

- Change the inbound number type. For details, see [Configuring an inbound number](#).
- Disable all the inbound numbers for a contact center unit. Go to **Voice Service > Enable/Disable Voice**.

Configuring voice (IVR) queue progression

For inbound numbers of type IVR, you can script how inbound calls are managed by the IVR system. You can automate simpler calls and leave agents to handle the more complex calls. For example, media scripts can verify the identity of the caller, offer a menu, gather data from the caller, update records in Entity tables, and where necessary route the call to the best skilled agent. You can also extend the functionality further through custom JavaScript.

For example:

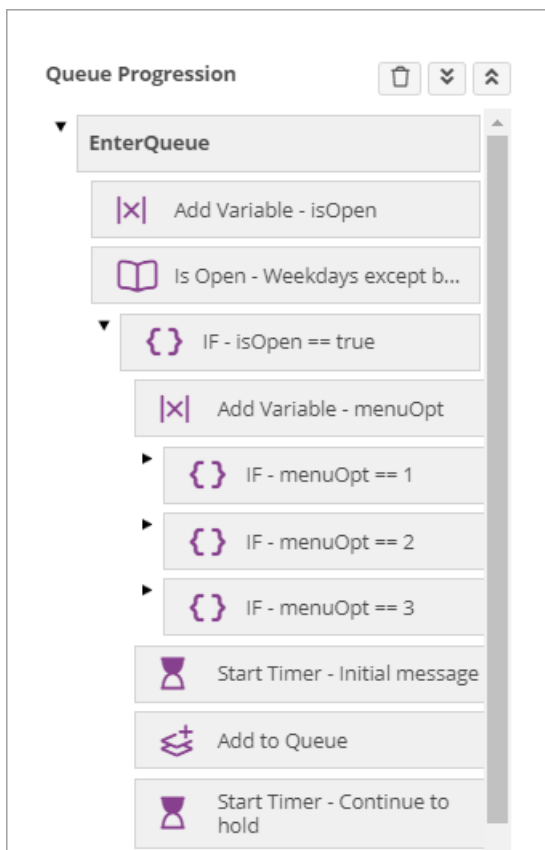


Figure: Example of a voice queue

There are two ways of configuring queue progression. You can:

- Set up a default media script that is used by all the inbound numbers for the contact center unit that do not have their own script.
- Set up a media script that is used by specific inbound numbers.

For details, see [How to configure media scripts for voice](#).

How to configure media scripts for voice

There are two ways of configuring a media script for managing the IVR system:

- Set up a default media script that is used by all the inbound numbers for the contact center unit that do not have their own script.
- Set up a media script that is used by specific inbound numbers.

Set up a default media script

To configure a default media script for all inbound numbers that do not have their own script:

1. In the Admin Portal, go to **Media Management > Voice**.
2. In the Inbound Number List, select the contact center and contact center unit.
3. Click **Default Queue Progression** — the media script applies to all inbound numbers for the contact center unit that do not have their own script.
4. Click **New** to go to the Media Script Editor.
5. Set up the script by dragging options into the Enter Queue node of the queue. For a call that will eventually be answered by an agent, you must add the **Add to Queue** action. For further details, see:
 - [Configuring media scripts](#)
 - [IVR queue progression events](#)
 - [Voice system variables](#)
6. Make the media script live:
 - a. Enter a descriptive version name.
 - b. Click **Make Live**.

You can also do this later on the Voice Queue Progression Version Detail page.

- c. Click **Save** or **Save & Generate**. Use **Save & Generate** when you are ready to go live—this will check the script for errors and then generate the script.

Set up a script for specific inbound numbers

Start by creating a new script for one or more of your inbound numbers:

1. In the Admin Portal, go to **Media Management > Media Queue Progression**.
2. Click **New**.
3. Enter the details of the media script: contact center, contact center unit and name.
4. Click **Save**.

You can now configure the media script.

5. Select the script from the Media Queue Progression List and then click **Queue Progression**:

- a. Click **New** to create the first version of the script.
 - b. Drag the required options into the Enter Queue node of the Queue Progression pane. For a call that will eventually be answered by an agent, you must add the **Add to Queue** option.
For further details, see:
 - [Configuring media scripts](#)
 - [IVR queue progression events](#)
 - [Voice system variables](#)
 - c. Enter a descriptive name for the script and save it.
6. When you are ready to test the script, make it live:
- a. Click **Make Live**.
 - b. Click **Save & Generate**. Use **Save & Generate** when you are ready to go live—this will check the script for errors and then generate the script.
7. You now need to associate the media script with the inbound number(s) that will use it:
- a. Go to **Media Management > Voice**.
 - b. Select the inbound number.
 - c. In the **Queue Progression** field, select the script that you want to use.

Editing a media script for inbound numbers

There are two ways of editing the media script for an inbound number - the changes you make will effect all inbound numbers that use the same media script:

- On the **Media Management > Voice** page, select the inbound number and then click **Queue Progression**. Make your changes.
- On the **Media Management > Media Queue Progression** page, select the queue progression script and click **Queue Progression**.

IVR queue progression events

The following events can occur during an inbound or outbound voice call. Each event is represented as a node in the Media Script Editor. You attach actions to the event to control what happens in response to each event type.

Event type	Description
Enter Queue	<p>For inbound calls only, add the actions to:</p> <ol style="list-style-type: none"> 1. Preprocess the call: action to take based on open hours, prompt caller to choose from an IVR menu, request data from the caller, and so on. 2. Add the call to queue. 3. Add actions to handle the call while it is held in the queue. <p>Note: The system will automatically check that the call is still active.</p>
Call Ended	<p>For inbound calls only, occurs when the phone call is ended by the caller while the call is in the queue. You can add actions here to create a work object for custom call backs, for example to request additional information from the caller.</p>
Digit Detected	<p>Occurs when the caller presses a number on their keypad at some unspecified point during the call.</p> <p>For example, you can give callers the option to press a key at any point while on hold to request a call back rather than continue to wait.</p>
Agent Available	<p>For inbound calls only, occurs when the agent accepts the call and before the IVR exits.</p> <p>Typically, you need the IVR to terminate as quickly as possible because during this period the agent is waiting to receive the call. However, you could use this event to perform quick actions (maybe taking a few milliseconds) such as updating database records.</p>
Leave Queue	<p>For inbound calls only, occurs when the IVR is exiting because the agent has taken the call or the call is terminated.</p> <p>You can use this event to perform any final cleanup. For example, if the script wrote any temporary records about calls in the queue then you could clear these here. However, you need the IVR to terminate as quickly as possible.</p>

Event type	Description
Call Failed	For outbound calls only, occurs when (for example) the callee disconnects the call after answering.
Call Ringing	For outbound calls only.
Call Answered	For outbound calls only, occurs when the callee answers the call.
Ring Timeout	For outbound calls only, occurs when the callee doesn't answer the call and the ring timeout on the LaunchScript work action times out.

The Timers and Custom Functions nodes are placeholders for functions that run when timers expire and custom JavaScript functions.

Voice system variables

You can use the following variables when developing media scripts for inbound voice calls. Enclose these in % symbols. For example, %sys_DDI%.

System Variable	Notes	Condition	Output
sys_CLI	Caller ID		
sys_DDI	Inbound number (DDI or DID)		
sys_StartDate	Format example: Fri Aug 12 16:27:16 UTC +0100 2016		
sys_DayOfTheWeek	Shows the day of the week as a number 0-6	Mon	1
" "		Tue	2
" "		Wed	3
" "		Thu	4
" "		Fri	5
" "		Sat	6
" "		Sun	0

System Variable	Notes	Condition	Output
sys_TimeOfDay	Format example: 16:27:16 UTC+0100		
sys_LastQueryResult	Applies when the Search Data Table action is used	Search returns no records	NO RECORDS
" "		Search returns records	RECORDS FOUND
sys_LastInvokeProviderActionResult	See Provider Action		

Configuring call backs

You can configure IFS Customer Engagement to create a call back or ring back request (work object) when a caller ends the call while waiting in the queue. The work object is created if the caller stays on the call for the minimum number of seconds and didn't withhold their Caller ID and has all the information needed by an agent to make the call.

IFS Customer Engagement can automatically generate call backs for you based on the [workflow](#) you define.

You can define:

- Call backs containing one or more of the standard fields (work elements) listed in [List of work element names for standard call backs](#).
- Or, call backs containing custom fields.

There is a CE Studio template for call backs (IFS CE Callback Template). The template is configured for a workflow definition that uses the [standard element names](#).

Note You can download a demo callback workflow definition from the Knowledge Base: [Download call backs example](#).

For full details, see [Configuring custom workflows](#).

Configuring a contact center unit for call backs

Once you have created a workflow for call backs, you can configure the contact center unit.

Configuring standard call backs

Note You don't need to set these options if you are using a media script to create the work objects.

In the Admin Portal, in **Media Management > Advanced Settings** there are two options to configure for the contact center unit. They are:

- **Abandoned Call Workflow:** the workflow definition that will be used to create the work object for the call back.
- **Abandoned Call Threshold:** the threshold in seconds after which work objects will be created.

In **Media Management > Voice**, for each inbound number that requires call backs, select the **Create Work Object if Caller Rings off** option.

Configuring non-standard call backs

For call backs containing non-standard work elements then you need to use the media script to generate the work object. See [Create Work Object](#).

Testing the call back definition

To test the call back definition:

1. Phone the inbound number.
2. Wait for the configured number of seconds and then hang up once you've reached the configured threshold as set in the Admin Portal, on the **Media Management > Advanced Settings** page for the contact center unit.
3. The work object will be created (after the timer expires if you created a timed event).

In Agent Desktop the work object will be presented. You need a CE Studio app to open the work object but you don't need one to see the activation appear on the toolbar.

To see the work object in the Admin Portal, go to **Workflow Management > Work Objects**.

Disabling call backs

The workflow definition is live once you save it, and the contact center is configured to use it. There are no versions.

If there is an issue with the workflow definition, you can disable it. Disabling it will:

- Prevent work objects being created from the workflow definition
- Remove all work objects from the queue belonging to this workflow definition

To disable a definition, in the Admin Portal, go to the workflow definition and click **More > Disable**.

Configuring automated outbound calls

You can configure CE to make automated outbound calls where the call data is determined by a work definition. Work objects are created from the work definition for each automated call. For an automated call, you need to record one or more voice prompts.

In summary, these are the steps to configure this type of voice call:

1. In the Admin Portal, configure a work definition that defines the details of the call and the necessary logic to initiate, process and complete the call. The work definition needs to use the LaunchScript action, with the **Launch** parameter set to **Media Script**. This action will invoke the queue progression script that makes the actual call.

For details of how to create work definitions, see [Configuring custom workflows](#). An example of this type of workflow definition is described in [Workflows for automated outbound calls](#).

2. Upload the message(s) required by the script on the **Contact Center > Voice Prompts** page.

See [Play Message](#) for details.

3. Create a media script to handle the call after it is dialed.

For details of how to create this type of media script, see [How to configure standalone media scripts for voice](#).

4. Assign the media script to one of the inbound numbers:
 - a. Go to the **Media Management > Voice** page.
 - b. From the **Inbound Number List** on the left, select an inbound number.
 - c. Enter the details of the selected number. You must select **Queue Progression Script** from the **Inbound Number Type** list.
 - d. Select the required queue progression script.
 - e. Save your changes.
5. Configure the creation of work objects from the work definition. There are several ways of doing this, for example:
 - Use a CE Studio app (that you create) to let agents working in Agent Desktop schedule automated calls.
 - Use the Tenant API to create work objects from data in a third-party system.
 - Import the calls using the **Workflow Management > Import Work Objects** page. You save the call details in a csv file.

How to configure standalone media scripts for voice

You can configure a media script that is independent of the tenant's inbound numbers. You can then assign the media script to one or more inbound numbers that are configured as type Queue Progression Script.

1. In the Admin Portal, go to **Media Management > Media Queue Progression**.

2. Click **New**.
3. Select the contact center unit and then enter the name of the script.

You can only create this type of queue progression script for contact center units.

4. Click **Queue Progression** to open the Media Script Editor.
5. Click **New**.
6. Set up the media script by dragging options into the EnterQueue node of the queue. For a call that will eventually be answered by an agent, you must add the **Add to Queue** action. For further details, see:
 - [Configuring media scripts](#)
 - [IVR queue progression events](#)
 - [Voice system variables](#)

Note For details of how to pass this type of call through to an agent, see [How to pass an automated outbound call to an agent](#).

7. Make the media script live:
 - a. Enter a descriptive version name.
 - b. Click **Make Live**.

You can also do this later on the Media Queue Progression Version page.
 - c. Click **Save** or **Save & Generate**. Use **Save & Generate** when you are ready to go live—this will check the script for errors and then generate the script.

How to pass an automated outbound call to an agent

You can configure the media script to pass the recipient of the outbound call to an agent. This requires a custom function with the JavaScript given below.

The example JavaScript makes an internal call to a skillset (*Testing* in the example below). If this is successful then the call to the agent is connected to the automatically-dialled call:

```
host.SwitchConnect(firstCallDevice, secondCallDevice, SWI_OPT_DUP);
```

If this is unsuccessful then the call (*secondCallDevice*) is disconnected:

```
HangupCall(0, ERR_LIN_RES);
```

If the `SwitchConnect` command is successful, the script waits until one of the calls disconnects and then disconnects the other call.

This is the full example:

```
var firstCallDevice = host.GetCurrentLineDevice();
var err = host.DialOut('ss:' + 'Testing', sys_CLi, true);
if (err === ERR_GEN_SUC)
```

```

{
    var secondCallDevice = host.GetCurrentLineDevice();
    err = host.SwitchConnect(firstCallDevice, secondCallDevice,
    SWI_OPT_DUP|SWI_OPT_APP);
    if (err != ERR_GEN_SUC)
    {
        host.HangupEx(false, ERR_LIN_RES);
    }
    else
    {
        // Wait for one of the calls to end and then disconnect the
other
        while (sys_ExitIVR != 1)
        {
            // Check the first call
            err = host.SetCurrentLineDevice(firstCallDevice);
            err = host.CheckLine();
            if ((err != ERR_GEN_SUC) && (err != ERR_LIN_AAO) && (err !
== ERR_LIN_CSO))
            {
                err = host.SetCurrentLineDevice(secondCallDevice);
                host.HangupEx(false, ERR_LIN_HNG);
                break;
            }

            // Check the second call
            err = host.SetCurrentLineDevice(secondCallDevice);
            err = host.CheckLine();
            if ((err != ERR_GEN_SUC) && (err != ERR_LIN_AAO) && (err !
== ERR_LIN_CSO))
            {
                err = host.SetCurrentLineDevice(firstCallDevice);
                host.HangupEx(false, ERR_LIN_HNG);
                break;
            }

            //Wait for an event or timeout (ms) to minimize CPU
            host.WaitForEvent(5000);
        }
    }
}

```

Configuring voicemail

You can configure a contact center unit to let callers leave a voicemail, and then email the voicemail as an email attachment.

Voice-mails are initially reported in the Admin Portal, on the **Standard Reports > Unretrieved Voice Mail** page, and then removed from this page once emailed.

Enabling voicemail

To enable voicemail for the contact center unit:

1. In the Admin Portal, go to the **Media Management > Advanced Settings** page.
2. In **Contact Center Unit Uses Voice Mail**, select Yes.
3. Specify where the voicemails are sent in the field **Email Address(es) to Email Voice Main Notification**.

You can enter multiple email addresses separated with a semi-colon(;).

Configuring inbound numbers to accept voicemail

To configure the inbound numbers to let callers leave voicemail:

1. In the Admin Portal, go to **Media Management > Voice** page.
2. Select the inbound number that requires voice mail.
3. In **Inbound Number Detail**, choose when callers can leave voicemail using the following options:
 - **Voicemail when Queuing**
 - **Voicemail when Closed**
4. For IVR numbers, edit the media script for the inbound number to include the *Record Voicemail* option.

You can upload custom recorded messages to play before and after callers leave voicemails.

You do this on the **Contact Center > Voice Prompts** page.

Uploading queue and hold music

You can upload custom music to play music while callers are waiting in the queue or on hold.

1. In the Admin Portal, go to the **Contact Center > Voice Prompt** page.
2. Click **New**.
3. Set the prompt type to **Queue Music**.
4. To upload the default queue music, **do not** select a language.

If you want to use this music as the default hold music then do not select a language. This will result in the file upload being correctly named `HoldMusic.wav`.

5. Import the file.

To use the queue music:

- In the voice script, in the Play Message option, select **Custom Prompt** and then `QueueMusic.wav` (Default).
- If you selected a language when setting up the wav file, such as English, then in the script, select `QueueMusic_en-gb.wav`.

Masking phone numbers

By default, the Admin Portal saves the original phone number as part of the call details, and this could be used to identify the caller or the geographic location from which a call originated. Any user with access to the standard or custom reports in the Admin Portal can then view those phone numbers. This applies to both inbound and outbound calls.

Configuring phone number masking

You can mask the phone numbers that are saved, for example change +447888666555 to +44XXXXXXXXXX using a Translate call routing rule. The rule changes the phone number by applying a *mask*, and it is the masked phone number that is saved in the call details and shown in Agent Desktop. It is impossible to retrieve the original number from the masked phone number. You can configure multiple translate rules.

Note Do not configure phone number masks for outbound calls when using Twilio as the provider because Twilio will reject the calls as it does not recognize the masked caller ID.

To configure masking for inbound calls, set up a Translate call routing rule on the **Contact Center > Call Routing Rules** page. See [Adding a call routing rule](#) for details.

Retrieving the original phone numbers for reporting

You can retrieve the original phone numbers for use in reports by configuring the Translate call routing rule(s) to save the original phone number in an encrypted format. When configuring the rule, select the **Store Unmasked CLI** option.

Note Where there are multiple translate rules then you need to select this option on the first translate rule that is applied to the phone number.

Authorizing users to view unmasked phone numbers in reporting

You can restrict who can see the unencrypted phone numbers in both standard and custom reports. Authorized users will see unencrypted phone numbers and unauthorized users will see the masked phone numbers in a Restricted Caller Id column. Authorized users will also be able to schedule custom reports to run that include unmasked phone numbers.

You can authorize a user to view the unmasked phone numbers provided that you have the Studio Admin role:

1. Go to the **User Management > Users** page.
2. In the user details, select the option **Allow to View Unmasked CLI**.

This means that the user will see unmasked phone numbers in all the standard reports.

Note Once the system is operational, we recommend that you review who has the Studio Admin role as anyone with this role can give access to other users to view unmasked phone numbers.

Generating custom reports to show unmasked phone numbers

There are two ways of running a custom report created in Report Designer:

Previewing a custom report	Shows masked or unmasked phone numbers depending on whether the user is authorized to view unmasked phone numbers.
Scheduled custom report	<p>Depends on whether the user who schedules the report:</p> <ul style="list-style-type: none"> Is authorized to view unmasked phone numbers. How they choose to run the scheduled report. <p>If the user is authorized then they can show unmasked phone numbers in scheduled reports by selecting SELF from the Run As list. To show masked phone numbers, they leave Run As empty.</p> <p>If the user is not authorized then unmasked phone numbers are never shown regardless of how they set Run As.</p>

Text to speech API

For media scripts for voice calls, you can use text to speech as an alternative to pre-recorded messages. This lets you combine plain text with data. It is suitable for any interactions between the media script and the caller.

Note IFS Customer Engagement uses Microsoft Azure Text to Speech. See <https://learn.microsoft.com/en-us/azure/ai-services/speech-service/speech-synthesis-markup>.

To configure a media script in the Media Script Editor for text to speech, use the JavaScript option and call the `PlayAddText()` function. For example:

```
host.PlayAddText('Thank you for calling Ventechi today.',
  'config:Female', 0, 0);
host.Play();
```

You must supply the text in the language that you want to play. The text can be spoken by voices in a range of accents but the API cannot translate it to another language.

The PlayAddText() function

Syntax:

```
host.PlayAddText('<text>', 'config:<voice name>', <flags>, <options>);
```

Where:

Parameter	Description
text	<p>Is the text to convert to speech, in the required language. You can use a combination of plain text and variables.</p> <p>Note Alternatively, you can use a SSML-configured string.</p>
voice_name	<p>The voice to use for the text to speech. Enter the prefix <code>config:</code> followed by the name of the audio setting to use as defined on the Media Management > Audio Settings page. The language set in the audio setting must match the language of the text in the <i>text</i> parameter.</p> <p>Leave it empty if there is only one audio setting.</p> <p>Note Not required if using a SSML-configured string.</p>
flags	Enter 0.
options	<p>The full list of options available to any generated IVR script (as seen in the debug logs). The most useful options for text to speech are:</p> <ul style="list-style-type: none"> • 0 - Play full message • 1 - Stop playing the message if a DTMF digit detected

Playing text in different languages

To play a text in a different language:

1. In the Admin Portal, add the required language on the **Contact Center > Manage Languages** page.
2. On the **Media Management > Audio Settings** page, select the correct language for the voice.

3. In the JavaScript option, in the `PlayAddText()` function, make sure that the *text* argument is in the correct language for the voice.

Using SSML markup

Assign the SSML markup to a variable, using the Add Variable option:

```
<speaking version="1.0" xmlns="http://www.w3.org/2001/10/synthesis"
  xmlns:mstts="https://www.w3.org/2001/mstts" xml:lang="en-US">
  <voice name="en-US-GuyNeural">How can I help you <emphasis
    level="moderate">today</emphasis>. </voice></speaking>
```

Then call the `PlayAddText()` function as shown below, where *ssml* is a variable containing the SSML markup:

```
host.PlayAddText(ssml,"", 0, 0);
host.Play();
```

7

SMS configuration

As standard, you use Twilio as the SMS provider, but you can also use other third-party vendors (*custom providers*).

Configuration for Twilio phone numbers

For each Twilio phone number you plan to use to send and receive SMS, you need to configure an SMS definition. See [Creating SMS definitions](#) for details.

Note The trunk group of the phone number must be configured with Twilio as the SMS provider. See [Configuring trunk groups for SMS](#) for details.

Configuration for other third-party vendors

For all other providers, you need to follow the steps in [Configuring SMS providers](#).

Note Some example custom SMS providers are included in the release. These are examples only and you must not use them in a production environment.

Configuring SMS providers

You can use multiple SMS providers to send and receive SMS messages. Twilio is the standard provider for both voice and SMS.

Twilio	<p>Twilio is already configured as an SMS provider. This is a predefined provider that all contact centers can use.</p> <p>Note To view the Twilio provider, go to the Contact Centers > SMS Provider page and then deselect the contact center.</p> <p>The following steps do not apply if you use Twilio as the <i>only</i> SMS provider.</p>
Other third-party vendors	<p>For any other third-party vendors that you use (called <i>custom providers</i>), you must:</p> <ol style="list-style-type: none"> 1. Create a custom trunk group. 2. Add the SMS numbers to the custom trunk group. 3. Configure an SMS provider definition. 4. Configure an SMS provider from the definition. <p>See below for details.</p>

Note The following steps do not apply if you use Twilio as the *only* SMS provider.

Step 1 - Create a custom trunk group

For details of how to create a trunk group for a custom SMS provider, see [Configuring trunk groups for SMS](#).

Step 2 - Add a definition for a custom SMS provider

Note Some example custom SMS providers are included. These are examples only and you must not use them in a production environment.

To add a definition for a custom SMS provider:

1. Go to the **Contact Center > SMS Provider Definition** page.
2. Enter the details for the provider definition:

Field	Description
Name	Enter a name for the provider definition.

Field	Description
Javascript	<p>If required, edit the JavaScript that is used by IFS Customer Engagement to convert inbound messages from the message format of the third-party vendor into the CE message format, and vice versa for outbound messages.</p> <p>Note If there is an error in the JavaScript then you will see an error message when you save the SMS provider created from this provider definition.</p>
Pull Message Interval	The frequency with which the service checks for new messages (in seconds).
Parameters	Click + to add one or more parameters. Use this to define the parameters required in the script, such as URL, login, password and so on. You enter the values later when configuring providers from this definition.

3. Save the SMS provider definition. You can add further SMS provider definitions for third-party vendors if required.
4. The next step is to configure the actual SMS provider.

Step 3 - Configure a custom SMS provider

Note Some example custom SMS providers are included. These are examples only and you must not use them in a production environment.

The next step is to configure an SMS provider. This can be:

- A provider for a third-party vendor using the definition created in step 1.
- An additional Twilio provider, for example, if a contact center requires a different Twilio provider.

You can configure multiple SMS providers from the same provider definition.

As part of this you specify whether the provider is used by all the contact centers, by one contact center or just by a single contact center unit. You may need to do this if, for example, EU and US-based offices require different URLs.

To configure the SMS provider:

1. Go to the **Contact Center > SMS Provider** page.
2. Enter the provider details:

Field	Description
Contact Center	To configure: <ul style="list-style-type: none"> The same SMS provider for all contact centers, leave this field blank. A separate SMS provider for each contact center, then select the contact center from the list.
Contact Center Unit	To configure: <ul style="list-style-type: none"> The same SMS provider for all units belonging to the contact centers, leave this field blank. A separate SMS provider for each unit, then select the contact center unit from the list.
Name	Enter an informative name to identify this SMS provider.
Type	The provider type: <ul style="list-style-type: none"> Twilio: the default provider for all tenants that use telephony. Custom: for other third-party vendors.
Disable	Select this option if you do not want to immediately use the SMS provider. <div> <p>Note You can disable this SMS provider at any time by selecting this option and saving the provider. This will effectively disable any SMS number that uses this provider.</p> </div>

3. For custom providers enter the following details:

Field	Description
Script Trace Emails	When the JavaScript in the provider definition executes logs are collected and any errors captured. To receive a debug email with this information, enter one or more email addresses, separated with semi-colons.
Max Trace Level	Select the amount of detail required in the debug email.
Alternate Provider	Optionally, select an alternative SMS provider. If the SMS provider fails, then the alternate provider is used to send and receive SMS messages.
Custom Provider	Select the SMS provider definition.

Field	Description
Parameters	Enter the required value(s). The parameters depend on the SMS provider definition selected from the Custom Provider list.

4. Save the new provider.

Step 4 - Assign the SMS provider to the custom trunk group

To assign the SMS provider to a custom trunk group:

1. Go to the **Voice Service > Trunk Groups** page.
2. Select the custom trunk group.
3. In **SMS provider**, select the custom SMS provider.
4. Save the custom trunk group.

If you create an additional Twilio provider then you also need to assign the provider to the appropriate trunk group. See [Configuring trunk groups for SMS](#) for details.

Step 5 - Add the SMS numbers to the custom trunk group

You need to add each SMS number that you intend to use for SMS messages to the custom trunk group:

1. Go to the **Contact Center > Custom Trunk Group DDI Ranges** page.
2. Enter each SMS number as explained in [Adding custom inbound numbers](#).

Step 6 - Create the SMS definition

After completing the above steps, you are ready to start creating queue progression scripts for handling SMS messages. See [Creating SMS definitions](#) for further details.

Note You may be a delay before the SMS number appears in the SMS Number list of the social media definition page.

Configuring trunk groups for SMS

Before you can use phone numbers on a Twilio or custom trunk group for SMS you need to update the trunk group to use one of your configured SMS providers.

Finding the trunk group for Twilio phone numbers

If you do not know which trunk group a Twilio phone number is on then follow these steps:

1. In the Admin Portal, go to the **Voice Service > Inbound Number Ranges** page.

2. Select the phone number that you want to configure for SMS.

The name of the trunk group is shown in the Inbound Number Range Detail pane.

Update the Twilio trunk group with an SMS provider

To update the trunk group with an SMS provider:

1. In the Admin Portal, go to the **Voice Service > Trunk Groups** page.
2. Select the trunk group.
3. In the trunk group detail area, select the provider from the **SMS Provider** list.

You can select Twilio as the provider or a custom provider if one is configured.

4. Save the trunk group.

Creating a custom trunk group for SMS

To create a custom trunk group for SMS that is not provided by Twilio:

1. In the Admin Portal, go to the **Voice Service > Trunk Groups** page.
2. Select the contact center that will use the trunk group.
3. Enter a unique name for the trunk group, such as `BulkSMS_EU`.
4. Leave the other fields empty.
5. Click **Save**.

There is a short delay while the custom trunk group is created for you.

6. Update the custom trunk group with an SMS provider as described above.

Creating SMS definitions

You can monitor and respond to SMS messages. This requires a social media definition for SMS. Once you have a social media (SMS) definition, you can then configure how inbound SMS messages are handled. You do this by creating a queue progression script.

To create an SMS definition:

1. In the Admin Portal go to **Media Management > Social Media**.
2. In the Social Media Detail area, select the contact center and the contact center unit.
3. Enter the details of the social media definition:

Field	Description
Name	The internal name of the SMS definition.

Field	Description
Type	Select the SMS type as social media definitions vary depending on the digital channel.
Disabled	The service will not monitor the account for new messages when the definition is disabled. For details, see Disabling a social media definition .
Description	Any notes that you want to enter, for internal use.
SMS Number	Select the SMS number that you want to use for inbound SMS messages.
Flood protection timeout (in hours)	Helps to protect the SMS number from an SMS flooding attack by setting a timeout period during which an identical message can be sent once only.
Webhook URL	This is inserted automatically. If it is empty then the configuration of the trunk group or SMS provider is incomplete. See troubleshooting below for details.

Field	Description
Priority Adjustment	<p>Priority is determined by the default priority for the activation type as set for the contact center unit and, optionally, by the relative priority set for the media definition. If used, the relative priority adjusts the default priority up or down.</p> <div> <p>Note To check the default priorities for the contact center unit, go to Contact Center Unit > Access to Contact Center.</p> </div> <p>If you want to:</p> <ul style="list-style-type: none"> Queue activations according to an adjusted (relative) priority then select an option from Lowest to Highest. Queue activations using the default priority that's set for the contact center unit then select No Change. <p>The relative priorities are:</p> <ul style="list-style-type: none"> High, Highest: raises the priority by adding 1 or 2 points respectively to the default priority. Low, Lowest: lowers the priority by subtracting 1 or 2 points respectively from the default priority.
Skillset	<p>Optionally, select the skillset required by agents to handle SMS messages.</p> <p>See Skills and skills-based routing.</p>
Coverage Plan	<p>Select the open hours that will apply to the SMS definition. Out of hours, the service will not start a session.</p> <p>The contact center or self-service portal is always open if you do not select a coverage plan.</p>

Field	Description
Script Trace Level, Script Email List	<p>You can configure the media definition to send an email with the debugging information. The trace level sets the event that triggers email sending. For example, during development you might want to receive an email every time the script runs but later change the script trace level to only send an email when an error occurs.</p> <p>You can send the log to one or more email addresses. Enter the email addresses as a semi colon-separated list.</p> <p>Note: The <i>From:</i> email address for script emails is either the email address given as the Main Contact Email for the contact center or, if that is empty, the Support Email for the contact center. If neither of these are set up, then it is sent from the system mailbox for the tenant.</p>

4. Click **Save**.
5. The next step is to configure a queue progression script to control how the system handles inbound messages sent to the SMS number. See [Configuring media scripts](#).
6. For contact centers only, on the **Contact Center Unit > Access to Contact Center** page, you can set:
 - The number of social media messages to hold in memory ready for agents to become available: the **Social Media Queue Quota** field. This covers all the social media types including SMS.
 - The default priority of social media messages including SMS – see [Setting default activation priorities](#).

Troubleshooting SMS definitions using Twilio providers

You may see the following error if the configuration of your Twilio provider is incomplete.

- SMS Provider is not configured to this number: The SMS number is assigned to a Twilio trunk group but the trunk group does not have an SMS provider associated with it. See [Configuring trunk groups for SMS](#) for details.

Troubleshooting SMS definitions using custom SMS providers

You may see the following errors if the configuration of your custom SMS provider is incomplete.

- SMS Provider is not configured to this number: The SMS number is assigned to a custom trunk group but the trunk group is not assigned to an SMS provider. You assign the trunk group to an SMS provider on the **Voice Service > Trunk Groups** page.
- Error: System.InvalidOperationException: <function name>: There is an issue with the JavaScript in the SMS provider definition. See [Configuring SMS providers](#).

Scripting queue progression for SMS

For details of how to configure a script for handling inbound SMS messages, see [Scripting queue progression for social media](#).

Important The information in this section applies to fully-featured tenants only.

Legacy SMS configuration

In 6.4 and later, the **Media Management > SMS** page shows the SMS phone numbers that were configured in earlier releases. You cannot add or configure SMS phone on this page in 6.4 and later.

8

Email configuration

How to configure a contact center unit for email.

Note The information in this section does not apply to self-service tenants.

In IFS Customer Engagement, new tenants have one system mailbox for sending system emails, such as automatically-generated reports. If required, you can use this for sending outbound emails. You can add as many additional email addresses as required.

In the Admin Portal, you need to:

- Add the mailboxes. You configure one mailbox per email address on the **Contact Center > Mailboxes** page. These are either shared or customer mailboxes. See [Setting up shared mailboxes](#) for details.
- Configure the email addresses on the **Media Management > Email** page. A system email address is preconfigured.
- Configure media scripts for inbound email to be handled through automation or by agents.
- Optional. For end-to-end testing of the email configuration, create a basic CE Studio app for email or use the IFS CE Email Template. On a new tenant, this template is already preconfigured as the default app for email.

Setting up shared mailboxes

You begin by adding the mailboxes. Shared mailboxes are tenant-specific mailboxes created on IFS Cloud.

Steps

1. In the Admin Portal, go to **Contact Center > Mailboxes**.
2. Click **New**.

3. Select the contact center.
4. Enter the following details for each mailbox.

Field	Description
Mailbox Type	Select: <ul style="list-style-type: none"> Shared if using the default mailbox created for the tenant on IFS Cloud.
Mailbox	<p>Mailbox names are in this format:</p> <p><i>username-ce-tenant-number-environment@ifscloud.onmicrosoft.com</i></p> <p>where:</p> <ul style="list-style-type: none"> <i>username</i> is how you want to identify the mailbox, such as Sales, Support, Accounts. You enter this part of the mailbox name. <p>The following is added to it when the mailbox is created.</p> <ul style="list-style-type: none"> <i>ce-tenant-number</i>: the unique number of the tenant. <i>environment</i>: the environment hosting the tenant such as prod, preprod. <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note You enter the <i>username</i> part of the mailbox name, such as Sales, Support, Accounts. The rest of the mailbox name is appended</p> </div>

5. Save the mailbox. It will take a few minutes for shared mailboxes to be created. Once this completes additional details are filled in for you.

Once the shared mailbox is configured, the IFS Customer Engagement Email service will automatically create `IFS_CE_Processed` and `IFS_CE_Ignored` subfolders under the corresponding Inbox folder. Once successfully processed, email is moved into the `IFS_CE_Processed` folder. Email received and sent to an email address that is not to one of the configured email addresses is moved to the `IFS_CE_Ignored` subfolder.

6. Complete the configuration of each mailbox.

Field	Description
Process CC Addresses	Select this option to send to any email addresses in the CC list.
Disabled	See Disabling mailboxes and email addresses .

Field	Description
Auto Responses Limit Auto Responses Gap Duration	<p>To mitigate against the effect of a mail bomb attack, you must set these two fields if you intend to send automatic replies.</p> <p>For example, if:</p> <ul style="list-style-type: none"> Auto Responses Limit = 1000 (replies) Auto Responses Gap Duration = 30 (minutes) <p>then a reply will not be sent if 1000 replies have already been sent to either or both of the following:</p> <ul style="list-style-type: none"> The sender's email address The configured email address for the mailbox
Outbound SMTP Server Outbound User Name Outbound User Password	<p>In some cases, there may be a requirement to use a separate SMTP server for outbound email. Normally, however, outbound emails are sent using the same mailbox, in which case, these fields should be left empty.</p>

7. Click **Save**.

The next step is to add the email address(es) for this mailbox.

Setting up the email addresses

In this step you configure what inbound emails to process. The emails to be processed will have email addresses (configured as below) in either the **To:** or **Cc:** fields. Each email address must already be set up. You can check whether this has been done by viewing the mailbox list (in the Admin Portal, go to **Contact Center > Mailboxes**).

Steps

1. In the Admin Portal, go to **Media Management > Emails**.
2. Click **New**.
3. Select the contact center and contact center unit.
4. From the **Email Address** list, select the email address.

The email address prefixed *System-ce* must be configured as the system email address. See [About the system email address](#) for details.

5. Enter the following details.

Field	Description
Priority	<p>Priority is determined by the default priority for the activation type as set for the contact center unit and, optionally, by the relative priority set for the media definition. If used, the relative priority adjusts the default priority up or down.</p> <div> Note To check the default priorities for the contact center unit, go to Contact Center Unit > Access to Contact Center. </div> <p>If you want to:</p> <ul style="list-style-type: none"> Queue activations according to an adjusted (relative) priority then select an option from Lowest to Highest. Queue activations using the default priority that's set for the contact center unit then select No Change. <p>The relative priorities are:</p> <ul style="list-style-type: none"> High, Highest: raises the priority by adding 1 or 2 points respectively to the default priority. Low, Lowest: lowers the priority by subtracting 1 or 2 points respectively from the default priority.
Skillset	<p>Optionally, select the skillset required by agents to handle incoming emails to this email address.</p> <p>See Skills and skills-based routing.</p>
Disabled	<p>See Disabling mailboxes and email addresses.</p>

Field	Description
Inbound Enabled	Whether the email address is for outbound email only or for both: <ul style="list-style-type: none"> • Select the option to use the email address for both inbound and outbound emails. • Clear the option to use it for outbound email only. Inbound emails to this address are ignored.
Allow HTML Content	Preserve the HTML content in emails or just send and store them as plain text.

6. In most cases, you will need to develop a media script for controlling how email activations are handled in the queue for an agent:

Field	Description
Use Progression	This option determines how emails are added to the queue for an agent. <ul style="list-style-type: none"> • When the option is selected: you use a script to control how email handling is automated and/or how emails progress in the queue. How the emails are processed depends on the queue progression rules that you configure. • When the option is deselected: the emails are added to the queue without any preprocessing or other processing. If a media script exists then it will be disabled.

Field	Description
Script Trace Level, Script Email List	<p>You can configure the media definition to send an email with the debugging information. The trace level sets the event that triggers email sending. For example, during development you might want to receive an email every time the script runs but later change the script trace level to only send an email when an error occurs.</p> <p>You can send the log to one or more email addresses. Enter the email addresses as a semi colon-separated list.</p> <p>Note: The <i>From:</i> email address for script emails is either the email address given as the Main Contact Email for the contact center or, if that is empty, the Support Email for the contact center. If neither of these are set up, then it is sent from the system mailbox for the tenant.</p>
System Email	See About the system email address .

The next step for inbound email addresses is to define the media scripts that will be used to process the emails.

About the system email address

The system email address for the tenant is used to send outbound emails and system emails, such as automatically-generated reports.

To see the system email address:

1. In the Admin Portal, go to **Media Management > Emails**.
2. From the **Email Address** list, select the email address prefixed *System-ce*.

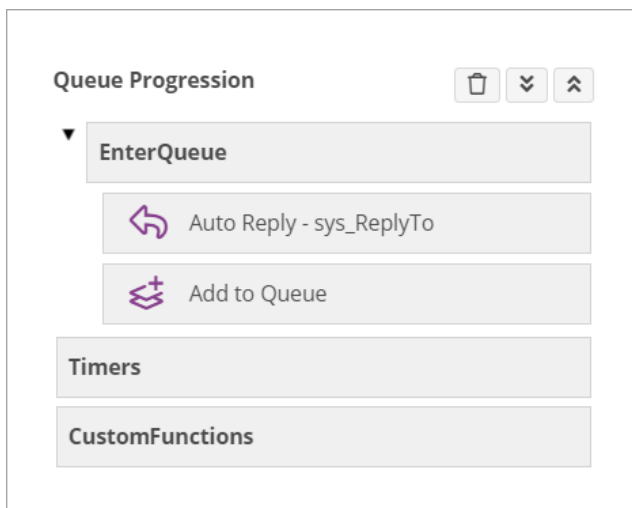
The **System Email** option is selected and this indicates the system email address. You cannot change this.

Creating media scripts for email

Important The information in this section applies to fully-featured tenants only.

You use the Media Script Editor to script how inbound emails are handled by IFS Customer Engagement. A media script can automate email handling or you can use a script to handle the email while it is in the queue before it is accepted by an agent.

The following figure shows a simple example of queue progression for emails, where an Auto Response is sent and the email is then added to the queue where it will eventually be presented to an agent.



Basic queue progression for emails

To configure a media script:

1. In the Admin Portal, go to **Media Management > Email**.
2. Select the contact center and contact center unit.
3. Do one of the following:
 - Click **Default Queue Progression** — the script will handle all the email addresses for the contact center unit that do not have their own media script.
 - Select an email address and then click **Queue Progression** — the media script is for the selected email address only.
4. Click **New** to open the Media Script Editor.
5. To set up a basic media script. For example:
 - a. Drag and drop the **Auto Reply Email** option on the **EnterQueue** box.
 - b. Fill out the auto response. You need to send the email from a system email address configured for the tenant.

See also [Email system variables](#).

- c. To add emails to the queue so that they will be seen by an agent, drag and drop the **Add to Queue** option on the **EnterQueue** panel.

See [Configuring media scripts](#).

6. To test the media script:

- a. Enter a version description.
- b. Click **Make Live**.

You can also do this later on the Email Queue Progression page.

- c. Click **Save & Generate**. This will check the media script for errors and then generate the script.

You can now send a test email. The email will appear as an activation in Agent Desktop. To accept the activation, see the details of the email and reply to it, you need a CE Studio app. Use the debug email to troubleshoot any problems with the media script. See [Debugging media scripts and script debug settings](#).

Use the Email Script Host Debug Info to understand how to fix any issues with your media script.

Queue progression events for emails

There is only one event for emails. You add options to the media script to determine what happens before the email enters the queue and while it is in the queue.



Queue Progression

EnterQueue

Timers

CustomFunctions

Queue progression events in the Email Script Editor

Email event nodes	Description
EnterQueue	<p>Contains all the actions that will process the email before it is added to the queue. For example:</p> <ul style="list-style-type: none"> • To identify spam and remove it before it gets to the queue. • To search for specific keywords and change the priority if they are found or send an automatic response. • Check whether it is a new conversation. <p>The last action in this node would be Add to Queue for emails that will be handled by an agent, or Hangup to remove the email from the queue.</p>

The Timers and Custom Functions nodes are placeholders for functions that run when timers expire and custom JavaScript functions.

Note Timers only exist while the email is in the queue and are automatically stopped once the agent closes the email (which removes it from the queue) or the media script hangs up.

Email system variables

You can use the following variables when developing media scripts for email. Enclose both system variables and script variables in % symbols. For example, %sys_Subject%.

sys_DayOfTheWeek	Numeric for the day of the week from 0-6 where 1 is Monday. For example: sys_DayOfTheWeek=1
sys_StartDate	Format example: Fri Aug 12 16:27:16 UTC +0100 2016
sys_Timeofday	Time. For example: 13:17:01 GMT+0000 (GMT)
sys_Subject	The subject line.
sys_Body	The content of the message.
sys_CCList	Email addresses in the CC field.
sys_TOList	Email address in the To field.
sys_ReplyTo	Reply to email address.

sys_SkillSet	The GUID of the skillset set on the email address.
sys_Priority	The relative priority set on the email address: <ul style="list-style-type: none"> • 2 highest priority • 1 high priority • 0 No change • -1 low priority • -2 lowest priority
sys_FromName	Sender's name.
sys_FromEmail	Sender's email address.
sys_EmailSentDate	Sent date. For example: sys_EmailSentDate=Thu Jan 16 2020 13:16:46 GMT+0000 (GMT)
sys_ReceivedDate	Received date.
sys_CurrentEmailAddress	The email address receiving the inbound email.
sys_CurrentClientId	GUID
sys_EmailID	GUID
sys_LastQueryResult	Applies when Search Data Table action has been used: <ul style="list-style-type: none"> • When the search returns no records: NO RECORDS • When the search returns records: RECORDS FOUND
sys_LastInvokeProviderActionResult	See Invoke Provider Action

Note on system variable arrays

The values returned to system variable arrays will be output to individual variables declared in the script (where required). The first one is for **Search using NLP**, and the second one is for **Detect Language**.

```
sys_NlpCatArr = [ ];
```

```
sys_NlpLangArr = [ ];
```

However, it is possible to see the result of the array in a template if this is needed for testing or development purposes.

The example given is based on **Detect Language**.

The variable used in the template does not need to be declared in the script. Here, it is called *lang_arr*.

```
lang_arr = %JSON.stringify(sys_NlpLangArr)%
```

The output will be in the following format:

```
lang_arr = [ { "code": "en", "name": "ENGLISH", "percentage": 0 } ]
```

In normal usage, if the script requires **Detect Language** or **Search using NLP**, the output will be split into variables declared in the script.

Disabling mailboxes and email addresses

Follow these steps to quickly disable an email address. The emails are received in the inbox but are not processed.

Steps

1. In the Admin Portal, go to **Media Management > Emails**.
2. Select the contact center.
3. Select the email address and then select the **Disabled** field.

You can also disable an email address by disabling the mailbox.

Note You can re-enable the email address or mailbox at any time, and processing will restart for all the emails in the inbox.

9

Chat configuration

How to configure a contact center unit for chat, and how to use the example chat client.

Important The information in this section applies to fully-featured tenants only.

In IFS Customer Engagement you can configure chat to:

- Act as a chat bot, engaging the web caller in a conversation
- Find out what the web caller wants using elements such as adaptive cards, choice lists and custom elements
- Identify the keywords in a message by using regular expressions and natural language processing
- Access and update data in Entity tables
- Send SMS messages and email, for example to confirm the outcome of the chat
- Escalate the chat to an agent when required
- Translate the strings in the chat window depending on the locale
- Make API calls (web requests) to access data in a third-party system

Each chatbot is defined by a chat definition and an associated *media script*.

A *demo chat client* (web site) is available for testing your chat definitions. Use the *chat API* to develop your own production-ready chat client.

Enabling chat for the contact center unit

To configure a contact center unit for chat:

1. In the Admin Portal, go to **Media Management > Advanced Settings**.
2. Select the contact center unit.
3. Select the **Enable Chat** option.

4. In **Chat Idle Timeout**, set the default chat timeout. You can also set this when you configure a chat definition.

The next step is to configure the chat definition. See [Creating chat definitions](#).

Note Agents can have handle simultaneous chat sessions. The maximum number of sessions is set in the agent's profile in **User Management > Users**.

Creating chat definitions

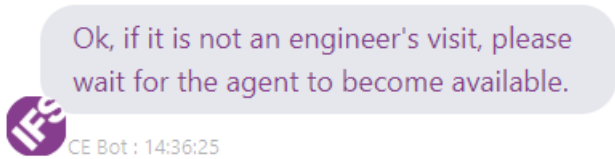
You configure how chat works for a contact center unit by creating one or more chat definitions and media scripts:

1. In the Admin Portal go to **Media Management > Chat**.
2. In the Chat Detail area, select the contact center and the contact center unit.
3. Enter the details of the chat definition:

Field	Description
Name	<p>The internal name of the chat definition. Use a descriptive name, such as Tech Support Chat, Sales Chat - Out of Hours. The name is used by the chat client (web page), which sends it to the chat service as part of the initial start chat parameters.</p> <p>For example, if the URL for your web page is: <code>https://company.net/sales/chat.html</code></p> <p>then for chat, you append the URL with the querystring parameter <code>?chatdefinition=name:</code></p> <p><code>https://company.net/sales/chat.html?chatdefinition=TechSupport</code></p>
Default Definition	Select this to make the chat definition into the default for the contact center unit. This means that the chat definition will be used if a specific chat definition is not given when starting a chat session.
Description	Any notes that you want to enter. For internal use.

Field	Description
Priority	<p>Priority is determined by the default priority for the activation type as set for the contact center unit and, optionally, by the relative priority set for the media definition. If used, the relative priority adjusts the default priority up or down.</p> <div> <p>Note To check the default priorities for the contact center unit, go to Contact Center Unit > Access to Contact Center.</p> </div> <p>If you want to:</p> <ul style="list-style-type: none"> Queue activations according to an adjusted (relative) priority then select an option from Lowest to Highest. Queue activations using the default priority that's set for the contact center unit then select No Change. <p>The relative priorities are:</p> <ul style="list-style-type: none"> High, Highest: raises the priority by adding 1 or 2 points respectively to the default priority. Low, Lowest: lowers the priority by subtracting 1 or 2 points respectively from the default priority.
Disconnect Timeout (secs)	<p>The session ends if the chat service detects that the communication with the chat client is lost (such as no internet connection, browser crash). The timeout is the number of seconds to wait before terminating the session.</p> <p>We recommend selecting a timeout value that lets callers minimize their browser or put the browser tab into the background. The maximum timeout is 255 seconds.</p>
Idle Timeout (secs)	<p>The session ends if it does not receive an event, including key presses, from the client after the given number of seconds. This setting applies <i>before</i> the session is added to the queue.</p> <p>We recommend selecting a timeout value that lets callers minimize their browser or put the browser tab into the background. The maximum timeout is 300 seconds.</p>
Skillset	<p>Optionally, select the skillset required by agents to handle this chat definition.</p> <p>See <i>Skills and skills-based routing</i>.</p>

Field	Description
Ignore DND	Select this to queue messages for the best skilled agent even if their status is Do Not Disturb.
Record Chat Conversation	Select this option to save <i>all</i> the messages sent by the client and agent to the database. For example, for audit and training purposes.
Record Associated Application Data	<p>Select this option to save application data (AppData) to the database.</p> <p>When initiating a chat, the chat client must send the application data as part of the initial request. AppData must contain the caller's initial message and, optionally, any other data which may be relevant to the processing of the chat request such as:</p> <ul style="list-style-type: none"> • The locale of the application and browser to be used by the chat window. • List of web pages, which the caller visited prior to initiating the chat. <p>For an example, see the Chat Demo (Using the demo chat client).</p>
Allow Script to Manage Session	<p>Select this option to use a media script to:</p> <ul style="list-style-type: none"> • Preprocess chat sessions in the queue before they are presented to the agent. • Manage the whole chat session. <p>When this option is deselected, the chat session is put on the queue in order to be presented to the next available agent without any prior processing.</p>
Keep Script Active After Delivery to Agent	Select this option if you want the media script, for example, to perform actions, such as inspect messages, after the agent has accepted the chat.

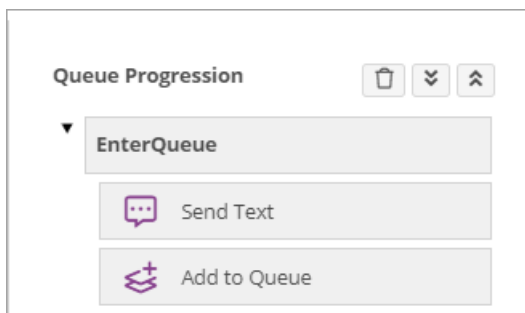
Field	Description
Forward Messages While in Queue	<p>The caller's first message is added to the queue. This option determines what happens to subsequent messages sent by the caller while the first message remains in the queue:</p> <ul style="list-style-type: none"> • Select the option to deliver the subsequent messages to the chat service along with the first message. • Select this option to ignore any subsequent messages, until the agent accepts the chat.
Call Quota	<p>This sets the maximum number of concurrent chat sessions that the chat service will handle.</p> <p>The primary reason to set a quota is to help prevent a denial of service attack. The quota you set will depend on a number of factors:</p> <ul style="list-style-type: none"> • The expected number of simultaneous chat sessions to be handled by the contact center unit (including the number of sessions that will be handled by chatbots). • Whether you want to allow capacity for a sudden increase in call rates. • Whether you have several chat definitions at the same contact center unit, in which case the quota should be divided between them. <div> <p>Note The maximum number of simultaneous chat sessions per agent is set in their user profile.</p> </div>
Coverage Plan	Select the open hours that will apply to the chat definition. Out of hours, the chat service will not start a session.
Chatbot name	<p>The name that will be displayed in the chat window when displaying the scripted responses to the web caller. In this example, the name is CE Bot:</p> <div>  </div>
Chatbot Avatar	For uploading an image to represent the agent or chatbot.

Creating media scripts for chat

You use the Media Script Editor to configure how chat is handled once a web caller starts a chat session. You can configure a media script to handle the entire chat session and, where necessary, add the chat to the queue to be presented to an agent. Once the chat is accepted by an agent, the script can continue to monitor the session.

To pass data from the chat session to a CE Studio app, use the Set Script Element option. For details, see [Set Script Element](#).

The following figure shows the simplest example where the caller receives a message, possibly a welcome message, and then waits for an agent to become available:



Note In the chat definition, make sure that the **Allow Script to Manage Session** field is selected. Deselecting this field will disable the script. Note also that the chat idle timeout is set by the chat definition. See [Creating chat definitions](#).

To configure a media script:

1. In the Admin Portal, go to **Media Management > Chat**.
2. Select the contact center and contact center unit.
3. Do one of the following:
 - Click **Default Queue Progression** — the script will handle all chat definitions for the contact center unit that do not have their own script.
 - Select a chat definition and then click **Queue Progression** — the script is for the selected chat definition only.
4. Click **New** to open the Media Script Editor.
5. To set up a simple script. For example:
 - a. Drag and drop the **Send Text** option on the **EnterQueue** box.
 - b. Complete the details for the option. You can include data from the initial message by using system variables.

See [Chat system variables](#).

- c. To add chats to the queue for an agent, drag and drop the **Add to Queue** option on the **EnterQueue** panel.

See [Configuring media scripts](#).

- 6. To test the media script:

- a. Enter a version description.
- b. Click **Make Live**.

You can also do this later on the Chat Queue Progression page.

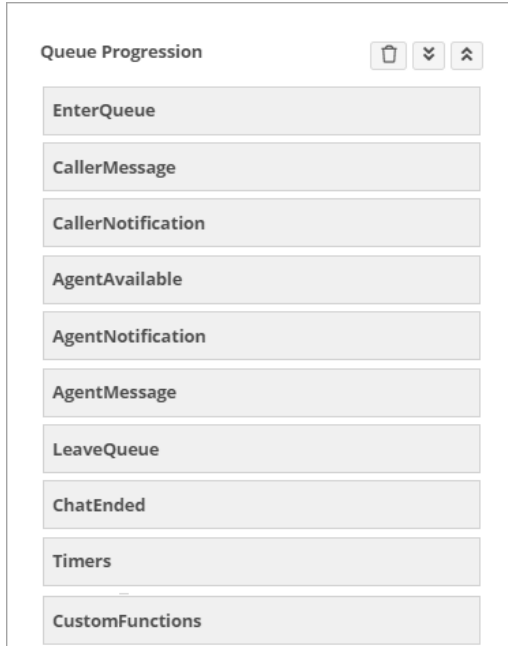
- c. Click **Save & Generate**. This will check the script for errors and then generate the script.

If you have a chat client for this chat definition, open it in a browser tab and send the start message. Alternatively, use the [Demo Chat client](#).

The chat will appear as an activation in Agent Desktop. To interact with the chat client, you need a CE Studio app. You can use the IFS CE Chat Template for this purpose. On a new tenant, this template is preconfigured as the default app for chat.

Queue progression events for chat

The following events can occur during a chat session. Each event is represented as a node in the Media Script Editor. You add options to the media script to determine what happens in response to each event type. Some of these event types are notifications that are sent to the web page.



Queue progression events in the Chat Script Editor

Chat event nodes	What happens when...
Enter Queue	<p>A web caller starts a chat session, which is either presented to an agent or handled by the script. Here are some examples of things that can happen in this node:</p> <ul style="list-style-type: none"> Initial message and <code>AppData</code> received by the chat service as part of the event that starts the chat. Chat service (script) may then act upon the received data. For example, assign a specific skillset based on the <code>AppData</code> or/and the initial message. The information messages sent to the user for which no reply is expected. Script can engage the web caller in a dialog, using simple text messages, choice lists and custom HTML. <p>The user's responses are handled with custom functions.</p>
Caller Message	How the script handles other messages that the user that might send at any point during the chat, for example, when the user wants to cancel the chat and start again. This is only used when there is no handler (function) running.
Caller Notification	Any notification sent from the web page to the chat service (which may relay it to the agent). For example, that the caller is typing.
Agent Available	A notification sent to the web page that an agent is available.
Agent Notification	A notification sent to the web page that an agent has joined the chat.
Agent Message	Similar to CallerMessage but sent to the web page.
Leave Queue	<p>The chat is accepted by an agent.</p> <p>For example, any data (script element) that is required in Agent Desktop should be made available.</p>
Chat Ended	<p>The chat session is closed by either the user or the agent. Use this event to perform any actions that need to happen once the chat session ends.</p> <p>For example, use <i>Data Insert</i> to save the data stored in the script's variables or send a closing message.</p>

Chat event nodes	What happens when...
Chat Ending	<p>The user or agent clicks to end the chat session but before the chat session ends, you can perform additional actions, for example, send a final message.</p> <p>For surveys, use the Add Survey Candidate option to show a survey in the chat client or browser tab. The survey responses are part of the survey responses and also captured as part of the chat conversation history.</p>

The Timers and Custom Functions nodes are placeholders for functions that run when timers expire and custom JavaScript functions.

Chat system variables

You can use the following variables when developing media scripts for chat. Enclose both system variables and script variables in % symbols. For example, %sys_Message%.

System Variable	Notes
sys_CallersName	As entered by the user when initiating the chat session. Default: <code>host.GetCallerName()</code>
sys_StartDate	Today's date. Default: <code>new Date()</code>
sys_DayOfTheWeek	Current day. Default: <code>sys_StartDate.getDay()</code>
sys_Timeofday	Current time. Default: <code>sys_StartDate.toTimeString()</code>
sys_CallID	Unique caller or chat ID. Default: <code>host.GetCallId()</code>
sys_ChatBotName	Configured name of the chatbot. Default: <code>host.GetChatBotName()</code>
sys_Locale	Provided that locale was determined and set, for example, by the chat client. You can use <code>sys_Locale</code> , for example, to send a localized version of a response template. Default: <code>host.GetLocale()</code>

System Variable	Notes
sys_Message	<p>The last message as sent by the web caller. By default, <code>host.GetCallerName()</code></p> <p>The very first <code>sys_Message</code> is the Initial Message obtained as: <code>host.GetScriptElement('INITIALQUESTION')</code>.</p> <p>The format of <code>sys_Message</code> depends on the <code>sys_MessageType</code> (see below). For <code>type=0</code> (text), it's a plain text, for the rest of the types it is a JSON-formatted string.</p> <div> Note Use this system variable to access the AppData. </div>
sys_MessageType	The message type as sent by the chat client or chat service. Message types are integer (strictly speaking, byte) values from 0–255. Currently defined values are:
	0 – A simple text message, the default and the most common type.
	1 – Choice list query, sent to the web caller, which contains structured data to build a “multiple choice” question for the web caller.
	2 – Caller's response to the “choice list” query.
	3 – Custom HTML query, sent to the web caller, which contains structured data for building an arbitrary HTML element. Use this to collect information from the web caller, or simply to inform or entertain the caller while in the queue (such as playing a YouTube video).
	4 – Caller's response to the custom HTML query.
	6 - Caller's response to an adaptive card.
	254 – Caller or agent joined the chat.
	255 – Caller or agent is typing.
sys_AdaptiveCardResult	Selection made in response to an adaptive card.
sys_ChoiceResult	Selection made in response to the Send Choice query.

System Variable	Notes
sys_HtmlResult	Selection made in response to the Send Custom HTML action.
sys_EndChatReason	Responses to the chat messages that are returned to the web page embedding the chat client. It's up to the web designer to handle the codes appropriately:
	0, SUCCESS – the message sent successfully. For example, if received in response to StartChat message, it means “chat started”.
	1, CHAT_CLOSED – in response to an attempt by a caller to communicate with a session, which this caller has already left.
	2, INVALID_PARAMETER – in response to StartChat message, it means that the parameters required to start a session, such as a chat definition, caller name, are wrong or missing.
	3, UNEXPECTED_ERROR – indicates an exception thrown by the chat service. This should not normally happen. Contact Support.
	4, TIMEOUT – same as 3 except that this is due to a specific timeout exception.
	5, SESSION_ID_ALREADY_ASSIGNED – a request to start a session that has already started. This should not happen normally.
	6, OUT_OF_MEMORY – for future use.
	7, SESSION_NOT_FOUND – wrong session ID passed as a part of the request.
	8, NO_DATA_AVAILABLE – in response to GetChatEvent request from chat client, it means that nothing happened in the chat session that needs to be communicated to the chat client.
	9, ACCESS_DENIED – in response to StartChat message, it means a timing issue when the chat is sent to an agent, but it's already has been picked up by a different agent, or left the queue for some other reason.

System Variable	Notes
	10, NO_SUITABLE_OPERATOR_AVAILABLE – no logged-in agents with the skills matching the chat's skillset.
	11, SERVICE_UNAVAILABLE – no active iMedia servers. Contact Support.
	12, RETRY_ON_PRIMARY_SERVER – when a primary server is available and the initial StartChat request lands on a backup server, a normal response, which also contains the URL of the primary server. Chat client should be designed to expect this situation and handle it accordingly.
	13, WAIT_FOR_OPERATOR – suitable agents are logged in but are not available to accept this chat call.
	14, OFFICES_ARE_CLOSED – sent in response to StartChat message, if according to the coverage plan configured for the chat definition, it is currently out of hours.
	15, QUOTA_EXCEEDED – sent in response to StartChat message, if the number of ongoing chat sessions has reached the maximum configured value for the chat definition (the Call Quota setting).
	16, SCRIPT_FAILED – an error in the script prevented it from running. Check the script for errors.
	17, HANDLED_BY_SCRIPT – the message has not been relayed to the web caller, but otherwise handled successfully.
	18, INVALID_NAME – sent in response to an attempt to join a session in which a web caller with the same name and the same IP address already exists.
sys_NlpCatArr	See Email system variables
sys_NlpLangArr	See Email system variables
sys_LastInvokeProviderActionResult	See Invoke Provider Action

Using the demo chat client

IFS Customer Engagement provides an example chat client (and web page) if chat is selected as a service for the tenant. You can use this to test your own chat definitions. You can also download the example chat client from the [Knowledge Base](#) for installation locally.

Note After installing the chat client, you need to request IFS Support to install the API key. The API token will be linked to a specific user, typically the Azure User Principal Name of the tenant's account manager.

Default URL for chat demo client

The default URL for the example chat client is at:

```
https://{data region FQDN}/tenant_name/ce/chat/main/index.html
```

On the above URL, chat sessions automatically use the default chat definition if this is configured. See [Creating chat definitions](#).

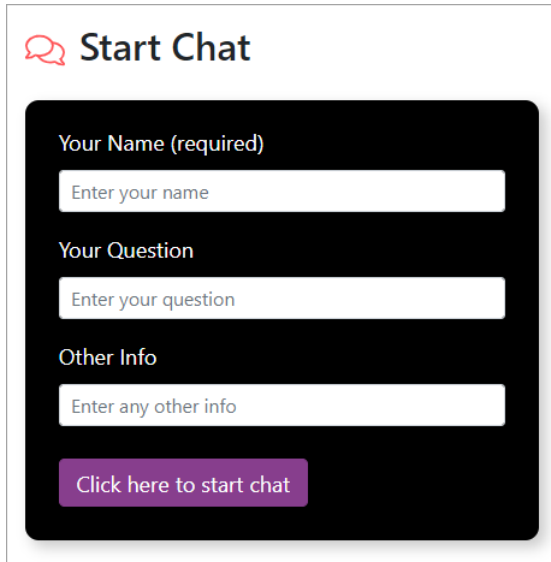
If you use the following URL, it will try to access a chat definition called *Chat Demo*. To use the example chat client with a differently named chat definition, append the query string: ?chatdefinition="My Demo" where "My Demo" is the name of your chat definition. For example:

```
https://{data region FQDN}/tenant/ce/chat/main/index.html?
chatdefinition="My%20Demo"
```

Note By default, the example chat client will return an INVALID_PARAMETER error if the URL contains a chat definition that does not exist.

Example web page

There is an example web page, `index.html`, that contains a form for starting a chat and a popup chat window:



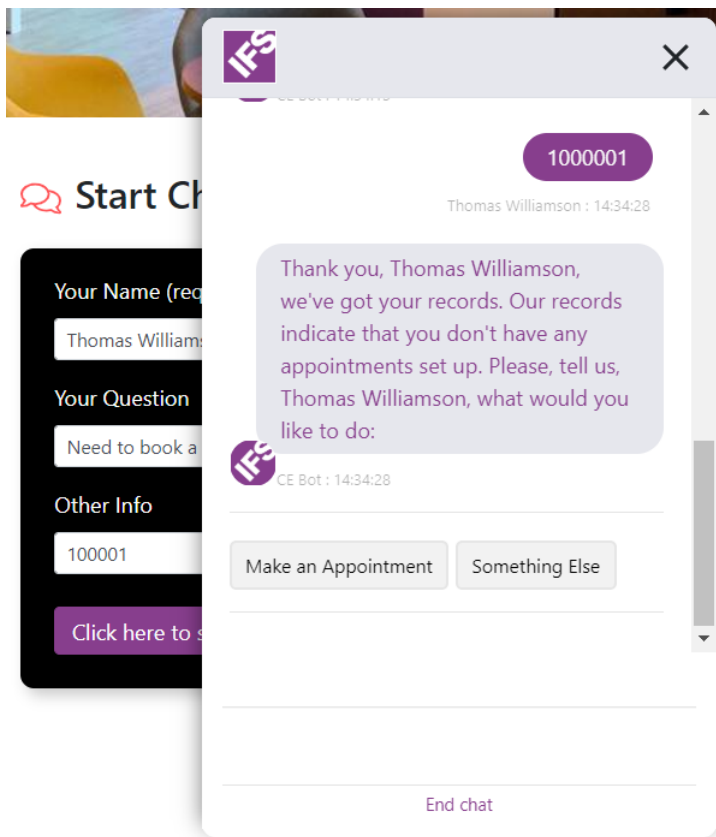
Start Chat

Your Name (required)

Your Question

Other Info

[Click here to start chat](#)



Start Chat

Your Name (required)

Your Question

Other Info

[Click here to start chat](#)

Chat Window

1000001

Thomas Williamson : 14:34:28

Thank you, Thomas Williamson, we've got your records. Our records indicate that you don't have any appointments set up. Please, tell us, Thomas Williamson, what would you like to do:

CE Bot : 14:34:28

[Make an Appointment](#) [Something Else](#)

[End chat](#)

JavaScript files

Important JavaScript files are located under:

`https://{data region FQDN}/tenant_name/ce/chat/main/assets/js/`

chat.js	<p>Contains the CE Chat API consisting of a <code>Chat</code> object and its methods. It acts as a middle layer between the chat client UI and the chat service.</p> <p>The methods are wrapper methods. For information on the chat API, see Chat API.</p> <p>Do not modify this file when making modifications to this web page or when creating your own chat client.</p>
chatClient.js	<p>Example of JavaScript functionality required to communicate between chat client web page and <code>chat.js</code>. It shows how to make functional calls to <code>chat.js</code> and receive event notifications from there. You can modify it or create your own JavaScript as long as you preserve the way it interacts with <code>chat.js</code></p>
index.js	<p>Example of “click here to start a chat with our staff” functionality. It must define <i>AppData</i>, a JSON-formatted, dictionary-like object, of the following structure:</p> <pre data-bbox="591 919 1469 1136"> { "InitialQuestion": "an initial question or message", "name 2": "value 2", "name 3": "value 3, etc" }</pre> <p>"InitialQuestion" is directly put into agent's chat window as a first line of the conversation, and is the only mandatory name/value pair. Others are optional. Some possible examples are:</p> <ul data-bbox="591 1304 915 1570" style="list-style-type: none"> • ApplicationLocale • BrowserLocale • LoggedInUserName • PagesVisited • ItemsClicked • ShoppingBasketItems <p>The values in the <i>AppData</i> JSON object must be strings.</p>

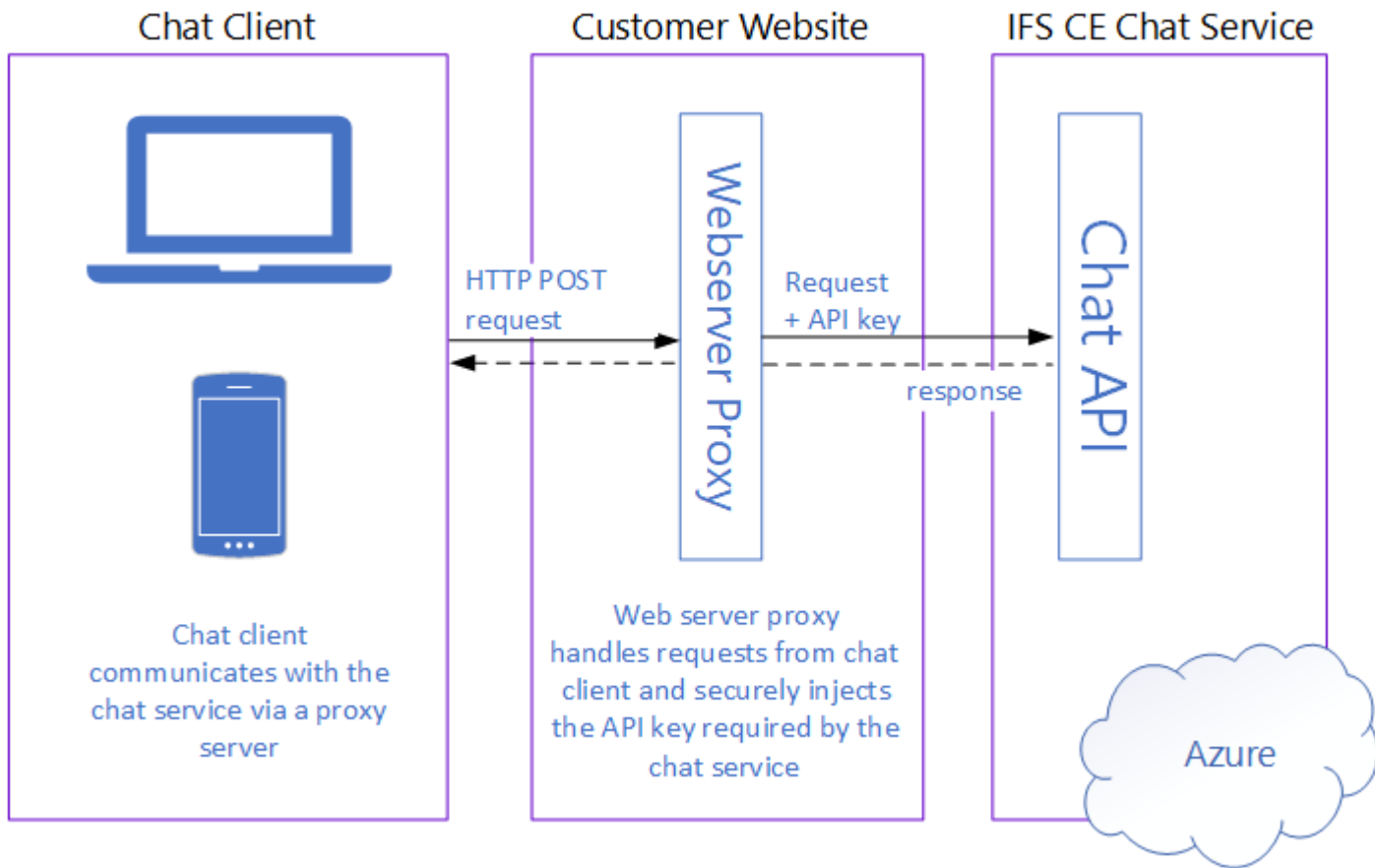
Other assets

Other assets for the chat client web page are located in folders:

- `tenant_name/ce/chat/main/assets/js/css`
- `tenant_name/ce/chat/main/assets/js/img`

Chat API

IFS CE Chat service combined with the web chat client lets internet users communicate with a chat bot, which is configured using a media script, or with a contact center agent via a chat web page, or both. The REST API endpoints are listed below.



Overview

Integration

You can integrate the chat client with your website or any other web application that you expose to your customers, such as a smart phone app. It is your decision how to implement the chat client, how to integrate it with a website or web application, and what level of security is required.

Example/demo chat client

IFS Customer Engagement provides a demo chat client. The wrapper methods in the demo chat client are examples of how to use the API. It is important to note that the demo chat client is not production ready – for example, it does not cover any security considerations. See [Using the demo chat client](#) for further information.

The code responsible for interacting with the REST API is in the **chat.js** file. This file contains the code, which is totally agnostic of the web UI. The functionality responsible for the interaction with the UI is separated into the **chatClient.js** file.

The REST API methods are invoked by calling the appropriate methods in **chat.js** file.

In addition, a built-in chat client for testing and debugging purposes is included with every chat service installation, and can be accessed by a user authenticated by logging onto either admin portal or agent desktop at

```
https://{data region FQDN}/tenant_name/ce/chat/main/index.html?
chatdefinition={definition name}
```

Chat service REST API endpoints

Web chat client (chat web page) communicates with the Chat service by accessing REST API endpoints exposed by the chat service:

Chat service REST API endpoints

Endpoint	API method	HTTP method	Description	Wrapper in demo chat client
{base uri}/start	<i>Start</i>	POST	Initiate or join a new chat session	startNewSession()
{base uri}/getevent	<i>GetEvent</i>	POST	Receive immediate events notifications from the chat service	GetChatEvent()
{base uri}/sendmessage	<i>SendMessage</i>	POST	Send information from the chat client to the server, either to the agent or the chat bot (queue progression script)	SendChatMessage()
{base uri}/stop	<i>Stop</i>	POST	Terminate the session from the client side	requestStop()

Endpoint	API method	HTTP method	Description	Wrapper in demo chat client
{base uri}/ translate	<i>Translate</i>	POST	Get the list of configured translations for chat client labels	Translate()

The base uri takes the form:

```
https://{host}/{tenant-path}/ce/chat/api/chathub
```

where:

- *host* is the fully qualified domain name
- *tenant-path* is the tenant path label, which you can get from the chat definition displayed in the Admin Portal.

For HTTP POST requests, parameters, if any, are provided as post data with the *content-type: application/json; charset=utf-8*.

These API methods and their properties are discussed in the following sections.

Note Future extensions may add additional properties to the API methods which should be ignored by earlier versions of the chat client.

Authorization headers

Each HTTP request sent by the chat client to the chat API must have an Authorization header, containing a bearer token. For example: "Bearer eyJhbGciOiJIUzUxMi...". The value of the bearer token is an API key, required for accessing chat API, and is configured for you by IFS Support. To obtain this, please raise a request in IFS Service Center.

Start method - chat API

Initiate or join a new chat session.

Start request

An example of Start payload:

```
{
  "SessionID": "6dac45f5-dde7-41a5-a206-fecf03f49e65",
  "CallerName": "John Doe",
  "DefinitionNameOrID": "Sales Support",
```

```

"AppData": "{ \"InitialQuestion\": \"Hello, do you have item #65A9 in
stock?\", \"ApplicationLocale\": \"en-GB\", \"BrowserLocale\": \"en-US\",
\"OtherInfo\": \"\" }\",
\"CallerTimeDelta\": -60,
\"Redirected\": false
}

```

Start properties

Request property	Description
DefinitionNameOrID	Definition name is configured in the Admin Portal and you can copy it from there. The definition name can be changed at any point but not the ID (Guid). We recommend using the ID.
SessionID	<p>Session ID (Guid) is required to start a new session. If the web caller starts a new session, then this is a new guid, generated by the client. Also used if the caller's browser crashes and the caller rejoins an existing session from a different browser or device.</p> <p>If the web caller joins the existing session, that is joins a group chat (future functionality), then the value will be given to them.</p>
CallerName	<p>There must be a caller name or alias, either the one entered by the caller or, if the caller has already authenticated with the website, from the customer record. The name provided is displayed to the agent and will be part of the chat history.</p> <p>When joining a group chat (future functionality), the name must be unique. If a web caller, who joins a group chat, provides a name that is already provided by another web caller, <code>CHAT_RESULT.INVALID_NAME = 18</code> is returned. This caller does not join the session, and the appropriate message should be displayed, such as the name taken, please choose another.</p>

Request property	Description
AppData	<p>AppData is any application-related data. Use this to pass the context from which chat starts to the chat service. For example, if the caller is logged in on the website, it may contain the user ID. Or, for an anonymous user, it may contain browsing history, shopping cart contents, and so on.</p> <p>AppData is expected to be a JSON object, such as:</p> <pre data-bbox="584 556 1469 1018"> { "InitialQuestion": "Can I cancel my order?", "name2": "value 2", "name3": { "prop1": "value 3", "prop2": true, "prop3": 42 }, "name4": [{ "field1": "one", "field2": "two" }, { "field1": "three", "field2": "four" }] }</pre> <p>We recommend that AppData contains the predefined property "InitialQuestion". If it exists, it is displayed to the agent.</p> <p>Other predefined optional properties are:</p> <ul style="list-style-type: none"> • "ApplicationLocale" – can be forced by the web page. • "BrowserLocale" – typically provided by the browser. <p>ApplicationLocale takes precedence. BrowserLocale is used only if ApplicationLocale is not given.</p> <p>Locale is based on ISO-639 Language Codes and on ISO-3166 Country Codes. For example, en-US, en-GB, pt-PT, pt-BR, and so on.</p> <p>You can add more properties to AppData if required.</p>
CallerTimeDelta	<p>Difference between UTC and local time in minutes, that is, CallerTimeDelta = UTC – local.</p> <p>For example, for the UK during British Summer Time, it is #60, for the US East Coast outside of daylight saving time (winter), it is 300, etc.</p>

Request property	Description
Redirected	A flag (Boolean value) required by the service. <i>True</i> means that the initial request (with the value <i>false</i>) was redirected to a different URL.

Start response

An example of a response to the `Start` request:

```
{
  "result": 0,
  "participantID": "2e549608-52ba-4f5a-a3da-c972ec1e613b",
  "redirectTo": null,
  "participantNames": null
}
```

Response properties

Response property	Description
Result	<p>Enumeration of possible outcomes:</p> <pre>let CHAT_RESULT = { SUCCESS: 0, CHAT_CLOSED: 1, INVALID_PARAMETER: 2, UNEXPECTED_ERROR: 3, TIMEOUT: 4, SESSION_ID_ALREADY_ASSIGNED: 5, OUT_OF_MEMORY: 6, SESSION_NOT_FOUND: 7, NO_DATA_AVAILABLE: 8, ACCESS_DENIED: 9, NO_SUITABLE_OPERATOR_AVAILABLE: 10, SERVICE_UNAVAILABLE: 11, RETRY_ON_PRIMARY_SERVER: 12, WAIT_FOR_OPERATOR: 13, OFFICES_ARE_CLOSED: 14, QUOTA_EXCEEDED: 15, SCRIPT_FAILED: 16, HANDLED_BY_SCRIPT: 17, INVALID_NAME: 18, REJECTED: 19, MAX: 20 // Keep as last entry };</pre>
participantID	Participant ID is a Guid assigned to the caller by the chat service.

Response property	Description
redirectTo	If not null, it contains a URL of the chat server to which the request is redirected.
participantNames	Contains the names of all the participants of the chat session, if it is already in progress.

GetEvent method - chat API

Receive immediate events notifications from the chat service.

GetEvent request

`GetEvent` is an implementation of the long polling technique. It is used by the chat client to receive the immediate events notifications from the chat service.

Initial `GetEvent` call occurs following the successful return of the `Start` method. `GetEvent` http request is configured to time out in five seconds if an event is not returned sooner. In the demo chat client, the timeout of 5 s (5000ms) is configured in `GetChatEvent` method of `chat.js`.

Immediately upon either the return of the event, or upon a timeout, the next `GetEvent` is called. The exception is when the returned event contains Session Ended information, such as when the session is terminated by the agent, script or as a result of some other server event, in which case, no further `GetEvent` request is made.

It is essential to call `GetEvent` immediately upon the return or timeout of the previous `GetEvent`. Server chat sessions will time out if `GetEvent` is not invoked for the configured session disconnect timeout period.

An example of `GetEvent` payload:

```
{
  "SessionID": "812431c2-e521-4c22-826f-cbd1238899d8",
  "ParticipantID": "42fc37b5-f629-4c73-a66f-9d5984074812",
  "Timeout": 5000,
  "LastEventId": 4
}
```

GetEvent request properties

Request property	Description
SessionID	Session ID (Guid) of the current session.
ParticipantID	Participant ID (Guid) of the caller, returned as a part of the <code>Start</code> method response.

Request property	Description
Timeout	Timeout of the request, ms.
LastEventId	The event Id of the last received or sent event. See EventID for details.

GetEvent response

Some examples of GetEvent response.

Example 1 initial response from the chat bot (HAL 9000):

```
{
  "result": 0,
  "type": 4,
  "eventId": 1,
  "senderName": "HAL 9000",
  "messageType": 0,
  "message": "Hello from Bot",
  "avatarType": "png",
  "avatarB64": "iVBORw0KGgoAAAANSUhEUgAAAJ4AAACeCAYAAADD..."
}
```

Note eventId=1, that is the very first event in the chat history. If a chatbot avatar is configured, then the very first event would contain avatarType and avatarB64 fields.

Example 2 message from chat bot:

```
{
  "result": 0,
  "type": 4,
  "eventId": 4,
  "senderName": "HAL 9000",
  "messageType": 0,
  "message": "Please hold on a little, our agent will be with you shortly"
}
```

Example 3 GetEvent request timed out without getting any event:

```
{
  "result": 8,
  "type": 0,
  "eventId": 0,
  "senderName": null,
  "messageType": 0,
}
```

```
{
  "message": null
}
```

Note `eventId=0` and `type=0` (ie no event) and `result=8` (ie “no data available”, see the [Chat result codes](#)).

Example 4 chat ended by chat bot:

```
{
  "result": 0,
  "type": 1,
  "eventId": 5,
  "senderName": "HAL 9000",
  "messageType": 0,
  "message": ""
}
```

Note `type=1` (Session Ended).

GetEvent response properties

Response property	Description
Result	Same as CHAT_RESULT for <code>start</code> method.
Type	Integer values for basic server event types: NONE = 0, SESSION_ENDED = 1, PARTICIPANT_JOINED = 2, PARTICIPANT_LEFT = 3, INBOUND_MESSAGE = 4, // sent to the receiver of the event OUTBOUND_MESSAGE = 5 // sent by the receiver of the event

Response property	Description
Message	<p>For message type 0, this is a string, containing plain or HTML-formatted text, which was either generated by a queue progression script or typed by an agent. For all the other types, message is a json object, for example:</p> <ul style="list-style-type: none">• CHOICE_LIST: data required to display Choice buttons to the caller.• CHOICE_RESULT: data resulted from the caller making the choice. <p>If the message is a json object, then the data is interpreted by the recipient according to the <code>messageType</code> (below).</p>

Response property	Description
messageType	<p>A byte value which identifies the <code>message</code> type (as opposed to the <code>event</code> type called <code>Type</code> above).</p> <p>Some of the message types are the same for both outbound and inbound messages. Others are used exclusively in one direction.</p> <p>The following chat message types are defined (more can be added in the future):</p> <pre>let MESSAGE_TYPE = { TEXT: 0, CHOICE_LIST: 1, CHOICE_RESULT: 2, CUSTOM_HTML: 3, CUSTOM_HTML_RESULT: 4, ADAPTIVE_CARD: 5, ADAPTIVE_CARD_RESULT: 6, JOINED: 254, TYPING: 255 };</pre> <p>You can extend the enumeration to allow more message types for interaction with chat bots only, for example to push a URL to the web client. Custom message types are not supported in CE Studio.</p> <p>Message types with values from 0 to 127 can be recorded as a part of the chat history.</p> <p>Message types with values from 128 to 255 are informational events, which are not recorded as messages. For example, "Typing" (255) is simply passed in either direction between chat client and agent.</p> <p>See Message Types for the message type description.</p>
EventId	<p>Unique long integer (or bigint in SQL terms) is the number of the events either sent by the chat client or received from the chat service. Event IDs start from 1 and are always incremented.</p>
senderName	<p>Sender's name, that is the name of the agent, chat bot, or in the future, other callers participating in the chat session.</p>

Response property	Description
avatarType	Image MIME subtype, such as: jpeg, png, gif, or webp. File extensions jpg, jpeg, jfif, pjpeg, pjp are all handled as the jpeg subtype.
avatarB64	Base64-encoded image.
unsupported or deprecated property names	You may see other response property names, not listed here. They should be ignored by the chat client.

Message types

See also [Chat message type schema](#).

Parameter	Message originates from	Description
TEXT: 0	either server or client	Text message sent by web caller, agent, or queue progression script.
CHOICE_LIST: 1	from server	JSON object with the data required to display a list of clickable buttons or images for the caller to answer simple choice questions.
CHOICE_RESULT: 2	from client	JSON object containing the result of the caller response to CHOICE_LIST.
CUSTOM_HTML: 3	from server	JSON object with the data required to display an arbitrary HTML form.
CUSTOM_HTML_RESULT: 4	from client	JSON object containing the result of the caller response to CUSTOM_HTML.
ADAPTIVE_CARD: 5	from client	JSON object with the data required to display <i>adaptive cards</i> to the caller.
ADAPTIVE_CARD_RESULT: 6	from server	JSON object containing the result of the caller response to ADAPTIVE_CARD.
JOINED: 254	either server or client	Reserved for future use.

Parameter	Message originates from	Description
TYPING: 255	either server or client	JSON object containing the current length of the unsent input, for example: {"count":42}

SendMessage method - chat API

Use the `SendMessage` method to send information from the chat client (web caller) to the server, either to the agent or the chat bot (queue progression script).

SendMessage request

An example of the `SendMessage` request payload:

```
{
  "SessionID": "4f5eea8e-879d-438a-acdd-f1c3642a1ef0",
  "ParticipantID": "c23c2b7c-5024-4e53-af07-e6e6325389b5",
  "MessageType": 0,
  "Message": "Hello there!"
}
```

SendMessage request properties

Property	Description
SessionID	Same as for GetEvent request .
ParticipantID	Same as for GetEvent request .
MessageType	Same as for GetEvent response .
Message	Either plain text or JSON string, containing either caller's message or form data being send to the server.

SendMessage response

Example of `SendMessage` response:

```
{
  "result": 0,
  "eventId": 5
}
```


SendMessage response properties

Property	Description
result	Same as for <i>GetEvent response</i> .
eventId	Same as for <i>GetEvent response</i> .

Stop method - chat API

Terminates the session from the client side.

Stop request

Example of the Stop request:

```
{
  "SessionID": "e1fa6fe4-7148-4e0f-8ada-f6590bcab28d",
  "ParticipantID": "d2795058-e51a-47b5-91a8-542727a8587a"
}
```

Stop request properties

Property	Description
SessionID	Same as for <i>GetEvent request</i> .
ParticipantID	Same as for <i>GetEvent request</i> .

Stop response

No data is sent in response, and the result is reflected in the HTTP status code, for example 200 OK.

Translate method - chat API

Gets the list of configured translations for labels used by the chat client.

Note You can configure message IDs and message translations for use in the chat client. You can do this in the Admin Portal, on the **Studio > Message Store** page. Use the Chat_Label message type.

Translate request

Get the list of configured translations for chat client labels, defined by the TranslationLabel Chat_Label.

Example of the Translate request:

```
{
  " TargetLocaleCode ": " en-GB"
}
```

Translate request properties

Property	Description
TargetLocaleCode	Locale, based on ISO-639 language codes and, optionally, on ISO-3166 country codes. For example, en, en-US, en-GB, pt-PT, pt-BR, and so on.

Translate response

Example of Translate response:

```
{
  "messages": [
    {
      "id": "Chat Closing",
      "localeCode": "en-GB",
      "type": "Chat_Label",
      "text": "Chat Closing"
    },
    {
      "id": "Chat ended",
      "localeCode": "en-GB",
      "type": "Chat_Label",
      "text": "Chat ended"
    }
  ],
  "translationError": ""
}
```

Translate response properties

Property	Description
messages	An array of available message translations from the Message Store, and defined by the <i>TranslationLabel</i> Chat_Label. See <i>Properties of the members of the messages array</i> .
translationError	Error, if any.

Properties of the members of the messages array

Property	Description
id	Message ID
localeCode	Locale code, such as en or en-US
type	Only the "Chat_Label" type is returned by Chat API
text	Translation according to locale, as configured in the Message Store

Chat result codes

This section describes the CHAT_RESULT codes.

CHAT_RESULT	Int value	Description
SUCCESS	0	Chat request completed without errors. The intended goal of the request (Start, GetEvent, SendMessage) is achieved.
CHAT_CLOSED	1	Chat request references chat session which is already closed.
INVALID_PARAMETER	2	Can be one of the following: <ul style="list-style-type: none"> • (Usually) an attempt to use a non-existing or deleted chat definition • (Unlikely) caller's message is sent on behalf of an agent, in which case activation ID for the chat participant is not null

CHAT_RESULT	Int value	Description
UNEXPECTED_ERROR	3	An unforeseen exception thrown during one of the following: <ul style="list-style-type: none"> Starting chat Running queue progression script Sending either agent's or web caller's message to other chat participants Closing chat
TIMEOUT	4	<code>System.Timeout</code> exception thrown during one of the following: <ul style="list-style-type: none"> Starting chat Sending either agent's or web caller's message to other chat participants Closing chat
SESSION_ID_ALREADY_ASSIGNED	5	An attempt to start a chat session with the already existing Session ID.
OUT_OF_MEMORY	6	Reserved for future use.
SESSION_NOT_FOUND	7	Chat request (<code>GetEvent</code> , <code>SendMessage</code> , <code>Stop</code>) references a chat session which does not exist.
NO_DATA_AVAILABLE	8	<code>GetEvent</code> method returns NO_DATA_AVAILABLE if no events were put into the participant's event queue.
ACCESS_DENIED	9	Can be one of the following: <ul style="list-style-type: none"> (Common) attempt to start a chat for a disabled chat definition. Attempting to start a chat for a suspended or terminated contact center unit. (For future use) attempt to join a chat not configured for multiple participants.
NO_SUITABLE_OPERATOR_AVAILABLE	10	No appropriately skilled agent is available and no queue progression script is configured.
SERVICE_UNAVAILABLE	11	Attempt to start a chat when there are no operational contact centers available.

CHAT_RESULT	Int value	Description
RETRY_ON_PRIMARY_SERVER	12	Normal redirect response at the beginning of a chat session. Such response also contains <i>RedirectTo</i> property containing the actual redirection URL.
WAIT_FOR_OPERATOR	13	When web caller attempts to send a message before agent joined the chat and the chat definition does not allows sending messages while in queue.
OFFICES_ARE_CLOSED	14	Web caller attempts to send a message outside of the office hours configured for the chat definition.
QUOTA_EXCEEDED	15	“Call quota”, that is maximum number of simultaneous chat sessions for this chat definition, is exceeded.
SCRIPT_FAILED	16	Returned upon a failure to execute a queue progression script function.
HANDLED_BY_SCRIPT	17	When handling chat events in queue progression script, it is possible (currently only from custom JavaScript) to set a custom current event result. When set to <code>HANDLED_BY_SCRIPT</code> , messages will not be passed to other chat members, but will be saved in the chat history.
INVALID_NAME	18	(For future use) in multi-participant chat, a web caller attempts to join a chat with another web caller with the same name as another participant.
REJECTED	19	For future use

Chat message type schema

This section describes the JSON schema for the different chat message types:

- *Type 1: CHOICE_LIST*
- *Type 2: CHOICE_RESULT*
- *Type 3: CUSTOM_HTML*
- *Type 4: CUSTOM_HTML_RESULT*
- *Type 5: ADAPTIVE_CARD*

- *Type 6: ADAPTIVE_CARD_RESULT*

Type 1: CHOICE_LIST

CHOICE_LIST messages are configured as part of a queue progression script.

Example:

```
{
  Name: 'yes or no',
  Prompt: 'Please choose:',
  AllowOnce: true,
  DisableFreeInput: true,
  ChoiceOptions: [
    {
      Order: 1,
      Txt: 'yes',
      Val: '1',
      BkgSrcB64: null,
      BkgStyle: '',
      BkgType: null,
      TxtStyle: ''
    },
    {
      Order: 2,
      Txt: 'no',
      Val: '2',
      BkgSrcB64: null,
      BkgStyle: '',
      BkgType: null,
      TxtStyle: ''
    }
  ]
}
```

CHOICE_LIST object properties

Property	Type	Description
Name	string	Name of the choice
Prompt	string	Message to be displayed on behalf of the chat bot, describing the choice that needs to be made.
AllowOnce	boolean	Normally, should be false. Defines whether the buttons stay enabled after the selection is made.

Property	Type	Description
DisableFreeInput	boolean	Normally, should be true. Defines whether the caller's text input field is disabled to prevent them from doing anything else, other than the selection (choice).
ChoiceOptions	array	Array of choice options, see below.

Properties of the members of the ChoiceOptions array

Property	Type	Required	Value if not given	Description
Order	number	Yes		Ordering position in the row of buttons
Txt	string	Yes		Button label, such as "Yes!"
Val	string	No	Empty string	Value, corresponding to the button, such as "1", or "y", or "yes".
BkgSrcB64	string	No	null	Base64-encoded image for the button.
BkgType	string	No	null	Type of image format, such as png, jpeg, required for adding a correct MIME type for the image, for example image/png.

Property	Type	Required	Value if not given	Description
BkgStyle	string	No	Empty string	Value for the 'style' attribute of the tag for the button.
TxtStyle	string	No	Empty string	Value for the 'style' attribute of the tag containing the label for the button.

Type 2: CHOICE_RESULT

CHOICE_RESULT is sent by the chat client in response to a CHOICE_LIST message.

Example :

```
{
  name: 'yes or no',
  value: '1',
  text: 'yes'
}
```

CHOICE_RESULT object properties

Property	Type	Description
name	string	Name of the choice that was passed to the chat client in the CHOICE_LIST message.
value	string	Value assigned to the button in accordance with the 'Val' property in the CHOICE_LIST message.
text	string	Button label created in accordance with the 'Txt' property in the CHOICE_LIST message.

Type 3: CUSTOM_HTML

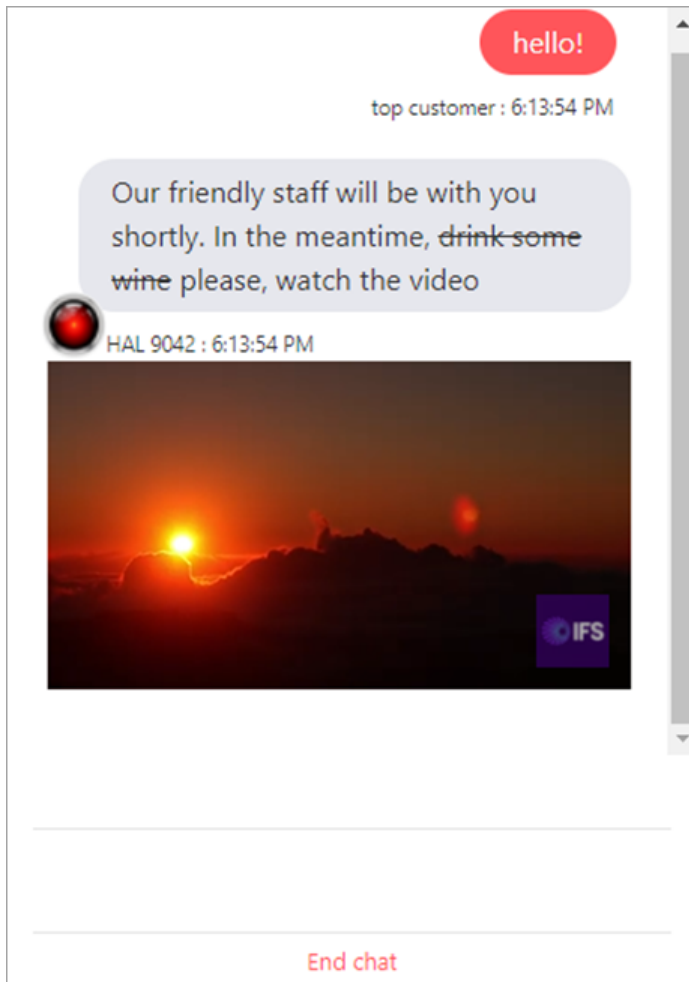
Using the CUSTOM_HTML message you can configure queue progression to display arbitrary HTML. This functionality overlaps with the one provided by Adaptive Card message types, and it is generally recommended to use Adaptive Cards for this purpose, if possible. However, in many cases, especially, when you don't need to collect an input, it is more straightforward to use CUSTOM_HTML.

Note that this HTML is configured in the Admin Portal as a part of queue progression script and sent *from the server* to the caller's browser.

Example 1. Show a video to web callers while they wait in queue

```
{
  "Name": "youtube forthechallengers",
  "Prompt": "Our friendly staff will be with you shortly. In the
  meantime, <del>drink some wine</del> please, watch the video",
  "AllowOnce": true,
  "DisableFreeInput": true,
  "HTML": "<iframe width=\"320\" height=\"180\" src=\"https://
  www.youtube.com/embed/1MeKUwnjmJI?autoplay=1&mute=0\" frameborder=
  \"0\" allow=\"autoplay; encrypted-media\" allowfullscreen></iframe>"
}
```

This is how the chat message from chat box would look:



Example 2. Ask a customer to fill in a form

This functionality is also provided by Adaptive Card message types, and although it is generally recommended to use Adaptive Cards for this purpose, CUSTOM_HTML is still an option.

```
{
  "Name": "Engineer Visit CustomHTML 01",
  "Prompt": "Please select: ",
  "AllowOnce": false,
  "DisableFreeInput": false,
  "HTML": "<hr/>\nEngineer's visit date: <input type=\"date\" id=
\"newDate\"
name=\"newDate\" value=\"2022-04-06\"> \nContact name: <input type=
\"text\"
id=\"contactName\" name=\"contactName\" value=\"John Doe\"> \nContact
phone:
<input type=\"text\" id=\"contactPhone\" name=\"contactPhone\" value=
\"01234567890\">
\n<button name=\"btnSubmitDate\""
```

```

onclick=\"submitButton( MESSAGE_TYPE.CUSTOM_HTML_RESULT, {'value':
  '{date:\\\\' +
  $v('newDate') + '\\',name:\\\\' + $v('contactName') + '\\',phone:\\\\'
  +
  $v('contactPhone') + '\\'}', 'innerText':$v('newDate'),
  'name':'btnSubmitDate'}); return false;\">\n Submit new time\n </
button>\n  <hr/>\"
}

```

Note The HTML property contains input fields, such as "contactName", and a JavaScript snippet, which takes advantage of the `$v` function defined in the `chatClient.js` file of the demo chat client.

In this case the chat message from the chat bot would look like:

Please select:

HAL 9041 : 6:09:35 PM

Engineer's visit date:

06/04/2022

Contact name:

John Doe

Contact phone:

01234567890

Submit new time

Type your message here...

Send

End chat

CUSTOM_HTML object properties

Property	Type	Description
Name	string	Name of the custom HTML

Property	Type	Description
Prompt	string	Message to be displayed on behalf of the chat bot, describing the choice to be made.
AllowOnce	boolean	Normally, should be <i>false</i> . Defines whether the buttons stay enabled after the selection is made.
DisableFreeInput	boolean	Normally, should be <i>true</i> . Defines whether the caller's text input field is disabled to prevent them from doing anything else, other than making the selection (choice).
HTML	string	<p>HTML to be displayed to the caller.</p> <p>If the caller's input is required, then it needs to contain a submit button, for example:</p> <pre><button name="btnSubmitDate" onclick = "sendButton(MESSAGE_TYPE.CUSTOM_HTML_RESULT, { 'value':\$v('newDate'), 'innerText':\$v('newDate'), 'name':'btnSubmitDate' }); return false;"> Submit new time </button></pre>

Type 4: CUSTOM_HTML_RESULT

The message type CUSTOM_HTML_RESULT is sent by the chat client in response to a CUSTOM_HTML message.

Example:

```
{
  "name": "btnSubmitDate",
  "value": "{date:'2022-04-06',name:'John Doe',phone:'01234567890'}",
  "text": "2022-04-06\"
}
```

CUSTOM_HTML_RESULT object properties

Property	Type	Description
name	string	Name of the submit button that was passed to the chat client in the CUSTOM_HTML message.
value	string	Data, in arbitrary form, collected from the form fields defined in the CUSTOM_HTML message.
text	string	Any text that can be, for example, displayed back to the web caller. It could be based on the data collected from the form fields defined in the CUSTOM_HTML message.

Type 5: ADAPTIVE_CARD

The ADAPTIVE_CARD message type contains a template and a data payload in order to display an adaptive card to the caller, as well as display instructions for the chat client (options). This is configured as part of a queue progression script.

Example of an ADAPTIVE_CARD message:

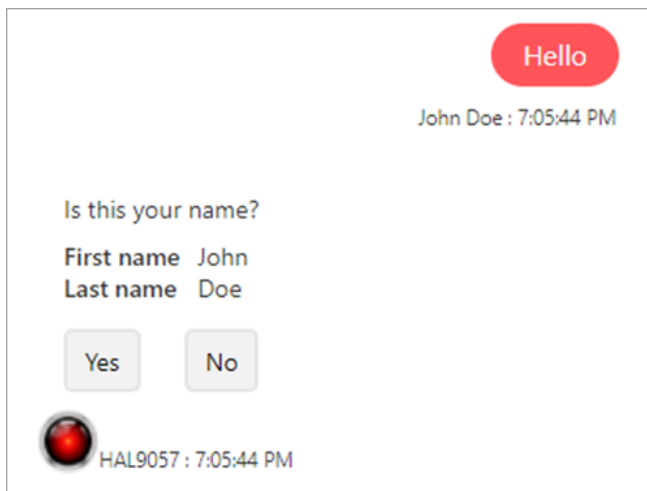
```
{
  "template": {
    "type": "AdaptiveCard",
    "body": [
      {
        "type": "TextBlock",
        "text": "Is this your name?",
        "wrap": true
      },
      {
        "type": "FactSet",
        "facts": [
          {
            "title": "First name",
            "value": "${firstname}"
          },
          {
            "title": "Last name",
            "value": "${lastname}"
          }
        ]
      },
      {
        "$data": "${contact}"
      }
    ],
    "type": "ActionSet",
    "actions": [
      {
        "type": "Action.Submit",
```

```

        "title": "Yes"
      },
      {
        "type": "Action.Submit",
        "title": "No"
      }
    ]
  },
  {
    "$schema": "http://adaptivecards.io/schemas/adaptive-
card.json",
    "version": "1.3"
  },
  {
    "data": {
      "$root": {
        "contact": [
          {
            "firstname": "John",
            "lastname": "Doe"
          }
        ]
      }
    },
    "options": {
      "disableFreeInput": true,
      "hideBotDetails": false
    }
  }
}

```

This is how the chat message from the chat bot would look:



In the above example, the structure of the ADAPTIVE_CARD message can be seen as follows:

```

{
  "template": { ... },
  "data": { ... },
  "options": {

```

```

    "disableFreeInput": true,
    "hideBotDetails": false
  }
}

```

The first two properties ("template" and "data") are required in order to implement Adaptive Card Templating scenario of “separating the template from the data” (See Option B [here](#)). The "template" and "data" thus adhere to [Microsoft Adaptive Cards](#) specification.

The "options" property is to control chat web client behavior.

ADAPTIVE_CARD object properties

Property	Type	Description
template	string	Name of the custom HTML
data	string	Message to be displayed on behalf of the chat bot, describing the choice to be made.
Options.DisableFreeInput	boolean	Normally, <i>true</i> . Defines, whether the caller's text input field is disabled to prevent them from doing anything else, other than making the selection.
Options.hideBotDetails	boolean	Normally, <i>false</i> . Defines whether to display the chat avatar and name. Sometimes, you may want to hide them for a cleaner UI.

Type 6: ADAPTIVE_CARD_RESULT

An ADAPTIVE_CARD_RESULT message is sent by the chat client in response to an ADAPTIVE_CARD message. It contains action(s) which are submitted to the server. The action, responsible, for submitting data, has a type "Action.Submit". Example:

```

{
  "type": "Action.Submit",
  "title": "Yes"
}

```

ADAPTIVE_CARD_RESULT object properties

Property	Type	Required	Description
type	string	Yes	Has value "Action.Submit"

Property	Type	Required	Description
title	string	Yes	Action title, that is a label for the submit button. In situations, such as the example above, this may be all the data that you need to collect.
Data	object	No	Form data from input fields of the card.

Disabling a chat definition

You can disable a chat definition, which will disable the chat service for this chat definition:

1. In the Admin Portal go to **Media Management > Chat**.
2. In the Chat Detail area, select the contact center and the contact center unit.
3. Select the chat definition.
4. Select the **Disabled** checkbox.

Note Attempts to start a chat will result in a *CHAT_RESULT* code (*ACCESS_DENIED*) being sent back to the web page. It is up to the web designer to handle this appropriately in their chat client.

10

Social media configuration

WhatsApp, Twitter and Facebook.

Important The information in this section applies to fully-featured tenants only.

You can monitor and respond to social media messages, whether Twitter, Facebook, WhatsApp or SMS. This requires a social media definition for each social media type. Once you have a social media definition, you can then configure how the messages are handled by the system by creating a queue progression script.

Note Using SMS requires an SMS provider. For further details, see [SMS configuration](#).

Facebook and Twitter

A contact center can monitor and respond to both Twitter and Facebook social media messages. This requires a social media definition for each service. You create this in the Admin Portal.

Configuring the Twitter or Facebook account

You require a fully configured Twitter or Facebook account before you can create any social media definitions.

For Facebook, you must complete the app review process for the account. For details, see <https://developers.facebook.com/docs/app-review>. Full approval is needed, for example, if you need to respond to direct messages.

In the Twitter or Facebook account, you need to set the callback URL for your tenant. For example, if your tenant is:

`https://<environment>/<tenant-name>` then the callback URL will be:

`https://<environment>/<tenant-name>/ce/admin/api/ce/UpdateTwitterToken`

You need to be aware of the rate limit set on your Twitter or Facebook account. This limits the number of API requests that can be made to the account.

Important Exceeding the rate limit for the account may temporarily lock the account.

Configuring CE access to the Twitter or Facebook account

You configure how social media works for a contact center unit by creating one or more social media definitions and queue progression scripts:

1. Before you can do this, and depending on the target, you need to get the Facebook application id and secret, or Twitter key and secret. You will need these when you set up the definition.
2. In the Admin Portal go to **Media Management > Social Media**.
3. In the Social Media Detail area, select the contact center and the contact center unit.
4. Enter the details of the social media definition. The configuration details for Facebook and Twitter are slightly different:
 - [Configuring definitions for Twitter and Twitter DM](#)
 - [Configuring definitions for Facebook and Facebook DM](#)

Important When setting the **Poll Interval**, you need to be aware of the rate limit set on your Twitter or Facebook. This limits the number of API requests that can be made to the account - exceeding the rate limit may temporarily lock the account.

5. You need to authorize the social media definition for use with a specific Facebook or Twitter account using the credentials you entered in the social media definition. This is a once only step unless there are security reasons for obtaining a new key. You do not need to reauthorize the definition when you make changes to the definition.
 - a. Click the **Authorize** button.

You go to the Facebook or Twitter account. Sign in if necessary.
 - b. The outcome of the request is reported.

If successful, this saves the access token and secret that will be required by the service to access the Twitter or Facebook account.
 - c. Once you have successfully authorized the definition, the service will immediately start querying Twitter or Facebook provided the definition is not disabled.
 - d. When testing the definition, you can click **Reset Poll** so that the service immediately queries the account rather than waiting for the polling interval to expire. Note that the table shows the number of social media messages added to the queue and not the total number of messages.

6. On the **Contact Center Unit > Access to Contact Center** page, you can set:

- The number of social media messages to hold in memory ready for agents to become available: the **Social Media Queue** Quota field
- The priority of social media messages – see [Setting default activation priorities](#).

Configuring definitions for Facebook and Facebook DM

This describes the information needed for either Facebook or Facebook Direct Message social media definitions. See [Facebook and Twitter](#) for background information on creating new definitions.

Field	Description
Name	The internal name of the social media definition.
Type	Select the type as social media definitions vary depending on the target application or account.
Disabled	The service will not monitor the account for new messages when the definition is disabled. For details, see Disabling a social media definition .
Description	Any notes that you want to enter, for internal use.
Use Default Multi-Tenant App	Do not select this.

Field	Description
App ID, App Secret	<p>You need to give Customer Engagement access to read and process messages in your Facebook account. To do this enter the application ID and secret for the Facebook account.</p> <p>Important CE uses <i>page access tokens</i> and these expire in about 60 days. Please refer to the Facebook developer documentation for further details.</p> <p>Important Your Facebook account limits the number of API requests that can be made within a 24-hour period so you may require separate credentials for each social media definition.</p>
Max Message Age (Days)	Only messages that are less than the Max Message Age number of days are monitored.
Poll Interval (Seconds)	<p>The interval at which the service checks for new messages.</p> <p>Important Your Facebook account limits the number of API requests that can be made within a 24-hour period so it is important to select a poll interval that does not exceed this limit. Please refer to the Facebook developer documentation for further details.</p>

Field	Description
Call Quota	<p>The number of messages to download and hold in the queue. Once you reach the call quota, monitoring stops until the number in the queue falls below the quota. For example, if the quota is 100 then monitoring stops when there are 100 messages in the queue. The purpose of this is to prevent too many downloads in the event of something going viral.</p> <div data-bbox="852 617 1469 911"> <p>Note This is different to the Social Media Quota set on the Contact Center Unit > Access to Contact Center page which determines how many messages from the queue are held in memory ready to be presented to the next available agent.</p> </div>

Field	Description
Priority Adjustment	<p>Priority is determined by the default priority for the activation type as set for the contact center unit and, optionally, by the relative priority set for the media definition. If used, the relative priority adjusts the default priority up or down.</p> <div data-bbox="852 495 1471 669"> <p>Note To check the default priorities for the contact center unit, go to Contact Center Unit > Access to Contact Center.</p> </div> <p>If you want to:</p> <ul style="list-style-type: none"> • Queue activations according to an adjusted (relative) priority then select an option from Lowest to Highest. • Queue activations using the default priority that's set for the contact center unit then select No Change. <p>The relative priorities are:</p> <ul style="list-style-type: none"> • High, Highest: raises the priority by adding 1 or 2 points respectively to the default priority. • Low, Lowest: lowers the priority by subtracting 1 or 2 points respectively from the default priority.
Skillset	<p>Optionally, select the skillset required by agents to handle social media messages.</p> <p>See Skills and skills-based routing.</p>
Coverage Plan	<p>Select the open hours that will apply to the social media definition. Out of hours, the service will not start a session.</p> <p>The contact center is always open if you do not set a coverage plan.</p>

Field	Description
Script Trace Level, Script Email List	<p>You can configure the media definition to send an email with the debugging information. The trace level sets the event that triggers email sending. For example, during development you might want to receive an email every time the script runs but later change the script trace level to only send an email when an error occurs.</p> <p>You can send the log to one or more email addresses. Enter the email addresses as a semi colon-separated list.</p> <p>Note: The <i>From:</i> email address for script emails is either the email address given as the Main Contact Email for the contact center or, if that is empty, the Support Email for the contact center. If neither of these are set up, then it is sent from the system mailbox for the tenant.</p>
Monitor Only Tagged Posts	<p><i>Facebook only.</i></p> <ul style="list-style-type: none"> • Deselect this option if you want the service to only monitor posts on the page configured for the Facebook account. (Default) • Select this option if you want the service to collect messages from anywhere in Facebook where your Facebook account is tagged (using the @ character).

Configuring definitions for Twitter and Twitter DM

This page describes the configuration options specific to Twitter and Twitter Direct Messages. For details of priority, skillset, coverage plan, script trace level and script email list, see [Facebook and Twitter](#).

Field	Description
Name	The internal name of the social media definition.
Type	Select the type as social media definitions vary depending on the target application or account.

Field	Description
Search Query	<p><i>Twitter only.</i></p> <p>For Twitter, you must enter a search query. For details of the query format, see this reference page https://developer.twitter.com/en/docs/twitter-api/tweets/search/integrate/build-a-query:</p> <p>All tweets for the Twitter account are found if the search query is empty.</p>
Disabled	The service will not monitor the account for new messages when the definition is disabled. For details, see Disabling a social media definition .
Use Default Multi-Tenant App App ID, App Secret	<p>You need to give Customer Engagement access to read and process messages in your Twitter account. Twitter access tokens do not expire. See the Twitter developer documentation for details.</p> <div> <p>Important Your Twitter account limits the number of API requests that can be made within a 24-hour period so you may require separate credentials for each social media definition.</p> </div> <p>You can either use the standard CE identity for authentication or define your own.</p> <ul style="list-style-type: none"> To use the standard identity, select Use Default Multi-Tenant App. This option is only available if your tenant is configured to use this. To use your own credentials, enter the Twitter key and secret for the Twitter account.
Max Message Age (Days)	Only messages that are less than the Max Message Age number of days are queried.

Field	Description
Poll Interval (Seconds)	<p>The interval at which the service checks for new messages.</p> <p>Important Your Twitter account limits the number of API requests that can be made within a 15-minute period so it is important to select a poll interval that does not exceed this limit. Please refer to the Twitter developer documentation for further details.</p>
Call Quota	<p>The number of messages to download and hold in the queue. Once you reach the call quota, monitoring stops until the number in the queue falls below the quota. For example, if the quota is 100 then monitoring stops when there are 100 messages in the queue. The purpose of this is to prevent too many downloads in the event of something going viral.</p> <p>Note This is different to the Social Media Quota set on the Contact Center Unit > Access to Contact Center page which determines how many messages from the queue are held in memory ready to be presented to the next available agent.</p>

Field	Description
Disable Soft Start	<p>This feature optimizes calls to the Twitter API, which is a paid for service with an allowed rate limit. Exceeding the rate limit may temporarily disable the Twitter API linked to your Twitter account.</p> <ul style="list-style-type: none"> • When you enable the definition and the option is deselected (the default), the service starts by collecting the most recent messages first, and then over a number of days works back to the full time range. For example, it takes the messages posted in the last few hours rather than the last few days. • If Disable Soft Start is selected, then the service will instruct twitter API to collect all the messages between the time of the last message and now, which may exceed the allowed rate limit.

Field	Description
Disable Auto Download of Linked Tweets	<p><i>Twitter only.</i></p> <p>By default, both replies and tweets linked from the original tweet or reply are automatically downloaded to CE. This gives agents the context they may need to respond a tweet. Replies are always downloaded but you can decide whether you need the linked tweets.</p> <ul style="list-style-type: none"> • For replies, the linked tweet is the tweet to which you are replying. • For quotes, the linked tweet is the tweet you are quoting. • For retweets, the linked tweet is the original tweet. <p>When:</p> <ul style="list-style-type: none"> • Disable auto download of linked tweets is deselected (the default), both replies and retweets of the original tweet are downloaded. Use the option Enable automatic queuing of additional/linked tweets to decide how to handle them in CE. • When Disable auto download of linked tweets is selected, only replies are downloaded.
Enable Auto Queuing of Additional/Linked Tweets	<p><i>Twitter only.</i></p> <p>This option only applies when linked tweets are being downloaded (Disable auto download of linked tweets is deselected).</p> <p>By default, tweets linked from the original tweet are not added to the queue but are saved as part of its history. They are therefore available as part of the conversation but don't need to be handled by the agent.</p> <p>Select this option if you want each linked tweet to be added to the queue.</p>

Field	Description
Save Raw Message Details in MSG_JSON App Data Element	<p><i>Twitter only.</i></p> <p>You can save additional information from the tweet to the database for use in CE Studio. The data is exposed through the Social Media provider.</p>
Disable queueing of retweets	<p><i>Twitter only.</i></p> <p>By default, retweets of the original tweet are added to the queue and will therefore require processing either by an agent or automatically. Select this option if you don't want retweets to be added to the queue.</p>

WhatsApp

You can use WhatsApp as one of your social media channels. This requires:

- A Facebook Business account.
- You to complete a client agreement form.
- Approval from Twilio and WhatsApp.

Please request IFS Support to start the WhatsApp enablement process on your behalf as Twilio has recently changed the approval process, and it is not currently possible to do this through the Admin Portal.

Create a social media definition for WhatsApp

In this step, you need to create a social media definition for WhatsApp, selecting the Twilio phone number to use. When you save the definition, you automatically start the process for Twilio and WhatsApp to approve the phone number as a WhatsApp enabled sender.

Note The details are sent to IFS Services who will submit the request with Twilio on your behalf.

To create a social media definition for WhatsApp:

1. In the Admin Portal, go to **Media Management > Social Media**.
2. Click **New**.
3. Enter the following details.

Field	Description
Name	A descriptive name identifying the purpose of the social media definition.
Contact Center	The contact center that will handle WhatsApp messages.
Contact Center Unit	The organizational unit within the contact center that is responsible for WhatsApp.
Type	Select WhatsApp .
Disabled	Select this later if you need to disable this social media definition.
Description	Any additional information that you want to save with the social media definition. This is for internal use only.
Display Name	The name that will be displayed in the WhatsApp profile description. For detailed information on the WhatsApp profile, see the Twilio guide here: https://www.twilio.com/docs/whatsapp/tutorial/connect-number-business-profile .
WhatsApp Number	Select the phone number to use for WhatsApp messages.
Priority Adjustment	Select No Change if you are not ready to configure this or you want to use the default priority. For here for details of what priority adjustment.
Skillset	Optionally, select the skillset required by agents to handle WhatsApp messages. See Skills and skills-based routing .

Field	Description
Coverage Plan	<p>Select the open hours that will apply to the social media definition. Out of hours, the service will not start a session.</p> <p>The contact center is always open if you do not set a coverage plan.</p>
Script Trace Level, Script Email List	<p>You can configure the media definition to send an email with the debugging information. The trace level sets the event that triggers email sending. For example, during development you might want to receive an email every time the script runs but later change the script trace level to only send an email when an error occurs.</p> <p>You can send the log to one or more email addresses. Enter the email addresses as a semi colon-separated list.</p> <p>Note: The <i>From:</i> email address for script emails is either the email address given as the Main Contact Email for the contact center or, if that is empty, the Support Email for the contact center. If neither of these are set up, then it is sent from the system mailbox for the tenant.</p>

- Click **Save**. This saves the social media definition.

Note Ignore the **Authorize** button. This does not apply to WhatsApp social media definitions.

This sends the details to IFS Services who will request Twilio and WhatsApp to approve the phone number as a WhatsApp enabled sender on your behalf.

- You will receive a notification in your Facebook Business Manager account from Twilio. You need to approve Twilio to message on your behalf in Facebook Business Manager.
- Twilio will also ask you to verify your Facebook Business Manager account. To do this, go to your Facebook Business Manager account and submit a business verification. See [Facebook's help article](#) for details of this step.

Configure and get approval for WhatsApp templates

WhatsApp templates enable you to send unsolicited messages to WhatsApp users. Each template and language variant of the template must be approved by Meta. The **Media Management > WhatsApp Content Template** page automates the approval process for you. You can only use approved templates in WhatsApp queue progression scripts (in the [WhatsApp Template Reply](#) option).

Note You can add as many templates as you need but you can't edit them (this is a Twilio restriction).

Note To understand Facebook's approval process and common reasons for rejection, see <https://developers.facebook.com/docs/whatsapp/message-templates/guidelines/>.

To add a WhatsApp template:

1. In the Admin Portal, go to the **Media Management > WhatsApp Content Template** page.
2. Enter the template name. This must be lowercase, without any spaces or special characters apart from underscores.
3. Select a category.
4. Select a language and then enter the message body.

The body can contain placeholders that are substituted when the media script runs.

Use double curly braces to indicate where you plan to use dynamic content. For example, to send "Your login code for Twilio is 1234", the template would be: "Your login code for {{1}} is {{2}}." Then, when you use the template in a queue progression script, you map the placeholders with variables that will supply the data at runtime.

5. Click **Add Translation** to add another language variant.

You can add multiple languages to the same template. Each language variant is approved separately.

6. Click **Save**. This automatically submits the template to Facebook for approval.

After saving, the template is at Pending status. This will update to Approved status once Facebook has reviewed the template.

Whatsapp content templates with parameters:

You can now create a Whatsapp content template with parameters directly through the Admin Portal. To increase the likelihood of WhatsApp approving the template, we recommend including sample data for all parameters in the template. If the template is rejected, the admin portal will display the reason WhatsApp provided for the rejection.

Note

- The approval or rejection of templates is determined by Whatsapp based on their guidelines.
- See: <https://developers.facebook.com/docs/whatsapp/message-templates/guidelines/>

Disabling a social media definition

You can stop monitoring of social media accounts by disabling the social media definition for the account. This will also stop the presentation to the agent of any existing messages that are in the queue at the time the definition is disabled.

Note You cannot reset the polling interval for disabled Facebook and Twitter definitions.

To start monitoring again, you can enable the definition. New messages are added to the queue again and any old messages in the queue will go to the agents.

Note For Facebook and Twitter definitions, only messages less than the configured maximum age are added to the queue.

To disable a social media definition:

1. In the Admin Portal go to **Media Management > Social Media**.
2. Select the definition from the Social Media List.
3. On the right, select the **Disabled** check box to stop monitoring.
4. Click **Save** to disable the definition.

To restart monitoring, clear the **Disabled** check box again and save the definition.

Scripting queue progression for social media

You use the Media Script Editor to script how inbound social media messages are handled by CE. A media script can automate message handling or you can use a media script to preprocess the message in some way before it is passed to an agent.

In WhatsApp and SMS, for example, all inbound messages from the same sender are treated as the same conversation, regardless of the interval between sending. Data for use by the script is stored in script elements and automatically saved as part of the conversation.

Typically, you need to use the following options when scripting queue progression for social media:

Option	Description
Is New Conversation	Use the Is New Conversation option to check whether an incoming message is part of an existing conversation or a new one. For SMS and WhatsApp this is determined by the sender's number. See Is New Conversation .
Set Script Element	Use the Set Script Element option to save the data obtained from the current social media message. You can then refer to the data when handling a later message in the same conversation. See Set Script Element .

See [Configuring media scripts](#).

System variables for social media messages

You can use the following variables when developing media scripts for handling any type of inbound social media message. Enclose both system variables and script variables in % symbols. For example, %sys_MessageText%.

System Variable	Description
sys_MessageText	Body of the social media message.
sys_MessageType	The type of social media message: <ul style="list-style-type: none"> • Facebook = 0 • FacebookDM = 1 • Twitter = 2 • TwitterDM = 3 • WhatsApp = 4 • SMS = 5
sys_SenderId	Sender's id: <ul style="list-style-type: none"> • The from number for SMS or WhatsApp messages • For Facebook, it's the userid provided by the FaceBook API (such as 12345678901234).

System Variable	Description
sys_SenderName	<p>Sender's name:</p> <ul style="list-style-type: none"> The from Number without the prefix for WhatsApp message (such as whatsapp: +123456789012) The from Number for SMS For Facebook, it's the name (such as John Doe)
sys_RequestID	Activation ID once an activation is created for the message.
sys_DefinitionName	Name of the social media definition.
sys_StartDate	<p>Today's date.</p> <p>Default: <code>new Date()</code></p>
sys_DayOfTheWeek	<p>Current day.</p> <p>Default: <code>sys_StartDate.getDay()</code></p>
sys_TimeOfDay	<p>Current time.</p> <p>Default: <code>sys_StartDate.toTimeString()</code></p>
sys_NlpCatArr	See Email system variables
sys_NlpLangArr	See Email system variables
sys_LastInvokeProviderActionResult	See Invoke Provider Action
sys_MessageExternalId	ID of the inbound message.
sys_MessageID	ID of the queued message.
sys_ClientID	ID of the contact center unit set in the social media definition.

11

Configuring media scripts

How to use the Media Script Editor.

Important The information in this section applies to fully-featured tenants only.

You use the Media Script Editor, part of the Admin Portal, to configure queue progression for each communication channel, based on the actions needed for that channel and the required level of automation.

For voice calls, the script will control the IVR system. For emails, you might need to identify the content of the email:

- Identify spam and remove the email.
- Identify keywords to determine the next action.
- Identify the language and then change the skillset needed to handle the email.

To save any data collected by the script for use later, for example in a CE Studio app, you can use script elements or *custom entities*.

You can configure:

- Default scripts to be used if there is no more specific script for an inbound number, email address or chat/social media definition belonging to the contact center unit.
- Custom scripts that are specific to an inbound number, email address or chat/social media definition. However, you can share scripts by exporting and importing.

A JavaScript file is generated from your script. We recommend that you have some knowledge of JavaScript when developing and troubleshooting queue progression.

To open the Media Script Editor, go to:

- **Media Management > Voice**
- **Media Management > Emails**
- **Media Management > Chat**

- **Media Management > Social Media** (includes SMS)

Creating a media script for queue progression

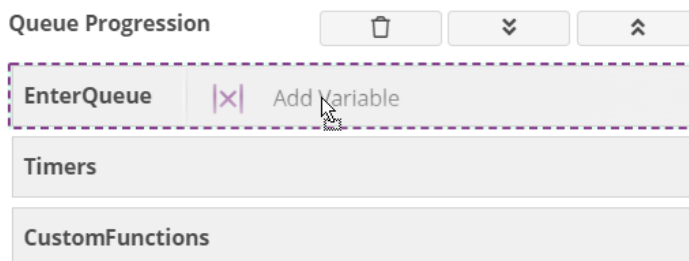
Note If an error occurs in the running media script, for example, a caller enters something that the script is not configured to handle then the script ends and the caller is immediately added to the queue for an agent without any further preprocessing by the script.

To create a new media script:

1. In the Admin Portal, go to **Media Management** and select the media type. For example, **Chat**.
2. Do one of the following:
 - Click the **Default Queue Progression** button. For example, for chat the script will be used by any chat definition for the contact center unit that does not have its own script.
 - Select a definition from the list, for example a chat definition, and then click the **Queue Progression** button. The script you develop is for this definition only.
3. Click **New** to start a new media script.

In the editor, script options are on the left. An outline script with nodes for the standard events is on the right. This is where you will drag and drop the options required by the script.

4. Drag an option, such as Add Variable, and drop it onto the EnterQueue node. This adds it as the first option for that event. Any further options are added to the end.



5. Enter a description to help others understand what each step in the script does.
6. Complete the option's details. See [Media script options](#) for details.
7. Add other options as required.

You can change the order in which the options will run by dragging and dropping the options onto the EnterQueue node.

8. You must finish the script with one of the following options:
 - Add to Queue
 - Disconnect Call

- Hangup
- Remove Call from Queue
- Play Message

This ensures that the script ends correctly rather than timing out. For example, for voice calls when the script times out, the caller will hear a Twilio error message `An application error has occurred`.

9. When you have finished:

- a. Enter a name for the version and then click **Save**.

If the version exists already and you don't want to overwrite it, select **Save As New Version**.

- b. When you have added all the options and you are ready to test the script, click **Save & Generate**. This validates the script and generates it as a JavaScript file.

Note If the button is unavailable then check the mandatory settings in each option in the script. You cannot generate a script if any mandatory settings are missing.

10. If the script is ready to run, and you have generated it:

- a. Go to the Queue Progression Version page for the media type. For example, for voice calls go to **Media Management > Voice**, select the inbound number and then click either **Default Queue Progression** or **Queue Progression**.
- b. Select the version and then click **Make Live**. Once you make a version live, you can't delete it—you need to make another version live first.

11. Test the live script by phoning the number or starting a chat session. When you hang up the call or end the chat session then a debug email is sent to the email addresses in the **Script Trace Emails** field for the inbound number, email address, chat definition. Use the information in the email to fix any problems with the script. See [Debugging media scripts and script debug settings](#) for details.

Media script options and events

Some events are standard to every media script. For example, the EnterQueue event. Options added to the EnterQueue node define what happens to an inbound call, email or chat. Options must be added here for any queue progression to occur that requires agent intervention.

Other events are optional. For example, Timer events. If you require a delay, add it to Timers node along with the actions that should take place once a Start Timer has expired. The Start Timer option is set in the EnterQueue event.

Custom Function events are optional. You can call them from other points in the script.

For more details, see:

- [IVR queue progression events](#)
- [Queue progression events for emails](#)
- [Queue progression events for chat](#)

Managing media scripts

On the Queue Progression Version page for the media type, click the required version of the media script.

Note For example, for voice calls go to **Media Management > Voice**, select the inbound number and then click either **Default Queue Progression** or **Queue Progression**.

Deleting a media script

To remove a script version, select the version and click **Delete**. You cannot delete the live version.

Editing a media script

Select the version that requires editing and click **Edit Script**. Generating (saving) the script after editing will not create a new version unless you explicitly choose this option on saving.

Making a media script live

The live script is the version of the script that will be used by the queue. Select the version that you wish to use and click **Make Live**. You need to generate a script first. Click **Edit Script** to do this.

Importing a media script

You can import a script that you have exported from another queue. To import a script, click **Import** to select a file to import. Importing a file will create a new version number.

Note You need to ensure that all resources referred to within the imported script are available. In the case of voice scripts, .wav files may need to be re-imported and re-set if you export a script from one inbound number and/or contact center unit and import it into another. For emails, you may need to recreate templates if a script is imported from another contact center unit. You may also need to check skillsets.

Exporting a media script

To export a script, select the version and click **Export**. This will create a file called `<media>QProgression.xml` which you can then re-import.

Debugging media scripts and script debug settings

To assist with configuration and troubleshooting, there are debug options available. To set any of these options, in the Admin Portal, go to **Media Management** and then select **Voices**, **Emails** or **Chat**. You require a [system email address](#) to send debug emails.

Note If this option isn't set then the trace log is emailed to the email address of the manager of the contact center unit. To set this go to **Contact Center Unit > Contact Center Units**.

Script Trace Level

The suggested meaning of each of the trace/severity levels is as follows:

- None – disables the script trace.
- Critical Error – highest severity failures where there is a significant loss of service
- Error – failure resulting in partial loss of service
- Warning – unexpected condition encountered, but not resulting in a loss of service
- Information – low frequency success conditions/actions which are worthy of human attention
- Trace – low frequency diagnostic events for troubleshooting purposes
- Debug – diagnostic events where each successive level represents increasingly more verbose/detailed information.

Script Email List

The email address to which the trace logs should be sent. Information will be emailed on the inbound activation for any version of the queue progression script. Separate multiple email addresses with a semi-colon (;).

Using the Debug Log option in a script

You can add a debug option to a script to provide additional information that is reported in the trace log. To do this add the Debug Log option in one of the following parts of the script:

- Before the Add To Queue option in the Enter Queue event — the Debug Log option is ignored if it is placed after Add to Queue.
- In the Timers event
- In the Custom Functions block

Media scripts and system variables

System variables are available for use in media scripts. Enclose the variable in % characters. See:

- [Voice system variables](#)
- [Email system variables](#)
- [Chat system variables](#)

You can also include variables in text fields. You declare the variables using the Add Variable action and then enclose them in % characters.

Media script options

The following options apply to scripts for all the media types unless indicated otherwise in the Activation type column.

Note Social Media includes Facebook, Twitter, WhatsApp, SMS.

Script option	Activation type
Adaptive Card	Chat
Add to Queue	
Add Survey Candidate	
Add Variable	
Auto Reply	Social Media
Auto Reply Email	Email
Call Function	
Close Work Object	
Create Work Object	
Data Delete	
Data Insert	
Data Update	
Debug Log	
Detect Language	Email, Chat, Social Media

Script option	Activation type
Disconnect Call	Inbound Voice Call, Outbound Voice Call
Function	
Hangup	Email, Chat, Social Media
IF	
Invoke Provider Action	
Is New Conversation	Email, Social Media
Is Open	
JavaScript	
Open Work Object	
Play Message	Inbound Voice Call, Outbound Voice Call
Play Position in Queue	Inbound Voice Call, Outbound Voice Call
Post Work Object	
Record Voicemail	Inbound Voice Call, Outbound Voice Call
Remove Call from Queue	Inbound Voice Call, Outbound Voice Call
Request Caller Data	Inbound Voice Call, Outbound Voice Call
Search Data Table	
Search for Email Keywords	Email
Search for Email RegEx	Email
Search for Keywords	Chat, Social Media
Search for RegEx	Chat, Social Media
Search using NLP	Email, Chat, Social Media
Send Choice	Chat
Send Custom HTML	Chat
Send Email	
Send SMS	

Script option	Activation type
Send Template	Chat
Send Text	Chat
Send WhatsApp Templated Message	Chat, Email, Social Media
Set Priority	
Set Script Element	
Set Skill Set	
Set Variable	
Start Timer	
Start Work Timer	
Stop Timer	
Timer	
Transfer Call	Inbound Voice Call, Outbound Voice Call
Web Request	Email, Chat
WhatsApp Template Reply	WhatsApp (for the old-style templates that Twilio is phasing out)
WHILE	

Adaptive Card (media scripts)

Input type: Chat

Use the Adaptive Card option for a richer style of interaction with the caller. Adaptive cards are developed using the Microsoft Adaptive Card editor. For further details, see the *CE Studio Guide*.

After selecting the adaptive card, you need to map the placeholders in the card to variables (which will be handled as expressions). Any operations required by the adaptive card are configured using the Invoke Provider Action option.

Placeholder Mappings

contacts

first_name	<input type="text" value="\$.first_name"/>	<input type="button" value="X¹"/>
last_name	<input type="text" value="\$.last_name"/>	<input type="button" value="X¹"/>
job_title	<input type="text" value="\$.job_title"/>	<input type="button" value="X¹"/>

Example of placeholder mappings in the Adaptive Card option

To configure the Adaptive Card option in a media script:

1. Configure the Invoke Provider Action to return the data required by the card. See [Invoke Provider Action](#) for details.
2. In the Adaptive Card option, select the category, adaptive card and version. The card details are then displayed:

Field	Description
Placeholder Mappings	<p>Map each placeholder in the adaptive card to an expression defined in the script. In the example above:</p> <ul style="list-style-type: none"> • The contacts placeholder from the adaptive card is mapped to an expression called results. This is the object returned by an Invoke Provider Action option (see example) but is handled as an expression here. results is the object containing first_name, last_name and job_title. Expressions unlike variables are not validated when the script is generated. • The first_name placeholder in the adaptive card is mapped to an expression entered using the format <code>\$.variable_name</code>. The variable was declared earlier using the Add Variable option.
Disable Free Input	Prevents the caller from typing in the chat window's text input box.
Handler	In Handler , select the function that will run once the caller responds to the card.

Add to Queue

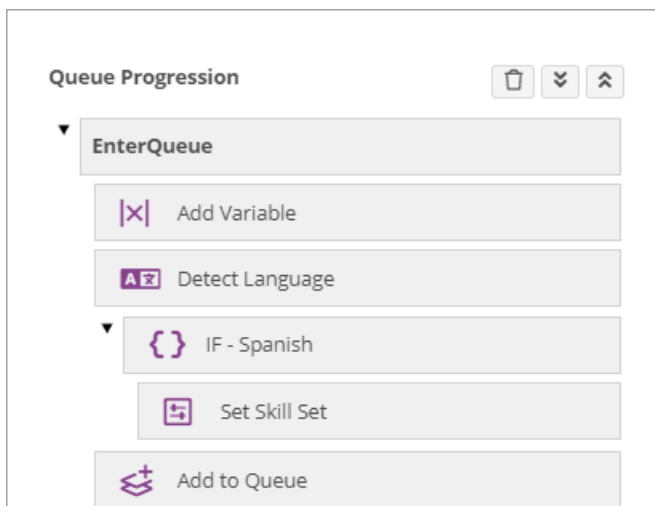
Input type: Email, Chat, Voice Call, Social Media

Adds the email, call or chat to the queue to be presented to an agent once a suitable agent is found. Not required for communications that will be handled entirely by a script. **Note that options added after the Add to Queue option are not processed.**

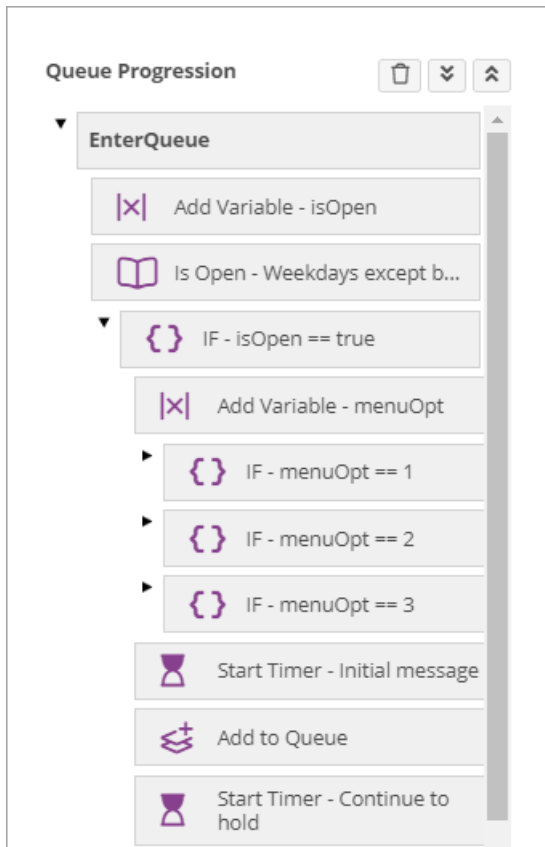
Note Emails, calls and messages remain in the queue until closed by the agent. This means that the script remains in control although no actions will run while the agent is working on the activation, for example timers are suspended. If the agent cannot close the activation and simply wraps up then the actions in the script resume, for example, the timer starts running again.

Note Phone calls remain in the queue for a limited period before the caller's network disconnects them. To prevent this from happening, you can, for example, play messages to the caller.

Note If an error occurs in the running script, for example, a chat caller enters something that the script is not configured to handle then the script ends and the caller is immediately added to the queue without any further preprocessing by the script.



Preprocessing an email or chat before adding it to the queue



Managing a communication while it is in the IVR queue

Add Survey Candidate

Input type: Email, Chat, Facebook Direct Message, Twitter Direct Message, WhatsApp, SMS, Inbound Voice Call

Use this option to send a survey invite to a caller using any of the supported media channels. Before you start, you need to create the following:

- A survey, either App or IVR - for details, see [Creating a survey](#).
- For App surveys, the CE Studio app that will display the questions and gather feedback. This must be live - survey links are not generated for non-live apps.
- Optional response templates for email or SMS if you plan to send the survey invites later - not required if sending the invite immediately.

You do not need to specify the language of the survey as this is determined automatically based on the caller's browser settings or by options in the queue progression script such as Detect Language.

To use the Add Survey Candidate option:

1. Drag and drop the Add Survey Candidate option onto a suitable event in the Queue Progression pane.

Note This must be the last option because, apart from Disconnect and Hangup, further options are not processed.

2. Begin by selecting the survey and the app you will use to display the questions and gather feedback:

Field	Description
Description	Optional description of the media script.
Category	Select the survey category.
Survey	<p>Select the survey to use:</p> <ul style="list-style-type: none"> • Select an app survey for media channels that only support app surveys, such as chat and email. You can also select an app survey for inbound voice when you want to send the survey link by email or SMS. • Select an IVR survey for inbound voice. This immediately transfers the caller to the voice survey. <p>You use the questions in the live version of the survey. If there is no live version then it uses the latest version.</p> <p>Note The survey version must be live and the survey app (if using) must be live. Survey links are only generated if these are live.</p>
Survey App	For app surveys only, select the CE Studio app to use. All the CE Studio apps that use this survey definition are listed here.

3. Enter the variables for storing the caller's contact details. You need these to send scheduled invites. Leave these empty if you want to send the invites immediately.

Field	Description
Name	Enter the variable that stores the caller's name and select the variable data type. This is <i>always</i> required to generate the survey request regardless of the media channel.
Number	<p>To send an invite by SMS, enter the variable that stores the caller's mobile phone number and then select the variable data type.</p> <p>You can configure both Number and Email Address. If both the email address and phone number are provided when the script runs then:</p> <ul style="list-style-type: none"> For Immediate invites: <ul style="list-style-type: none"> For email: system gives preference to email and sends the survey link in email. For voice call: system gives preference to phone number and sends the survey link as SMS. For SMS: system gives preference to phone number and sends the survey link as SMS. For scheduled invites, email is always used. <p>Note If sending invites by SMS then you need to configure the SMS number here even if replying to the caller.</p>
SMS Template	<p>Optionally, select a response template to use when sending the link to the survey app. Leave this blank if you want to send just the link without any additional wording.</p> <p>For details, see Response templates for surveys.</p>

Field	Description
Email Address	<p>To send an invite by email, enter the variable that stores the caller's email address and then select the variable data type.</p> <p>See Number above for what happens if both email address and phone number are configured.</p> <div> <p>Note For scheduled invites, email is used in preference to SMS.</p> </div>
Email Template	<p>Optionally, select a response template to use when sending the email containing the link to the survey app. Leave this blank if you want to send an email containing only the link.</p> <p>Placeholders are the same as for SMS Template.</p>
Timezone	Sets the timezone of the survey. The default timezone is UTC.

- For app surveys, specify how the survey invites are sent - this does not apply to IVR survey where the invite mode is always Immediate:

Field	Description
Invite Mode	<p>How the survey is distributed:</p> <ul style="list-style-type: none"> • Automatic: use the default distribution settings for the survey. • Immediate: Immediately send the survey invite using the current media channel. For example, this means chat if you are configuring the media script for chat or direct message if configuring the script for Twitter Direct Message. • Scheduled: Send the survey invite later according to the configured distribution settings for the survey. This means using: <ul style="list-style-type: none"> • Email if an email address is known • SMS if a mobile phone number is known and there is no email address <p>The invite uses the default wording unless you set up a response template for this purpose.</p>
Presentation Mode (<i>chat only</i>)	<p>Release 6.7 and later</p> <p>For chat queue progression scripts, how the survey is presented to the chat caller:</p> <ul style="list-style-type: none"> • Survey Link: shows a link that is clicked to access the survey. <p>For immediate invites only:</p> <ul style="list-style-type: none"> • iFrame: shows the survey inside the chat window, keeping the previous conversation. You need to add the Add Survey Candidate option to the Chat Ending event. Immediate invites only. • Whole Window: shows the survey inside the chat window, removing the previous conversation. You need to add the Add Survey Candidate option to the Chat Ending event.

Field	Description
Survey Candidate Result Variable Name	<p>Using the Add Variable option, declare a variable to use here. This is required to generate the survey candidate request.</p> <div> <p>Note This variable references the complex JavaScript object of the survey request. You can read values such as the candidate request ID and survey link, from the object.</p> </div>

5. Save the media script.

To test survey sending, select **Make Live** and then click **Save & Generate** button.

Add Variable (media scripts)

Input type: Email, Chat, Voice Call, Social Media

You can define the variables for use in the media script using a single Add Variable action or a series of Add Variable actions. These are global variables.


Note that:

- It is important to select the correct data type for a variable (see below for details). The generated script is JavaScript so most of the script options expect the variables to be strings.
- You can set or update the value later using the [Set Variable action](#).
- To include variables in messages enclose them in % characters.

To add a variable:

1. Drag and drop the Add Variable option into the Queue Progression pane.

2. In **Description** enter any comment that you want to add.

3. Click  to add the first variable.

a. Enter the **Variable Name**. Normal variable naming conventions apply, such as no white space. Names are case sensitive.

It is the name that is referenced in any scripts.

b. Enter an initial value (if required). You do not have to include quotes, even for a string. You can also set the value later, or evaluate multiple variables in an expression, using the [Set Variable action](#).

c. Click in the **Data Type** column to set the variable type:



for numeric values or Booleans



for alphanumeric values



for a reference to an existing variable

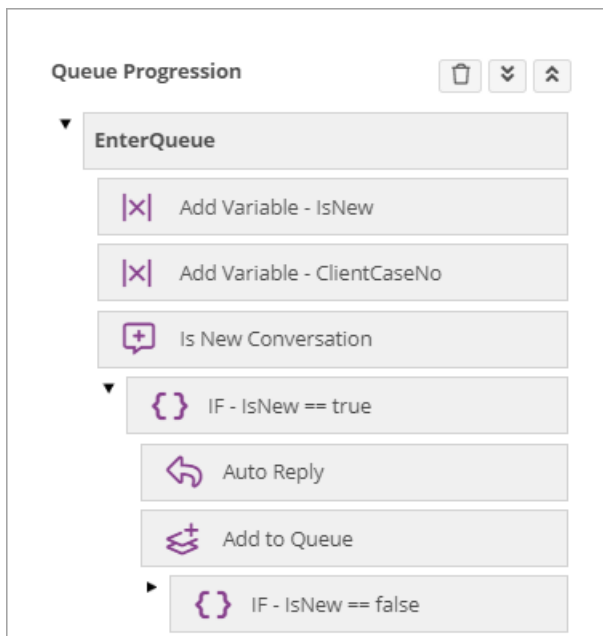
4. Repeat these steps to add additional variables.

Auto Reply Email

Input type: Email

Use the Auto Reply Email option in a media script to send an automatic email response to the sender from an email address that is configured for the tenant. To ensure that an auto reply is sent once only, use the Is New Conversation option.

You can add an application reference for use later. Note that for **Custom Recipients**, you need to enclose variables such as `sys_ReplyTo` in % characters. For example `%sys_ReplyTo%`.



Sending an automatic response to the sender

You can select an Auto Reply email template which has been set up in **Media Management > Response Template** or create a new Auto Reply. Use a template to format the text, insert images (maximum file size 760KB) and links.

Use system variables to include values from the received email. See [Email system variables](#).

Adding an application reference

Use the **App Ref** field in the option to attach a value to the auto reply that could be used later when filtering or aggregating emails as part of the script. For example, a script with conditional logic might use several auto replies and could set the **App Ref** depending on which condition sent the auto apply.

Call Function

Input type: Email, Chat, Voice Call, Social Media

Use the Call Function option from anywhere in the media script to call a function that you have defined in the **Custom Functions** node of the script.

1. Select the function from the **Signature** list.
2. If the function has parameters then map each parameter to either plain text or to a variable.

Note If you change the function after selecting the function in the Call Function option, then you have to reselect the function in order to update the parameter list

For more details, see [Function](#).

Close Work Object

Input type: Email, Chat, Voice Call, Social Media

Use the Close Work Object option in a media script to close the processed work object.

Note For background information on this type of workflow definition, see [Workflows for automated outbound calls](#).

Field	Description
Lock Id	<p>The variable that stores the mandatory lock ID. Use the Add Variable option to declare a variable that you will use in all the Work Object options.</p> <p>Note For background information, see Locks.</p>
Object Id	<p>The variable that stores the mandatory object ID. Use the Add Variable option to declare the variable that you will use in all the Work Object options..</p>

Create Work Object

Input type: Email, Chat, Voice Call, Social Media

Use the Create Work Object option in a media script to generate work objects that can then be added to the queue. A typical example is a work object for a call back where the work object contains the details of the call that the agent needs to make. The Create Work Object option requires a workflow definition. For an example of how to create a workflow definition, see [Configuring call backs](#).

Note You do not need to use this option if the only requirement is to generate a standard call back object. You need to use this option for call backs that capture additional information from the caller. An example of this might be letting the caller request a time for the call back.

To create a work object:

1. Drop a Create Work Object option into the Queue Progression area.
2. Enter the details of the workflow definition:

Field	Description
Workflow Definition	Select one of the existing workflow definitions.
Work Object Reference	Enter a reference that you can use later to search for the work objects created by this media script.
Lock Text	The reason why the work object is locked. Work objects are locked while agents are working on them. When you list workflow objects in the Admin Portal, this text appears in the Lock with Reason field.
Initial State	Select the state for new work objects.

3. Enter the values or previously declared variables that will provide the data required by the workflow definition to create the work objects.

Data Insert, Update, Delete

Input type: Email, Chat, Voice Call, Social Media

The Data Insert, Data Update and Data Delete options in a media script let you write and delete records in [Entity tables](#). To read records use the Search Data Table action (see [Search Data Table](#)).

Consider this example which updates a mobile number field in an entity record if the caller's name is in the entity table. It leaves the other values unchanged:

Data Update

Table Name*
 StaffNew

Table Name	Value	Type
StaffNo		
StaffName		
StaffEmail		
StaffMobile	sys_CLI	

WHERE

StaffName

Equals v1

Not Set




String Variable

A

+

Example of updating a record in a custom entity

In this example, the following variables and variable types are used:

- *StaffMobile* is updated from the system variable *sys_CLI*. This is referenced using the  variable type.
- There is a previously declared string variable for *StaffName* called *v1*. This is declared in an Add Variable option using the  variable type.
- In the Data Update condition *v1* is referenced as a string variable . Using this variable type encloses the variable in quotes, like this *StaffName = '%v1%'*, and ensures that the correct syntax is used for the SQL update.

Debug Log

You can add extra information to the trace log to help with trouble shooting. See [Debugging media scripts and script debug settings](#) for details.

Detect Language

Input type: Email, Chat, Social Media

Use the Detect Language option in a media script to manage instances where input may not be in your main language. If, for example, a company deals with the UK, France and Germany, there could be separate skillsets for agents who speak these languages. Refer to the *IFS Customer Engagement Release Notes* for a list of supported languages.

Note Numbers and certain strings, such as URLs, are discounted in the analysis.

The result is comprised of the detected language code and name, and the confidence percentage. It is possible for up to three separate languages to be identified. The values are saved to an array and its components are output to individually defined variables. You define these variables first using the Add Variable action.

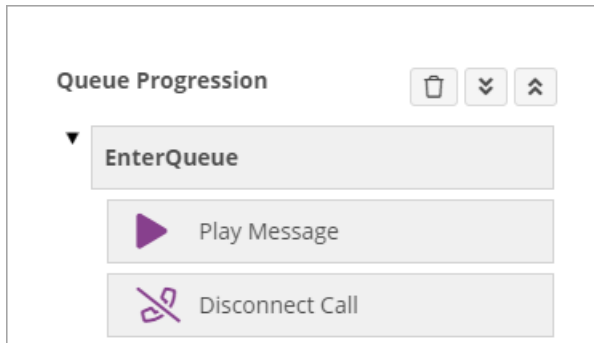
Field	Description
Input Text Var	Unless Input Text Var is defined, the subject and body of the email will be analyzed. Input Text Var would most likely be used if the content of an email attachment was extracted for analysis.
Reliable Result Var	Optional. Gives an outcome of either <i>true</i> or <i>false</i> .
Optional code variable	Enter the variable to store the language code of the detected language. These are ISO-639-1 codes.
Optional name variable	Enter the variable to store the name of the detected language.
Optional % variable	Enter the variable to store the confidence % of the detected language. The lower the value, the higher the confidence.

Disconnect Call

Input type: Inbound Voice Call, Outbound Voice Call

Use the Disconnect Call option in a media script to disconnect a voice call.

A typical use for this would be to follow a previous option where no further action is required. For example, when an “office is closed” message has been played.



Disconnecting a call

Function

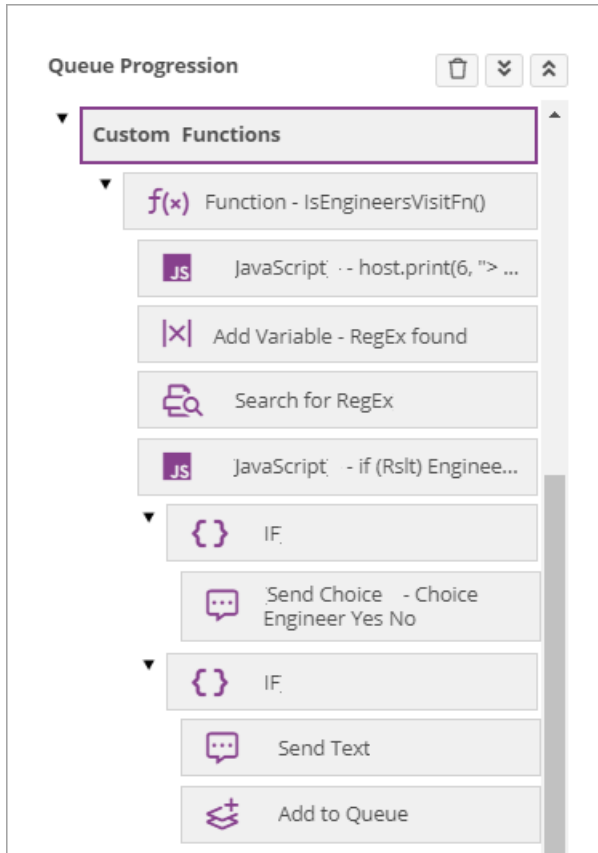
Input type: Email, Chat, Voice Call, Social Media

Use the Function option in a media script to define a set of actions that can be called multiple times from any part of the script. The function can take any number of parameters. Use the parameters as variables within the function.

1. Add the Function option to the **Custom Functions** section.
2. In **Name**, enter the function name. The function name cannot contain special characters such as underscores.
3. Click + to add one or more parameters.

When you call the function, you can assign the parameters to either strings or variables.

4. Implement the function by declaring variables and adding options.



Function example

5. Call the function by adding the Call Function action in the Enter Queue node of the script. For chat, call it from another option such as Send Choice, Send Text:
 - a. Select the function from the **Signature** list.
 If there are parameters then assign the parameters to either strings or variables.
 - b. If a return value is needed then enter a previously declared variable in the **Variable** field.

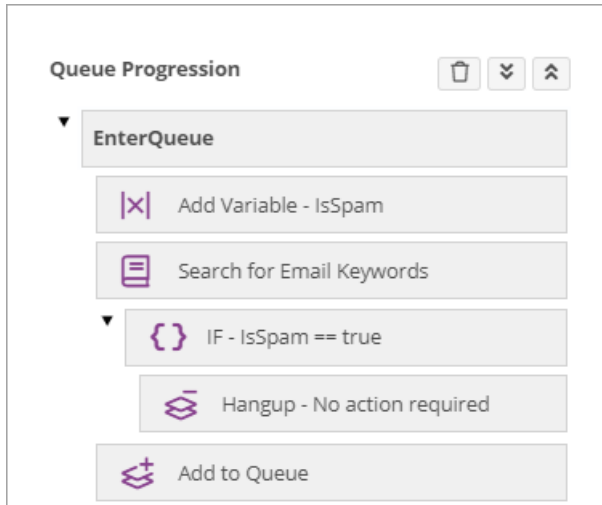
Hangup

Input type: Email, Chat, Social Media

Use the Hangup option in a media script to remove an email or chat that you do not want to add to the queue. The reason for removing the communication can be reported on using the value defined in the **Description** field. Note that:

- Any options after the Hangup option will be ignored.
- Any functions in the EnterQueue section will not run if followed by the Hangup option. The Hangup option should be placed inside the function(s).

For example, use this for a communication that could be handled with an automatic reply or to remove spam from the queue.



Note If an error occurs in the running script, for example, a chat caller enters something that the script is not configured to handle then the script ends and the caller is immediately added to the queue without any further preprocessing by the script (even if the script ends with Hangup).

Discarding spam emails – other emails are added to the queue

Get Element and Get Elements

Input type: Email, Chat, Voice Call, Social Media

Use the Get Element and Get Elements options in a media script to get the data stored in the work object.

To assign the value to a script variable, use the Set Variable option and syntax similar to this: `results['W_FIRSTNAME']`. The data type must be a variable.

Note For background information on this type of workflow definition, see [Workflows for automated outbound calls](#).

Field	Description
Object Id	The variable that stores the object ID. Use the Add Variable option to declare a variable for use in the script.
Workflow Definition	The workflow definition that defines the work elements that you want to access.
Element names	Select the elements that you want to access

Field	Description
Result Variable Name	<p>The variable that stores the data from the work object. Use the Add Variable option to declare a variable for use in the script or use the system variable <code>sys_LastActionResult</code>.</p> <p>If you declare a variable then use the Set Variable option to get the value. Use this syntax to get the value:</p> <pre><Result_Variable>['<my_work_element>']</pre> <p>The data type should be Variable.</p>

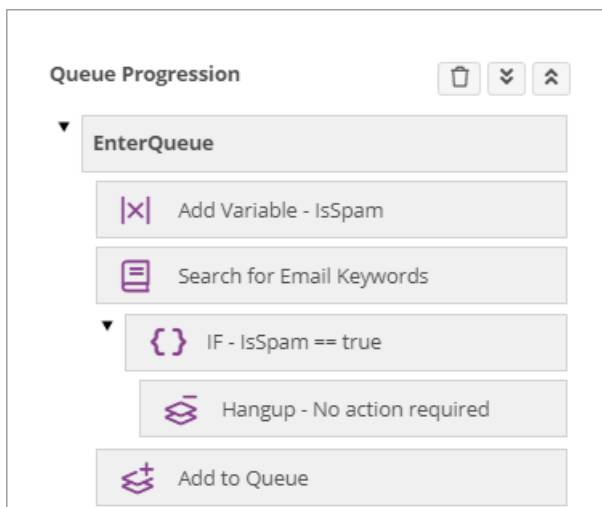
IF

Input type: Email, Chat, Voice Call, Social Media

Use the IF option in a media script to build an IF statement using the script variables. These are either system variables (see [Media scripts and system variables](#)) or global variables declared using the Add Variable option.

When an IF statement has been added to the script, subsequent child options are nested beneath it. Child options are only executed if the IF condition is met.

In this simple example:




There is:

1. A keyword search that identifies emails that do not need to be passed to an agent. The keyword search variable is named *IsSpam*.
2. The IF statement checks whether the keyword search returned *true*.
3. Under the IF statement, there is a child option to bypass the queue (the Hangup option) if the condition is *true*.

4. If the result is *false*, the script ignores the Hangup option and moves to the next step, which is to add the email to the queue for an agent.

Note You could add a second IF statement to check if the keyword search returned as *false* and, if so, have the option to queue the email as the child action.

To define an IF condition:

1. In the IF option, enter the global variable declared earlier using the Add Variable option. Variable names are case sensitive.
2. To remove an existing condition, click **Clear** before starting.
3. Depending on the type of condition, enter the comparison that is to be evaluated. Note that:
 - The comparison is case sensitive.
 - The equals operator used in the comparison is `===`. This means that it returns *true* only if both values and types are identical for the two variables being compared.
 - Quotes are added automatically to the condition where needed.
 - When entering a value on the righthand side of comparisons such as **Contains**, click the icon to select the data type.
4. If you are finished, click  to insert the condition in the **Condition** box.

Note You can edit the condition manually by typing directly into the **Condition** box. The debug log will report if there any problems with the condition.

5. Repeat these steps to add further AND OR comparisons.

To clear the condition and start again, click **Clear** and then select **Not Set** from the first IF list.

6. To pass the result to a variable, enter the name of a previously-declared variable in the **Variable** field.

Invoke Provider Action

Input type: Voice, Chat, Email, Voice Call, Social Media

You can use data from an external data source in a media script, as well as create, modify and delete data in the data source. This requires that there is a global action set configured for this purpose in CE Studio.

You need to use an option such as Set Variable to get the result from Invoke Provider Action. If the returned result is a single value then you use syntax such as `<result_variable>['<variable>']` but if is an array then use this syntax: `<result_variable>[0]['<variable>']`.

Using JavaScript, you can test the outcome of the request using the system variable `sys_LastInvokeProviderActionResult`.

Note In the 6.2 release, the syntax for accessing the data is simplified: `object[0]` ['property'], for example, `results[0]['last_name']`. Previously the syntax was `object[0]['property_type|property']` but the property type is no longer needed.

Simple example

This is a simple example for chat and the IFS Field Service Management provider.



Example using the Invoke Provider Action

In the above example:

1. A function `getCallerDetails()` adds a new contact to IFS Field Service Management using a global action set configured for the FSM provider in CE Studio. The global action has placeholders for the values needed to create new contacts.
2. The script uses the Invoke Provider Action option to send the request to FSM.
The response from FSM is a JSON object. You can see the structure of the response in debug emails from the chat script host.
3. The function gets the success or failure status from the response and handles failed requests appropriately.









Using the Invoke Provider Action where the result is an array

To access the data from a CE Studio provider in a script:




1. Using the Add Variable option, declare a variable for the object that is returned from the provider endpoint, and its data.

In the following example, four string variables are declared. *results* is the object and *first_name*, *last_name* and *job_title* is the data inside it. The *results* object is an array.

+

Variable	Value	Data Type	
results			
first_name			
last_name			
job_title			

- Add the option Invoke Provider Action to the script.
- Fill out the fields in the Invoke Provider Action option:

Field	Description
Global action set	Select the global action set – all the global action sets created in CE Studio are listed. However, if you need to use data from the provider in the script, then you need to make sure that you select a global action set that returns properties.
Variable	<p>Enter the variable that you previously defined using the Add Variable option. The external data you select will then be available to other options in the script through this variable. In the example given above this is the variable called <i>results</i>.</p> <div> Note System variables, such as <i>sys_Message</i> are not currently supported. As a workaround add a variable and then set this to the system variable you want to use. </div>
Placeholders	<p>The placeholders (if any) are defined in the global action. You set a placeholder to one of the following:</p> <ul style="list-style-type: none"> A static value (click  for a string or  for a numeric value) A previously-defined string variable (click )

Field	Description
Type Properties	Select one or more properties from those listed. All the selected properties will be formatted as JSON when the script is generated.

- Using the Set Variable option, set the variables you declared to the data in the response.

Continuing the above example, the data is held in an object previously declared as *results*. You access the data through the *results* variable, which is an array, as shown below.


Set Variable

Description


Variable Name*

first_name

New Value

results[0]['first_name'] 

New Value

results[0]['last_name'] 

- Save and generate the script.

Note When you do this, CE Studio records that you have used this global action set in this version of the script. Before the global action set can be deleted in CE Studio, you will need to delete the version of the script.

Handling the response

Using JavaScript, get the status and any error message from the system variable *sys_LastInvokeProviderActionResult*:

- outcome status: `sys_LastInvokeProviderActionResult.OutcomeStatus`, such as *OnFailure* or *success*
- any error message: `sys_LastInvokeProviderActionResult.ErrorMessage`

Important You cannot use the Set Variable option for this purpose.

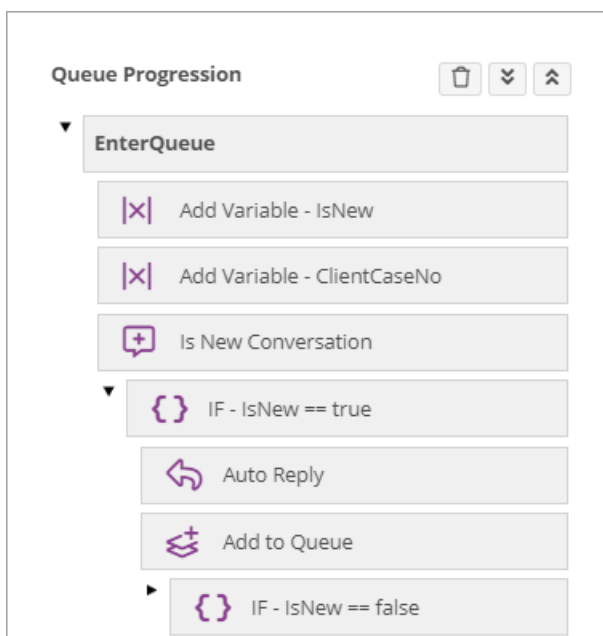
Is New Conversation

Input type: Email, Social Media

Use the Is New Conversation option in a media script to check whether an incoming email or social media message is part of an existing thread or a new one.

Media	Default conversation
Email	By default, the system automatically determines whether an email is part of a conversation based on the email subject. It relies on the sender replying to the original email. They can reply from a different email address if the subject heading is the same.
Social media	By default, the system determines whether a WhatsApp or SMS message is part of a conversation based on the sender's phone number. It relies on the individual sending from the same mobile device.

You can also determine whether the email or social media message is a new thread based on some other criteria. For this you need to write a custom function.



Example: A different auto reply is sent for a new or old conversation

To determine whether it is a new conversation based on the subject line or sender's number

1. Use the Add Variable option to add a variable for the value returned by Is New Conversation.
2. In the New Conversation option, select the variable you declared.

To determine whether it is a new conversation based on other criteria

For example, other criteria could be a customer reference in the email subject, body or message text:

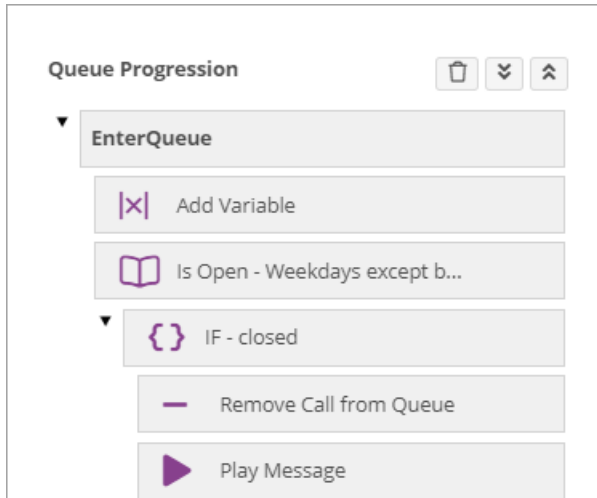
1. Using the Add Variable option, add two variables for the values returned by the custom function:
 - Custom reference
 - Whether it is a new conversation
2. In the Custom Functions option, configure a function to search for the custom reference. For example, you could use an option such as Search for Keywords, Search for RegEx, Search Email RegEx, Search for Email Keywords. If it is a new conversation then the function must return *true* and, optionally, return a reference to identify the conversation.
3. Set up the New Conversation option:

Field	Description
Custom Reference Variable	The new conversation is identified by a unique value, which is returned by the custom function.
New Reference Function	The custom function that checks whether the email or message is a new conversation. It must pass <i>true</i> to the New Conversation variable if the email or message is a new conversation.
New Conversation Variable	The variable for the result of the New Conversation option: <i>true</i> for a new conversation otherwise <i>false</i> .

Is Open

Input type: Email, Chat, Voice Call, Social Media

Use the Is Open option in a media script to determine whether the communication has arrived in or out of open hours. The open hours are obtained from a coverage plan.



In the above figure, the IF statement tests whether the call arrived out of hours (`isOpen == false`). If it arrived out of hours then the call is removed from the queue and a message is played to the customer.

To use the Is Open option:

1. Using the Add Variable action, add a variable for the result of the Is Open option.
2. In the Is Open option:
 - a. Select an existing coverage plan. For details, see [Configuring open hours](#).
 - b. Enter the variable name that you created above.

JavaScript

Input type: Email, Chat, Voice Call, Social Media

Use the JavaScript option to insert JavaScript directly into the media script.

Note Terminate each statement with a semi-colon, for example, `var sys_Locale = 'en-US' ;`

For examples, see:

- [Search Data Table](#)
- [Play Message](#)
- [Text to speech API](#) for IVR scripts

Open Work Object

Input type: Email, Chat, Voice Call, Social Media

Use the Open Work Object option in a media script to get a lock on the work object to be processed. This, for example, prevents the work object being presented to an agent.

Note For background information on this type of workflow definition, see [Workflows for automated outbound calls](#).

Field	Description
Object Id	The variable that stores the object ID. Use the Add Variable option to declare a variable for use in the script.
Lock ID Variable	The variable that references the lock for the work objects. Use the Add Variable option to declare a variable for use in the script or use the system variable <code>sys_LastActionResult</code> .
Time Out	The attempt to acquire a lock on the object fails after the specified number of seconds and sets the Lock Reason variable to <i>false</i> .
Lock Reason	Enter the text to use as the lock reason. Use the Add Variable option to declare a variable for use in the script.

Play Message

Input type: Inbound Voice Call, Outbound Voice Call

Use the Play Message action in a media script to determine what the caller will hear played.

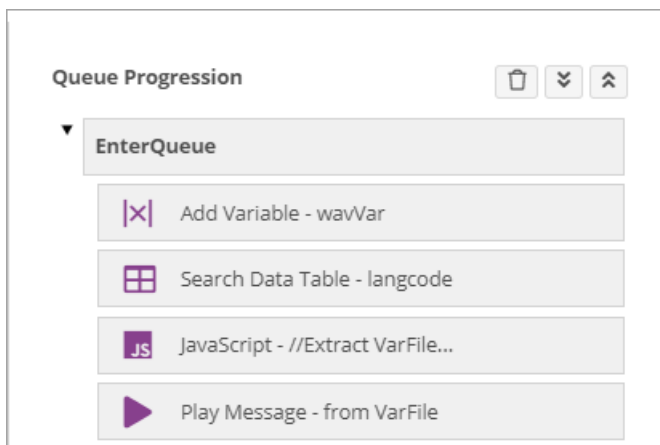
You upload the messages as WAV files on the **Contact Center > Voice Prompts** page. See below for details.

Field	Description
Custom Prompt	Select this option to play a WAV file that you have uploaded on the Contact Center > Voice Prompts page. You need to upload the file as an IVR Resource. See Uploading queue and hold music .
System Prompt	Select this option to select one of the system recordings. You can upload WAV files for each of the prompt types on the Contact Center > Voice Prompts page.
Variable	Enter the name of the variable whose value is a WAV file. See below for details of how to set this up.

Field	Description
Silence After Message (ms)	The number of milliseconds to wait after playing the message. The default is zero (0) milliseconds.
Stop on DTMF detection	Select this option to stop the file playing if another event is detected, such as digit being entered. Note that these digits are handled as strings not numbers.
File may not exist	Select this option if you need to allow for the possibility that someone may delete your WAV file. Selecting the option allows the script to continue without crashing.

Using the Variable option

An example of use is having a data table containing WAV files. Using the Search Data Table action, the correct WAV file can be selected into the variable.



Playing a message using the WAV file referenced in a variable

The variable name is given in the Search Data Table action, in which case the array position is required. For instance, if the table was called `langcode`, and the data table column was called `wavfile`, the JavaScript action would declare `langCode[0].wavfile`. As the variable `langCode` is declared in the Search Data Table action, it does not also need to be declared using the Add Variable action.

You could then use custom JavaScript to extract the `WavFile` value into another variable called `wavVar` by using code such as that shown below:

```
//Extract VarFile value into a variable called wavVar
//wavVar has been declared using the Add Variable action
wavVar = (langCode[0].wavfile);
```

Then *wavVar* would be entered in the Play Message action. You need to declare *wavVar* using the Add Variable action.

Uploading the wav files

You upload the messages as WAV files on the **Contact Center > Voice Prompts** page.

Note The WAV file format must be 8kHz mono (one channel) and the audio encoding must be either 16-bit linear PCM or 8-bit m-law/a-law PCM.

Field	Description
Prompt Type	<p>The following prompt types are system prompts:</p> <ul style="list-style-type: none"> • Welcome • Hold • Queue Music • Voice Mail Offering • Offices Closed • Hold For Voice Mail • Voice Mail Prompt • Goodbye • Pre-Queue Announcement Message <p>To upload WAV files for use as custom prompts in queue progression scripts use the IVR Resource type.</p>
Language	Lets you upload a voice prompt for a specific language. Manage the available languages on the Contact Center > Manage Languages page.
IVR Type	<p>One of the following:</p> <ul style="list-style-type: none"> • MediaQP - the voice prompt is available for the queue progression script you select. • Voice - the voice prompt is available for the inbound number that you select.

Field	Description
Media Queue Progression Definition	<p>When the IVR type is MediaQP then you need to select a media queue progression script. Only scripts with live versions are listed.</p> <p>You configure the scripts on the Media Management > Media Queue Progression page. The voice prompt you upload is available for all inbound numbers that use the queue progression script.</p> <p>To find out which inbound numbers use the voice prompt, go to the Media Queue Progression page, select the script, and click View Usage.</p>
Inbound Number	<p>When the IVR type is Voice then you need to select the inbound phone number that will use the voice prompt. The voice prompt is available for the single inbound number that you select.</p>

Play Position in Queue

Input type: Inbound Voice Call, Outbound Voice Call

Use the Play Position in Queue option in a media script to periodically play the caller their position in a queue.

Important Use this option with caution. The caller's position in the queue could go up in environments where some calls are higher priority than other calls. It also does not tell the caller how quickly their call will be answered.

Specify which WAV files are to be played:

Field	Description
Prefix Message	Determines which WAV file is to be played before the position in the queue is played.
Suffix Message	Determines which WAV file is to be played after the position in the queue is played.
Stop on Detect	<p>Stops the message from playing if a DTMF tone is detected.</p> <p>You could then add actions to the DigitDetected event to determine what happens next, such as allow the caller to request a call back.</p>

Post Work Event

Input type: Email, Chat, Voice Call, Social Media

Use the Post Work Event option in a media script to send an event to the work object that will trigger a work action or change of state. Open the work object first using the Open Work Object option. Use the Start Work Timer option if you do not want to open the work object.

Note For background information on this type of workflow definition, see [Workflows for automated outbound calls](#).

Field	Description
Lock Id	<p>The variable that stores the mandatory lock ID. Use the Add Variable option to declare a variable for use in the script.</p> <p>Note For background information, see Locks.</p>
Workflow Definition	Select the workflow definition. This is the definition that defines the work objects that you want to process with your media script.
Workflow Event	<p>The workflow event that you want to trigger. Work events are defined as part of the workflow definition.</p> <p>For example, once the actions in the media script are executed, you need to close or complete the work object. You do this by posting a work event that triggers the workflow service to change the state of the work object to closed or completed.</p> <p>Note For background information, see Events.</p>
Event Id	Entered automatically when you select the workflow event.
Auto Unlock	<p>To process a work object, you need to lock the work object. This option specifies whether the lock is released when the work event is posted:</p> <ul style="list-style-type: none"> • Select Yes to automatically release the lock on the work object. • Select No to keep the lock on the work object. For example, if further processing of the work object is done by your media script. Use the Close Work Object to release the lock.
Name, Value, Data Type	The work element(s) that you want to update.

Record Voicemail

Input type: Inbound Voice Call, Outbound Voice Call

Use the Record Voicemail option in a media script to let the caller record a message to be retrieved later by an agent.

The **Prefix Message** plays before the caller is connected to the voicemail. The **Suffix Message** plays after the **Max Recording Length** (in seconds) elapses.

Voicemail can be retrieved either by dialing into the system or by setting up the voicemail to email the recording (potentially back to an agent). See [Configuring voicemail](#).

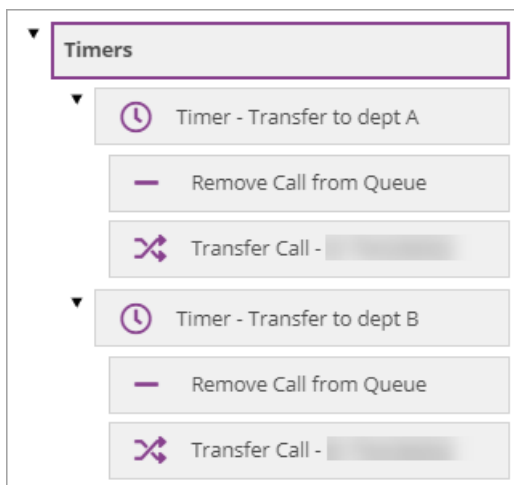
Remove Call from Queue

Input type: Inbound Voice Call, Outbound Voice Call

Use the Remove Call from Queue option in a media script if you do not want the call to be presented to an agent. For example, you might then:

- Transfer the call
- Gather data from the user for a call back

This will automatically cancel any timers.



Example: calls are removed from queue and then transferred to another number

Request Caller Data

Input type: Inbound Voice Call, Outbound Voice Call

Use the Request Caller Data option in a media script to collect data from the caller which can be stored in a variable for subsequent processing via an IF or WHILE option. Typically, you collect this data, such as a case number, caller name etc, before adding the call to the queue. You can save the caller data for use once the media script ends with script elements. See [Set Script Element](#).

The Request Caller Data option ends when the caller enters the maximum number of characters or the termination character, or when a timeout occurs.

Field	Description
Min Length	Specifies a minimum number of characters to accept.
Max Length	Specifies a maximum number of characters to accept.
Variable Name	<p>Enter a variable name if the action is to be used by an IF or WHILE statement. You must also declare the string variable using the Add Variable action.</p> <div> <p>Note The variable must be a string as the entered values are DTMF digits not numbers.</p> </div>
Initial Prompt	Specifies the WAV file that prompts the caller to enter data.
Retry Message	Specifies a WAV file to be played if the caller fails to select the correct (or any) digit. Can be left blank if required, in which case the Initial Prompt will just replay.
Termination Char	Lets the caller indicate they have finished entering data. For example, by entering a 4#digit pin followed by #. The # character is the terminating character.
Retry Count	Lets you specify how many times to allow the caller to retry if an incorrect (or no digit) is detected.
Initial Digit Timeout	Allows you to specify in seconds how long to wait for the initial digit before concluding no digit has been entered and then, depending on the retry count, play the Retry Message. For example, you might enter 10 as the number of seconds to wait.
Inter Digit Timeout	Is the time in seconds to allow between characters. For example, you might enter 5 as the number of seconds to wait.
Stop on Detect	Stops playing the Initial Prompt file if a digit is detected. Use this to let the caller select a menu option without having to listen to the whole message. This also overrides any configured silence.
Accept Empty	Lets the user press nothing, for example “Press 1 for Sales or hold for Customer Services”.

Field	Description
Play Beep	Plays a beep when the message ends to indicate to the caller that they can now enter something.

Search Data Table

Input type: Email, Chat, Voice Call, Social Media

Use the Search Data Table option in a media script to search against a custom entity (table), using one or more columns, and then use the search result in an IF statement. The WHERE condition returns the matching entry or entries in the entity. For details on entities, see [Entities for use in media scripts](#).

The screenshot displays a media script editor interface. At the top, there's a 'Queue Progression' section with a trash icon, a dropdown arrow, and an up arrow. Below this is a step named 'EnterQueue'. Underneath 'EnterQueue' is a function call 'f(x) Call Function - FindStaff()'. Below that is a 'Timers' section. Further down is a 'CustomFunctions' section. Inside 'CustomFunctions', there's a function 'f(x) Function - FindStaff()'. Below this function are three steps: 'Add Variable - result', 'Add Variable - TableRow', and 'Search for Email RegEx - Find staff ID number'. Below these is an IF statement 'IF - result == true'. Inside the IF statement is a 'Search Data Table - Staff' step. Below the IF statement are two more IF statements: 'IF - TableRow != ""' and 'IF - TableRow == ""'.

Example – using Search Data Table in a script

Search DB Table

Description

Table Name

Staff

Top*

1

Select Column*

StaffName

+

Selected Columns*

StaffEmail,StaffNo,StaffName

WHERE

Not Set

Not Set

+

Condition*

StaffNo =%result%

Orderby Column*

StaffEmail

+

Column Name	Value	
StaffNo	↑ ½	⊖ Clear
StaffName	↑ ½	⊖ Clear
StaffEmail	↑ ½	⊖ Clear

Variable*

tableRow

Example showing how to set up a Search Data Table action

This example sets up a search where two columns of a custom entity (table) called *Staff* are used.


- *StaffNo* for the condition, which checks if anything is found by the regex search. The search result is held in a *result* variable (previously declared using the Add Variable action).

- *StaffEmail* and *StaffName* where the value of these fields in the Entity table will be used if the data table search finds the staff number returned by the regex search.
- *TableRow* which stores the result of the data table search, making the value of the Entity table fields *StaffEmail* and *StaffName* available at a later stage.

Setting up the data table search

To set up the search, fill in the following mandatory fields:

Note Columns are displayed using the column names rather than the message associated with column's message ID.

Field	Description
Custom Entity	The custom entity that you want to search.
Top	The maximum number of records to be returned by the data table search.
Select Column	The entity column to search on.
Selected Columns	The columns to return by the data table search.
WHERE, Condition	<p>Using the WHERE fields, enter the search criteria based on previously declared variables and then click + to add the search criteria to the Condition box. You can build complex search criteria using the AND and OR operators.</p> <p>For <i>where</i> conditions involving strings in an entity table use the String Variable type .</p> <p>The resulting syntax for the condition will be similar to this:</p> <pre>StaffName = '%sys_CallersName%'</pre> <p>In this example, <i>StaffName</i> is an entity column and <i>sys_CallersName</i> is a chat system variable.</p> <p>For details of the other variable types, see Add Variable (media scripts).</p>

Field	Description
Order By Column	Select the column for sorting the records returned by the search. Then, add the columns to the table below, for searches that return multiple records, this lets you specify ascending or descending order.
Variable	The previously declared variable that stores the result of the data table search. This is the whole object containing one or more records. See below for an example.

Evaluating the result of the search

To use the Search Data Table result, you need to add an IF statement. The result of the Search Data Table action, that is whether something was found or not, is held in a system variable called:

sys_LastQueryResult

After running a Search Data Table action, the value of *sys_LastQueryResult* is either:

- *RECORDS FOUND*
- *NO RECORDS*

Use an IF statement to test the value of *sys_LastQueryResult*. For example:

```
sys_LastQueryResult == RECORDS FOUND
```

Using the data returned by the search

The result of the search is an object containing one or more rows from the custom entity table. For the *TableRow* variable in the above example, the object is:

```
{
  StaffNo = TableRow[0].StaffNo;
  StaffName = TableRow[0].StaffName;
  StaffEmail = TableRow[0].StaffEmail;
}
```

Use a JavaScript action to select the relevant part of the array. For example:

```
//Extract the StaffEmail value into a variable called emailVar
emailVar = (TableRow[0].StaffEmail);
```

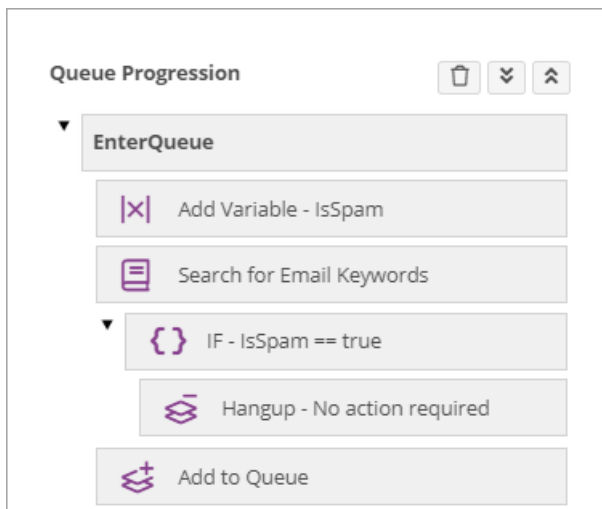
In the above example, the JavaScript references the contents of *TableRow*. It extracts the value held in the data table column called *StaffEmail* and returns it in another variable called *emailVar*. You need to declare the variable *emailVar* using Add Variable action. The variable *emailVar* can then be used for whatever purpose required.

Search for Email Keywords

Input type: Email

Use the Search for Email Keywords option in a media script to identify keywords in an email subject line or body of an email, and then use IF conditions for further processing depending on whether the keyword(s) were found.

For example:



In this example, if the variable *IsSpam* tests as *true*, you could take the email out of the queue (see the Hangup option).

You can add multiple words to the subject or body filters using a delimiter (^). Note that the search is case insensitive.

For example:

```
autoreply^auto-response^auto reply^auto response
```

The variable for the value returned by the search must be declared separately using the Add Variable option.

Search for Keywords

Input type: Chat, Social Media

Use the Search with Keywords option in a media script to identify keywords in a message. For details, see [Search for Email Keywords](#).

Search for Email RegEx

Input type: Email

Use the Search for Email RegEx option in a media script to detect strings in an email subject line or in the body of an email. You search using a regular expression. The search result is stored in a variable and therefore available to the script actions that follow. You need to declare the variable separately using the Add Variable option.

A regular expression finds 8-digit numbers in the email subject line (note the single quotes and the escaped `\d`):

```
'/(\\d{8})/g'
```

If found, the 8-digit number is stored in the variable for later use.

Important Enclose regular expressions in single quotes and follow JavaScript string escape rules, for example:

- Horizontal tab: `\t`
- Nul char: `\0`
- Form feed: `\f`
- Newline: `\n`
- Carriage return: `\r`
- Single quote: `\'`
- Double quote: `\"`
- Backslash: `\\`

Search for RegEx

Input type: Chat, Social Media

Use the Search for RegEx option in a media script to detect strings in a message using a regular expression. The search result is then stored in a variable. To test the variable, you need to use the following conditions in an IF:

- *Is Empty* instead of *Is False*
- *Is Not Empty* instead of *Is True*

This option is similar to the email equivalent. See [Search for Email RegEx](#) for further details.

Search using NLP

Input type: Email, Chat, Social Media

Use the Search using NLP option in a media script to categorize an email or message based on a pre-existing model which has two or more defined categories.

Note You need to define the NLP model before you can use this option. See [Natural language processing \(NLP\)](#) for details.

The categories can be determined by:

- Content, such as “Refund” and “Cancellation”
- Sentiment, such as “Happy” and “Annoyed”

There are many ways in which a person may write something, and there is always the chance of typos. NLP processes human language and can identify nuances in the email that keyword or regular expression searches could not.

The result is comprised of the detected category name and the minimum confidence percentage. You can specify up to three separate categories. Add these variables using the Add Variable option.

Field	Description
Input Text Var	Unless Input Text Var is defined, the subject and body of the email will be analyzed.
1st Match Vars	First detected category: <ul style="list-style-type: none"> • Enter the name of a variable that you have already declared using the Add Variable action. • Enter the minimum confidence percentage. The default is set when the NLP model was deployed. This will be a variable that you have already declared.
2nd Match Vars	Variables for the second detected category.
3rd Match Vars	Variables for the third detected category.
Model	Select the NLP model.

Assuming an inbound email has been sent that the Search using NLP reaches the minimum confidence level, the output is as follows:

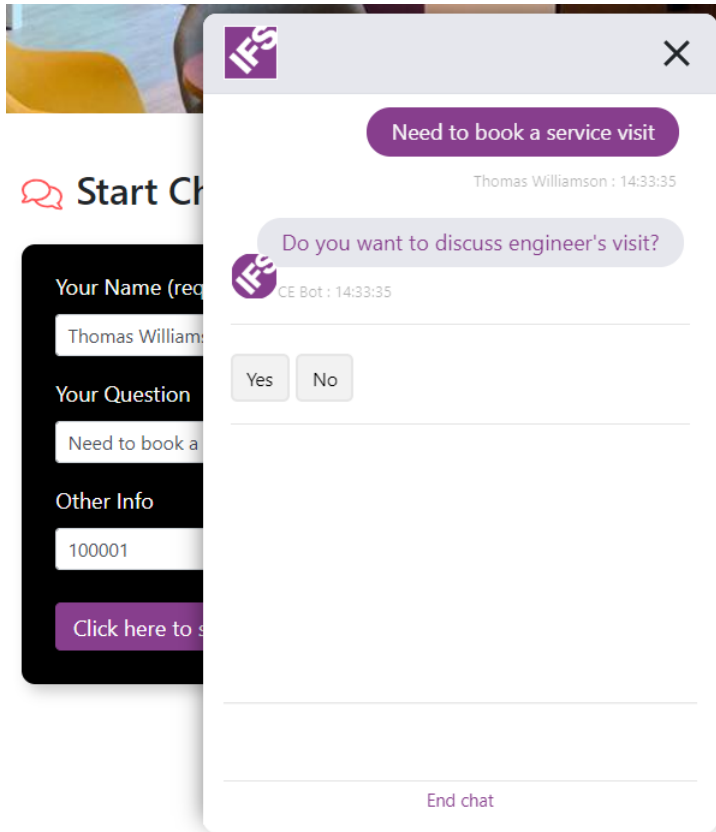
```
catName = Cancellation  
confLevel = 0.720413515370499  
  
catName2 =  
confLevel2 = 0  
  
catName3 =  
confLevel3 = 0
```

Note It is possible that the Search using NLP action will not find any category that meets the minimum confidence level. If the requirement is to only identify emails or chats that match certain categories, this is not a problem. However, if every email or chat received needs to be categorized, provision should be made in the script. For example, if nothing is returned, you could use a Java Script action to set the relevant variable to, say, "Other".

Send Choice

Input type: Chat

Use the Send Choice option in a media script to find out what the user wants to do next, and to let them know what their choices are. An alternative to the Send Choice is the Adaptive Card option.




Choice list in the Chat Demo definition

To set up a Send Choice option:

1. Before you start, you need to write the function that will run when the user selects an item from the choice list.
2. Choose a template for an existing choice list (optional) and enter a prompt:

Field	Description
Template	<p>You can either select an existing choice list from a template, or you can leave this blank to create a new choice list.</p> <p>You can save the choice list you create here as a template for use elsewhere in the script. To save it as a template, select the Save As New Template option.</p> <div> <p>Important Note that subsequent changes to the choice list will be saved to the existing template (even if you change the template name). To save it as a different template, reselect the Save As New Template option.</p> <p>When importing a script you will to select Save As New Template for each choice list in the script.</p> </div>
Template Name	Enter a descriptive name for the template. For example, <code>Choice Engineer Visit Yes No</code> .
Prompt	Enter the message that is shown before the choice list.

3. Define the choices in the list. You can enter these as text or images. Click  to add multiple choices, however the size of your chat window will in practice limit the number:

Field	
Text	The label to appear on text buttons. For example, Change Date .
Value	The payload. For example, <code>date</code> . This is also what the agent sees in Agent Desktop.
Image	The image to display on the button. Upload these on the Media Management > Import Images page.
Image Size	The button sizes to fit the image but you can enter height and width in pixels, such as <code>100px</code> . You must add <code>px</code> after the value.
Text Padding	The number of pixels to add to the top and left of the text, in pixels. You must add <code>px</code> after the value.

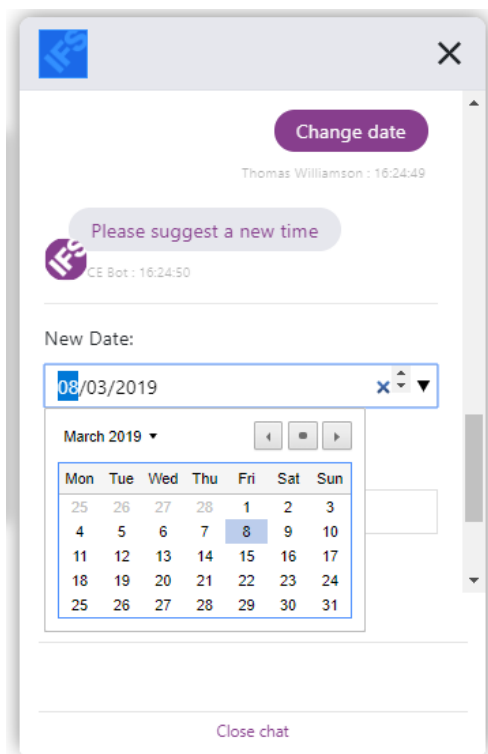
Field	
Text Color	This is the foreground color of the text. Enter the color as a name or use its hex value.
Order	The left to right order of the buttons in chat window. Where 1 is the left-hand button.

4. In **Handler**, select the function that will run once the user selects one of the options.
- **Allow Once:** prevents the user from making another choice after they have sent the first one.
 - **Disable Free Input:** prevents the user from typing in the chat window's text input box.

Send Custom HTML

Input type: Chat

Use the Send Custom HTML option in a media script when you need to enter your own HTML. For example, for a non-standard widget such as a date picker. An alternative is to use the Adaptive Card option.



Custom HTML widget in the Chat Demo definition

To set up a Send Custom HTML option:

1. Before you start, you need to write the function that will run when the user interacts with the custom HTML.
2. Choose a template for an existing custom HTML configuration (optional) and enter a prompt:

Field	Description
Template	<p>You can either select an existing custom HTML configuration from a template, or you can leave this blank to add a new one.</p> <p>You can save the HTML you enter here as a template for use elsewhere in the script. To save it as a template, select the Save As New Template option.</p> <p>Note that subsequent changes will be saved to the existing template (even if you change the template name). To save it as a different template, reselect the Save As New Template option.</p>
Template Name	Enter a descriptive name for the template. For example, Get New Date Widget.
Prompt	Enter the message that is shown before the custom HTML.

3. Enter the custom HTML. You do not need to include tags such as `<html>` or even `<p>` (including a `<p>` tag will force an indent).

The following is an example of valid HTML:

```
<hr/>
New Date: <input type="date" id="newDate" name="newDate"
value="%ApptDate%"><br/>
Contact Name: <input type="text" id="contactName"
name="contactName" value="%Customer%"><br/>
Contact Phone: <input type="text" id="contactPhone"
name="contactPhone" value="%CustPhone%"><br/>
  <button onclick="sendButton(MESSAGE_TYPE.CUSTOM_HTML_RESULT,
    { 'value':$v('newDate'),
      'innerText':$v('newDate'),'name':'NewDate' });return
false;">
    Submit new time
  </button>
<hr/>
```

4. In **Handler**, select the function that will run once the user selects one of the options.
 - **Allow Once**: lets the user select a button once only.

- **Disable Free Input:** prevents the user from typing in the chat window's text input box.

Send Email

Input type: Email, Chat, Voice Call, Social Media

In a media script, you can use the Send Email option to send an email from one of the system email addresses configured for the tenant.

Note Note that you need to enclose variables such as `sys_ReplyTo` in % characters. For example `%sys_ReplyTo%` or select the Variable data type.

You can write a simple email as part of the action or select a response template. Response templates let you format the text, insert images and links:

- Create email templates on the **Media Management > Response Template** page.

You add the email templates on the **Media Management > Response Templates** page. If the response template contains variables (enclosed in % characters) then set these in the script using the Add Variable option.

You can add templates for different locales and the service will automatically select the correct template for the locale. You can add templates for different locales. By default, only US English, UK English and English are supported but you can add additional languages on the **Contact Center > Manage Languages** page.

- When sending email templates, select HTML as the body type.
- Maximum image size is 760KB

Depending on the type of the original communication, you may be able to use system variables in the email and email body. See:

- [Voice system variables](#)
- [Email system variables](#)
- [Chat system variables](#)

Send SMS

Input type: Email, Chat, Voice Call, Social Media


Use the Send SMS option in a media script to send an SMS message for which you do not require a reply. For example, as a confirmation or maybe to verify the identity of the caller before the communication is presented to an agent.

To use the Send SMS option:

1. Add any required variables using the Add Variable action. For example, a variable for the recipient's mobile number. You can also add the variables needed for response templates that contain variables.
2. Add the message to send. You can write a text message or select an SMS template. Using a template lets you format the text, add images and links.

You add the sms templates on the **Media Management > Response Templates** page. You can add templates for different locales and the service will automatically select the correct template for the locale. You can add templates for different locales. By default, only US English, UK English and English are supported but you can add additional languages on the **Contact Center > Manage Languages** page.

3. In the **From** field, select an SMS-enabled inbound number.

4. In the **To** field, select the variable that has the number to call. Change the variable type to .

Send Template

Input type: Chat

Use the Send Template option in a media script to send a text using an existing chat response template and then, optionally, run a function on receiving the user's reply.

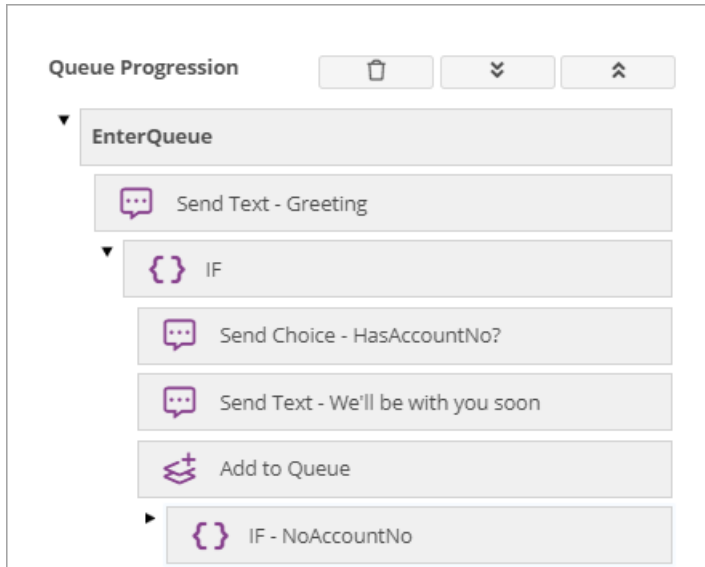
You add the template on the **Media Management > Response Templates** page. You can add templates for different locales and the chat service will automatically select the correct template for the locale. By default, only US English, UK English and English are supported but you can add additional languages on the **Contact Center > Manage Languages** page.

Select a function in the **Handler** field if you want the script to handle the reply from the user.

Send Text

Input type: Chat

You can define text messages that will be sent as part of the media script.



To add a Send Text option:

1. If this part of the chat session is to be handled by the script, then you need to add a custom function that will run when the user replies to this message. See [Function](#).
2. In the Send Text option, enter the text you want to send.

You can use system variables to include data from the session. See [Chat system variables](#).

3. In **Handler**, do one of the following:
 - Select the custom function that will run *when* the user replies to this message. If you do not use a handler then the script will just move onto the next option configured in the script. For example, it will not wait for the user to reply.
 - Leave this field empty. The script will then immediately move onto the next configured option. For example, if there are three Send Text options then the user will see three messages one after the other.

Send WhatsApp Templated Message

Input type: Chat, Email, Social Media

In 6.8 and later, use the Send WhatsApp Templated Message option in a chat, email or social media media script to send automated replies. Automated replies are configured using the templates created on the **Media Management > WhatsApp Content Templates** page.

Only approved templates are available for selection.

Set Priority

Input type: Email, Chat, Voice Call, Social Media

Use the Set Priority option in a media script to change the priority of a communication in the queue. An email, message or call will be added to the queue at its default priority. The default priorities are set for the contact center unit. See [Setting default activation priorities](#).

For example, the defaults at the contact center unit are:

- Calls: 5
- Chat: 2
- Email: 1
- Workflow: 4

The default priority can be adjusted as part of the email address, chat definition or inbound number configuration using a relative priority. For example:

- **High, Highest:** raises the priority by adding 1 or 2 points respectively to the default priority.
- **Low, Lowest:** lowers the priority by subtracting 1 or 2 points respectively from the default priority.

For example, a chat definition might adjust the priority to **Highest** which in the above example gives chats a priority of 4 in the queue.

To override the adjusted priority set for the inbound number, email or chat definition, use the Set Priority option. For example, enter 2 to set a specific email to the highest priority. You can enter a number in the range -2 to 2:

- 2: Highest priority
- 1: High
- 0: Normal
- -1: Low
- -2: Lowest

Note If two communications in the queue have the same priority then the communication that has been in the queue longest will go first.

Set Script Element

Input type: Email, Chat, Voice Call, Social Media

Use the Set Script Element option in a media script to save the data obtained during script execution for use later. For example, you can use the data:


- During script execution to refer to data obtained from one email or SMS message when handling a later email or text message in the same conversation.
- In a CE Studio app to refer to data requested from the caller. Application data is made available through the IFS CE System provider (version 5 or later). For chat, application data is made available through the IFS CE Chat provider.

Note You do not need to use script elements when configuring work objects.

Saving data in a script element

To use Set Script Element:

1. Using the Add Variable option, add one or more variables to store the value for the duration of the media script execution.
2. Capture the data. For example:
 - For voice, you could use a Request Caller Data option.
 - For email, search for keywords.
 - For chat, save the selection from a choice list.
 - For social media, save the value in the system variable *sys_MessageText*.
3. In the Set Script Element option, configure the script element:

Script Element Name	Enter the name that you want to use to store the data.
Value	Enter the name of the script variable that will store the data during the script execution. You need to set the data type to Variable  .

Getting the data in a script element

To get the data saved in a script element, you need to use the JavaScript option. You get the value from the script element and assign it to a variable. The syntax depends on the media channel.

Note In the following examples, *callersName* is the name of the script element and *v1* is a variable declared earlier using the Add Variable option.

Social media, email	<code>v1=host.GetConversationElement('callersName')</code>
Voice	<code>v1=host.GetScriptElement('callersName')</code>

To use the data in a message, use the following syntax:

`%@callersName%`

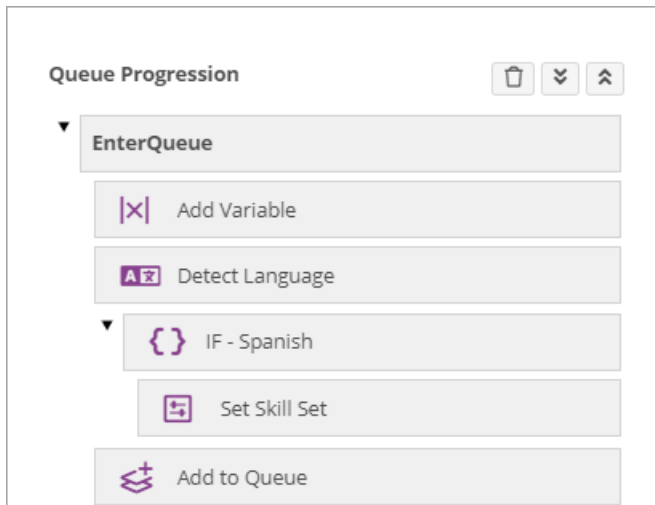
Where:

- % identifies the variable to be substituted
- @ identifies that the following text is the name of a script element.

Set Skill Set

Input type: Email, Chat, Voice Call, Social Media

Use the Set Skill Set option in a media script to set or change the skillset required to handle the communication.



Setting the skillset based on the detected language (email or chat)

Set Variable

Input type: Email, Chat, Voice Call, Social Media

Use the Set Variable option in a media script to set the value for a variable previously declared using the Add Variable option. When you set the value, you must select the data type:



for a numeric value or a Boolean



for an alphanumeric value



for a reference to an existing variable



for an expression that will be evaluated, for example to concatenate two strings, `firstName + ' ' + lastName` where *firstName* and *lastName* are variables

For details of how to set the variables when using the option Invoke Provider Action, see [Invoke Provider Action](#).

Start Work Timer

Input type: Email, Chat, Voice Call, Social Media

Use the Start Work Timer option in a media script to send an event to the work object that will trigger a work action or change of state after an interval. You do not need to open the work object before using this option.

Note For background information on this type of workflow definition, see [Workflows for automated outbound calls](#).

Field	Description
Object Id	The variable that stores the object ID. Use the Add Variable option to declare a variable for use in the script.
Workflow Definition	Select the workflow definition. This is the definition that defines the work objects that you want to process with your media script.
Workflow Event	<p>The workflow event that you want to trigger. Work events are defined as part of the workflow definition.</p> <p>For example, once the actions in the media script are executed, you need to close or complete the work object. You do this by posting a work event that triggers the workflow service to change the state of the work object to closed or completed.</p> <p>Note For background information, see Events.</p>
Event Id	Entered automatically when you select the workflow event.
Time	The number of minutes to wait before triggering the workflow event. For details of the timer interval, see Timers .
Name, Value, Data Type	The work element(s) that you want to update. It is mandatory to enter a minimum of one work element.

Timers

Input type: Email, Chat, Voice Call, Social Media

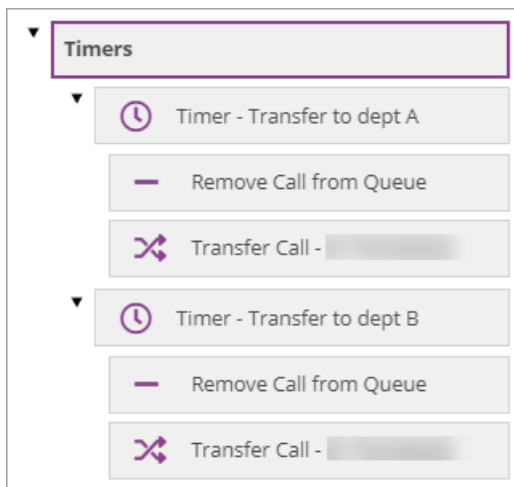
Timers are added to the Timer node of the media script. A timer defines what actions take place

- When a timer fires after the configured interval
- *And* while the call is still in the queue

Note Emails, calls and messages remain in the queue until closed by the agent. This means that the script remains in control although no actions will run while the agent is working on the activation, for example timers are suspended. If the agent cannot close the activation and simply wraps up then the actions in the script resume, for example, the timer starts running again.

You add an option to start the timer. The previous timer is automatically cancelled by the next timer in the script, and all timers are automatically cancelled when the communication is removed from the queue. A timer will fire once only.

For example, you might start an initial timer *before* adding a call to the queue. When the timer expires, the IVR system plays some hold music; then another timer starts with the purpose of checking the caller is still happy to hold. The second timer automatically cancels the initial timer.



Example using timers to transfer calls

For a media type such as emails that may remain in the queue for a while, multiple timers can be configured. For example, a first timer can be configured to start a second timer.

To add a timer:

1. Optional. Declare any variables that you need using the Add Variable action — timer intervals can be set in a variable. Make sure you select the correct data type as explained below.
2. Drop a Timer option into the Timers node.
3. Enter the timer name. *Time names must not contain spaces.*
4. Inside the Timer option, add the options that define what events take place when the timer expires.

Note Scripts cannot be set live if an empty timer has been added to the Timers node, that is the timer contains no options to define what happens when the timer expires.

5. Define when the timer should start:

- a. Drop a Start Timer option into, for example, the EnterQueue node. Add it *before* the Add to Queue option.
- b. Select the timer you defined above and enter the following details:

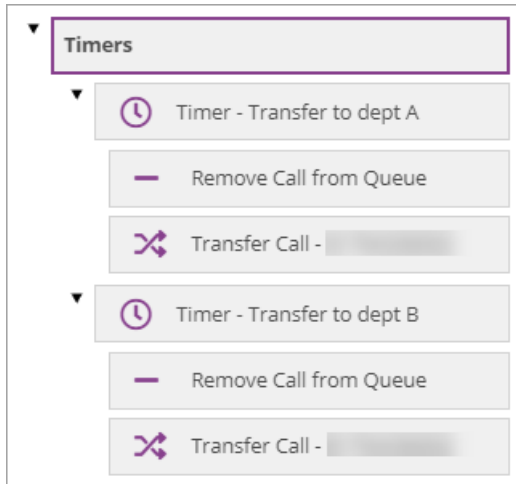
Timer Interval	<p>Do one of the following:</p> <ul style="list-style-type: none"> • For any media type, you can enter the name of a variable that sets the timer interval. Select the variable data type. • For chat and inbound number definitions, enter the timer interval as a number of milliseconds. Select the numeric data type. • For email definitions, enter the timer interval as a relative datetime. Select the string data type. The period specifiers are: <ul style="list-style-type: none"> • W=weeks • D=days • H=hours • M=minutes (the default if a period specifier is not included) • S=seconds <p>For example, the following are the same timer interval: 2h30m or 150m or 150.</p>
Cookie	A value (string only) that you want to pass to the next stage of the script. For example, when you want to send a different message to a chat caller based on the length of time they have been in the queue.

6. Optionally define when the timer stops (is cancelled).

Transfer Call

Input type: Inbound Voice Call, Outbound Voice Call

Use the Transfer Call option in a media script to transfer a call elsewhere (either internally or externally to the system). Typically used by an IF statement, such as diverting the call to another department if it is not handled by the contact center.



The telephone number entered in **Transfer Number** should contain numeric characters only, with no gaps.

Web Request

Input type: Email, Chat

Use a Web Request option in a media script to send a GET or POST request to a web service.

Field	Description
Method	Either a GET or POST.
Request URI	The request URI of the web service.
Content Type	Mandatory for POST requests. The format of the data in the response.
Timeout (Milliseconds)	Mandatory for both GET and POST requests.
Http Headers	Click + to add key-value pairs to the HTTP header.
Data	The data that you expect to be receive as part of the response body. The format of the data depends on the content type.
Variable Name	A predefined variable through which to access the response.

WhatsApp Template Reply

Input type: WhatsApp

Use the WhatsApp Template Reply option in a media script to send automated replies to the caller. Automated replies are configured using the templates created on the **Media Management > WhatsApp Content Templates** page.

Only approved templates are available for selection.

Field	Description
Template	Select from the list of approved templates.
Language	Select the language variant for the template. Only approved language variants are listed.
Parameter	Shows the placeholder(s) from the template, 1, 2, 3 and so on.
Value	Enter the static text or the name of the variable.
Type	Enter the data type of the value or whether it is a variable.

While

Input type: Email, Chat, Voice Call, Social Media

Use the WHILE option in a media script to build a WHILE statement using:

- System variables (see [Media scripts and system variables](#))
- Variables declared using the Add Variable option



When you add a WHILE condition to a script, subsequent child options are placed beneath it which are only carried out whilst the WHILE condition continues to be met.

The screenshot shows the 'WHILE' configuration interface with five numbered steps:

- Step 1: Select a variable from the dropdown menu (currently 'sys_DayOfTheWeek').
- Step 2: Select an operator from the dropdown menu (currently 'Not Set').
- Step 3: Select a comparison value from the dropdown menu (currently empty).
- Step 4: Click the '+' button to add a new condition.
- Step 5: Select a variable from the dropdown menu (currently 'Not Set').

To build a WHILE statement:

1. To remove an unwanted, existing condition, click **Clear**.
2. Select the variable to be evaluated from the **WHILE** list.
3. Select the operator.
4. Enter the comparison. The comparison is case sensitive and you may need to specify the data type of the value.

5. Click  to add the condition to the **Condition** box. You can edit the condition here.
6. Optional. You can build more complex statements by using the AND or OR operators:
 - a. Enter a second condition.
 - b. Select either the AND or OR operator.
 - c. Click  to extend the existing condition.

Entities for use in media scripts

You can create entities for storing the data required for use in media scripts, in outbound dialer campaigns, for use with Report Designer and in CE Studio apps. These are SQL tables where the data, for example, might be preloaded for use by scripts, or created, updated and deleted by the running scripts. Entities can also be used in Report Designer when configuring custom reports.

There are actions in the Media Script Editor for:

- Searching entities: Search Data Table
- Inserting a record: Data Insert
- Updating a record: Data Update
- Deleting a record: Data Delete

Entities are specific to a contact center unit.

Note Entities are not currently supported by CE Studio Designer.

Creating custom entities

You can either create custom entities by importing the XML that defines the SQL table or you can create them in the Admin Portal by going to the **Studio > Custom Entities** page.

To obtain the correct XML format for the import, create a test entity and then export it. Use the XML output as a template.

Note When viewing entities, the column heading defaults to its internal name. For example, a `staffno` column is displayed as `{{staffno}}`. To see a display name instead, add a *label* on **Studio > Message Store** page. The label is automatically used if the message id matches the column name.

Viewing the data

To view the entity data, go to the **Studio > Manage Data** page. Select the entity and then click **Data**.

If necessary, you can add, edit or delete individual records. However, it is good practice to export the data, amend it and then re-import it. This reduces the likelihood of a subsequent data import overwriting your manual updates. Note also that using the Restore Data option may overwrite your manual updates.

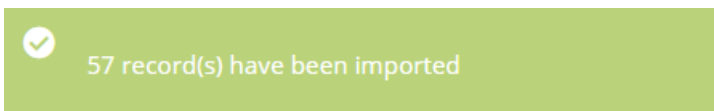
Note In order to avoid errors, you need to understand the structure of the SQL tables. For example, whether there is a restriction on the number of characters allowed in a field, whether a field is mandatory, or if it is a unique field.

Importing data

You can import the data from a CSV file. The previous version of the data is automatically archived.

Import option	Description
Append	Inserts all the records from the import file into the table. An error is reported if any existing records in the table are also in the import file.
Replace	Overwrites existing records and inserts any new records from the import file.
Update	<p>Before the import, you select the column that uniquely identifies each record. The import then updates the data in existing records—this will not insert new records.</p> <p>Note This will not report on the number of updated records.</p>

- On a successful append or replace, the number of records are reported:



- Any errors are reported. The import is terminated if any errors are detected:



{{Error:}} Violation of PRIMARY KEY constraint 'IDX_A000001_Staff_StaffNo_Primary'. Cannot insert duplicate key in object 'A000001.Staff'. The duplicate key value is (01). The statement has been terminated.

Deleting records

You can delete single records:

- Go to **Studio > Manage Data**. Select the entity and then click **Data** to list the records.

Or, you can delete all the records that match a SQL query:

- Go to **Studio > Delete Data**. Select the entity and enter the query in the **Data Filter** field. Before deleting, review the results of the query by clicking **View**. Click **Delete All** to delete all the records returned by the query.

Archiving and restoring records

When you import records into an entity, CE automatically archives the existing records before importing the new or updated records. You can restore the previous version if required. However, when deciding whether to restore the previous version, consider whether there were any manual changes to the data since the import as these changes will not be in the archived version. Prior to restoring, and as a backup, you could export the existing records.

To see the entity and its data, or to restore the data to a point in time:

1. Go to **Studio > Restore Data**.
2. Select the entity.
3. Select the date—dates are in UTC format.

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Configuring custom workflows

Important The information in this section applies to fully-featured tenants only.

In the Admin Portal, you can configure workflow definitions to handle:

- Call backs or ring backs. This is when a caller phones the contact center, is added to the queue and then hangs up before they are connected to an agent. A call back work object is generated and then presented to the agent who will dial the caller manually. The workflow definition defines what information is captured and when the call is presented to the agent.
- Campaign dialing. For background information on the different types of dialer campaigns, see [Outbound campaigns](#).
- Any custom task that will be presented to an agent working in Agent Desktop. Typically, these are handled by agents working in Do Not Disturb mode.

In Agent Desktop, work objects are presented to agents as activations. A CE Studio app is required as the default workflow media app, and this is used to show the details of the work object. The app is loaded when the work object is presented.

You can download some example workflow definitions from the Knowledge Base.

About states, events, actions and locks

A workflow definition defines:

- The data required for the configured task, for example, for dialing a phone number. These are the work elements.
- The sequence of *states*, *events* and *actions* that determine how the call is dialed and what happens if the call is unsuccessful.

A work object is the task that will run, for example, the call that is dialed and then presented to an agent. Locks are used to synchronize write access.

States

A work object is always in one *state* at a time and transitions between states occur as the result of a ChangeToState action being executed. The state is either an active state or a completion state.

State name	Type of state	Notes
S_START	Active state	Further processing is required—you can add the active states needed in the workflow
S_COMPLETE	Successful completion state	No automatic processing will occur unless done manually by the agent
S_CANCEL	Successful completion state	No further processing required
user defined	Failed completion state	You can add these states depending on what is required for the workflow

Events

To progress a work object, you define *work events*. Events are generated by a script or automatically in response to a timeout expiring (timed events). *Actions* run in response to the work event and change the state of the work object. For example, if a supervisor cancels a work object from a CE Studio application then an E_CANCEL event could be sent.

There are several event *types*:

- Normal – the actions to perform when the event happens.
- State Change – the next state to go to when this event happens and no further processing is required.

You can use these predefined system states:

- OnEnterState – on entering a state
- OnLeaveState – on leaving a state, for example, to validate the current state. Do not use with State Change.
- OnLockExpired – when the write lock on the work object is released

Events are specific to each workflow definition.

Actions

The *action* that runs when a work object in a specific state receives a work event. The actions run in the order in which they are listed on the Workflow Actions page of the workflow. This means that

an action for the start state that saves information in the work object (the ApplyUpdates action) must run before the action that changes the work object to the next state.

You can use these actions:

Work actions

Action	Description
ChangeToState	<p>Changes the state of the work object when an event is triggered or when a timer expires.</p> <p>For example, when a cancel event is triggered by an agent clicking a button in a CE Studio app, the state changes from a Start state to a Cancelled state.</p>
FireTimedEvent	<p>Starts a timer that expires after:</p> <ul style="list-style-type: none"> • A fixed period, such 2h for 2 hours, 180m for 180 minutes. • A value in a work element. Prefix the work element name with @, such as @ringback_time. <p>Defaults to seconds.</p>
CancelTimedEvent	Cancel a timed event for the work object.
CancelAllTimedEvents	Cancel all timed events for the work object. For example, completed events should run this work action.
SetWorkColour	Predefined action that sets the colors of work objects.
LaunchScript	Add the work object to the queue for an agent working in Agent Desktop. Additional parameters let you override the default skillset and priority. Select a coverage plan to determine the hours when the work object can be added to the queue. See LaunchScript work action .
Run Queue Progression Script	Run a queue progression script, for example, to dial an automated outbound call. See Configuring automated outbound calls .
ApplyUpdates	<p>Use this when you need to store data in the work object. For example, when agents enter information into a field that is associated with a work element.</p> <div> <p>Note Use this when you are <i>not</i> using a queue progression script.</p> </div>

Action	Description
RunScriptlet	For conditional logic, or any action for which there isn't a predefined action type, you can write a JScript or VBScript. For details of the RunScriptlet action and its methods, see RunScriptlet methods .
Invoke Provider Action	<p>To send a request to the endpoint that's configured in CE Studio but only for static text. As an alternative use the RunScriptlet work action.</p> <p>The action parameters are:</p> <ul style="list-style-type: none"> • Action ID: Select the name of the global action set configured in CE Studio. • Response Properties as JSON. Only required if the action returns data otherwise [" "]. • Placeholder Mapping as JSON. You can also use this to map to a variable(s) defined by the RunScriptlet action, for example @Placeholder_Mapping. See Invoke provider action for an example. <p>Note You can download an example workflow definition that shows how to use the Invoke Provider Action to create records at the provider from the samples page in the webhelp.</p>
CancelLaunchScript	Remove the work object from the queue.
UpdateLaunchScript	Change, for example, the priority or skillset for the work object without changing its position in the queue.
SendEmail	<p>Send an email to email addresses that are passed in work elements. To reference a work element, prefix the work element name with @.</p> <p>Note Do not use the Status Update Event and Reply Event options. These will be removed in a future release.</p>
SendSMS	Send an SMS message to mobile numbers that are passed in a work element. To reference the work element, prefix the work element name with @.

Locks

Locks are used to synchronize access to work objects. For example:

1. A new work object is in its start state. The system locks the work object and queues an OnEnterState event for processing the work object.

The work object is listed on the Work Objects page as *Locked/Open*.

2. The system looks for any actions configured for the start state and runs them. After running the actions, the system releases the lock. Locks also expire automatically after a configured period (such as the **Work Editor Max Lock Time** set in the workflow definition).

The work object is shown as *Not Open*.

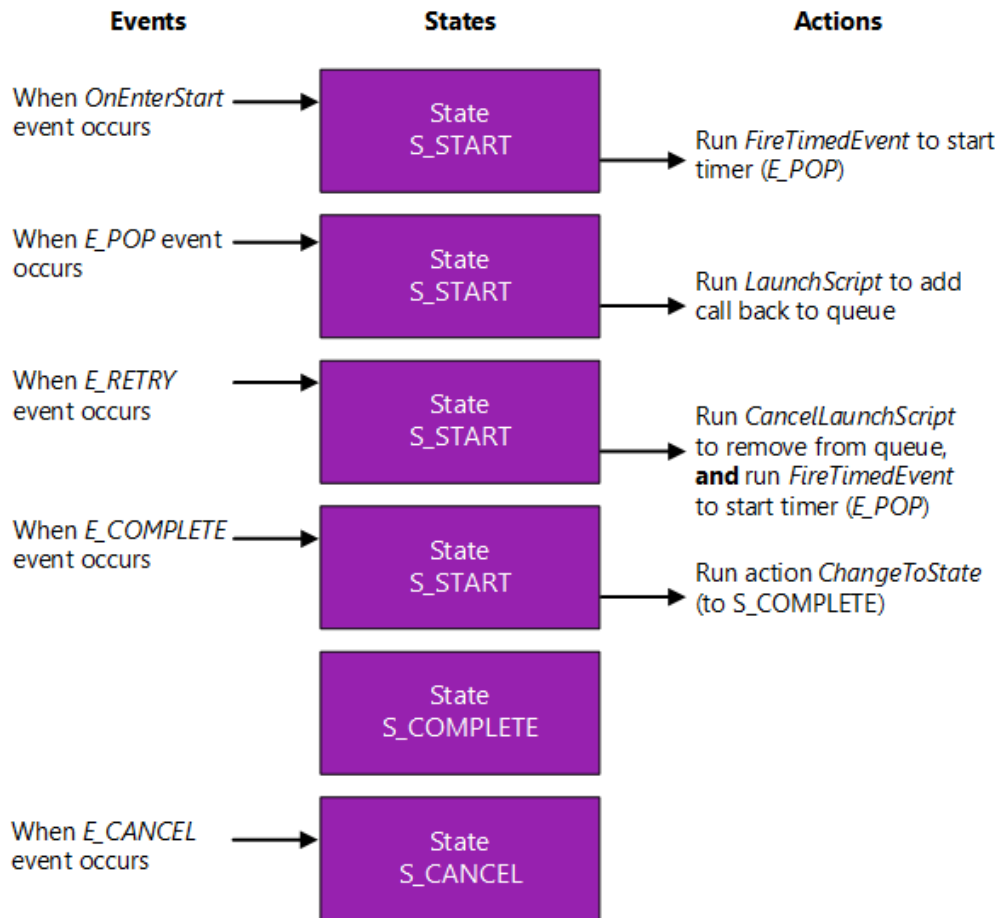
The same applies when work objects are added to the queue for an agent. The iMedia server obtains a lock on the work object before presenting the work object to an agent as an activation. When the agent accepts the activation, the lock is passed to the CE Studio app. When the agent completes their work, for example, completes an outbound call then the CE Studio action releases the lock as part of closing or updating the work object.

Example workflow for call backs

This is an example of a workflow for call backs.

Note You can download the workflow definition used in this example from the [Knowledge Base](#).

When a caller hangs up after waiting in the queue for an agent, a call back work object is created which will schedule a call back. When the timer expires, the `E_POP` event is fired and the call back is added to the queue to eventually present to an agent. Agents use a CE Studio app to cancel the call back, retry it (if the number is engaged when the agent calls) and wrap up when the call is completed successfully.



Example of the events, states and actions in a call back workflow

This example has these states:

State name	Notes
S_START	An active state
S_COMPLETE	A successful completion state
S_CANCEL	A successful completion state

Note This example doesn't have a failed state.

The example uses these events:

Event name	Event type	Notes
E_CANCEL	State change	Triggered by a CE Studio app when the agent cancels the call back.

Event name	Event type	Notes
E_POP	Normal	Triggered by the system. Runs action to add to queue.
E_COMPLETE	Normal	Triggered by a CE Studio app when the agent completes the call back.
E_RETRY	Normal	Triggered by a CE Studio app when, for example the agent can't make the call and reschedules it.
OnEnterState	Predefined	Triggered by system creating the work object.

The example uses these actions:

State	Work event or timer	Work action	Notes
S_START	OnEnterState	FireTimedEvent (E_POP)	Starts timer
S_START	E_POP	LaunchScript	Adds to queue
S_START	E_COMPLETE	ChangeToState (S_COMPLETE)	Sets work object to complete
S_START	E_RETRY	CancelLaunchScript	Removes from queue
S_START	E_RETRY	FireTimedEvent (E_POP)	Starts timer again

List of work element names for standard call backs

For standard call backs, there are fixed names for the work elements that are automatically saved by IFS Customer Engagement.

If you want IFS Customer Engagement to generate the work objects for you then you must use the work elements listed here. If you want to use different names or you require other work elements then you will need to generate call backs as part of an IVR script.

Work element name	Description
W_CALL_ID	Use this if you need to link to the actual call record.

Work element name	Description
W_CALL_REF	Use this to provide a 8-character call reference that could, for example, be used in a CE Studio app as a tracking reference. This is not the same as the GUID that uniquely identifies each activation.
W_QUEUE_DURATION	Time in the queue before the call back is created.
W_CLI	The number the user is calling from.
W_DDI	The inbound number dialed by the user.
W_QUEUE_SKILLSET_ID	The GUID for the skillset.
W_QUEUE_SKILLSET_NAME	The skillset name.

Workflows for automated outbound calls

There is an example of a workflow and queue progression script for making automated phone calls using a media script. You can download this example from the [Knowledge Base](#).

Purpose of the workflow definition

When a work object is created from a workflow definition, the service will:

1. Run the LaunchScript action of the workflow definition. This runs a queue progression script which dials the call and manages the call, for example, what happens when the call is answered, unanswered or the line is engaged.
2. When the call is answered, the script could, as in this example, play a pre-recorded message and then disconnect. However, it could also offer a menu with a range of self-service options.

What happens when the outbound call is made is controlled entirely by the media script that you configure. You create this type of script on the **Media Management > Media Queue Progression** page.

For details of how to configure this type of media script for outbound calls, see [Configuring automated outbound calls](#).

Creating the work objects (planned calls)

You create work objects from the example workflow definition in different ways:

- You can import the work objects, from an Excel file, on the **Workflows > Import Work Objects** page.
- Use the Tenant API to create the work objects programmatically from a third-party system.
- Agents working in Agent Desktop can create work objects using a CE Studio app (that you create).

About the example workflow definition

This example has these states:

State name	Notes
S_START_DIALOUT	An active state for newly created work objects
S_COMPLETE_DIALOUT	A successful completion state
S_CANCEL_DIALOUT	A successful completion state

Note Other states would be required in a production example, such as a failed state.

The example definition uses these events:

Event name	Event type	Notes
E_CANCEL	Configurable	Triggered by a Post Work Event in the media script posting a work event to the work object. Changes the state to canceled.
E_COMPLETE	Configurable	Triggered by a Post Work Event in the media script posting a work event to the work object. Changes the state to completed.
OnEnterState	Predefined	Triggered by system when you create the work object.
E_POP	Configurable	Triggered by the system (the FiredTimedEvent action).

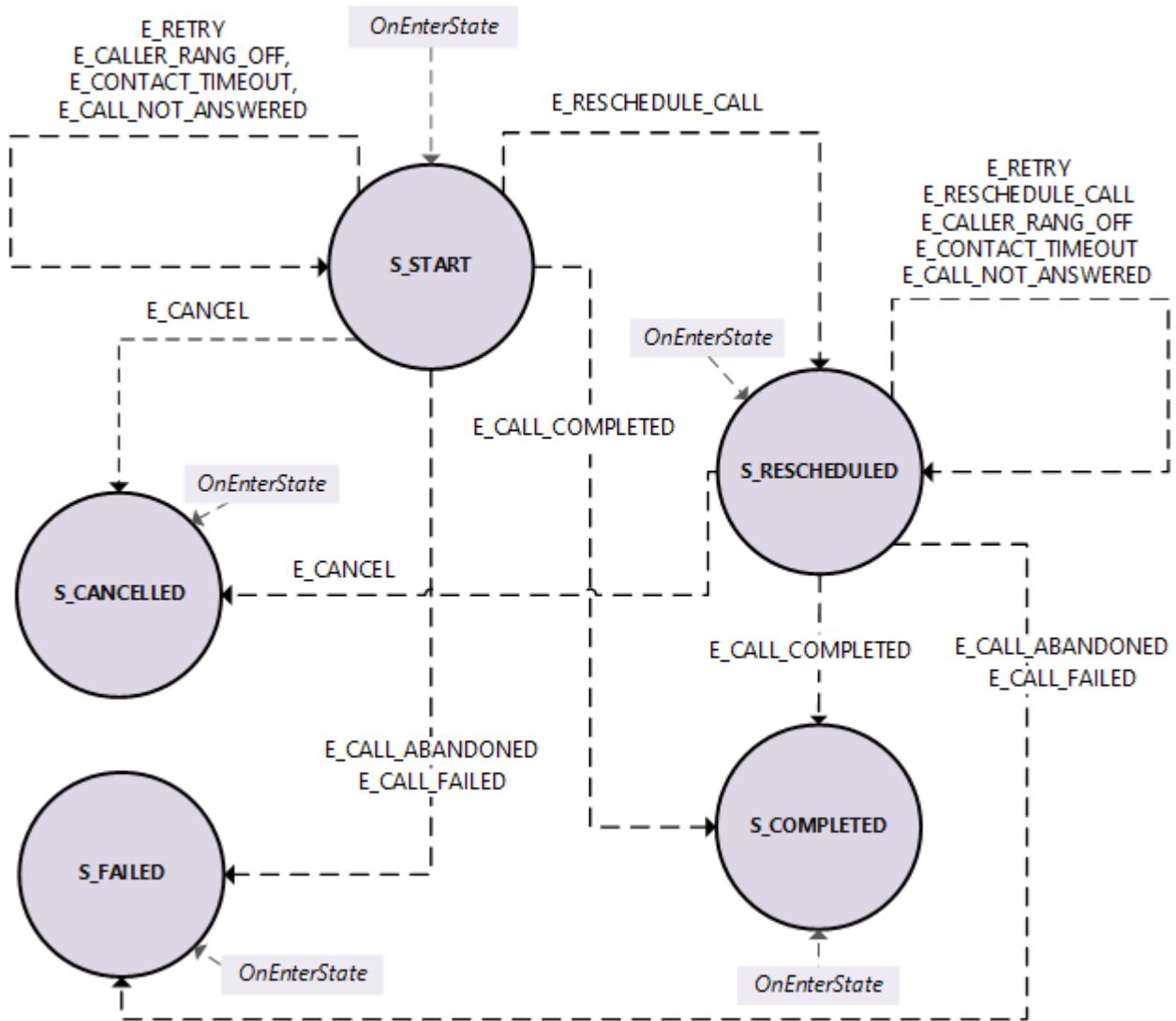
The example uses these actions:

State	Work event	Work action	Notes
S_START_DIALOUT	OnEnterState	LaunchScript	On entering this state, system triggers the associated media script to run.
S_START_DIALOUT	E_COMPLETE	ChangeToState (S_COMPLETE_DIALOUT)	Sets work object to complete
S_CANCEL_DIALOUT	E_CANCEL	ChangeToState (S_CANCEL_DIALOUT)	Sets work object to canceled

Example workflow for campaigns

This is an example of a more complex workflow for campaign dialing.

Note You can download the workflow definition used in this example from the Samples page in the Admin Portal webhelp.



Example events and states in a campaign dialer workflow

This example has these states:

State name	Notes
S_START	An active state
S_COMPLETED	A successful completion state
S_CANCELLED	A cancelled/failed state for outbound calls that were dialed but where the call is unsuccessful, for example, wrong number.
S_RESCHEDULED	A normal intermediate state where the callee asked to be called another time.

State name	Notes
S_FAILED	A cancelled/failed state, for example, the line was engaged.

The example uses these events:

Event name	Event type	Notes
OnEnterState	Predefined	Triggered by system creating the work object. Runs action to add to queue.
E_CANCEL	Normal	Triggered by a CE Studio app when the agent cancels the call.
E_RESCHEDULE_CALL	Normal	Triggered by a CE Studio app when, for example the agent reschedules the call at the callee's request.
E_CALL_COMPLETED	Normal	Triggered by a CE Studio app when the agent completes the call successfully.
E_CALLER_RANG_OFF	Normal	Triggered when the callee answers the call and then disconnects before being connected to an agent.
E_RETRY	Normal	The system tried to connect the call but failed. It will try again for the configured number of retry attempts.
E_CONTACT_TIMEOUT	Normal	The system tried to contact the callee on the given number but was unable to make contact within the configured time period.
E_CALL_NOT_ANSWERED	Normal	The system dialed the number but no one answered.
E_CALL_ABANDONED	Normal	The definition of an abandoned call depends on the local regulations. In the UK, an abandoned call is defined as one where the callee answered but the system did not connect the call to an agent quickly enough. UK regulations set a limit on the number of abandoned calls permitted within a 24-hour period.

Note Events are defined as normal event type because separate actions are configured that perform the state change.

The example uses these actions:

State	Work event or timer	Work action
S_START	OnEnterState	SetWorkColour, RunScriptlet (gets the data for making the call and adds the work object to the queue)
	E_CALL_COMPLETED	ApplyUpdates, ChangeToState(S_COMPLETED)
	E_CALL_ABANDONED	RunScriptlet
	E_RETRY	RunScriptlet (gets the data for redialing the call and adds the work object to the queue)
	E_CONTACT_TIMEOUT	RunScriptlet (determines if there is another number to try else changes state to S_FAILED)
	E_RESCHEDULE_CALL	ApplyUpdates, RunScriptlet (gets the data for making the scheduled call and adds the work object to the queue)
	E_CALL_FAILED	ApplyUpdates, RunScriptlet (determines if there is another number to try else changes state to S_FAILED)
	E_CANCEL	ApplyUpdates, ChangeToState(S_CANCELLED)
	E_CALL_NOT_ANSWERED	RunScriptlet (removes the work object from the queue and increments the retry counter. The call will be tried again after the configured retry interval.)
	E_CALLER_RANG_OFF	Similar to E_CALL_NOT_ANSWERED
S_COMPLETED	OnEnterState	SetWorkColour, RunScriptlet (updates the log)

State	Work event or timer	Work action
S_CANCELLED	OnEnterState	SetWorkColour, RunScriptlet (updates the log)
S_RESCHEDULED	Similar to S_START	Similar to S_START
S_FAILED	OnEnterState	SetWorkColour, RunScriptlet (updates the log)

Creating a workflow definition

Note For background information on workflows, states, events and actions, see [About states, events, actions and locks](#).

1. In the Admin Portal, go to **Workflow Management > Workflows**.
2. Click **New**.
3. Select the contact center and contact center unit.
4. Enter the details of the workflow:

Field	Description
Name	The name of the workflow definition.
Description	A description to help others who might need to modify the workflow.
Work Noun	A suffix that is added to internal names.
Work Editor Max Lock Time	<p>Work objects are locked once agents accepts them. Only the agent who accepts the work object can update the details although other agents can still see the details if they want.</p> <p>Enter the maximum number of minutes the agent has to complete their work before the write lock is removed and the work object returned to the queue. It should be sufficient time for the agent to make the phone call and complete any other required steps.</p>

Field	Description
Cancel Event	<p>You need to <i>create a cancel event</i> before you can select it here. Once you've created a cancel event, you can edit the workflow definition to add the cancel event.</p> <div> Important A cancel event is mandatory for all workflow definitions. </div>
Date and Time are in UTC	This applies to dates supplied by the agent application (such as a queue progression script) where imported dates may not be in a UTC format. Select this option to avoid ambiguity with datetimes.
Campaign Definition	Select this if configuring a workflow definition for a dialer campaign. You will then need to configure some additional event types used in a campaign as explained in <i>Event types for campaign workflow definitions</i> .

Add work elements

To add work elements to the work definition:

1. In the Admin Portal, go to **Workflow Management > Workflows**.
2. Select the work definition.
3. Go to the Work Elements section and define the work elements required by the workflow. Enter the first work element in the **Work Elements** table (click **Add Element** to add more rows to the table):

Field	Description
Name	<p>A name for internal use in the workflow definition and later when configuring the CE Studio app.</p> <div> <p>Note To reference this work element when configuring work actions you prefix a @ to the work element name.</p> </div> <p>Call Backs Only: Standard work element names are available for call back workflows:</p> <ul style="list-style-type: none"> If you want CE to automatically generate the work object for you (rather than configure this step as part of the IVR script) then you need to use the standard work element names. See List of work element names for standard call backs. If you are planning to use an IVR script to generate the work object then you can name the work elements as you want.
Description	A description to help others who might need to modify the workflow.
Searchable	<p>The data is stored as JSON in one column of the database. To search for a specific work object, for example to cancel it, you need to specify the element(s) you want to search by. You can only search for work elements that are configured as Searchable.</p> <p>Work elements are also searchable when configuring reports in Report Designers, and CE Studio actions.</p>

Add events

1. In the Admin Portal, go to **Workflow Management > Workflows**.
2. Select the work definition and then click **More > Event**.
3. Define the first event in the workflow: on the **Workflow Events** tab, click **New**. Repeat this for each required event.

Important You must define a cancel event for all workflow definitions. To refresh the list of events on the Workflows page, right-click on the Workflow Detail page and select **Refresh Tab** from the popup menu.

Field	Description
Name	The event name. By convention, starting with E_
Description	A description to help others who might need to modify the workflow.
Work Event Type	Configure events that: <ul style="list-style-type: none"> Run actions as the Normal event type. Only this type of event is available when configuring actions. Perform a state change as the State Change event type.
State	For events that perform a state change, select the state to change to.

Note After defining the events, go back and update your workflow definition. You may need to refresh the page before you see the list of events.

Add actions

1. In the Admin Portal, go to **Workflow Management > Workflows**.
2. Select the work definition and then click **More > Action**.
3. Define the first action for the workflow: on the **Workflow Actions** tab, click **New**. Repeat this for each required action.

Field	Description
Work State	<p>Select the state. The work object must be in this state before the action can run. For example, choose the start state if the action runs when the work object is in its start state.</p> <p>You can define multiple actions for the same state - they will run in the order in which they are listed.</p> <p>Further settings depend on the chosen state.</p>

Field	Description
Work Event/Timer	Select the event. Only <i>normal</i> event types are listed here. The action runs in response to this event. See About states, events, actions and locks for a list of event types.
Work Action	Select the action to run. See About states, events, actions and locks for a list of action types.
Action Parameters	<p>The parameters depend on the chosen action. For example, if you choose LaunchScript then you can optionally set:</p> <ul style="list-style-type: none"> lock text (the reason why the work object is locked) work element to a static value (select from the element Queue Priority list) or enter the work element name prefixed with a @. queue priority to a numeric value skillset to a specific skillset coverage plan if different from the coverage plan set for the work definition or the contact center itself timezone <p>See LaunchScript work action for details.</p>

Note To make it easier to read the Workflow Action List on the left, only the first or top most action for an event is shown with a state name and event. To change the running order of the actions *within an event*, click **Move Up** or **Move Down**.

Event	Action
OnEnterState	SetWorkColour(YELL FireTimedEvent(E_P
E_COMPLETED	ChangeToState(S_CC
E_RETRY	CancelLaunchScript FireTimedEvent(E_P

Move the actions in this event up or down

Event types for campaign workflow definitions

This topic describes the additional event types that are needed in workflow definitions for campaigns. As a minimum, you will need to configure the *Cancel Event*, *Failed Call Event* and possibly the *Abandoned Call Event*.

Note You can download an example of a workflow definition for campaigns from the [Knowledge Base](#).

Event Type	Description
Failed Call Event	<p>Triggered when a call fails, for example, the line was engaged.</p> <p>Note If multiple destination numbers are specified then this event will only relate to one of those numbers.</p>
Unanswered Call Event	Triggered when the target does not answer the call within the ring timeout period.
Abandoned Call Event	<p>Typically, you do not need to configure this event if your campaign uses automatic answering.</p> <p>Note In the UK, an abandoned call is defined as one where the callee answered the call but the system did not connect the call to an agent quickly enough. UK regulations set a limit on the number of abandoned calls permitted within a 24-hour period.</p>
Disconnected Call Event	Triggered when the callee answers the call and then disconnects before being connected to an agent.

For details of the cancel event, see [Creating a workflow definition](#).

Testing workflow definitions

To help with the development of workflow definitions, you can create work objects and then test the events and actions configured in the definition.

Note To receive debug emails for work objects, in the Admin Portal, go to **Contact Center > Contact Centers** page and add your email address in the **Main Contact Email** and **Support Email** fields.

Create a work object

Important If you are creating work objects for testing campaigns then you need to use the **Workflow Management > Create Campaign Data** page.

You can create work objects for test purposes on these pages , in the Admin Portal:

- The **Workflow Management > Work Objects** page (click **New**).
- The **Workflow Management > Create Workflow Object** page.
- For campaigns, on the **Workflow Management > Create Campaign Data** page.

Edit a work object or view its details

1. Search for the work object, for example by workflow definition, date and/or reference.
2. Select the work object from the Workflow Object list and click **Edit**.
3. To view the events, click **Event History**. Only the events configured in the definition are selectable from the **Event** list - system events such as OnEnterState and OnLockExpired are always listed in the table.
4. To edit the values in the work elements, lock the work object: in **Lock with Reason**, enter a descriptive name for the lock.
5. Edit the values and then click **Save**.

Test the events and state changes configured in a workflow definition

Note You cannot always test events and actions that are scripted using RunScriptlet methods as the events and actions may require values configured in the script.

1. In the Admin Portal, on the **Workflow Management > Work Objects** page, find the new work object and then click **Edit**.
2. To test an event configured in the workflow definition:
 - a. In **Lock with Reason**, enter a descriptive name for the lock.
 - b. Click **Lock** to acquire a lock on the work object.
 - c. Select the event you want to test from the **Fire Event** list.

You can only test the custom events configured in the workflow definition, you cannot directly test the system events such as OnEnterState.

- d. Click **Fire** to trigger the event.

The system will then perform any actions and state changes configured for the event.

3. To test a state change configured in the workflow definition
 - a. Lock the work object as described in the previous step.
 - b. Select the state from the **Change State** list.
 - c. Click **Change** to perform the state change.

Fixing OnEnterState errors

When testing a workflow definition that you are developing, it is possible to create work objects that the system cannot change to the start state. To fix this:

1. On the Work Objects page, select the work object from the Workflow Object list and click **Edit**.
2. Click **Initialize** to move the work object to its start state.

Disabling work objects

When testing a workflow definition that you are developing, you should always configure a cancel event. This enables you to cancel a work object when necessary using the steps described above in [Test the events and state changes configured in a workflow definition](#).

If you do not have a cancel event, then you can select the work object on the Work Objects page and click **Disable**.

LaunchScript work action

The LaunchScript work action defines:

- How the generated work objects are added to the queue for an agent (the **Add to Operator** type)
- For campaigns, whether the phone number in the work object is dialed before presenting the call to an agent.
- Whether the incoming call is processed using a queue progression script (the **Media Script** type).

Depending on the type, you can configure any of the following:

Field	Description
Launch	<p>The type of action to run:</p> <ul style="list-style-type: none"> • To Operator: select this to create work objects from this work definition that will be presented to agents working in Agent Desktop. Select the CE Studio app to use from the Agent Media App list. • Media Script: select this to process the inbound call using a queue progression script. Select the queue progression script to use. For background information, see How to configure standalone media scripts for voice.
Queue Progression	<p>The queue progression script to use for work objects that are processed automatically. If the script is configured to pass the work object to an agent then you can also select the CE Studio app to use from the Agent Media App list.</p>
Agent Media App	<p>If the work object is handled by agents working in Agent Desktop then select the CE Studio app to use. Only media apps with a live version are listed here.</p>
Tag	<p>Short application-specific string (maximum 30 characters) to be passed through to the script as a <i>WORK_TAG</i> URI parameter.</p>
Lock Text	<p>Brief description of the action the agent is expected to perform. This description is used when locking the work object and will therefore be visible to other agents who attempt to lock the work object whilst it is still being worked on by the agent.</p>
Queue Priority	<p>Select one of the following:</p> <ul style="list-style-type: none"> • Numeric Value and then select from the adjacent list. <ul style="list-style-type: none"> • Select Default to use the default queue priority for the contact center unit. • Select an adjustment that will be applied to the default queue priority, for example +1 will increase the default priority by 1. • The work element that will define the queue priority. This means that the priority is determined by the work object. <p>For background information on queue priority, see Setting default activation priorities.</p>

Field	Description
Processing Timeout	<p>The number of seconds to allow for the system to execute the work object before setting it to Not Open status. To investigate why a work object was not processed:</p> <ol style="list-style-type: none"> 1. Go to Workflow Management > Work Objects. 2. Find the work object and then click Edit. 3. Click Event History.
Preferred Agent Delay	<p>Queue delay (in seconds) for waiting for an agent with one or more preferred skills to become available before the object is delivered to an available agent with only the required/mandatory skills (that is without a preferred skill). Leave blank (or enter 0) to use of the default preferred agent delay that is configured for the contact center unit.</p>
Skillset	<p>Select one of the following:</p> <ul style="list-style-type: none"> • Use Default to use the default skillset set in the campaign. • A skillset configured for this contact center unit. • Custom Element to use the skillset defined in the work object. <p>For background information on skillsets, see Skills and skills-based routing.</p>
Coverage Plan	<p>For background information on coverage plans, see Public holidays and open hours.</p>
Timezone	<p>Defines the default time zone for this workflow definition.</p>
Greeting	<p>For campaigns only: The text shown to the agent before the call is presented to them.</p>

Field	Description
Mode	<p>For campaigns only: the dialing mode:</p> <ul style="list-style-type: none"> • Preview: the number(s) in the work object are not dialed. Work objects present as workflows in Agent Desktop using the CE Studio app associated with the workflow media type. • Progressive: the number(s) in the work object are dialed automatically. Work objects present as campaign calls in Agent Desktop using the CE Studio app associated with the workflow media type. • Predictive: the number(s) in the work object are dialed automatically. Work objects present as campaign calls in Agent Desktop using the CE Studio app associated with the workflow media type. <p>If the workflow definition and the campaign are configured for different dialing modes then the campaign will use the <i>lowest</i> mode where</p> <ol style="list-style-type: none"> 1. Preview is the lowest 2. Progressive 3. Predictive is the highest <p>For example, if the campaign is configured for Preview mode and the definition is configured for Progressive dialing then the actual campaign will use Preview mode.</p>

Field	Description
Destination Number	<p>For campaigns only and media scripts: You can enter any of the following:</p> <ul style="list-style-type: none"> • Phone number(s) • One work element prefixed with @ - multiple work elements are not supported <p>For campaigns only: You can enter multiple numbers either in the Destination Number field or inside the work element, such as +441926623509 , +4419854324711 ; +447968093280).</p> <p>If multiple numbers are specified, then the numbers can be attempted in sequence or in parallel:</p> <ul style="list-style-type: none"> • For sequential dialing, use a comma as the separator. This means that the first number is called and, if that fails, then next one, and so on. • For parallel dialing, use a semi-colon as a separator. This means that all the numbers are dialed simultaneously and, then depending on which number is answered first, hangs up the other calls. <div> <p>Important If multiple sets of numbers are specified then all of the numbers must relate to the same callee otherwise this would contravene some dialer regulations such as those in the UK.</p> </div>
Caller ID	<p>For campaigns only: Sets the default caller ID for any campaign that uses this workflow definition. This overrides any caller ID set elsewhere. For further details of caller IDs, see Creating campaigns (preview dialing).</p>
Ring Timeout	<p>For campaigns only: Maximum time (in seconds) to wait for calls to be answered before automatically disconnecting. Enter 0 to use the default campaign ring timeout; otherwise the system will ensure that the timeout used is not smaller than the minimum campaign ring timeout (to ensure compliance with dialer regulations).</p>

Field	Description
App Data	For campaigns only: Optional application-specific 50-character string (such as a reference) to stored in all the outbound call records associated with this request.

RunScriptlet methods

The RunScriptlet action allows one or more JavaScript or VBScript statements to be executed. The script can contain any valid statement (including functions/subroutines) as supported by the script engine and can interact with the workflow engine by means of the `host` object.

Note Unlike script embedded in a HTML page, you cannot access browser-based objects (such as `document` or `window`) because the script is hosted by the workflow engine and not a web browser.

For example, in a dialer campaign, to redial a number three times before giving up.

```
var number = '';
var num1 = host.GetObjectElement("MobilePhone");
var num2 = host.GetObjectElement("WorkPhone");
var skillset = ''
if (num1 != '')
    number = num1;
if (num2 != '')
    number = (number == '') ? num2 : number + ',' + num2;
if (number == '')
    host.ChangeToState("S_CANCEL_DIALER");
else {
    host.PopToAgentEx(2, 0, "", 0, "", 60,
        "Dialling...", "", skillset, 0, 0, "",
        2, number, "", 0, name);
}
```

For further scriptlet examples, see the IFS CE Example Campaign Workflow Definition. You can download this from the [Knowledge Base](#).

Add to Queue

Use the `PopToAgent` and `PopToAgentEx` RunScriptlet methods both add work objects to the queue - the `PopToAgentEx` methods takes a wider range of parameters. Use `CancelPopToAgent` to remove the work objects without changing their state.

PopToAgent

The `PopToAgent` `RunScriptlet` method adds the work object to the queue for delivery to a suitably skilled agent. Returns 0 if successful or a negative number if an error occurs.

Performs the same action as the *LaunchScript* work action.

```
PopToAgent[in]
int queuePriorityDelta,
[in] ULONG nPrefOprDelay,
[in] BSTR sScript,
[in] ULONG nScriptPage,
[in] BSTR sScriptTag,
[in] ULONG nLockTimeout,
[in] BSTR sLockText,
[in] BSTR sOcu,
[in] BSTR sSkillset,
[out,retval] LONG* pResult
```

Parameters:

- **queuePriorityDelta:** Relative queue priority between -5 and +5. 0 will use the default workflow priority for the current contact center unit. A positive number increases the default priority accordingly and a negative number decreases it. The actual queue priority is limited to the range 1..9 where 9 is the highest possible level.
- **nPrefOprDelay:** Queue delay (in seconds) for waiting for an agent with one or more preferred skills (if applicable) to become available before the object is delivered to an available agent with only the required/mandatory skills that is without a preferred skill). A value of 0 will result in the use of the default preferred agent delay that is configured for the contact center unit.
- **sScript:** not used
- **nScriptPage:** not used
- **sScriptTag:** Short application-specific string (max 30 characters) to be passed through to the script as a *WORK_TAG* URI parameter.
- **nLockTimeout:** Timeout (in minutes) to use when locking the work object before delivering it to an agent. This value should be set as low as possible, but it must also be large enough to cater for the longest amount of time that an agent can reasonably spend dealing with the work object.
- **sLockText:** Brief description of the action the agent is expected to perform. This description is used when locking the work object and will therefore be visible to other agents/users who attempt to lock the work object whilst it is still being worked on by the agent.
- **sOcu:** Unique id or name of a specific contact center at which the work object should be queued, otherwise the object will be queued at all the contact centers that have been given access to the contact center unit.

- **sSkillset:** Id or name of a skillset to use when queuing the work object, otherwise the default skillset that is configured for the contact center unit is used.

CancelPopToAgent

Cancels any outstanding *LaunchScript* action without necessitating a state change.

PopToAgentEx

For example:

```
host.PopToAgentEx(0, 0, "", 0, "MakeInitialContact", 30,
"Making initial contact...", "", skillset, "coveragePlan",
0, greeting, mode, numbers, "", 20, "name");
```

```
PopToAgentEx[in] int queuePriorityDelta,
[in] ULONG nPrefOprDelay,
[in] BSTR sScript,
[in] ULONG nScriptPage,
[in] BSTR sScriptTag,
[in] ULONG nLockTimeout,
[in] BSTR sLockText,
[in] BSTR sOcu,
[in] BSTR sSkillset,
[in] ULONG coveragePlan,
[in] ULONG timezone,
[in] BSTR sGreeting,
[in] ULONG mode,
[in] BSTR sNumber,
[in] BSTR sCLI,
[in] ULONG ringTimeout,
[in] BSTR sAssocAppData,
[out,retval] LONG* pResult
```

Performs the same action as the *LaunchScript* work action. It adds the work object to the queue for delivery to a suitably skilled agent. Returns 0 if successful or a negative number if an error occurs.

- **queuePriorityDelta:** Relative queue priority between -5 and +5. 0 will use the default workflow priority for the contact center unit. A positive number increases the default priority accordingly and a negative number decreases it. The actual queue priority is limited to the range 1..9 where 9 is the highest possible level.
- **nPrefOprDelay:** Queue delay (in seconds) for waiting for an agent with one or more preferred skills to become available before the object is delivered to an available agent with only the required/mandatory skills that is without a preferred skill). Enter 0 to use the default preferred operator delay that is configured for the contact center unit.
- **sScript:** not used.
- **nScriptPage:** not used.

- **sScriptTag**: Short application specific string (max 30 characters) to be passed through to the script as a *WORK_TAG* URI parameter.
- **nLockTimeout**: Timeout (in minutes) to use when locking the work object before delivering it to an agent. Set this value as low as possible, but it must also be large enough to cater for the longest amount of time that an agent can reasonably spend dealing with the work object.
- **sLockText**: Brief description of the action the agent is expected to perform. This description is used when locking the work object and will therefore be visible to other agents who attempt to lock the work object whilst it is still being worked on by the agent.
- **sOcu**: Unique id or name of a specific contact center at which the work object is queued, otherwise the object is queued at all the contact centers that have access to the contact center unit.
- **sSkillset**: Id or name of skillset to use when queuing the work object, otherwise the default skillset configured for the contact center unit is used.
- **coveragePlan**: coverage plan that defines the times-of-day that the object can be queued. Enter "0" to use the default coverage plan for the campaign or contact center unit instead.
- **timezone**: timezone to use in conjunction with the coverage plan to determine the times-of-day that the object can be added to the queue. Enter 0 to use the default timezone for the campaign or contact center unit instead.
- **sGreeting**: Greeting text to be displayed in a pop-up window in Agent Desktop for cases where the agent might be connected to a live call before the CE Studio app has completed loading (such as campaign outbound calls in progressive or predictive mode). If a blank string is supplied, then the default greeting text for the contact center unit will be used instead.
- **mode**: Requested campaign dial mode: 0=Preview, 1=Progressive, 2=Predictive. Non-campaign objects always operate in preview mode. Campaign objects should request the highest dial mode that is supported or required as the actual dial mode that will be used will be the lower of that requested by the work objects and that configured for the campaign. See also [About the dialing modes](#).
- **sNumber**: Destination number(s) to dial. If multiple numbers are supplied, they need to be separated by either a comma or a semi-colon. In the progressive and predictive dial modes, the specified number is automatically dialled and only presented to an agent when the call is answered. For further details, see [Destination number](#).
- **sCLI**: The caller ID that should be presented for the outbound calls associated with this request. If blank, the default caller ID associated with the campaign, contact center unit or agent is used instead.
- **ringTimeout**: Maximum time (in seconds) to wait for calls to be answered before automatically disconnecting. Supply 0 to use the default campaign ring timeout; otherwise the system will ensure that the timeout used is not smaller than the minimum campaign ring timeout (to ensure compliance with dialer regulations).

- **sAssocAppData**: Optional application-specific 50-character string (such as a reference) to be stored in all the outbound call records associated with this work object.

Work object

RunScriptlet methods to get information about a work object:

GetObjectId

```
GetObjectId[out,retval] BSTR* pResult
```

Returns the work object's unique identifier (guid).

GetObjectReference

```
GetObjectReference[out,retval] BSTR* pResult
```

Returns the work object's alphanumeric reference string.

Work object color

RunScriptlet method to set the color of a work object, for example, on a state change.

SetObjectColour

```
SetObjectColour [in] BSTR strColour
```

Performs the same function as the *SetWorkColour* work action. It updates the object's display color to the value specified by **strColour**:

- *BLUE*
- *GREEN*
- *ORANGE*
- *PURPLE*
- *RED*
- *WHITE*
- *YELLOW*

Work object element

RunScriptlet methods to get, set and update the elements in a work object.

GetObjectElement

```
GetObjectElement [in] BSTR strName, [out,retval] BSTR* pResult
```

Returns the value of the work object element specified by *strName* or returns an empty string if the element is not found.

GetObjectElements

```
GetObjectElements [out,retval] BSTR* pResult
```

Returns a JSON-encoded string containing all the object's elements, such as:

```
<RuntimeScript>
  <RuntimeVariable name="W_NUMBER"
    value="07970579339" />
  <RuntimeVariable name="W_TIME"
    value="2011-05-06 12:15" />
</RuntimeScript>
```

SetObjectElement

SetObjectElement [in] BSTR strName, [in] BSTR strValue

Sets the value of the work element identified by *strName* to the contents of *strValue*. The updated work elements are saved in the database when the scriptlet completes successfully.

As per UpdateObjectElementsFromEventData, if the element name has a '+' or '-' suffix, then the suffix is stripped off and the value specified in *strValue* is appended or pre-pended respectively to the object's existing element value.

UpdateObjectElementsFromEventData

Performs the same function as the *ApplyUpdates* work action. It saves all the event data elements in the object's work elements.

As per the *ApplyUpdates* work action, if an event data element name has a '+' or a '-' suffix, then it is stripped off and the value of the event data elements is appended, or pre-pended respectively, to the existing value of the corresponding work object element instead of simply replacing or overwriting it.

The updated work elements are saved in the database when the scriptlet completes successfully.

Work object timer

RunScriptlet methods to start, stop and query the events used as timers in a workflow definition.

QueryTimerDueTime

QueryTimerDueTime [in] BSTR strIdOrName, [out,retval] BSTR* pResult

Returns the absolute UTC expiry datetime value (in ISO format) for the timer specified by *strIdOrName* if it is still pending. It return an empty string if the timer is not pending.

StartObjectTimer

StartObjectTimer [in] BSTR strIdOrName, [in] BSTR strDueTime, [in] LONG lockTimeout, [out,retval] LONG* pResult

Performs the same function as the *FireTimedEvent* work action. It starts (or restarts) a timer. Returns 0 if successful or a negative value if an error occurs.

- **strIdOrName:** Id or name of the event to fire when the timeout expires.

- **strDueTime:** Due time either as an absolute datetime in the form 'yyyy-mm-dd hh:nn' or as a relative time in the form of a series of one or more decimal integers immediately followed by either 'm' for minutes, 'h' for hours or 'd' for days. For example, a relative delay of one and a half hours can be represented as 1h30m or simply 90m.

You should always enable the **Date and Time are in UTC** setting in the work definition so that dates in the above form are interpreted as UTC times (otherwise you will use the local time and current timezone on the server).

It is also possible explicitly supply absolute UTC datetimes by replacing the space between the date and time components with a T, or example yyyy-mm-ddThh:nn.

- **lockTimeout:** Timeout (in minutes) to use when locking the object after the expiry of the timer. Enter 0 to allow the system to select a suitable default.

StopObjectTimer

StopObjectTimer [in] BSTR strIdOrName, [out,retval] LONG* pResult

Performs the same function as the *CancelTimedEvent* work action. It stops or cancels the timer specified by *strIdOrName* if necessary.

Returns 0 if successful or a negative number if an error occurs.

StopAllObjectTimers

Performs the same function as the *CancelAllTimedEvents* work action. It stops or cancels all active or outstanding timers for the work object.

Work event

RunScriptlet methods to get information about the current event.

GetCurrentEventId

GetCurrentEventId [out,retval] BSTR* pResult

Returns the guid of the current event that is being processed.

GetCurrentEventName

GetCurrentEventName [out,retval] BSTR* pResult

Returns the name of the current event that is being processed.

GetEventElement

GetEventElement [in] BSTR strName, [out,retval] BSTR* pResult

Returns the value of the event data element specified by *strName*.

GetEventElements

GetEventElements [out,retval] BSTR* pResult

Returns a JSON-encoded string (as per [GetObjectElements](#)) containing all the elements supplied with the current event. An empty string is returned if the event does not have any associated data elements.

Note Currently, only events explicitly queued by custom applications can have associated data elements.

Work states

RunScriptlet methods to get the current state of a work object and perform a state change.

ChangeToState

```
ChangeToState [in] BSTR sNewState, [out,retval] LONG* pResult
```

Performs the same function as the *ChangeToState* work action. It moves the object to the new state identified by *sNewState* after the scriptlet has completed successfully.

Returns 0 if successful or a negative number if an error occurs.

GetCurrentStateId

```
GetCurrentStateId [out,retval] BSTR* pResult
```

Returns the guid of the work object's current state.

GetCurrentStateName

```
GetCurrentStateName [out,retval] BSTR* pResult
```

Returns the name of the work object's current state.

UpdateLaunchScript

RunScriptlet method to update a work object in the queue without changing its state or position in the queue.

UpdateLaunchScript

```
UpdateLaunchScript [in] int iQueuePriorityDelta, [in] BSTR sSkillset,  
[in] ULONG mode, [in] BSTR sNumber, [out,retval] LONG* pResult
```

Updates some of the attributes of an outstanding *LaunchScript* action without needing to cancel the previous request and issuing a new one. See [Add to Queue](#) for a description of the attributes.

Invoke provider action

A runScriptlet method to invoke a global action configured in CE Studio for a create, read, update or delete operation:

```
InvokeProviderAction(action_set, response, placeholderMappings)
```

Where:

- **action_set** is the guid of the global action set configured in CE Studio. Note that when configuring the global action set, you must pass the primary key - you cannot set the primary key to be 'Ignored' or 'Use Null'. Get the action set guid from the browser's developer tools:
 1. In CE Studio Designer, go the Global Action Sets page.
 2. Open the browser's developer tools and refresh the page.
 3. In developer tools, go to the Preview tab and, in the Name column, click `GlobalActionSet?=<guid>`
 4. On the right, expand `items.items` lists the global action sets. Expand each in turn to locate the global action set you are using. The guid of the action set is the first guid listed.
- **response** is "[]" for a CREATE method. For a GET method, you would parse the JSON that's returned.
- **placeholderMappings** is a JSON blob.

This is an example that creates a new record from the values saved in the work elements:

```
var contact_sequence = host.GetObjectElement("contact_sequence");
var first_name = host.GetObjectElement("first_name");
var last_name = host.GetObjectElement("last_name");
var company_name = host.GetObjectElement("company_name");
var placeholderMappings = [
{
  "Name": "contact_sequence",
  "Value": contact_sequence
}, {
  "Name": "first_name",
  "Value": first_name
}, {
  "Name": "last_name",
  "Value": last_name
}, {
  "Name": "company_name",
  "Value": company_name
}
];
var result = host.InvokeProviderAction("A4020710-B373-4E1C-B2FD-E132CF037CC3", "[ ]", JSON.stringify(placeholderMappings));
```

Locks

RunScriptlet method to get the ID of the lock belonging to the current work object.

GetLockId

```
GetLockId [out,retval] BSTR* pResult
```

Returns the id of the work lock that is currently in effect for work object.

Campaign and contact center unit details

RunScriptlet methods to get the details of the contact center unit (referred to as the *account*) or campaign.

GetAccountId

```
GetAccountId [out,retval] BSTR* pResult
```

Returns the guid of the work object's contact center unit.

GetAccountNumber

```
GetAccountNumber [out,retval] BSTR* pResult
```

Returns the six-digit number of the work object's contact center unit.

GetAccountName

```
GetAccountName [out,retval] BSTR* pResult
```

Returns the name of the work object's contact center unit.

GetCampaignId

```
GetCampaignId [out,retval] BSTR* pResult
```

Returns the unique id of the outbound campaign to which the object belongs or a blank string for non-campaign objects.

GetCampaignName

```
GetCampaignName [out,retval] BSTR* pResult
```

Returns the unique name of the outbound campaign to which the object belongs or a blank string for non-campaign objects.

Print

RunScriptlet method for writing messages to a log.

print

```
print [in] int level, [in] BSTR strMessage
```

Writes error or trace messages to the trace message logger for diagnostic purposes.

level : Severity level of the message [1..9]

- 1 = Critical error
- 2 = Error
- 3 = Warning
- 4 = Informational
- 5 = Trace
- 6..9 = Debug

strMessage: Message content

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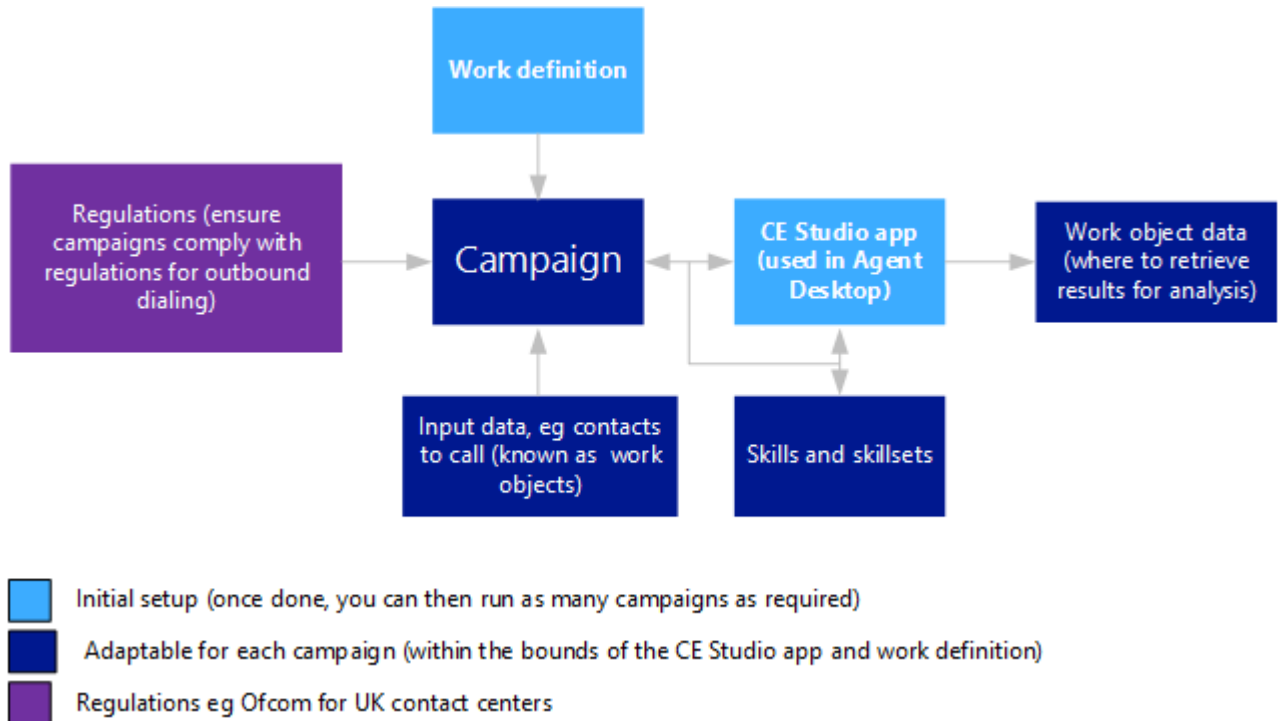
Outbound campaigns

Important The information in this section applies to fully-featured tenants only.

You can blend multiple outbound campaigns, inbound and outbound contacts, different dialing modes and multiple media types to optimize campaign success and agent productivity. This section explains what's need to run a campaign in the CE Admin Portal and how to set up new campaigns.

Note The following features are not currently supported: Answer Machine Detection (AMD), Live Speaker Detection Mode and forwarding abandoned calls to an IVR system.

Note An example CE Studio app for campaign dialling is pre-installed on tenants.



Requirements for running an outbound campaign

Note It is the responsibility of the contact center to fully understand and comply with regulations concerning outbound campaigns.

IFS Customer Engagement set defaults that fall within current (UK Ofcom) requirements. It also allows the prerequisite analysis required when answer machine detection (AMD) is used.

Requirements

Before you can set up a campaign you require:

- A work definition that defines the data needed by agents working on the campaign
- A CE Studio app that will be used by agents when working on the campaign in Agent Desktop

To derive maximum benefit from campaigns in CE, you should design the CE Studio app and work definition with future campaigns in mind. For example, the design could allow agents to schedule call back times, even though the first planned campaigns do not include such a feature.

Things to consider at the planning stage

Consider the overall objective of the campaign? Is it to make sales, or to check and update customer details, or to book appointments? Or a combination of things?

How is the data compiled? Is there just one telephone number per contact, or multiple ones? Will the data need cleansing before it can be used by an automated system? For example, having the following in a Telephone field will not work very well, “01234 567890 but only call in afternoons”. The data table may need re-designing.

What data needs to be collected from the call? Some data, such as Time of Call, Length of Call, are recorded as a matter of course (using system variables). But other variables will have to be defined, for example, a Call Outcome field.

How many call attempts should be made to each contact if the first is a failure, for example the line is engaged, goes to answer machine?

Should provision be made for the agent to arrange specific call back times? For example, where the agent reaches the contact but is told they are busy and “to please call back tomorrow afternoon”. Obviously, this would allow for better customer service. It could be taken further by ensuring the same agent gets the call: there is continuity for the contact and, in the case of sales, the agent who made the initial call gets the selling opportunity.

About the dialing modes

You can use all dialing modes concurrently within an individual campaign. Furthermore, the dialing mode for each campaign can be adjusted in real-time. A brief description of each dialing mode is given below.

Preview dialing

Once an agent becomes available, information about the call is presented to them. The agent can review the information and then dial the number(s) manually or, depending on how the CE Studio app is configured, click a button to dial automatically. When dialing automatically, multiple numbers can be attempted for the same contact.

Preview mode is suitable where each case is complex, and the agent needs to be aware of historic information before the call.

Note In Agent Desktop, preview calls are presented as workflow activations and will use the CE Studio app associated with the workflow media type.

Progressive dialing

As soon as an agent is available, the number is dialed immediately and the call is presented to the agent when answered. Call progress is monitored by the dialer technology. Calls that do not result in ‘ringing’ are automatically and immediately disconnected, whilst ‘no answers’ are disconnected after a predefined number of seconds.

As in preview mode, multiple numbers can be automatically attempted for the same contact, however progressive mode adds the ability to attempt some or all the numbers in parallel.

Software call control minimizes agent involvement in the dialing process and eliminates call pickup times for unsuccessful calls. Also eliminated is the time agents spend listening to call progress tones or network announcements. If concurrent dial attempts are made, further efficiency gains can be made to an agent's idle time during call setup.

Note In Agent Desktop, progressively dialed calls are presented as outbound campaign activations and use the CE Studio app associated with the Outbound Campaign Call media type.

Predictive dialing

Predictive dialing automatically initiates calls and only presents successful calls to the agent in the same way as for progressive mode. However, it does not necessarily need to wait for an agent to become available to do so and it may also concurrently initiate calls to multiple contacts.

The dial rate is automatically and continually adjusted to maximize efficiency whilst complying with any legislation covering predictive dialers (such as those in the UK and US). The efficiency gains for predictive mode will typically exceed those of progressive mode as the agent wait and idle times during the call setup phase are reduced.

Note In Agent Desktop, predictively dialed calls are presented as outbound campaign activations and use the CE Studio app associated with the Outbound Campaign Call media type.

Preparing to run campaigns

Before running a campaign you need to configure the system using the Admin Portal. This configuration includes:

- Phone number(s). One of these numbers provides the default Caller ID required by the system.
- Nailed-up connection to maximize call efficiency
- User setup suitable for campaign calls
- Adequate queue quota for the number of agents working on the campaign
- Transferable skills and skillsets (optional)
- Custom entities (if you plan to import the call data into a table before using it to generate the campaign call data)

- A [CE Studio app](#) that will be used in Agent Desktop for the campaign, and a [workflow definition](#) that defines the outbound calls to be made by agents.

Caller ID

A caller ID is required which is set for either the contact center unit, the campaign or the agents involved in the campaign. It is not possible to dial out using a number that is unknown to the system.

Note If you enter a number that is not one of your phone numbers then you will need to request IFS Services to verify that the number belongs to you.

The caller ID is set:

- For the [contact center unit](#) in **Media Management > Advanced Settings**. This is overridden by any caller ID set in the campaign.
- In the campaign. This is overridden by any caller ID set for the agent.
- In the agent's [user account](#).

Automated call answering and nailed-up connections

To maximize call efficiency, you should:

- Enable automatic answering. This is enabled for the [contact center](#) or the [contact center unit](#).
- Configure either individual agents or the contact center to use nailed-up connections. For background information on nailed-up connections, see [Adding agents for staffed contact centers](#).

You can configure nailed-up connections per user as part of their user account or you can request IFS Services to set it for you at the contact center level, in which case the setting will apply to all the organizational units in the contact center.

Agent setup

For agents handling campaign calls, the following settings are required in their user account:

- The default contact center should be the one that is running the campaign.
- Nailed-up connection (unless this is set for the contact center).
- Make sure that automatic answering is not disabled in the user account.

Make sure that the agents have all the skills required by the campaign.

Campaign queue and workflow quotas

When preparing to start a campaign, you can import a very number of calls, for example several hundred thousand. However, not all these calls can be immediately converted to work objects without causing delays and making the system unresponsive.

The Campaign Queue Target is used to manage the conversion of imported calls to work objects. The Workflow Quota sets the maximum number of work objects that are added to queue at any one time.

Campaign queue target	Approximately every 10 seconds, the system gets the number of agents signed on in Agent Desktop and, based on this number, converts sufficient calls to work objects. We recommend you leave the queue target as 0 so that the system can dynamically manage the queue.
Work flow queue quota	<p>This determines the number of work objects (of any type) that are added to the queue on each of the tenant's iMedia instance.</p> <p>Check that the work object queue quota is high enough for the number of agents working on the campaign. For example, the default quota is 5 which is too low for a campaign involving 100 agents - 20-50 is more realistic. For further information, see Setting the queue quotas.</p>

Note Depending on the tenant and how workflows are used, you may need to configure an additional contact center unit so that you can configure the default media apps and workflow queue quotas separately for campaigns. Workflows configured for different purposes such as call backs and campaign calls both use the same workflow queue quota.

Skills

You can use skill-based routing with campaigns. You can set the skillset for:

- Each call as part of the work object - a skillset is set as part of the call data. This overrides any skillset set in the campaign.
- For all the calls made during a campaign - the skillset is set in the campaign. This overrides any skillset set in the work definition.
- For all campaigns that use a specific work definition - the skillset is set in the LaunchScript work action

The IFS CE Example Campaign Workflow Definition lets agents reschedule calls and set a skillset for the call. This skillset must be configured as transferable.

Workflow definitions for campaigns

You need to configure a workflow definition for campaigns. This defines:

- The data required for dialing, such as contact details, the phone numbers and optionally other details such as skillset and queue priority.
- The sequence of *states*, *events* and *actions* that determine how the call is dialed and what happens if the call is unsuccessful.

Work objects are the calls that will be presented to the agents. The work objects are generated once the campaign goes live at its configured start date and time.

For details of how to configure a workflow definition, see [Creating a workflow definition](#) and also [Event types for campaign workflow definitions](#).

Creating CE Studio apps for campaigns

You need to create an app that will be used by the agents working on campaigns. You do this in CE Studio Designer:

- Use the IFS CE Workflow provider
- The provider properties are the elements from the work definition

The standard IFS CE Campaigns Template is an example of how to design an app for a campaign workflow. This template is installed on all tenants and you can open this template in CE Studio Designer.

Note In CE Studio Designer, after creating the app, make sure that it is added as the default media app for the Outbound Call media type and/or the Workflow media type depending on the dial mode used by the campaign. If this is not set then the app will not load in Agent Desktop when a call is presented to an agent.

Handling dialing modes

The example IFS CE Campaigns Template can be used for any of the dialing modes. However, if required you can configure two different CE Studio apps. One for Preview dialing and a separate one for Predictive or Progressive dialing.

Preview mode	<p>Calls are not automatically dialed for preview mode so agents can either use the dial icon on the toolbar or the CE Studio app requires a dial button.</p> <p>Activations present as workflows so the CE Studio app must be associated with the Workflow media type.</p>
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Predictive and Progressive mode	<p>Calls are dialed automatically so the CE Studio app does not require a dial button.</p> <p>Activations present as outbound campaign calls so the CE Studio app must be associated with the Outbound Campaign Calls media type.</p>
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Creating campaigns (preview dialing)

This section explains how to set up a campaign for preview dialing, which is the simplest of the *dialing modes*. All the settings for Preview dialing also apply to the Progressive and Predictive dialing modes. Once you save the campaign, the campaign is Idle (enabled) and will automatically run at the configured start date and time, at which point it becomes Active. The work objects for the campaign are generated and added to the queue at this time.

To set up an outbound campaign:

1. In the Admin Portal, go to **Workflow Management > Campaigns**.
2. On the Campaign Details page, select the contact center and contact center unit for the campaign.
3. Enter the campaign details:

Field	Details
Definition	<p>Select the name of the workflow definition to be used for the campaign. This controls the dialer scheduling behavior, such as the business logic of which number to dial and when.</p> <p>If the work definition and the campaign are configured for different dialing modes then the campaign will use the <i>lowest</i> mode where</p> <ul style="list-style-type: none"> a. Preview is the lowest b. Progressive c. Predictive is the highest <p>For example, if the campaign is configured for Preview mode and the definition is configured for Progressive dialing then the actual campaign will use Preview mode.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note In a workflow definition it is the LaunchScript action that sets the dialing mode.</p> </div>
Initial State	<p>Defines the initial state of work objects created from the selected work definition. Typically, this is left as default to use the default initial state of the workflow definition (the <i>Select an option</i> setting).</p>
Name	Name of the campaign.
Description	Description of campaign (informational).
Status	Shows the current status of campaign: idle, active, completed, disabled, cancelled.
Start	The date the campaign will begin. The start time is determined by the coverage plan you select. You can change the start date later provided that the campaign is in the Idle status.

Field	Details
End	The date the campaign will end. You cannot change the end date once the campaign reaches its end date.

4. Select **Preview** as the dialing mode for this campaign. For details, see [About the dialing modes](#).

For additional details of setting up campaigns for the other dialing modes, see:

- [Creating campaigns \(progressive dialing\)](#)
- [Creating campaigns \(predictive dialing\)](#)

5. Enter the details of the outbound campaign - these fields apply to all of the dialing modes:

Fields	Details
Disable Call Recording	Select this option to disable call recording for the campaign.
Abandoned Call Threshold (ms)	<p>Time period, in milliseconds, that is used to define abandoned calls. An abandoned call is a dialer-initiated call that is answered, but not then delivered to an agent within the configured timeout.</p> <div> <p>Note To ensure compliance with the UK and US dialer regulations, set to 2000 or less.</p> </div>
Forward Abandoned Calls to IVR	Currently not supported.
Default Coverage Plan	<p>Defines the hours of operation for the campaign. This is used if the work objects created for the campaign do not explicitly set an alternative coverage plan.</p> <p>Leave this empty to use the coverage plan set for the contact center unit on the Media Management > Advanced Settings page.</p>
Timezone	Defines the time zone in which the campaign operates. Used in conjunction with the campaign's default coverage plan.

Fields	Details
Queue Target	<p>We recommend that you leave the queue target as 0.</p> <p>This allows the system to dynamically manage the number of work objects. Dynamic management ensures that there is always sufficient work to keep the signed-on agents busy without creating an excessive number of active work objects which would put extra load on the system.</p> <p>You also need to set the Work Flow Queue Quota on the Contact Center Unit > Access to Contact Center page to a figure suitable for the maximum number of available agents. For example, a quota of 50 for 100 agents. See Preparing to run campaigns.</p>
Default Ring Duration(s)	Default time (in seconds) that calls ring before being automatically disconnected by the dialer and categorized as “no answer”.

Fields	Details
Default Caller ID	<p>Caller ID used by the automatic dialer, and seen by the callee when they are dialed by the campaign. Used if the work objects created for the campaign do not explicitly set a caller ID.</p> <p>If this is left blank, the default caller ID is the:</p> <ul style="list-style-type: none"> • Caller ID set in the workflow definition's LaunchScript action. • If the above is blank then the Default Outbound Caller ID configured on the Media Management > Advanced Settings page. <p>You need to ensure that number presentation is enabled on the trunks used by the dialer and that the specific number configured here can be presented (as some network providers limit the Caller IDs that can be presented to one of the inbound numbers on the same trunk). If this is a number not acquired through the provider then request IFS Services to verify the number for you.</p> <div data-bbox="873 1192 1471 1493"> <p>Note To comply with the UK dialer regulations, ensure that all outbound calls present a geographic or non-geographic Caller ID that satisfies the Ofcom guide to the use of presentation numbers and to which return calls can be made.</p> </div>
Default Skillset	<p>Default skillset to be used by the campaign. Used if the work objects created for the campaign do not explicitly set a skillset. This can be overridden by the skillset selected in the workflow definition's LaunchScript action.</p>

Fields	Details
Elements	Shows the work elements from the selected definition. For each element, you can either enter a default value or you can leave it empty in which case you can supply the values when you create the data for the campaign.

- Click **Save** to save the campaign. The campaign is automatically enabled and will run at the configured start date and time (selected coverage plan).

To prevent the campaign from running, click **Disable**.

Creating campaigns (progressive dialing)

This section explains how to set up a campaign for progressive dialing. For background information on progressive dialing, see [About the dialing modes](#).

- In the Admin Portal, go to **Workflow Management > Campaigns**.
- Create a new campaign as described in [Creating campaigns \(preview dialing\)](#).
- Enter the additional settings required for progressive dialing:

Field	Details
Don't Interrupt Abandoned Call Prompt	<p>Dictates whether an abandoned call can be interrupted to allow abandoned calls to be presented to an agent as soon as one becomes available.</p> <div> Note Disabling this option may affect UK dialer regulation compliance. </div>
Retry on busy	<p>Effects dialer behavior when a call hits a busy line:</p> <ul style="list-style-type: none"> Default - currently this is Enabled. Enable: continue to retry the line in case it becomes available. Disable: immediately move onto the next number.

- Configure the handling of progressive calls. These settings do *not* apply to Predictive dialing:

Field	Details
Don't Abort Reassigned Progressive Calls	<p data-bbox="872 268 1174 306"><i>Progressive mode only</i></p> <p data-bbox="872 327 1446 527">When an agent that is assigned to a pending progressive call attempt becomes unavailable, then the default behavior is to abort (hang up) the pending progressive call attempt for that agent.</p> <p data-bbox="872 548 1455 783">This option allows you to disable that behavior and instead allow the progressive call to continue (as if it were a predictive call) and, if answered, to be delivered to another suitable agent if and when one becomes available.</p> <div data-bbox="898 842 1438 1041"> <p>Note Enabling this option will contravene the UK dialer regulations because progressive mode is automatically used when the regulations require the availability of an agent to be guaranteed.</p> </div> <div data-bbox="898 1125 1427 1241"> <p>Note Agents become unavailable as a result of being reassigned to another live call when all other agents are busy.</p> </div>

Field	Details
Disable Reassignment of Progressive Agents	<p><i>Progressive mode only</i></p> <p>Select this option to ensure that agents assigned to pending progressive call attempts are <i>never</i> reassigned to another live call if necessary.</p> <p>If deselected, the dialer will automatically reassign agents assigned to pending progressive call attempts if:</p> <ul style="list-style-type: none"> • All other agents are busy, • And a live call is at risk of becoming abandoned. <p>This automatic re-assignment is only performed if the pending progressive call attempt has not yet started ringing or if it has been ringing for longer than the minimum ring duration.</p>
Always Reassign Progressive Agents	<p><i>Progressive mode only</i></p> <p>If the automatic reassignment of agents assigned to pending progressive call attempts is not disabled, then selecting this option allows agents assigned to pending progressive call attempts to be automatically reassigned even when the progressive call has been ringing for less than the minimum ring duration.</p> <div> <p>Note Enabling this option will contravene the UK dialer regulations.</p> </div>

5. Enter the remaining campaign details. These settings apply to both progressive and predictive dialing.

Field	Details
Start Recording After Connecting To Agent	If call recording is not disabled, then the system will record calls from the moment the callee answers. Select this option to change that to the moment the call is delivered to an agent.
Live Speaker Detection Mode	Not supported in this release.
Don't Use Start of Salutation Based Timing	<p>Calls are considered abandoned if they are not delivered to an agent within the configured abandoned call threshold.</p> <p>The timing for the abandoned call threshold begins as soon as the call is answered (picked up). The UK and US dialer regulations also allow the threshold to be measured from the point at which the callee starts to speak ("start of salutation").</p> <p>By default, the dialer will only use the "start of salutation" based timing if <i>Live Speaker Detection</i> is enabled as the small time extension allowed for by the "start of salutation" timing allows a greater proportion of answer machines to be accurately detected.</p> <p>Selecting this option limits the timing of the abandoned call threshold to the call answer point.</p>
Pending Call Priority Boost	When the dialer initiates a call request, it boosts the queue priority of the resulting pending call so that it is assigned to the next agent that becomes available in preference to other dialer requests that have not yet been initiated. Defaults to 1.

Field	Details
Abandoned Call Priority Boost	<p>If a live call cannot be delivered to an agent within the requisite timeframe and is therefore classified as abandoned, the dialer will adjust the queue priority boost (typically to a slightly lower level so that any other live calls that have not yet exceeded the threshold will be delivered to the next agent to become available in preference to those that have already been abandoned). Defaults to 2.</p>
Minimum Ring Duration(s)	<p>Minimum duration (in seconds) that a pending call must be allowed to ring before it can be aborted.</p> <div> <p>Note To comply with the UK dialer regulations, ensure that this is set to 15 seconds or greater.</p> </div>
Abandoned Call Prompt	<p>Wav file that will be played when call is abandoned.</p> <div> <p>Note To comply with the UK dialer regulations, ensure that the selected recordings contains a very brief information message with the identity of the company on whose behalf the call was made and details of a no-charge or basic rate number that the callee can use to decline to receive further marketing calls from that company. The message must also not include any marketing content.</p> </div>

Field	Details
Elements	Lists the fields used by the work definition and allows you to populate one or more of the fields with a value that will be common to all work objects created by this campaign, such as the name of the campaign, so the agent can see the name, when multiple campaigns are running.

Creating campaigns (predictive dialing)

This section explains how to set up an outbound campaign for predictive dialing. For background information on predictive dialing, see [About the dialing modes](#).

1. In the Admin Portal, go to **Workflow Management > Campaigns**.
2. Create a new campaign as described in [Creating campaigns \(preview dialing\)](#).
3. Enter the additional settings required for progressive dialing:

Some of the options for progressive dialing also apply to progressive dialing. These options are covered in [Creating campaigns \(progressive dialing\)](#).

Field	Details
Don't Abort Unassigned Predictive Calls	<p>During predictive over-dial periods, calls are abandoned or are at high risk of being abandoned. By default, the dialer will try and abort unassigned pending calls that:</p> <ul style="list-style-type: none"> • Have not yet started to ring, • Or have been ringing for over the minimum ring duration when the campaign is close to the abandoned call limit. <p>It does this to maximize efficiency gains and reduce the chance of the abandoned limit being exceeded.</p> <p>Calls that are aborted will be retried again as soon as the over-dial state is cleared.</p> <p>Select this option to disable this dialer feature.</p>
Use Progressive Mode during AMD Embargo	Not supported in this release.

Field	Details
Max Abandoned Call Rate (%)	<p>This is the maximum permissible percentage of live calls that can be abandoned (to a resolution of one decimal point).</p> <p>In predictive mode, the dialer will automatically adapt its dialing rate according to the campaign conditions to maximize performance whilst also keeping the abandoned rate for the current calendar day below the configured limit.</p> <ul style="list-style-type: none"> • In rare circumstances, it is possible for the configured limit to be slightly exceeded. If this occurs, the dialer will immediately disable predictive mode until the abandoned rate is again safely below the limit. • The dialer also automatically lowers its dialing rate in the last few minutes of the day (or current coverage period) if it is close to the configured limit to further reduce the chance of a last minute burst of abandoned calls tipping the abandoned rate over the limit. <div data-bbox="873 1230 1471 1570"> <p>Note To comply with UK and US dialer regulations, ensure that the limit is set at or below 3%. If operating at or very close to the 3% limit, it is important that the abandoned rate is checked at the end of each day to ensure that it is in fact within the regulatory limit.</p> </div>

Field	Details
Abandoned Call Predictive Embargo	<p>The UK dialer regulations require users of automated dialing equipment to guarantee the availability of an agent if a number is redialed in the 72 hours following an abandoned call – this is referred to as the 72-hour policy.</p> <p>The dialer ensures compliance with this policy by automatically ensuring that predictive redial attempts during the configured embargo period are automatically processed in progressive mode to guarantee the availability of an agent.</p> <div> <p>Note To comply with the UK dialer regulations, ensure that the predictive embargo period is set to a minimum of 3 days.</p> </div>
AMD FP Rate (%)	Not supported in this release.
AMD Embargo	Not supported in this release.
Predictive Queue Priority Boost	When a pending call is answered and no agent is immediately available, the dialer will boost the queue priority of the call so that it is assigned to the next agent to become available in preference to all other campaign requests (including inbound calls and other media types). Defaults to 3.

Setting up and importing campaign data

After defining a workflow definition for a campaign, you need to create the data that will be used for the outbound calls.

The predictive and progressive dialing modes require you to use the campaign functionality. In campaigns, you do not directly create work objects individually; instead you import the details of the work objects. The imported data is held in a campaign queue.

You can add entries to the campaign queue by importing the call details. You import it in the Admin Portal, using the **Workflow Management > Create Campaign Data** page.

The system will automatically convert the entries in the campaign queue to work objects at the appropriate time. Once converted, you can view the work objects on the **Workflow Management > Work Objects** page.

Note Very large campaigns can be created efficiently by ensuring that only enough work objects are active at any time to keep the available agents busy. This avoids unnecessary load and also ensures that multiple campaigns can be managed together at the same priority level.

Recommendations

We recommend that you enter:

- All dates or datetimes using an ISO format, such as:
 - `yyyy-MM-dd` — for example, `2021-11-23`
 - `yyyy-MM-dd 'T' HH:mm:ss.SSSXXX` — for example, `2021-11-23T01:30:00.000-05:00`
- Phone numbers in their international format, such as:
 - `[+][country code][area code][local phone number]`

Import the data into CE

You can use either a CSV file or a custom entity for the data. A work object is created for each row in the csv file (or entity).

CSV file	Create the CSV file. Each column in the file will become an element in the workflow definition. A work object will be created for each row in the CSV file.
Custom entity	Create the custom entity in the Admin Portal, on the Studio > Custom Entities page, and then upload or add the data to the custom entity. For details, see Entities for use in media scripts .

Add the data to the campaign

Once you have created the CSV file or custom entity, you are ready to add the data for the campaign on the **Workflow Management > Create Campaign Data** page. Enter the details of the data to use and then click **Import**.

Campaign	Select the campaign that you want to use. The campaign must not have reached its end date.
Upload Type	Controls whether you add to the existing campaign queue (Append) or whether you replace all the data in the campaign queue (Replace).
Data Source	Select the Custom Entity type if you are adding data from a custom entity.

Object ID column	If required, select the work element/column that will provide a unique ID for each work object.
Object reference column	<p>This provides the reference for each work object and is an important way of retrieving call details later. We recommend that the reference associates the call with the person dialed, such as their name or phone number.</p> <p>You can:</p> <ul style="list-style-type: none"> • Select the work element/column that will provide the reference • Enter a work element name that will be used to generate a unique reference. For example, for a work element called W_NAME, you could enter <code>Test_@W_NAME@_##</code>. Enclose the work element name in @ characters and use ## characters as the placeholder for the number part of the reference.
Element Name	Map each field in the CSV file or custom entity to an element in the workflow definition. You can leave the remainder of the elements empty.

The work objects for the campaign are created and added to the queue on the campaign's start date and time. The time is determined by the coverage plan for the campaign or the default coverage plan for the contact center unit:

- Agents must be signed onto Agent Desktop, and available, before the work objects are generated and appear on the Work Objects page.
- The agents must have the appropriate skills. If there are no agents with the right skills then the calls remain in the queue and are not converted to work objects.

Note When the campaign reaches its configured end date, any unused or canceled work objects are automatically deleted. This also includes unprocessed work objects added to the queue. The number of unprocessed work objects is shown on the Campaigns page in the Queue Count column.

Enabling and disabling campaigns

Saving a new campaign automatically enables it. The campaign is then ready to run on its configured start date and time (the start time is determined by the coverage plan selected for the campaign).

If necessary, you can disable a work object, a campaign (and therefore all its work objects) or the work definition (and therefore any campaigns created for that workflow definition). Disabling pauses the campaign(s):

- Suspends system processing of any work objects
- Stops any timers that are running

- Releases any expired locks

Enabling the work object, campaign or work definition will resume system processing and restart any timers. The status of the campaign changes to Active or Idle.

Disable or enable multiple campaigns

To disable or enable a workflow definition and any campaigns (and their work objects) that use it:

1. In the Admin Portal, go to the **Workflow Management > Workflows** page.
2. Select the workflow definition.
3. Click **More** and select **Disable** or **Enable**.

Disable or enable a single campaign

To disable a single campaign and all its work objects:

1. In the Admin Portal, go to the **Workflow Management > Campaigns** page.
2. Select the campaign. It must have Active or Idle status.
3. Click **Disable** or **Enable**.

Viewing the queue count and work objects for a campaign

In the Admin Portal, the **Workflow Management > Campaigns** page shows summary details of the campaign:

Column	Description
Status	<p>The status is:</p> <ul style="list-style-type: none"> • Active: the campaign is running and has not reached its scheduled end date. • Idle: the campaign has not yet started because it has not reached its scheduled start date or there are no agents available. • Completed: the campaign has reached its scheduled end date. • Disabled: an active or idle campaign has been paused. See Enabling and disabling campaigns.
Mode	For details, see About the dialing modes .

Column	Description
Queue Count	<p>The number of entries imported into the system by:</p> <ul style="list-style-type: none"> • Import from a csv file • Import from a custom entity • Inserted by a queue progression script <p>These will be converted to work objects that can be dialed when the campaign starts or as needed depending on the queue quota, and the number of agents available to make the calls.</p>
Object Count	The number of work objects generated for the campaign. These are the calls that have been dialed during the campaign.

For detailed information on the work objects, use the **Workflow Management > Work Objects** page. Using this page, you can see the individual status of the work objects created for the campaign, and by editing the object, view its details such as work element values.

To view the work objects generated for a campaign

By default, the **Workflow Management > Work Objects** page shows all the work objects for today that are in an Open or Disabled state.

1. You can select the work objects for a contact center or a contact center unit, for a workflow definition and a date range.
2. You can then filter the work objects further:

Field	Description
Campaign	Shows only the work objects created for the selected campaign.
Reference	Shows the work object(s) having a matching reference.
Show Open States	Shows work objects in any state other than cancelled, completed or disabled.
Show Completed States, Show Cancelled States	Shows work objects in any completion or cancelled state.
Elements	Search for work objects with specific value(s). Select a work element and an operator and then enter the value that you want to filter by.

Creating campaign work objects by using a queue progression script

At this release, the queue progression script needs to insert records directly into the WorkCampaignQueue table. **As a general rule, extreme care is required when configuring scripts that directly access system tables or views as future releases could alter their schema and therefore potentially break any queue progression scripts that rely on the old schema.**

To do this use custom JavaScript, and the helper function, InsertDataIntoTable. You pass it two parameters:

- Table name
- A serialized JSON dictionary of key/value pairs corresponding to the column names and values. The values can be either static values or replaceable parameters (between two percentage symbols/characters) that are evaluated dynamically. The replaceable parameters can be
 - The name of a variable
 - The name of a script element prefixed with an @ symbol
 - JavaScript expression to be evaluated

For example:

```
var skillset = 'A_SPECIAL_SKILLSET';
var isVip = false;
var elements = {
    NAME: '@FIRST_NAME%' + ' ' + '@LAST_NAME%',
    DESTINATION_NUMBER: '@MOBILE_NUMBER%',
    DIAL_MODE: 2,
    SKILLSET: '%isVip?skillset:""'
};
var dictionary = {
    wcqCampaignID: '@CAMPAIGN_ID%',
    wcqReference: '@OBJECT_REFERENCE%',
    wcqElements: JSON.stringify(elements)
};
InsertDataIntoTable('dbo.WorkCampaignQueue',
    JSON.stringify(dictionary));
```

To get data from the table use the read function GetDataFromTable (table, columns, whereClause, top, ordering) that returns an array of objects; ie the rows you have selected.

For example:

```
var campaigns = GetDataFromTable(
    "dbo.WorkCampaignStatus",
```

```
"ID",  
"(Name = COALESCE(NULLIF(N'@CAMPAIGN_NAME%', N''), Name))  
    AND (Status IN ('Idle', 'Active', 'Disabled'))",1,  
"[Start Time] DESC");  
var campaignId = (campaigns && (campaigns.length > 0)) ?  
    campaigns[0].ID : null;
```

Important As a general point/warning regarding direct database access, extreme care is required when you do access system tables or views as future releases could alter their schema and therefore potentially break scripts that do so.

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Creating surveys

You can configure surveys to request feedback from your users in any of the following media types:

Media channel	Survey type	
Voice	IVR survey	This survey type uses an automatically generated script that is played to the caller to ask the questions and get their responses.
Voice	App survey	Where an immediate response is not required, then you can send a link to the survey using email or SMS. In this case, you require a CE Studio app to display the questions and get feedback.
Email, chat, SMS, Facebook Direct Message, Twitter Direct Message, WhatsApp	App survey	This survey type requires a CE Studio app to display the questions and get feedback.

In summary, you need to:

1. Create a survey definition. See [Creating a survey](#).
2. For both types of survey, click **Survey Version** and add the questions to the survey. See [Adding questions to a survey](#).
3. Make the survey version live - only the questions in the live version are used.
 - You do not need a live version to configure the CE Studio app. This will use the latest version of the survey.
 - Making the survey version live for IVR surveys automatically generates the media script.
4. For IVR surveys only:

- a. Configure a media script to send the survey invite to the caller. You use the Add Survey Candidate option and select your IVR survey. See [Add Survey Candidate](#).
- b. Make the script live.
- c. Optionally, edit the automatically-generated script for your IVR survey, for example, you might want to play a message before the survey starts.
- d. You are now ready to test the IVR survey.
- e. To view the survey results, go to Report Designer.

For details, see [Sending invites for IVR surveys](#).

5. For app surveys only:

- a. Configure a CE Studio app. See *IFS Customer Engagement Studio Guide* for details.
- b. Configure a media script to send the survey invite to the caller. You use the Add Survey Candidate option. See [Add Survey Candidate](#).
- c. Make the script live. You are now ready to test the app survey.
- d. To view the survey results, go to Report Designer.

For details, see [Sending invites for app surveys](#).

Creating a survey

The survey definition specifies the:

- Survey type (either IVR for voice or App for other supported communication channels)
- Whether you send the survey invites immediately or after a delay
- When the survey ends - this also sets the expiry date of the survey link
- The frequency for any reminders to complete the survey

To create a survey definition:

1. In the Admin Portal, go to **Media Management > Surveys**.
2. Select the contact center (mandatory) and, optionally, the contact center unit that will use this survey.
3. Enter the following details:

Field	Description
Survey Name	A descriptive name to identify the survey here and later in CE Studio. The name must be unique to the tenant.

Field	Description
Survey Type	Select IVR for voice only or App for any of the supported media types. For background information on the survey type, see Creating surveys .
Category	A way of grouping your surveys so they are easier to find and manage.
Email From, SMS From	The email address and phone number to use to send the survey invites.
Retry Count	<p>Maximum number of times to resend the same survey invite if it was not completed. Applies to scheduled survey invites only.</p> <ul style="list-style-type: none"> • Candidate must not be selected for this survey if the candidate has already completed it in the current distribution period. • Candidate can be selected again for this survey if the candidate has not completed it in the current distribution period. • If the candidate has more than one scheduled invite for the current distribution period and none of them is completed, only the most recent invite is selected for retry, and any previous retries are voided. <p>For example:</p> <ul style="list-style-type: none"> • Retry Count is 0. Scheduled to send the invite after two hours. Only one scheduled invite is sent after two hours. • Retry Count is 1. Scheduled to send the invite after two hours. Initial invite is sent in two hours and then another invite is sent again two hours later.
Disabled	Select this to switch off sending of invites for this survey.

Field	Description
Is System	Identifies example surveys that may be installed as part of the system. You can clone these but not delete them. There are no example surveys in this release.
Language Audio Settings	Select the audio settings for IVR surveys only. For details, see Audio settings for voice surveys .

4. Set up the distribution of survey invites:

Field	Description
Percentage for Immediate Distribution	Percentage of callers who are immediately sent an invite to do the survey. The survey is sent using the current media channel so for example chat callers receive the invite in a chat message and SMS users receive it in a text message. This is a default setting and you can override it for specific date ranges.
Percentage for Scheduled Distribution	Percentage of callers who are sent the invite later, either by text if a mobile number is available or by email if the email address is known. This is a default setting and you can override it for specific date ranges.
Interval Before Sending (Days/Hours)	The default interval to wait before sending the initial scheduled invite in days or hours. By default reminders are sent three times. Contact IFS Support if you require a different number of reminders.

5. Set the start and end dates of the survey. You can enter multiple date ranges but they must not overlap:

Field	Description
Start Date, End Date	<p>You must enter a start date for the survey - the end date is optional. You can add several date ranges but they must not overlap.</p> <p>Survey invites expire after 7 days. Contact IFS Support if you require a different value.</p> <div> <p>Note In this release the survey invite reminder is sent even if the customer has already filled in the survey. They will see an error if they try to fill it in again.</p> </div>
Immediate	For this date range, the percentage of callers who are immediately sent the survey invite.
Scheduled	For this date range, the percentage of callers who are sent the survey invite later after the number of days or hours you enter in the Interval field.
Interval	The period to wait before sending a scheduled invite.
Days to Wait Before Resending Survey	<p>Number of days to wait before resending the incomplete, scheduled survey invite.</p> <p>For example, if this field is set to 1 then the initial invite is sent at the configured time after 1 day.</p>

6. Select the language of the survey. You can set up the survey to be localized into multiple languages.

To add to the list of available languages, go to the **Contact Center > Manage Languages** page.

7. Save the survey.

The next step is to configure the survey version. Click the **Survey Version** button to continue. For details, see [Adding questions to a survey](#).

Adding questions to a survey

Once you have created the survey (see [Creating a survey](#)) you can add the questions. You add questions to a version of the survey. Versions let you modify the survey while continuing to use an older, live version. You cannot make changes to a survey version once you use the version in survey invites.

To localize the survey, select a message for each screen text and question. You add the messages to the message store first. See [Localizing the survey](#) for details.


You can export a survey version and import it into another survey. Questions for surveys are exported as json files. Save the export as a zip file when importing into IVR surveys.


To add questions to a survey version:

1. In the Admin Portal, go to **Media Management > Surveys**.
2. Select the survey.
3. Click **Survey Version**.
4. Click **New** to create a new version in the survey.
5. Enter a descriptive name for this version of the survey.
6. Enter the text that appears at the start and end of the survey.
 - For App surveys, you can add placeholders, such as {name}, {address} that are mapped later to static or dynamic data. Enclose each placeholder in curly brackets.
 - For IVR surveys, you can upload audio files that are used instead of text-to-speech. You must add and save the questions before you can upload audio files.

Field	Description
Default Start Screen Text	Text that appears at the start of the survey as an introduction to the questions that follow. The survey displays this text when: <ul style="list-style-type: none"> • There is no message for the user's locale. • The Start Screen Message field is empty. Later, you can choose to hide the start screen text or show it when configuring the app in CE Studio Designer. 200 characters long.
Start Screen Message	Select the message to display instead of the default screen text. See Localizing the survey for details of how to add languages and messages.

Field	Description
Default End Screen Text	Text that appears after the last question. Later, you can choose to hide it or show it when configuring the app in CE Studio Designer. 200 characters long.

7. The first question is added for you. Click  to add additional questions. For App surveys, you can add placeholders to the splash text or question, such as {name}, {address} that are mapped later to static or dynamic data. Enclose each placeholder in curly brackets:

Note To delete a question, click  in the question header. You cannot delete the first question.

Field	Description
Splash Text	Use splash text to introduce the question. Optional. 200 characters long.
Question Name	Enter the name of the question. This will be used in CE Studio when configuring the app survey. Important It cannot contain spaces or any special characters.

Field	Description
Question Type	<p>Choose from:</p> <ul style="list-style-type: none"> • Multiple Choice: the option name is the text that is displayed in the survey. This is reported as the <i>Answer</i>. The option value is for internal use, for example, in reporting and is reported as the <i>Answer Value</i>. • Single Input: you can also choose whether to validate the input, for example for a Number input type the minimum and/or maximum allowed value. This tells the user whether their answer is out of range but does not enforce it. <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;"> <p>Note IVR surveys do not support the string input type.</p> </div> <ul style="list-style-type: none"> • Star Rating: you then choose the range (1-10) and the shape to use in the scale.
Question Default Text	The question that is displayed in the app.
Include "Not Applicable" Option	For Single Input or Multiple-Choice question types, this check box enables you to designate a question as "Not Applicable" if the provided answer is irrelevant.
Include "Other" Option	This check box applies to Multiple Choice questions. It allows survey candidates to select "Other" as an answer when the other choices do not apply.
Mandatory answer	Whether the question is mandatory and must therefore be completed by the caller before continuing.

8. Click **Save** to save this version of the survey.

Note You cannot make changes to this survey version once you start sending out survey invites.

Adding rules to a survey

You can configure rules for a survey (both app surveys and in version 6.7 to IVR surveys). There are two types:

Conditions	<p>Conditions control which question is presented based on the user's previous answer or answers. For example, if the star rating is ≤ 2 then show a specific question or if the star rating ≥ 5 then show a different question.</p> <p>Note that:</p> <ul style="list-style-type: none"> • This type of rule applies to stepped surveys which can only show progress by using a progress bar (not a stepper). • You cannot use the first question in the survey in a condition.
Flags	<p>Flags run actions after the survey is completed. Actions include sending email, SMS messages or invoking an action in CE Studio.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note By default, the flags apply to completed surveys only. You can include partially completed surveys once you reach the end of the distribution period. This allows for candidates to go back and finish the survey later. To use this feature, select the option Execute flags for partially completed surveys in the survey definition.</p> </div>

You create questions first and then add the rules.

Note When exporting and importing survey versions, note that the rules are not shown until you save the new version.

How the customer answers this question determines which question they see next

The question they see next is the 'target question'

Questions

Question ID	Question Text	Actions
favorite-flavor	What is your favorite flavor?	🗑️ ▼
chocolate-preference	What type of chocolate do you	🗑️ ▼
vanilla-preference	Why do you prefer vanilla?	🗑️ ▼
see-more-fruit-flavors	Would you like to see more fru	🗑️ ▼

Rules

Condition : chocolate | preferred type of chocolate | 🗑️ ^

Rule Name: chocolate | Rule Description: preferred type of chocolate | Rule Type: Condition ▼

Target Question: chocolate-preference ▼

▼ **AND** **OR**

favorite-flavor = 1 ✖

Condition applies to this question

If the customer answers 1 (this is a multiple choice question) then the next question they see is the target question.

+ Rule + Ruleset

Example rule


Adding conditions

1. Go to the Survey Version page.
2. Select a survey version.
3. Under Rules, click + to add the first rule.

Rule Name	The name of the condition.
Rule Description	Additional information describing the condition.

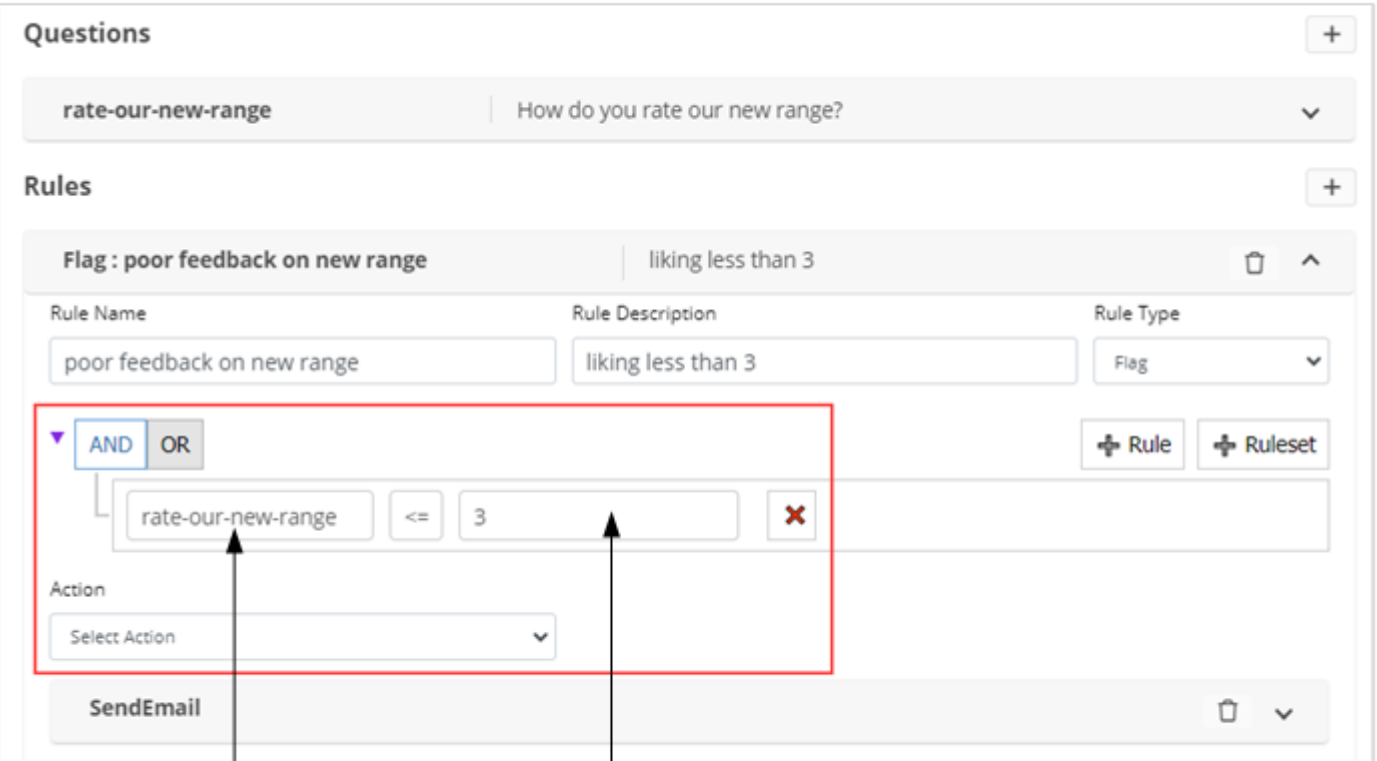
Rule Type	Select Condition .
Target Question	This is the question to show next if the condition is met.

4. Set up the condition:

- Select an operator, either **AND** or **OR**. The selected operator applies to all the rows in this condition.
- Click **Rule**. To add a row that uses a different operator, click **Ruleset**.
- Define the condition:
 - Left side of the condition is the preceding question. The condition applies to the answer to this question.
 - Right side is the condition to be met in order to show the target question. For strings, you can use any of the variables from the survey. Click  to list the variables in the survey.

Adding flags

This rule runs when the survey is completed and raises a 'red' flag when something occurs




The screenshot shows the 'Questions' and 'Rules' sections of the IFS Customer Engagement interface. The 'Questions' section lists 'rate-our-new-range' with the text 'How do you rate our new range?'. The 'Rules' section shows a rule named 'Flag : poor feedback on new range' with a description 'liking less than 3'. The rule type is 'Flag'. The condition is set to 'AND' and 'rate-our-new-range' is less than or equal to 3. The action is 'SendEmail'.

Condition applies to this question

If the customer gives a poor rating then the flag runs an action (in this example, sends an email)

Example rule using a flag

When filling out the fields for the action, you can select from the variables in the survey. Click  to list the variables.

You can also send to multiple email addresses and phone numbers - separate each with a semi-colon.

Note To prevent the flags in the survey from running, select the option **Disable Flags** in the survey definition.

Audio settings for voice surveys

For voice (IVR) surveys, you need to configure the voice that you want to use. Each voice can support multiple languages. This voice is used when converting the question text to speech. As an alternative, you can upload an audio file for each splash text and question in the survey (save the questions first).

Note CE only supports the languages for which a voice is available in Microsoft Azure Text to Speech.

To add audio settings for voice (IVR) surveys:

1. In the Admin Portal, go to **Media Management > Audio Settings**.
2. Set up the voice, speaking style, in the following fields:

Field	Description
Contact Center	Select a contact center if the voice is for use by a specific contact center. Leave this empty if the settings are available to all contact centers.
Contact Center Unit	Select a contact center unit if the voice is for use by a specific contact center unit. Leave this empty if the settings are available to all contact center units.
Name	A descriptive name for the voice, such as: Ana-General

Field	Description
Default Language	The default language of the voice. To add to the list of available languages go to Contact Center > Manage Languages . You can select multiple languages at the bottom of the page.
Default Voice	Select the required voice for the default language.
Speaking Style	Select the required speaking style for the default language.
Speaking Speed	Speed is in the range 0.00 to 3.00 where 3 is the default speed.
Pitch	Pitch is in the range 0.00 to 2.00 where 2 is the default pitch.
Additional languages	Select the other languages that you want to use. For each language, select the voice and speaking style. CE only supports those languages for which a voice is available.

Response templates for surveys

You can send scheduled survey invites using email and SMS response templates. You can also send emails and SMS messages as an action triggered by the flags on the survey.

To create the response templates:

1. In the Admin Portal, go to the **Media Management > Response Templates** page.
2. Enter a unique name for the template.
3. Select the language of the template.

For example, if the customer's browser locale is German then the German-language template is used. If there is no German language template then it falls back to the default language which is US English.

4. Select either **Email** or **SMS** as the type.
5. In the **Content** field, use these placeholders:
 - `%surveycandidateid%`
 - `%surveylink%`
 - `%surveyexpirydate%`

Sending invites for app surveys

The survey invite is sent once the user completes all the self-service steps in the configured queue progression script. Sending the survey invite is always the last option in the script.

For IVR surveys, see [Sending invites for IVR surveys](#).

App surveys

Note For App surveys, you require a CE Studio app that will display the questions and gather the responses. This needs to exist before you can configure survey sending.

When testing survey invites, make sure that both the Survey Version and the CE Studio app are live. Invites are only sent if both are live.

To configure sending:

1. On the **Media Management > Media Queue Progression** page, configure a queue progression script for the required media channels (this includes inbound voice if you want to send the survey invite using email or SMS).
2. Add the option Add Survey Candidate to the script. This must be the last option in the script. See [Add Survey Candidate](#).

Immediate sending

The survey invite is sent using the current media channel. For example, for a chat caller, the link to the survey is sent in a chat message.

Note For immediate sending with inbound voice, see [Sending invites for IVR surveys](#). For voice where an immediate response is required you need to use an IVR survey.

Scheduled sending

The survey invite is sent using either SMS or email. The media script must capture the mobile phone number and/or email address to use when sending the invite.

Sending invites for IVR surveys

The invite for the survey candidate is generated once the user completes all the self-service steps in the configured queue progression script. For voice, generating the survey candidate is always the last option in the script.

How you send the survey invites depends on the survey type. For app surveys, see [Sending invites for app surveys](#).

Voice (IVR) surveys

When you make the IVR survey version live, a script is automatically generated for you. You use this to play the questions to the caller and capture their answers. You can see the script on the **Media Management > Media Queue Progression** page. The script is a JavaScript file. You do not need to change this. You need to configure how the survey candidate invite is generated.

Note There are different steps if you want to preview and test the IVR survey. See [Testing IVR surveys](#).

To configure the survey candidate invite:

1. On the **Media Management > Media Queue Progression** page, configure a new queue progression script.
2. Add the option Add Survey Candidate and select the IVR survey. Note that:
 - If the caller is selected for the survey then this option is the last option in the script to be processed by the system. This is because the caller is transferred to the survey and the current call terminated.
 - If the caller is not selected for the survey then the system can process further options in the script. For example, you can record why the caller was not selected by retrieving values from the results object.

See [Add Survey Candidate](#).

3. Click **Make Live** and then save and generate the script.

You will use this version of the script.

4. Associate the script with an inbound number:
 - a. Go to the **Media Management > Voice** page.
 - b. Select the number to use.
 - c. In the Inbound Number Detail pane, select the script from the **Queue Progression** field.
Select the script configured in step 1 above and **not** the automatically-generated script for the survey.
 - d. Save the inbound number.

Now, when a caller phones this number they hear the options in the script and then as the last option in the script they are transferred to the IVR survey. This is the survey selected in the Add Survey Candidate option. The caller hears the questions in the survey and the script gathers their responses using an IVR menu. When the survey ends, the caller's answers are submitted.

Testing IVR surveys

Note This topic describes how to test or preview an IVR survey. Note that you cannot save results when testing or previewing. When you are ready to use the survey then you need to reconfigure your system as described in [Sending invites for IVR surveys](#).

Previewing an IVR survey

Follow these steps to test or preview the survey.

1. Make sure that the IVR survey version is live. This is the step that generates the JavaScript for the survey.
2. Go to the **Media Management > Media Queue Progression** page.
The automatically-generated script is listed on the Media Queue Progression page. It has the same name as the survey you created.
3. Optional - edit the script, for example to play a message before the survey starts:
 - a. Select the automatically-generated script. It has the same name as the survey you created.
 - b. Click **Queue Progression**.
 - c. Edit the script by adding additional options. For example, play a message before or after the script runs. Disconnect the call when the caller hangs up.
For details of working with voice scripts, see [Configuring voice \(IVR\) queue progression](#).
 - d. Click **Make Live**.
You will use this version of the script.
4. To test or preview the script you need to associate the script with an inbound number - *do not do this for a script that is for production use*:
 - a. Go to the **Media Management > Voice** page.
 - b. Select the number to use.
 - c. In the Inbound Number Detail pane, select the script from the **Queue Progression** field.
 - d. Save the inbound number.
5. Now you are ready to test or preview the survey. Phone the number. You hear the questions in the survey and can answer the questions, however your results are not submitted.

Note When you are ready to use the survey then you need to reconfigure your system as described in [Sending invites for IVR surveys](#). This insures that the survey results are saved.

Notes on completing the survey during testing

Notes on completing the survey:

- Enter a value after the beep.
- Skip non-mandatory questions by entering asterisk (*).
- Questions with validation are repeated if you enter an unexpected value.
- Mandatory questions are repeated if you fail to enter anything.
- If you do not enter anything then the script waits 10 seconds before moving to the next question.
- The script waits 4 seconds between digits, for example when entering 21, it waits 4 seconds after the 2 is entered.

Question type	You enter
Number questions with validation	<p>Either enter the termination character # or wait until the input timeout expires and the system accepts your input.</p> <p>For example, the expected number range is 1 to 25:</p> <ul style="list-style-type: none"> • You enter 18 (a two-digit number), the system accepts the input immediately and moves on to the next question • You want to enter 7 (a single-digit number). You can either end the input with # (7#) or enter 7 and then wait for a few seconds for the system to accept 7 as input and move on to the next question.
Multiple choice	<p>1 for <i>option 1</i>, 2 for <i>option 2</i> and so on</p> <p>But if the option values are different lengths, such as 1 and 12 then you need to follow your entry with #.</p> <p>The choice options are repeated if you enter something outside of the option list.</p>
Date	Date format is always yyyyymmdd and does not depend on the locale.
Boolean	0 for No and 1 for Yes.

Set up scheduled sending as part of the script

1. Go back to your script and change the Add Survey Candidate option to scheduled invites.
2. You need to use a different survey definition.
3. Add a variable to the script with your email address or SMS number and use this in the Add Survey Candidate option.

4. See Admin Portal guide for details of setting up the script
5. Make the script live and test scheduled invites

Localizing the survey

You can add localized messages for use in surveys to the message store. These are used by both the app and IVR survey types.

Selecting supported languages

To add additional locales to the languages supported in the Admin Portal:

1. In the Admin Portal, go to the **Contact Center > Manage Languages** page.
2. Select the language.
3. In Locale Detail, select the **Is Active** check box.
4. Save the locale.

This locale is now available on all the language lists in the Admin Portal.

Adding messages for the supported languages

To add messages for the different locales:

1. Go to the **Studio > Message Store** page.
2. Enter a message:

Field	Detail
Language	Select the target language.
Message Type	Select: <ul style="list-style-type: none"> • AppSurvey for app surveys • IVRSurvey for IVR surveys If the message type is not available, then enter <code>AppSurvey</code> or <code>IVRSurvey</code> in the New Message Type field. This also updates the Message Type list after a short delay.
New Message Type	If the message type is not available from the Message Type field, then enter <code>AppSurvey</code> or <code>IVRSurvey</code> in the New Message Type field. This also updates the Message Type list after a short delay.
Message Id	Enter a unique message id. When configuring the survey questions, you select the messages by the message id.

Field	Detail
Message	Enter the text that you want to use in the survey.

3. Save the message.

Selecting messages for survey questions

To localize the start text, end text and survey questions:

1. Go to **Media Management > Surveys**.
2. Select the survey.
3. Click **Survey Version** and then select the survey version.
4. For the start screen text, end screen text and each question, select a message from the message list. The list shows the message ids.

When you preview or run the survey, you will see the message rather than the default text.

Important note on date formats

The date format is always yyyyymmdd regardless of the locale.

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Last-Mile Customer Portal

Note Previously called Last-Mile Technician Portal.

You can integrate IFS Customer Engagement with PSO Event Hub for scheduling appointments and allocating resources. You access PSO through one of the following endpoints:

- IFS Field Service Management
- IFS Cloud and Request Handling
- IFS Cloud and Work Task Handling (not available to new tenants)

Once you have configured IFS Customer Engagement and enabled the configuration, CE will subscribe to the notifications broadcast by PSO.

Requirements

Requirement	Description
Dataset	<p>You require a dataset in the backend system:</p> <ol style="list-style-type: none"> 1. Create the dataset in either IFS Field Service Management or IFS Cloud. 2. Note the dataset name. The dataset you create in the Admin Portal must have the same name. 3. Configure the dataset on the Last-Mile Customer Portals > Dataset Configuration page in the Admin Portal. See Configuring the dataset for Last-Mile Customer Portal. <p>The dataset is specific to the backend system.</p>

Requirement	Description
Rules	<p>Configure rules that determine what happens when a notification is received from PSO, for example whether an email or SMS is sent with a specific message. Rules can use response templates for sending notifications.</p> <p>The rules are specific to the endpoint.</p> <p>See Configuring notification rules for Last-Mile Customer Portal.</p>
CE Studio app	<p>There is a CE Studio app for displaying the appointment details. Import it from the Central Template Repository.</p> <p>The CE Studio app is specific to the endpoint.</p> <p>For IFS Cloud, the providers are created for you when you import the CE Studio app. You need to create credentials for the environment you want to use in the Admin Portal on the Credentials Manager > Manage Credentials page. Optionally, set the credentials as the default to use when importing apps.</p>

For information on configuring surveys for Last-Mile Customer Portal apps, see the help for CE Studio.


Adding credentials for Last-Mile Customer Portal

For Last-Mile Customer Portal, configure the PSO endpoint in the **Credentials Manager > Manage Credentials** page. This is required to communicate with the PSO system.

1. In the Admin Portal go to **Credentials Manager > Manage Credentials**.
2. Enter the details:

Field	Description
Name	Name to identify this set of credentials.
Description	Additional information about these credentials.
Endpoint	The URL of the PSO API endpoint. This is the same for all endpoints.
Authentication Scheme	Select Custom .
Provider Type	Select Planning and Scheduling Optimization .

3. The credentials consist of one or more properties such as accountId, username and password.

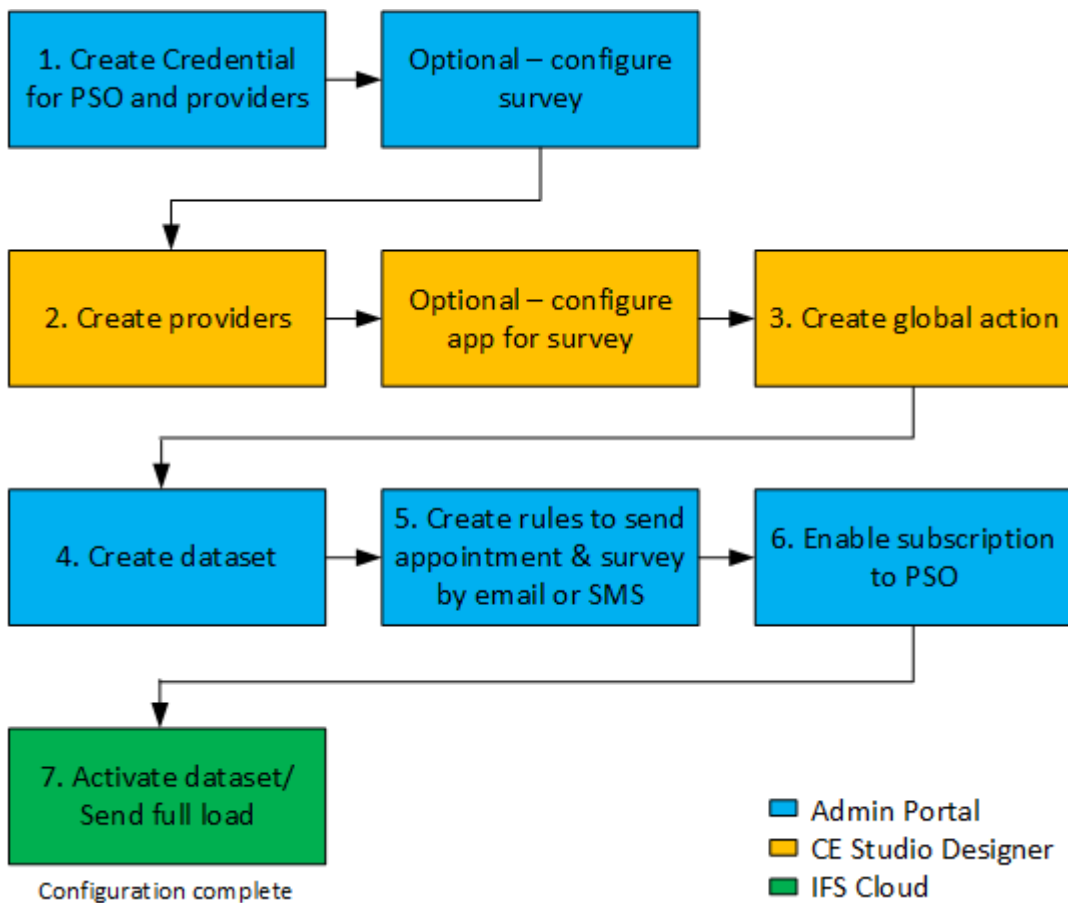
Click the  button to add each required property. Enter these as key-value pairs. For example:

Key	Value
For example password	For example, enter the actual password to use. Select Secure Field to encrypt the actual password.

Configuration overview for Last-Mile Customer Portal

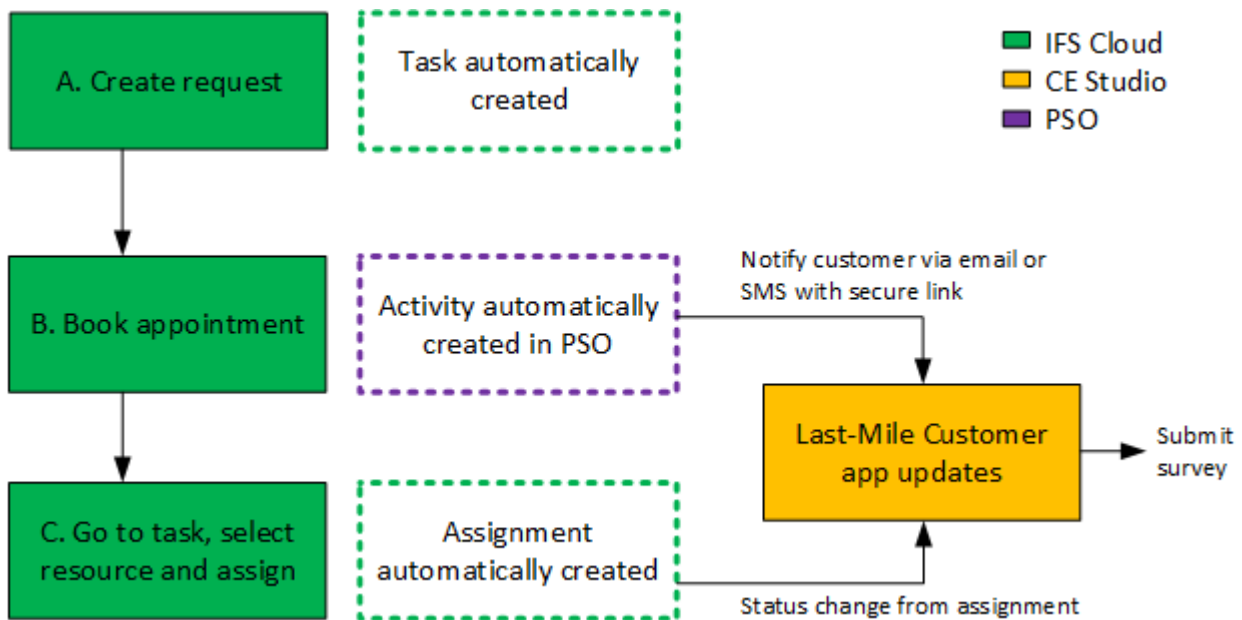
The following diagrams give a high-level overview of how to configure Last-Mile Customer Portal - in this instance for Work Order Handling.

The below diagram shows the configuration process in the Admin Portal, CE Studio Designer and on IFS Cloud. There is a similar process for Field Service Management.



Configuring Last-Mile Customer Portal

The below diagram shows the process of booking appointments in IFS Cloud - Field Service Management has a similar process.



Booking the appointments

Add global action set to get customer details

You need to add a global action set in CE Studio Designer to get the customer details associated with a particular task. For IFS Field Service Management, the `task_contact` type provides the customer details.

The screenshot shows the 'Global Action' configuration interface. The 'Action Name' field is set to 'FSM-Customer', with a dropdown menu showing 'FSM'. The 'task_contact' type is selected, and the 'get' method is chosen. Below the 'Parameter Mapping' section, the 'Filters' section is visible. It shows a filter rule: 'task_contact' (task_id) equals 'Taskid'. The filter is configured with 'And' logic and 'Equals' comparison.

Global action to get customer details from FSM

Global Action

Action Name: JtTask:

Parameter Mapping

Filters

☒ And ☐ Or

Condition: JtTask TaskSeq Equals TaskId

*Global action to get customer details for IIFS Cloud
Request Handling and FS Cloud Work Order Handling*

In the global action, you need to add a condition to match the task id of the task contact to the task id of the job notified by PSO Event Hub. You do this by using a placeholder on the right side of the condition. The name of the placeholder must be `TaskId`.

Important The name of the placeholder must be `TaskId`.

Configuring the dataset for Last-Mile Customer Portal

You need to configure the dataset that you created in the backend system. The backend is IFS Field Service Management (FSM), IFS Cloud Requests or Work Orders. The dataset lets you subscribe to PSO which broadcasts the appointment details. Each PSO subscription lasts 24 hours and the subscription starts at the Scheduled Start Time set below, plus an interval (we recommend 15 minutes).

Note Before you start, you need [credentials](#) to access PSO and a [global action set](#) to get details of the customer.

To configure the dataset:

1. Go to the **Last-Mile Customer Portals > Dataset Configuration** page.
2. Enter the details as below:

Note After editing the details of an existing dataset, you need to wait for approximately 15 minutes or longer for the cache to update.

Field	Description
Dataset name	The dataset name must match the name of the dataset created in the either IFS Field Service Management or IFS Cloud.
Scheduled Start Time	When the dataset starts to receive notifications from PSO Event Hub, plus an interval of 15 minutes or longer.
Enable Configuration	Deselect this until you have finished configuring Last-Mile Customer Portal. Select it when you are ready to start receiving notifications from PSO Event Hub.
Credentials Object	Create this on the Credentials Manager > Manage Credentials page. For Last-Mile Customer Portal these are the credentials to subscribe to notifications from PSO event hub. Only objects created for Planning and Scheduling Optimization are listed here. See Adding credentials for Last-Mile Customer Portal .
Get Customer Details	A global action set that you create in CE Studio to return customer details. For details, see Add global action set to get customer details .

Field	Description
Customer Response Properties	<p>This is the data that will be returned from FSM or IFS Cloud. The format is:</p> <pre>{ pso event required field:provider metadata property;}</pre> <p>For IFS Field Service Management, the provider type is task_contact:</p> <pre>{ "FirstName": "task_contact first_name", "LastName": "task_contact last_name", "PhoneNumber": "task_contact mobile_phone", "EmailAddress": "task_contact email_address", "AlternateEmailAddress": "task_contact alt_email_address" }</pre> <p>Map the parameters to the correct response properties. For example, if mobile phone numbers are entered in the phone property, change "task_contact mobile_phone" to "task_contact phone".</p> <div> <p>Note These properties are mandatory, apart from AlternateEmailAddress which is optional.</p> </div> <p>For IFS Cloud Request Handling, the provider type is ifs-App-WorkTaskServiceHandling-JtTask:</p> <pre>{ "FirstName": "IfsApp-WorkTaskServiceHandling-JtTask CustomerName", "PhoneNumber": "IfsApp-WorkTaskServiceHandling-JtTask ContactPhoneNo", "EmailAddress": "IfsApp-WorkTaskServiceHandling-JtTask Email" }</pre> <p>For IFS Cloud Work Order Handling, the provider type is IfsApp-WorkTaskHandling-JtTask:</p> <pre>{ "FirstName": "IfsApp-WorkTaskHandling-JtTask CustomerName", "PhoneNumber": "IfsApp-WorkTaskHandling-JtTask ContactPhoneNo", "EmailAddress": "IfsApp-WorkTaskHandling-JtTask Email" }</pre>

3. If necessary, refresh the page to see the broadcast parameters. The values you set here must match what is set in Field Service Management or IFS Cloud:

MaximumFrequencyMinutes	The maximum frequency (minutes) for plan output. Recommended minimum frequency is one minute.
MaximumWaitMinutes	The plan is broadcast when either (a) the minimum plan quality is attained, or (b) when the Maximum Wait is hit, whichever occurs first. If there is no Maximum Wait, then the plan is broadcast when the quality target is met.
MinimumPlanQuality	The minimum quality target for plans, for example, if you enter 100 then all the criteria for the appointment in FSM or IFS Cloud must be match by PSO.

4. **For IFS Cloud only** both Requests and Work Orders, specify the attribute that returns the task number: WT No

Skip this step for Field Service Management where the attribute is always `ActivityId`.

Configuring notification rules for Last-Mile Customer Portal

Note Before starting you need to have configured the dataset and the CE Studio app that you will use to display the appointment details. You can download the app for your endpoint from the Central Template Repository in CE Studio Designer.

About the triggers

Broadcasts from PSO can trigger one of the following event types. The rules you configure determine what happens next. The trigger types are predefined in PSO:

Trigger	Use for
ResourceChangeEvent	Triggered when PSO Event Hub allocates a different resource to the task.
ETACChangeEvent	Triggered when something occurs to change the estimated time of arrival.

Trigger	Use for
StatusChangeEvent	<p>When the status is changed in the backend system. For example:</p> <ul style="list-style-type: none"> • Resource is allocated to the task • Resource is confirmed • Resource is on their way

Configuring the rules

As a starting point, you can download some example rules from [here](#).

To configure the rules:

1. Go to the **Last-Mile Technician Portals > Rule Configuration** page.
2. For each rule, enter the details as below:

Field	Description
Name, Description	A name and description of the rule.
Dataset	Select the dataset configured on the Dataset Configuration page. See Configuring the dataset for Last-Mile Customer Portal .
Trigger	Select the required trigger. See above for details.
Enable Configuration	<p>Deselect this until you have finished configuring Last-Mile Customer Portal.</p> <p>Select it when you are ready to start receiving notifications from PSO Event Hub.</p>
Output Variables	<p>For email notifications, you need output variables for:</p> <ul style="list-style-type: none"> • <i>MessageToSend</i>: the body of the email • <i>CustomerEmailAddress</i>: the email address to send to • <i>EmailSubject</i>: the subject line <p>For each output variable you can do either of the following:</p> <ul style="list-style-type: none"> • Select a response template and map the variables in the response template to placeholders, such as <i>ctx.ActivityId</i> which will be the appointment number. • Define it as a string. For example define <i>CustomerEmailAddress</i> as the placeholder <i>ctx.CustomerEmail</i>.

Field	Description
Condition Expressions	<p>You can configure a rule to apply only in specific conditions. Typically, at a specific status. For example:</p> <pre>ctx.NewStatus == PsoStatusType.Allocated OR ctx.NewStatus == PsoStatusType.Committed</pre> <p>Use condition expressions to simplify the creation of complex conditions. For example:</p> <pre>NewStatusAccepted OR NewStatusCommitted</pre>
Actions	<p>What you want to happen when the appointment reaches a specific status:</p> <ul style="list-style-type: none"> • GenerateSecureLink: provides a secure link to the CE Studio app. You can enter the link text here. Note that secure links are only generated when the CE Studio app is live. • SendEmail: send an email notification using the email output variables you defined or the predefined placeholders. • SendSMS: send an SMS using the SMS output variables you defined or the predefined placeholders. • StoreMessage: push a message, such as an On Travel message, that displays in the CE Studio app. By default, the message expires after 15 minutes but you can set a different expiry period here. • Max Successful Execution: Set the maximum number of times to send an action. For example, when the plan allocates a resource and then reallocates the resource.

Example rules for Last-Mile Customer Portal

[Download example](#)

Some example rules to show how rule configuration works in the Admin Portal. Import these on the **Last-Mile Technician Portals > Rule Configuration** page:

- Engineer allocated.json
- New engineer allocated to task.json

- ETA Change.json

Response templates for Last-Mile Customer Portal

You can configure the rules for Last-Mile Customer Portal to use response templates instead of putting the message in the rule.

This is an example of a notification defined as text:

```
"Dear " + ctx.CustomerName + ", " + ctx.ResourceName +  
" has now completed your service. " + sys.SecureLink
```

But you can set up a response template for the notification:

To create the response templates

1. In the Admin Portal, go to the **Media Management > Response Templates** page.
2. Enter a unique name for the template.
3. Select the language of the template.

For example, if the customer's browser locale is German then the German-language template is used. If there is no German language template, then it falls back to the default language which is US English.

4. Select either **Email** or **SMS** as the type.
5. In the **Content** field, add placeholders for information about the appointment and the resource.

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Natural language processing (NLP)

Important The information in this section applies to fully-featured tenants only.

IFS Customer Engagement media scripts can search the content of inbound emails, chats and social media messages using Natural Language Processing. Typically for the most common queries handled by the contact center.

The Search using NLP action is available when creating a queue progression in the Media Script Editor. NLP processes human language and can identify nuances in the inbound email or chat that a keyword or regular expression could not.

Before you can use NLP in a script, you need to create and train an NLP model. How successful the model is depends on the quality and suitability of your training data.

Note IFS Customer Engagement uses Apache OpenNLP for natural language processing.

Why the training data is important

How successful the NLP model is in identifying the required categories depends entirely on your training data. The training data must be:

- As large as possible (up to 10,000 samples).
- Contain no duplicates
- Relevant to the type of enquiries you want to handle.
- Real, ie from real emails, tweets, chat conversations.
- Derived from the intended media channel because people interact differently with email, chat, Twitter, WhatsApp and so on. You cannot use training data derived from emails to train a model for Twitter messages.
- Sorted by real people into the required categories.

In addition to the categories that you want to detect, you always need an *other* category. For example, if you only have two categories then the NLP engine has a 50% chance of getting it right or wrong. The *other* category should have substantially more training data (possibly in the ratio of 1:100).

You can have up to 10,000 samples in the training data. A random 90% is used to train the model and the other 10% to test (evaluate) the model. The evaluation result tells you the result of the training. However, it depends on the purpose for which you are using NLP whether the minimum confidence level, detection rate and false matches are appropriate.

You may need to repeat the training with additional training data if the evaluation results show that the NLP model is not yet ready.

Gathering the training data

If you do not already have a database of emails (for example) that you can use, then you could follow this process in order to gather accurate data for NLP training. You initially allow all emails, chats, and social media messages to be handled by agents. The agents categorize each email or message as required. Once you have accumulated enough training data then you use this data to train and evaluate the model.

Supported languages for NLP

NLP supports English (United States).

Detecting the language in use

In addition, queue progression scripts can detect the language of the inbound email, chat or social media message. This does not require any configuration before you can use it. The following languages are supported:

- English
- Dutch
- Norwegian
- Danish
- French
- German
- Italian
- Spanish
- Swedish
- Portuguese

- Russian
- Korean
- Chinese
- Japanese

NLP training data

NLP sample data for training and testing the model consists of categories and samples for each category. Each entry has a `categoryname` and a `categorytext` attribute. For example:

```
<row categoryname='delivery' categorytext='I haven't received the
latest edition of the magazine.' />
```

The data is used to create the NLP model and evaluate its effectiveness.

Note For background information, see [Natural language processing \(NLP\)](#).

Format and categories

You need to obtain as much training data as possible, up to a maximum of 10,000 entries. This maximum is the total number of entries regardless of the number of categories. The data format must be XML.

There are two attributes:

<code>categoryname</code>	The name of the category. This is case sensitive. It represents what you are interested in, and how you want to classify the sample data.
<code>categorytext</code>	An example of data for the category. It should not contain any special characters (see below). This will be used to train the NLP model.

We recommend that you create and maintain the training data in a text editor rather than using IFS Customer Engagement. Each time you update the training data, you will need to [recreate and evaluate](#) the data. It is therefore preferable to do this in a new model so there is no disruption to any live media scripts that use NLP.

Note If the right tools are available, and the data is held in a SQL table with columns called Category and CategoryText, is to use the SQL command “FOR XML RAW”. The following is an example where data is held in a table named “MessageExamples”, and the columns are named “Category” and “CategoryText”:

```
SELECT Category, CategoryText
FROM MessageExamples
FOR XML RAW
```

Note There are certain special characters that should be avoided or replaced with the relevant escape characters. They are as follows:

Character	Replacement escape characters
<	<
>	>
"	"
'	'
&	&

Overview of the NLP evaluation process

This process creates a model from your training data. In the creation phase, it defines the rules that determine what the different categories mean for your training data. In the evaluation phase, it uses your training data to test the quality of the model. The results of the evaluation are displayed, and you use the results to judge whether the NLP model is ready or whether you need to import new data.

The evaluation process randomly splits the NLP data into two: a higher proportion (90%) is used for training, and the remainder for testing.

Evaluation training and test ratio

The number of records for training is 90% of the category with the fewest number of samples. Therefore, this gives the same number of records for training each category, but the test samples will vary.

Model Data Summary example

Category Name	negative	positive
No. of Samples	5331	5330
No. of Samples since current Deployment	5331	53329
No. of Training data in current Deployment	0	0
No. of Test data in current Deployment	5331	5330
Min Confidence Level	0.8	0.8
Detection Rate (%)	70.09	24.694
False Match (%)	74.269	31.221

In the above example:

- You need to decide whether the minimum confidence level is adequate for your needs. There is no right or wrong result here.
- The detection rate is very high because there are a high number of false matches. You need to find a balance between detecting the categories correctly while minimizing false positives.

In fact, the above model requires a third *Other* category with sufficient training data.

Evaluation figures

After evaluating, the evaluation result for each category is displayed. The results include the minimum confidence level, detection rate % and false match %.

Model Evaluation Result example

Category	Test Sample Count	Detection
positive	533	027.205
negative	534	038.577

Each category can be viewed in detail to see the results for each confidence level increment.

Min Confidence Level	The level of confidence in the result. This figure runs from 0.00 to 0.95, in 0.05 increments. Evaluation results, such as the Detection Rate, are made for each increment.
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Detection Rate	<p>The selected category is identified correctly, for example, the model correctly identifies Category A as <i>category A</i>. The rate is the percentage of matches made in a sample:</p> $(\text{No. of Detections} \times 100) / \text{No. of test samples}$ <p>For example, 28 matches out of 29 samples will give a detection rate of 96.55%.</p>
Avg. Detection Confidence	<p>The level of confidence in the result. The average is calculated as:</p> $\text{Sum (Confidence level of detections)} / \text{No. of detections}$
Misdetection Rate	<p>A misdetection occurs when the selected category is incorrectly identified as another category, for example, the model incorrectly identifies Category A as <i>category B</i>. The rate is calculated as:</p> $(\text{No. of misdetections} \times 100) / \text{No. of test samples}$
Avg. Misdetection Confidence	<p>The level of confidence in the result. The average is calculated as:</p> $\text{Sum (Confidence level of misdetections)} / \text{No. of misdetections}$
False Match	<p>A false match occurs when another category is incorrectly identified as the selected category, for example the model incorrectly identifies Category B as <i>category A</i>. The rate is calculated as:</p> $(\text{No. of false matches} \times 100) / \text{No. of test samples not identified as this category}$
False Match Confidence	<p>Calculated as:</p> $\text{Sum (Confidence Level of false matches)} / \text{No. of false matches}$

Adding a new NLP model

Note This assumes that you already prepared your data. See [NLP training data](#). For important background information on how to select training data, see [Natural language processing \(NLP\)](#).

To add a new model:

1. In the Admin Portal, go to **NLP Management > Models**.

The Models page lists any existing NLP models along with their language, status, and deployment date (if active).

2. You can add a model that will be used by the contact center and all its contact center units or one that applies to a single contact center unit.
3. Click **New** to add a new model.
4. Complete the details (name, description and language).
5. Click **Save**.

The model is now ready for you to import the sample data. At this stage, the status of the model is Inactive.

1. Go to **NLP Management > Model Data**.
2. Select your model from the list.
3. Click **Manage Data**.
4. Import the data:
 - a. On the Manage Model Data page, click **Choose file** (bottom right) and select the file. Only files with the *.xml* extension are accepted. They must be in the correct format otherwise the import will fail, and an error message will be displayed.
 - b. Click **Import**. The categories and the number of samples are then displayed.
5. Go back to the Model Data page. The Summary pane lists the categories you added and the number of samples. The NLP model is still inactive and cannot be selected in the Media Script Editor.
6. The next step is to evaluate the model. See [Creating and evaluating the NLP model](#).

Note on importing vs adding data manually

We recommend that you maintain the data outside of IFS Customer Engagement. For example, rather than edit the data manually on the Manage Model Data, edit the source data in a text editor and re-import it.

Creating and evaluating the NLP model

To create the NLP model and evaluate its effectiveness and accuracy:

1. On the **NLP Management > Model Data** page, select the model.
2. Click **Create and Evaluate**.
3. It may take 5–10 minutes for the model to be created. Once it is created, the status changes to **Evaluated**.
4. Click **Evaluation Result** to see the results.

5. From the Model Evaluation Result screen, it is possible to drill down into the detail and select a different confidence level/false match figure if applicable.

Note Although you can edit the training data on the following pages, we recommend that you edit the training data outside of IFS Customer Engagement.

Test Data List

The evaluation results for the training data in each category.

Min. Confidence Level Data List

The minimum confidence level for the training data in each category.

False Match Data List

The false matches for the training data in each category.

Deploying the NLP model

Once happy with the evaluation, on the Evaluate Model page, click **Deploy**. This updates the model to active status and makes it available for selection in the Media Script Editor when using the Search using NLP action.

You will need to create a new model and re-evaluate the model, every time you modify the sample data. For this reason, we recommend that you always maintain your model data outside of IFS Customer Engagement.

Masking sensitive data

You use masking to hide the personal data of customers by replacing the data with random characters, with a pattern, or by deleting it.

You create masking definitions, in the Admin Portal, on the **Masking > Definitions** page. To select the data to mask, you add placeholders to the masking definition. To mask customer data, you create a job from the masking definition and schedule it to run at a quiet time:

Page	Description
Definitions	View the list of masking definitions, create, edit and clone masking definitions. Create jobs to perform masking.
Queued Jobs	View the list of queued, in progress, and failed jobs.
Completed Jobs	View the list of completed jobs.

For detailed information on the options for masking data, see [Masking mechanism, rules, and regular expressions](#).

Masking mechanism, rules, and regular expressions

Masking mechanism refers to a technique used in various fields to selectively hide or ignore specific parts of data during processing or analysis.

Masking rules refer to specific guidelines for applying masking techniques to data.

A regular expression, often abbreviated as regex, is a sequence of characters that defines a search pattern.

You can use a masking mechanism, rules, and regular expressions to select any module/table that contains sensitive data that want to mask. Each selected module/table, configure the masking rules for each of its fields.

The time it takes to run depends on the number of masking fields, the amount of data in the fields, and the type of selected masking rules.

The operation speed of masking rules from fastest to slowest as below,

- Delete
- Random Characters
- Pattern

Masking Mechanism	Masking Rules	Data Type
Random Characters	Replaces sensitive data with random characters that are readable, but not recognizable. For date fields, specify the earliest and latest dates.	Text, Short Text, Phone, Date, Email, Fax, Date/Time, Address, URL
patterns	Replaces sensitive data with data generated using a defined pattern. The pattern must follow the following rules: <ul style="list-style-type: none"> • %c= replace with a lower-case letter (a-z) • %C= replace with an upper-case letter (A-Z) • %d= replace with a digit (0-9) • %% = replace with % sign • %n or %nc= replace with "n" number of digits or characters 	Text, Email Address

Delete	Deletes sensitive data entirely, leaving an empty field.	<p>Text, Phone, Date, Long Text Area, Email, Fax, Date/Time, Geo location, Address, Percent, Number, Currency, URL</p> <p>NOTE: This rule is not available for required fields and is the only masking option available for long text fields which can hold a large amount of data, where masking them would slow down the masking process considerably.</p>
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Definition: IFS CE Masking Definition

Section	Contact Centre Unit	Field	Mask	Filter	Save
Field	Heading	Module	Type		
email to address	Email To Address	InboundEmails	Email		
email content	Email Content	InboundEmails	Text		
email from address	Email From Address	InboundEmails	Email		
email subject	Email Subject	InboundEmails	Short Text		
email start time	Email Start Time	InboundEmails	NO MASKING		
email cc address	Email Cc Address	InboundEmails	Email		
email bcc	Email Bcc	InboundEmails	Email		

Example: In the above figure, the masking mechanism of all the maskable fields is Pattern. The masking rule which describes the pattern of the data is set up as:

```
%10c@%5c.%3c
```

The regular expression which indicates the data type is set up as email. According to the data type, both the masking rule and regular expression are set up.

Creating a masking definition

In the Admin Portal, go to **Masking > Definitions** page.

Add sections

You can add many sections from the following page by clicking **New Section**.

Definition: New

Section	Contact Centre Unit	Field	Mask	Filter	Save
---------	---------------------	-------	------	--------	------

Contact Centre

CCtr

Contact Centre Unit *

US Cal

Section Name

Test

Add contact centers

By default, you create masking definitions for the default contact center.
You can select a different contact centers and contact center unit from

Definition: New

Section	Contact Centre Unit	Field	Mask	Filter	Save
<div> <div>Contact Centre</div> <div>Add ▶</div> <div></div> <div> <div>CCTR</div> <div>test635 - (02)</div> </div> </div>					
<div> <div>Contact Centre Unit</div> <div>Add ▶</div> <div></div> <div> <div>Defau</div> </div> </div>					

here.

Selecting data for masking

You can select the fields that contain the personal data.

You can use **Alter Join** to join modules with any other module.

Example: You can mask data relate to when there are the outbound calls made when the agent was in an inbound call or there could be another report showing all the inbound calls, and showing any outbound calls made to any of those inbound calls.

Masking work objects using custom

Field Mask Filter Save

1.Select work definition

Work Definition

631_campaigns

Work Element

Add ▶ Remove ◀

2.Select fields you want to add

fields

W_MOBILE_NUMBER	W_NAME
W_MOBILE_COVERAGE_PLAN	W_HOME_NUMBER
W_CONTACT_ORDER	W_WORK_NUMBER
W_CONTACT_INDEX	W_WORK_COVERAGE_PLAN
W_MAX_CONTACT_TIME	W_HOME_COVERAGE_PLAN
W_MAX_RETRIES	

You can select custom-defined fields which do not belong to any module that can use to mask work objects by selecting work definition.

Go to the **Mask** tab to view the selected fields.

Column	Description
Type	If the field is maskable, the data type is displayed other it displays No Masking.
Masking Mechanism	If the field is maskable, the masking mechanism is displayed. If not displayed as 'No Masking', you can change the masking mechanism if the field is maskable.
Masking Rule	If the field is maskable, you can change the masking rule.
Reg.Exp	You can add regular expressions related to the field's data type.

Group By	You can ensure that the masking data across the related columns retain the same relationship.
Sort Option	You can sort the data in the column.
Sort Order	You can change the sort order of the fields.

Note These changes are available only for masking fields, not the additional fields selected for filtering purposes.

Section Contact Centre Unit **Field** Mask Filter Save

Standard Custom Fields

▼ Inbound Calls

<input type="checkbox"/> call diverted from	<input type="checkbox"/> inbound connected call duration	<input checked="" type="checkbox"/> inbound call time	<input type="checkbox"/> inbound call duration
<input checked="" type="checkbox"/> cli	<input type="checkbox"/> restrictedcli	<input type="checkbox"/> inbound call queue time	<input type="checkbox"/> inbound call type
<input type="checkbox"/> inbound call ring time	<input type="checkbox"/> diverted number	<input type="checkbox"/> inbound call id	<input type="checkbox"/> initials skillset
<input type="checkbox"/> queued skillset	<input type="checkbox"/> inbound call endtime	<input type="checkbox"/> inbound call talk duration	<input type="checkbox"/> queued skillset description
<input type="checkbox"/> ddi context			

▼ Outbound Calls

Adding placeholders

You can add placeholders to the masking template on the **Filter** tab. You must add at least one placeholder.

Note The masking template only allows you to mask data by entering specific values.

1. Click New Filter to add new field

Field Header	Operator	Value	Option	
email to addr ▾	equal to ▾	@EmailAddress	Don ▾	Delete

2. Select the field that need to identify the exact data

3. Select operator

4. Enter the placeholder name prefixed by the @ character

5. Select option

Saving masking definitions

After adding placeholders, you can save the definition on the **Save** tab.

Creating jobs

To run a job to mask sensitive data:

1. In the Admin Portal, go to **Masking > Definitions** page.
2. Select the definition.
3. Click **Create Job**.
4. Enter a value in all the placeholders (required before you can create the masking job).

View selected data Export data selected to Excel

View Download (Export to Excel - xlsx)

To	12/07/2023 05:30:00	Timezone	Select an option
Section	Select an option	Name	The name of the job you are about to create
Plan Run At	12/07/2023 05:30:00	PhoneNumber	
SMSNumber		ChatCallerName	
EmailAddress		No of Records	0

Page shows 100 records. Export the report to view all the records.

Search Search among selected data

Queued Jobs

You can view the jobs in the queue from the Queued Jobs page.

Completed Jobs

You can view all the completed jobs on the Completed Jobs page. Delete completed jobs by selecting the definition and clicking **Delete**.

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Designing reports

There are a wide range of standard reports that you can use in IFS Customer Engagement to report on the contact center, portal, survey results and so on. To run these, in the Admin Portal, go to **Standard Reports**. Depending on the report type, you can dig deeper to listen to the call recording or view the activation detail.

You can design your own reports and schedule when these run. In the Report Designer, use:

- **Reports** to design your own reports.
- **Queued Reports** to see which reports are currently queued to be generated (and distributed depending on the type of report).
- **Delivered Reports** to see the reports that have been generated (and distributed depending on the type of report).

System reports are also available within Report Designer. These are designed for (fully-featured) tenants with a contact center. To edit these, you need to first clone the report.

Designing a new report

You can design a new report in the Report Designer by adding a section for each type of data. You then configure the sections using the Report Designer (a standard section) or by writing your own SQL script query (a manual section). You can reformat the fields and set up filters on the data. Reports can be generated as Excel or PDF files.

To create a new report:

1. In the Admin Portal go to **Report Designer > Reports**.
2. Click **New**.

Note At any point you can save the report. Go to the **Save** tab. To save it as a report that's available for any contact center, select the **Standard Report** option when you save.

3. Click **New Section** to add the first section of the report. The report should contain one section only unless you are planning to export the report to Excel.

Note Scheduled reports must only contain one section.

4. Select the type of section:
 - **Standard**—select this option to use the facilities of the Report Designer.
 - **Manual**—use this to extract data directly from the database using a SQL script query. Access to this is restricted to users whose user role is *Technical*.
5. Go to the **Contact Center Unit** tab. For each report section, select the contact center and contact center unit to include. Leave this empty to automatically filter by the default contact center.

Note These settings filter the data in the report regardless of how the **Standard** check box is set on the **Save** tab.

6. Go to the **Field** tab to select the data for each section of the report:
 - *Standard Fields*: to include data on the contact center, activations, and agents.
 - *Custom Fields*: for the work elements from work definitions that you want to report on.
 - *User Defined Fields*: to include any custom fields that you define.
 - *Global Action Sets*: to include external data.

On the **Fields** tab you can:

- Hover over each field to see a definition of the field.
 - When there are multiple modules selected, you can alter the joins between modules to filter the reports. See *Using joins between modules in reports*.
7. Optionally, go to the **Format** and **Filter** tabs to complete the setup of the report. Use the **Format** tab for example to rename fields so they are suitable for use in CE Studio data transformations. See:
 - *Formatting report fields*
 - *Filtering data in report fields*

Selecting data

You select the data for the report on the Field tab of the report definition. You can include any of the following:

- **Standard Fields**: to include data on the contact center, activations, and agents. See *Including data on activations and agents*.

- **Custom Fields:** to include the work elements from work definitions that you want to report on. See [Including work elements as custom fields](#).
- **User Defined Fields:** to include any custom fields that you define. See [Creating user-defined fields for reporting](#).
- **Global Action Sets:** to include external data. See [Including external data in reports](#).

Including data on activations and agents

Note This section does not apply to self-service tenants.

In the Report Designer, you can add standard fields to the report to include data on activations and agents working in the contact center:

1. In the Admin Portal, in the Report Designer, select the report section.
2. Go to the **Fields** tab.
3. Expand the required module and select the standard fields that you want to include:

Module	Description
Activations	Relates to the activations in the contact centers, such as agent name, time call activated, durations, skills, priority.
Agent Availability	Data for reporting on overall session duration and time in DND.
Agent Signon	Data for reporting on when agents signed on, how long they were idle before each activation, handling duration (the chargeable duration), wrapup duration (unchargeable duration) and so on.
Agent Time Recording	Covers the time codes that agents select whenever they go online or place themselves in DND. This only applies to agents where their user account is configured for time recording. The system only time codes are not included in this module. For further details, see Time recording in Agent Desktop .
Chat, Chat Message	Data for all chat sessions, for example those handled by a script and those that were handled by agents.
Custom Entities	Shows the Entity tables and fields created by the user. See Entities for use in media scripts .

Module	Description
Inbound Calls	Data about the calls received at a contact center unit, such as call times, date call received, account name, call type.
Outbound Calls	Data about any calls made at a contact center unit, such as call times, date call made, call type.
Inbound Emails	Data relating to inbound emails, such as email received date/time, email subject, email status. This includes emails in the queue and those still on the server.
Inbound Emails Follow-Up	Emails in the same conversation or thread as the first email received.
Inbound Emails History	Data on all closed emails.
Inbound SMS, Outbound SMS	SMS data
Work Objects	Data on work objects. These are the objects that are created from work definitions.

Including work elements as custom fields

Note This section does not apply to self-service tenants.

In the Report Designer, you can add work elements from work definitions as fields in the report.

1. In the Admin Portal, in the Report Designer, select the report section.
2. Go to the **Fields** tab.
3. Click the **Custom Fields** button.
4. From the **Work Definition** list, select a work definition. You can then select which work elements you want to include in the report.
5. Click the **Fields** tab to go back to the main page.

The selected work elements will appear in the Custom Fields module on the Field page.

Including external data in reports

You can design reports that make use of external data. To do this, you first create one or more global actions in CE Studio to get data from the external data source and then you create the report using Report Designer. In Report Designer, you can use the fields from the external data source to:

- Provide data for the report
- Filter or sort report data
- Configure joins

You can use multiple global actions in the same report definition and also use the same global action in different report definitions. Configuring the global action with placeholders increases its flexibility.

Note For details of how to create global actions, see the help for CE Studio.

To include external data in a report definition:

1. In the Admin Portal, go to **Report Designer > Reports**.
2. Create a new report or edit an existing report definition.
3. On the **Field** tab, click **Global Action Sets**:
 - a. Select a global action set:

Field	Description
Module Name	A label to identify the data accessed through the global action set. The data will appear under this name on the Field tab.
Global Action Sets	Lists all the <i>readonly</i> global action sets created in CE Studio.
Placeholders	If the global action set was created with a placeholder then you must enter the static value to use. For example, if the placeholder is for a <i>status</i> then you enter one of the possible status values.
Type Properties	Lists all the properties available in the provider. Select all the properties that you need for the report.

- b. Click **Save** to continue.

At any time you can add additional properties by clicking the **Edit** button next to the module name or remove the module from the **Field** tab by clicking the **Delete** button.

4. You can select another global action set and define another module as described above.
5. Complete and save the report definition in the usual way.

Formatting report fields

In the Report Designer, when setting up a new report, you can change the name of the headings, format field groupings, set sort orders of the fields, and select or deselect the fields not required.

Once all the required fields for the report section are selected:

1. In the Admin Portal, in the Report Designer, go to the **Format** tab for the selected report.
2. Select the report section.
3. Change the order of the columns on the report. Select the field by clicking the lefthand end of the row and then click an arrow button (top right of the page).



Field	Head
action	Action
activity	Activ
end reason	End I

4. All the fields in the report section are listed. You do any of the following to each of the selected report fields.

Option	Description
Heading	<p>Note Copy these headings when configuring CE Studio components for report data. Values are case sensitive.</p> <p>If you intend to use this data in a CE Studio data transformation then remove spaces from the heading.</p> <p>The headings are automatically generated when you selected the fields. To rename a heading, click the field and type over the default heading.</p>

Option	Description
Format	<p>There are a wide range of date formats. By default, a date is stored as a datetime object. You can either change how the datetime is stored or change the way the datetime is formatted:.</p> <ul style="list-style-type: none"> • To preserve it as a datetime and just change the formatting, choose one of the Date (dd/mm/yyyy) formats. • To change the datetime to a date, choose Date Time As Date. <p>For fields intended for use in data transformation calculations in CE Studio, you may want to change numeric fields to Whole Number or Decimal Number fields.</p> <p>For more complex formatting, use a user-defined field as described in Creating user-defined fields for reporting.</p>

Option	Description
Group By	<div data-bbox="876 304 1469 499" style="background-color: #f0f0f0; padding: 10px; margin-bottom: 10px;"> <p>Note It can be more efficient to aggregate data in Report Designer rather than send the data to CE Studio for aggregation.</p> </div> <p>How the fields are processed in the report:</p> <ul style="list-style-type: none"> • Group By to make a group of rows based on the values of a specific column or expression (the default) • Sum total sum of a numeric column • Average returns the total average of a numeric column • Count Of returns the total count of a column • Minimum Value shows the minimum value of a numeric column • Maximum Value show the maximum value of a numeric column • Standard Deviation returns the statistical standard deviation of all values in the specified expression <p>Use these functions to show the numerical results of the data, as opposed to the details.</p>
Sort Option	<p>You can change the sort method of each field (unsorted, ascending or descending). There can be more than one field used to sort the data. You can specify the order in which the data is sorted in the Sort Order column.</p>
Sort Order	<p>You can set the order of the fields in the report section by clicking the arrow icons on the side. To change the sort order, select the field and then click to move the field to the desired position. We recommend that you always check the order of the fields, as they can move when you edit the report.</p>

Option	Description
Show	<p>You can sort by a field and also exclude that field from the report. To do this, select the Show check box.</p> <div> <p>Note Fields are included in the report when the check box is <i>not</i> selected.</p> </div>

Formatting example

In this example, you want a report to show the numerical values of the inbound calls by the month the call was received. Instead of running the report details and manipulating the data within Excel, you can achieve the requirements by formatting the fields:

- Inbound Call Date – To group by Month only.
- Inbound Call Time – The user originally was going to show the maximum value of the call time, which would have shown the latest call, however they decided against it and deselected this field so that it would not appear in the report.
- Inbound Call Client Name – Changes to a Count of to show the number of clients that called per month.
- Inbound Call Duration – is showing an Average call duration per month.
- Inbound Call Queue Time – is copied to show the Maximum and Minimum Queue time.
- Operator Name – has been deselected to exclude the field from the report.
- Inbound Call Type – is deselected to exclude the field from the report.

Field	Heading	Module	Format	Grouping Options	Sort Options	Sort Order	
Inbound Call Date	Inbound Call Date	Inbound	As Stored	Group By	Unsorted	3	<input checked="" type="checkbox"/>
Inbound Call Time	Inbound Call Time	Inbound	As Stored	Group By	Unsorted	1	<input type="checkbox"/>
Inbound Call Client Name	Inbound Call Client Name	Inbound	As Stored	Count of	Unsorted	2	<input checked="" type="checkbox"/>
Inbound Call Duration	Average Call Duration	Inbound	As Stored	Average	Unsorted	4	<input checked="" type="checkbox"/>
Inbound Call Queue Time	Minimum Call Queue Time	Inbound	As Stored	Minimum value	Unsorted	0	<input checked="" type="checkbox"/>
Inbound Call Queue Time	Maximum Call Queue Time	Inbound	As Stored	Maximum value	Unsorted	5	<input checked="" type="checkbox"/>
Operator Name	Operator Name	Activations	As Stored	Group By	Unsorted	6	<input type="checkbox"/>
Inbound Call Type	Inbound Call Type	Inbound	As Stored	Group By	Unsorted	1	<input type="checkbox"/>

Filtering data in report fields

In the Report Designer, when setting up a new report, you can filter the data to exclude certain data. You can also select which date field to use when running the report for a date range.

1. In the Admin Portal, in the Report Designer, go to the **Filter** tab for the selected report.

2. Select the report section.

Date Filter field

Many of the report modules have multiple date fields, for example:

- Chat has **chat start time**, **chat end time**
- Inbound Emails History has **email start time**, **email end time**
- Activations has **activation time**, **wrap up time**, **activation end time**

When you select a date range for a report, the report is run for the first date field selected for the report definition as listed on the **Format** tab. To apply the date range to a different date field, for example to select data based on email start time rather than email end time, set the field that you want to use in the **Date Filter Field** on the **Filter** tab of the report definition.

Filtering example

You can now filter on any of the fields in the report section. The value in the **Value** column must be enclosed in single quotes. In this example there are two filters applied to the report section:

- The Inbound Calls section is filtered by the Call Type of the call where the type is a Normal Operator Call.

And:

- The report section excludes any calls picked up by agent Carly Cole

Filed Header	Operator	Value	
Inbound Call Type	equal to	'Normal Operator Call'	And
Operator Name	not equal to	'Carly Cole'	Done
--None--	equal to		Done
--None--	equal to		Done
--None--	equal to		Done

Filtering example

In this example, as the user wants to apply a second filter, the first filter ends with **And**. If there was only one filter, **Done** would have been selected.

Saving reports

1. In the Admin Portal, in the Report Designer, go to the **Save** tab for the selected report.
2. Enter the details for the saved report:

Field	Description
Report Name	Enter a meaningful name for the report.
Visible To	For fully-featured tenants only: The report can be run by everyone who has the Agent role and higher. To restrict access to a specific group of people set up a skillset and assign this skillset to the people who need to run the report.
Description	A description that will be shown on the Report List page.
Standard	<p>Whether the report is available to all contact center units:</p> <ul style="list-style-type: none"> Select this option to make the report available to all the contact center units. <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;"> <p>Note The report will be filtered by the settings on the Contact Center Unit tab. Review these settings to check that they are appropriate for a Standard report.</p> </div> <ul style="list-style-type: none"> Deselect this option to make the report available only to the contact centers selected on the Contact Center Unit tab.
Note	This information is for your use and won't be shown on the Report List page.

Report output settings

In the Report Designer, the Setting page allows you to configure the output settings of the report for **Excel**, using an Excel template. The type of report that is required can be specified at the top of this page. How the report is sent is set on the Schedule page.

Any section that has been created in the report will be listed in the **Sections** table. Each section will appear on a different Excel sheet:

Sheet Number	If left unchanged, the sections added to the report will appear in the order that they were selected. To reorder them, enter the sheet number.
Sheet Name	By default, the sheet number is the sheet name. You can set it to the name of the section in the report definition.
Starting Cell	By default, the data starts in cell A1. This may override your column headings.

Copy Data	If selected this will overwrite the column headings in the template.
-----------	--

On the Setting page you can also:

- Download a template created in the Report Designer.
- Upload a template created in Excel. See [Creating report templates in Excel](#) for details.
- Compress reports that you plan to distribute by email.
- Prevent the export of the field headings. You might use this option when headings are already included in the template.

Note that fields such as CLI numbers, dialled numbers and so on will be exported to Excel as the general text type.

Scheduling reports

Scheduling reports in Report Designer allows you to automate the reports so that they can be sent out at specific times, days of the week or months to stake holders or generated for display in a CE Studiowallboard. You can also create multiple schedules for the same report as some stake holders may want the report at month end and others every day, for example.

To access these settings in Report Designer, select the report on the **Reports** page and click **Schedule**.

1. When creating a Report Schedule, you need to enter a schedule name. The name must be unique for in-memory reports.
2. Select the timezone that will be used when entering the report delivery time. The delivery time is then converted to UTC when you save the report.
3. If you are authorized to view unmasked phone numbers then you can show unmasked numbers in the report by selecting SELF from the **Run As** list. Leave this empty to use masked numbers.
4. In **Report Delivery Time**, decide when the report is generated and for how long:

Report Delivery Time	Details
From, To	The first report will be generated on this date.
To	The last report will be generated on this date. Note In-memory reports will also expire after this date.
Frequency	How often the report should be generated. For example, to generate a report every ten minutes, select Minute followed by 10 Time(s) .

Report Delivery Time	Details
Time	The time when the report is generated. For example, select 07 : 30 to generate the first report at 07:30 and then at the selected frequency.

5. In **Report Data Range**, decide how much data is included in the report by selecting one of the following options:

Report Data Range	Details
Data For	In Data For you can specify the number of days/weeks/months/years the report generates data for. For example, if set for 3 hours, from the time the report is run, it will generate the last 3 hours of data.
	You can run the report by day to date, week to date, month to date, or year to date. For example, if the parameters are set to month to date, the report will generate data from the beginning of the current month up to the date the report was run.
	You can run the report for a date range.

6. In **Report Delivery Options**, decide on the report format:

Delivery Option	Details
Email	<p>For email, you enter the distribution details. The default from address is the email address of the Account Manager but you can select any system email address on the Email From list. Separate multiple recipients with a comma. In Report File Name, enter the title of the report attached to the email.</p> <p>By default, the files are delivered as Excel files, but you can deliver them as comma-delimited, by including the suffix <code>.csv</code> at the end of the file (such as <code>filename.csv</code>).</p>
FTP	<p>For FTP, you schedule a file to be uploaded to a location on a server. The FTP Address is the address of the server that the file is to be uploaded to. For example, <code>ftp://ftp.drivehq.com/</code>. You must also enter the username and password to be used when logging into the ftp server and optionally an SSH key file and pass phrase. The Report File Name follows the same format as the email delivered reports.</p>

Delivery Option	Details
In Memory	<p>The report is cached in memory for display in a CE Studio component, such as a data grid or chart. An action configured in the IFS CE Reports provider will pull the report data into CE Studio.</p> <p>Only the latest version of the report is cached. The cached report will expire on reaching the To set for the report schedule.</p> <div> <p>Note In-memory reports are intended to hold a finite number of records. The practical limit will depend on your data set. For example, where the data set is simple, with a limited number of columns, containing mainly numeric data or short strings such as labels, then it may be several 100,000 records. However, where the data set is more complex, with a large number of columns, and more complex data such as long strings then the practical limit will be far less.</p> </div>
Max Record Count	<p>Since the report is intended for use in a CE Studio component, you must limit the number of records in the report. See the above note for details.</p>

- Enter a report filename with an appropriate file extension. Supported file formats are shown in the field. For example, if the report template contains macros then you must use the xlsx format.

Saving the schedule

To save the schedule, click **Save**. The schedule is validated to catch any errors and if everything is OK, added to the list of available schedules. You can then edit, delete, or create another schedule.

Note Editing the existing schedule will cancel any queued jobs for the schedule. You will need to manually delete the cancelled jobs.

Checking that scheduled reports have run

To check that a scheduled report has run, go to **Report Designer > Delivered Reports**. This acts as an audit trail and lists the top 1000 records for the selected contact center.

Designing reports for CE Studio apps and templates

You can generate reports in the Admin Portal for:

- CE Studio apps and templates
- CE Studio apps for use as wallboards. Wallboards present agents working in Agent Desktop with charts and reports that can be accessed on any device. The wallboard is accessed through the Admin Portal on the **Realtime Statistics > Wallboard** page, and also using the URL that's generated in CE Studio for previewing the app.

To create a report for a CE Studio app, you create the report definition in Report Designer and configure a schedule for running an in-memory report. The report can then be consumed by the IFS CE Reports provider in CE Studio. Timers configured in CE Studio are used to update the apps with the latest generated report.

Note For some example CE Studio templates that use scheduled, in-memory reports, see the Samples page in the CE Studio help.

Data formatting and transformations

We recommend that you prepare the data that you want to use in the CE Studio app as far as possible in Report Designer. For example:

- Rename the fields with shorter or friendlier names more suitable for use in data grids and charts
- Aggregate data using the Group By option
- Reformat data, for example, change a decimal to a whole number. However, do not change the date format if you intend to use it in data transformations. You need the As Stored type, which is DateTime.
- Sort the data

You can also configure data transformations as part of CE Studio but, depending on what you want to achieve, it is often more efficient to perform the transformation as part of the report definition.

To design a report for a CE Studio app

1. In the Admin Portal, create a report definition in the usual way. See [Designing a new report](#).

If required, you can:

- Include data from external data sources. See [Including external data in reports](#).
- Filter the data in the report. See [Filtering data in report fields](#).

2. Format the report fields on the **Format** tab. The field names in the **Heading** column become the properties that you will use in CE Studio Designer. You can therefore rename the fields.

Remove spaces from the names as these are not supported in CE Studio. Note that date fields intended for use in data transformations should be left as the DateTime type, which is the As Stored format.

See [Formatting report fields](#).

3. Save the report definition. See [Saving reports](#).
4. Schedule the report. Make sure that:
 - The name of the report schedule is unique across all the contact centers belonging to the tenant. See [Saving reports](#).
 - Make sure that you select the **In Memory** delivery option. This makes the generated report available to the IFS CE Reports provider. See [Scheduling reports](#).
 - The To date for the report schedule is set correctly. The cached report will expire after this date and will be deleted.

Running reports

You can first preview the report with a sample of the data using the View option and then export the report.

To run a report in Report Designer in the Admin Portal:

1. Go to the Reports page.
2. Select the report and click **Run**.
3. Set the date range and optionally the timezone:
 - The date range applies to the first date field in the report definition or to the date chosen on the filter page of the report definition.
 - The timezone defaults to the timezone set for the contact center unit.
4. Select a section. Some reports have more than one section to the report, usually done to provide data on more than one tab in Excel.
5. Click **View** to preview the report with a sample of the data.

You can change the sort order of the report by clicking the column headers.

6. If required, export the report to a different format.

Note The CSV format (comma delimited format) is not suitable for data that contains commas.

Advanced report configuration

This section describes some of the advanced report configuration options.

Creating user-defined fields for reporting

In the Report Designer, there are two types of user-defined fields. They are either a Calculated or a Value Defining field.

1. In the Admin Portal, in the Report Designer, go to the **Fields** tab for the selected report.
2. Select the report section.
3. Click the **User Defined Fields** button.
4. For a calculated field:
 - a. Enter the name of the field.
 - b. Add the appropriate fields to the calculation by selecting from the **Field** list.
 - c. Enter the calculation. In this example, the field finds out how long the caller is on the phone before the agent picks up the call. This is done by writing a formula to subtract the queue time from the ring time.:

```
Inbound.dbo.sys_INBOUND_CALL_RING_TIME -  
Inbound.dbo.sys_INBOUND_CALL_QUEUE_TIME
```

5. Click **Add Field**. The field then appears in the User Defined Fields module. Hover over the field to see the field definition. If you decide not to use the field in the report definition then you can deselect it here rather than delete the field from the User Defined Fields page.
6. Click the **Field** tab to go back to the main page.

Changing field values

In addition, to a calculated field, you can change the value of the data. Instead of entering a calculation, you enter a query. All queries are prefixed **CASE** and suffixed as **END**. They are similar to If Functions in Excel. For example:

```
=If(Field Value =0, True Result, False Result)
```

is the same as:

```
CASE 'Field Value' WHEN '0' THEN True Result ELSE False Result
```

In this example, the field shows the calls where 0 oranges were sold as No Sale and the calls where 1 or more sales were made as Converted:

```
CASE 'Oranges_Sold' When '0' Then 'No Sale' Else 'Converted' End
```

The query is asking the database to show a value of No Sale when the value in the 'Oranges Sold' field is 0, and to show 'Converted' in the calls with values of more than 0.

Using joins between modules in reports

In the Report Designer you can combine data from different sources in the same report by using joins. For example, you can combine:

- Call logs
- Real-time data for the contact center (provided by a global action configured in CE Studio Designer)
- Third-party data (also provided by global actions)

Each data source is available as a separate module in the Report Designer.

Note For information on using global actions, see [Including external data in reports](#).

When there are multiple modules selected in a report section, you need to combine the fields from two or more modules by using values common to each. For example, a module can be joined to another module by the Activation ID field.

There are four type of joins:

- **Inner Join** returns all rows when there is at least one match in BOTH module tables
- **Left Join** returns all rows from the left table, and the matched rows from the right module table
- **Right Join** returns all rows from the right table, and the matched rows from the left module table
- **Full Join** returns all rows when there is a match in ONE of the module tables

The Inner and Left joins are the most commonly used.

Note Fields from external data sources can also be used in joins. See [Including external data in reports](#).

Example 1

You want to add the name of the agent that took the call to the data. However, the data in this module table only includes the Activation ID. Therefore, you need to join the table that lists the names to the table that holds the call data.

First, you need to determine the common field by comparing the two tables.

Table 1

Inbound Call Date	Inbound Call Time	Inbound Call Client Name	Inbound Call Ring Time	Activation ID
05/06/2013	13:01	The Corner Shop	00:05:23	AC01101

Inbound Call Date	Inbound Call Time	Inbound Call Client Name	Inbound Call Ring Time	Activation ID
05/06/2013	13:15	The Local Supermarket	00:07:01	AC01102
06/06/2013	13:17	The Café	00:03:49	AC01103
05/06/2013	13:23	The Juice Shop	00:06:48	AC01101

Table 2

Agent Name	Activation ID
Amy Anders	AC01101
Bill Brown	AC01102
Carly Cole	AC01103

The common field for this example is the **Activation ID**. Therefore you would use this in the join. Once you have picked the fields that you want to include in the data, including the join to the other module table, you could get results like this:

Result of the join

Inbound Call Date	Inbound Call Time	Inbound Call Client Name	Inbound Call Ring Time	Activation ID
05/06/2013	13:01	The Corner Shop	00:05:23	Amy Anders
05/06/2013	13:15	The Local Supermarket	00:07:01	Bill Brown
06/06/2013	13:17	The Café	00:03:49	Carly Cole
05/06/2013	13:23	The Juice Shop	00:06:48	Amy Anders

Note The field used to join the modules does not need to be included within the results data.

Example 2

When using the module selection tool, the join fields are automatically selected for you, apart from in the case of Entity fields. If you add any fields from Entity tables, you will need to select the joins

themselves. This is not usually necessary although it is always best practise to check that the automated joins provide what are you expecting.

In this example, you want to review an agent's entire day in the contact center, from log on to log off, with the details of the inbound calls they made, including the outcome of the calls.

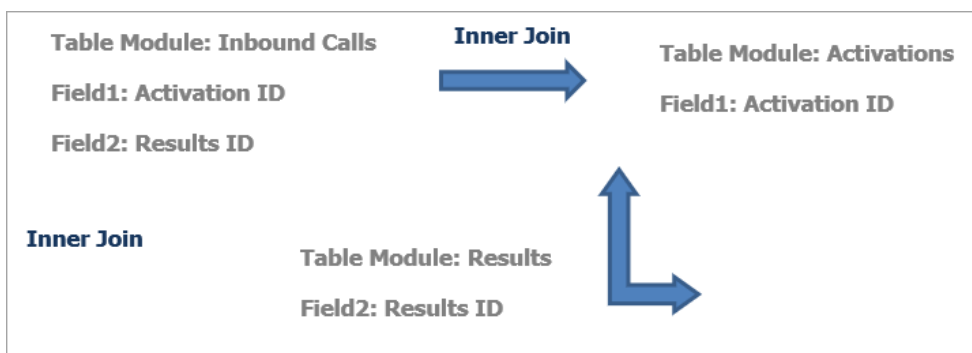
You could do this by using the following joins:



Joining tables using data in a common field

In this example, the Inbound Calls are joined to the Activations module (agent activity) using the **Activation ID** field that the two modules have in common. Then the Activations module was joined to the Results module using the same field. This then includes details of the Results according to what is in the Activations module. As an inner join has been used, the query that will bring back data that matches in both tables.

If you wanted to see the results for all Inbound Calls, regardless of whether the Activation module field (that is Agent Name) is completed, then you would join the Results module to the Inbound module instead as shown below:



Joining tables using data in different fields

The same could be done for a second report section showing the Outbound Calls. However, in this example, you want to show all Outbound Calls. Therefore there can't be a join between Inbound and Outbound calls (which is why there are two sections of data).

Note You can change the module you are viewing, by selecting the section name at the top.

Creating report templates in Excel

The use of an Excel template enables you to distribute the finished report from the system, rather than just the data. It could be that you have a table of formulas that derive from the data, or a macro that manipulates the data, or it may be that they have included a couple of cells that show the date parameters of the data. Whatever the reason, this tool increases your options when presenting the data pulled from the system.

To create a template, open up a new workbook, with all three blank sheets at the bottom. When starting a new template, it is best to delete the Sheets that won't be needed. Normally two sheets are recommended as one can contain the data content that was exported to Excel and the other can be used as a summary sheet, including graphs and tables. You can rename this worksheet, but should make note of the worksheets names when adding the template to the system.

We recommend that you start with the data headings from the system. To ensure that the headings will match the data added:

1. Run a report from the system as a CSV file.
2. Copy and paste the headings into the template.
3. Edit the headings as required, with the knowledge that the data will match.
4. Make a note of the starting cell of the data. You will need this when you add the template to the system.
5. You can now:
 - Change the format and layout of the report
 - Add formulas
 - Add macros to create tables and graphs when the document is opened
6. Once the spreadsheet is complete, check that the template is blank of any data that is not required in the workings of the template.
7. Save the spreadsheet with the XLSM or XLTM extension. You can name and choose a location for the template to upload to the system. For instructions on how to upload a template, see [Report output settings](#).

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Standard reports

IFS Customer Engagement offers several types of pre-designed reports, empowering businesses to optimize customer engagement. Accessible through the Admin Portal under **Standard Report**, these reports provide valuable insights on the performance of the contact center. Users can dig deeper, reviewing call recordings, activation details and many more for better understanding of operational activities.

Standard Report offers the following reports:

Report Name	Description
<i>Inbound Call</i>	This report provides information on all the incoming calls received by your contact center. You can filter the report by a specific User, Call Type, Inbound Number etc.
Inbound Call Efficiency	The Inbound Call Efficiency report provides information on how effectively incoming calls are handled in your contact center.
Outbound Call	The Outbound Call report offers insights into all the outgoing calls made by your contact center. You can filter the report by a specific User, Call Type, Inbound Number etc.
<i>Agent Activity</i>	This report focuses on individual agents' activities, providing information on their performance and productivity. You can filter the report by a specific agent to offer managers easy access to their respective agents.

Report Name	Description
Agent Activity Summary	The Agent Activity Summary report provides an overview of the overall performance of agents.
Agent Logon	This report provides you with the Logon information of agents. It can also be filtered by respective agents.
Monitoring Session	This report provides you with information on monitoring and coaching sessions conducted by managers.
Contact Center Unit	The Contact Center Unit report provides information on the performance of different units or departments within your contact center.
Users per skill	This report lists the number of users (agents) assigned to specific skills in your contact center.
Contact Center Units per Skill	The Contact Center Units per Skill report displays the distribution of skills among the various units or departments in your contact center.
Audit History	The Audit History report keeps track of changes made to the system settings or user accounts.
Deleted User	The Deleted User report logs information about user accounts removed from the system.
Unretrieved Voice Mail	This report provides information on un-retrieved voicemail messages within the contact center.
Deleted Skillset	The Deleted Skill set report provides information on any skill sets removed or deleted from the system.
Call Priority	The Call Priority report categorizes and analyzes calls based on their priority levels.
Unallocated Inbound Number	This report shows any inbound phone numbers that have not been assigned to specific agents or units yet.

Inbound Call Report

This report provides information on all the incoming calls received by your contact center. You can filter the report by a specific user, call type, inbound number and so on.

1. In the Admin Portal, go to **Standard Reports > Inbound Call Report**.
2. Enter the selection criteria for the report.
3. Click **View** to preview the report.

The report has the following columns:

Column Heading	Description
Call Start Time	The start time of the call prior to processing and thereafter delivered to the queue progression for the agent to handle the call.
Contact Center	The name of the contact center to which the inbound call was delivered.
Agent Contact Center	The default contact center of the agent.
Contact Center Unit	The subunit of the contact center (such as Marketing, Finance, Logistics) to which the inbound call was delivered.
Agent	The agent who accepted and handled the inbound call.
Station Number	A unique numeric ID which is associated to the agent's login.
Caller ID	The inbound phone number of the caller. Also known as the Calling Line Identification (CLI) in the UK.
Restricted Caller ID	Indicates if the caller ID was masked. It is impossible to retrieve a masked phone number (for example+447888666555 to +44XXXXXXXXXX).
Inbound Number	Indicates the number dialed by the customer. This is the number associated with the contact center unit.

Column Heading	Description
Call Reference	The reference number associated with the inbound call.
Call Type	Indicates the type of inbound call. Click here for further details.
Ring Duration (s)	The number of seconds the inbound call was ringing or allowed to ring before it was answered.
Queue Duration (s)	The number of seconds the inbound call was queued or allowed to be queued.
Connected Duration (s)	The duration of the call from the time it was answered by the agent to the point of disconnection.
Caller Hung-up	Whether the caller hung up or not (Yes/No).
Call Diverted From	Name of the contact center the call was diverted from. The reference of the site.

Call Types

The below list indicates the type of calls that may be reported in the Inbound Call report.

1. DDI (inbound phone number) not found.
2. DDI (inbound phone number) disabled.
3. DDI (inbound phone number) quota exceeded.
4. CLI not in whitelist.
5. CLI in blacklist.
6. Too many internal diverts.
7. DDI context not registered.
8. Client account not found.
9. Client account is suspended.
10. Client account is terminated.
11. No suitable operator (agent) logged on.
12. Call diverted.
13. Call could not be diverted.
14. Office is closed.

- 15.Call busied.
- 16.Caller rang off.
- 17.Normal operator call.
- 18.Caller left a voicemail message.
- 19.Caller declined option to leave a voicemail message.
- 20.Caller retrieved one or more voicemail messages.
- 21.Caller failed to logon to retrieve voicemail messages.
- 22.Other retrieval option.
- 23.Caller rang off during divert.
- 24.Operator (agent) not available for diverted call.
- 25.Call rejected.
- 26.Data was captured by a queue progression script.
- 27.User record not found.
- 28.IVR call (to an inbound number that has a queue progression script).
- 29.Skillset not found.
- 30.Test call failure.
- 31.Test call success.
- 32.Caller rang off in IVR.

Outbound call status types

The below list indicates the type of calls that may be reported in the outbound call report.

- No resources
- No lines
- Call collision
- Call failed
- Number engaged
- Not answered
- Call aborted
- Normal call
- Unknown

Status Types and Reasons :

Status Type	Reasons
No resources	<p><i>Automatically updated by the telephone network.</i></p> <p>The telephone system could not allocate the required resources to complete the outbound call. This issue may arise due to :</p> <p>Insufficient Call Recording Resources.</p> <p>For instance, when receiving a call from a media source, the system may face a shortage of allocated recording resources.</p>
No lines	<p><i>Automatically updated by the telephone network.</i></p> <p>The calls are routed through ZIPs in iMedia.</p> <p>In the contact center, a specific number of outbound calls are allocated to each line. If a calls made without an available allocated line, it will result in a "no lines available" status.</p>
Call collision	<p><i>Automatically updated by the telephone network.</i></p> <p>We use Zip-trunk trunk groups to handle calls.Calls are managed through a channel, and we check the channel's status (whether the channel is free) to ensure it is available.The system does not support simultaneous inbound and outbound calls on the same line, which can result in call collisions.</p> <p>The records will be stored.</p>
Call failed	<p><i>Automatically updated by the telephone network.</i></p> <p>This is due to failing a call because of unspecified error or timeout issue</p>
Number engaged	<p><i>Defined Status</i></p> <p>The line is busy when attempting the outbound call.</p>
Not answered	<p><i>Defined Status</i></p> <p>The outbound call is not picked up by the recipient</p>
Call aborted	<p><i>Automatically updated by the telephone network.</i></p> <p>When the agent initiates the outbound call but terminates or disconnects it before the receiver/user answers.</p>
Normal call	<p><i>Defined Status</i></p> <p>A regular success outbound call</p>

Status Type	Reasons
Unknown	<p><i>Automatically updated by the telephone network.</i></p> <p>The status of the outbound calls is not included into any of the above categories</p>

Agent Activity Report

This report focuses on individual agents' activities, providing information on their performance and productivity. You can filter the report by a specific agent.

1. In the Admin Portal, go to **Standard Reports > Agent Activity Report**.
2. Enter the selection criteria for the report.
3. Click **View** to preview the report.

The report has the following columns:

Column Heading	Description
Call Start Time	The start time of the call prior to processing and thereafter delivered to the queue progression for the agent to handle the call.
Wrap Up Time	The time that the agent wrapped up the relevant activity.
Contact Center	The name of the contact center to which the activity was delivered.
Agent Contact Center	The agent who accepted and handled the activity.
Contact Center Unit	The subunit of the contact center (such as Marketing, Finance, Logistics) to which the activity was delivered.
Agent	The agent who accepted and handled the activity.
Station Number	A unique numeric ID which is associated to the agent's login.
Call Reference	The reference number associated with the activity.

Column Heading	Description
Activation Type	A task or activity handled by the agent. Type (media type): call, voice mail, email, social media, chat
Charged Duration (s)	Total Time the agent was connected to the caller (could be considered as <i>chargeable</i>).
Uncharged Duration (s)	After call work to complete or wrap up the call, such as updating notes, records, making additional calls and so on. The amount of time after the main activity is also referred to as the Wrap up time, end of an activation.
Total Duration (s)	Start time to end time of the activation (presented to dismissed).

Realtime Statistics for contact centers

The Queue Statistics page reports on *absolute* priorities of all the activations in the queue while reports such as Today's Email Summary reports on *relative* priorities as set for the activation type.

Queue Statistics

In the Admin Portal, priority ranges from 1 through 9 where 1 is the lowest priority. The Queue Statistics page represents the values as follows, where Idle is the lowest priority:

- 1 Idle
- 2 Very Low
- 3 Lowest
- 4 Low
- 5 Below Normal
- 6 Normal
- 7 Above Normal
- 8 Sensitive
- 9 Emergency

How activations are reported on the Queue Statistics page depends on the *default priorities* of the different activation types as set for the contact center unit. For example, if the default priority for emails is 2 then the Queue Statistics page reports email priority as Very Low. For example:

Default Priority for contact center unit	Queue Statistics page
Inbound calls 5	Normal priority
Chat 3	Low priority
Email 2	Very Low
Workflow 4	Below Normal
Social Media 2	Very Low

Today's Email Summary

This page shows the adjusted priorities relative to the default email priority.

You can adjust the default priority for an activation type in the definition or as part of the queue progression script. You can raise or lower it by a few points relative to the default priority. For example, if the default priority for email at the contact center unit is 2 then you can raise it to a 4 (Highest). However, *Highest* is actually a fairly low priority when compared to an activation type with a higher default priority.

The relative priorities are:

Relative Priority	Action
Highest	Raise email priority to the highest (4)
High	Raise the priority slightly (3)
No Change	Keep the default priority (2)
Low	Lower the priority (1)
Lowest	Also 1 – you can't lower it any further if the default priority is 2

Note Where the default priority is already high, for example 8, then selecting High and Highest will be the same.

Consumption reports

Consumption metering provides tenants with the capability to monitor usage. You can view the usage for your tenant, in the Admin Portal, on the **Standard Reports > Consumption Summary** or **Consumption List** report.

The reports show sign on durations in milliseconds:

- Any IFS Customer Engagement app (Studio Designer, Admin Portal, Agent Desktop)
- Public portal
- Portal

The reports also show the number of:

- Appointments handled through Last-Mile Customer Portal (not the number of emails, SMS messages or clicks)
- Call recording downloads
- Call recording retrieval requests (ie retrieval from cool storage tier)
- NLP categorization based on the trained NLP model

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Users

You can add users to control access to portals and other CE web apps such as CE Studio Designer Agent Desktop in the Admin Portal.

Portal users

A portal user is someone, such as a customer, supplier, partner, who needs to sign onto the tenant's portal. This type of user doesn't have access to the Admin Portal, CE Studio Designer or Agent Desktop.

Access to the CE Studio portal apps on the tenant's portal is controlled by the use of the portal user role, user groups and portal landing categories. For further details, see [Adding portal users](#).

Note You do not need to add portal users for access to public portal apps, either access is open to all (anonymous users) or you can implement an alternative method of authentication.

Studio administrators

This role has the highest permissions. Studio administrator can, for example, grant the right to view unmasked phone numbers. For details, see [Masking phone numbers](#).

Note Once the CE deployment is operational, you should review who has the Studio administrator role in order to limit or remove third-party access to sensitive information.

Agents, supervisors, contact center managers

Important Changes to existing user accounts in the Admin Portal will not take effect until their access token is refreshed, which will take approximately 15 to 30 minutes. Alternatively, the affected user can sign off and on again, in which case the changes are immediately applied.

Each contact center is unique, but a common setup for agents is:

- **Default Call Delivery Number** set to **Integrated VoIP End Point**
- **User Role** set to **Agent** for all agents
- **Require Time Keeping** selected for all agents
- **Call Recording Option** set to **Retain all Calls**
- **Default Associated Contact Center Unit** should be set to the contact center unit where the agent works most of the time and where they need to be able to dial out from idle or where the Address Book is to be used to transfer calls from one agent to another.

Supervisors could be configured as above, but without **Require Time Keeping** and with **Enable Ability to Assist/Coach**.

Users sign on to Admin Portal, CE Studio Designer Agent Desktop using the credentials for one of the following:

- Their Microsoft account
- Their Azure Active Directory account - before you can configure user accounts with single sign on, you need to request that an SSO deployment is configured for the tenant in IFS Service Center. You can view the SSO deployment, and configure a user group for it on the **Studio > SSO Deployment** page.

User roles

The user role determine what each user can do in the Admin Portal. The permissions for the roles in the following table are cumulative, for example, a Supervisor also has all the permissions of an Agent.

In the Admin Portal, go to the **User Management > Page Permission** page to see the pages to which each role has access, and the type of permission.

User Role	Notes
Portal User	The lowest permission level. Lets users sign on to the tenant's portal and run CE Studio Portal apps. These users cannot access the Admin Portal or Agent Desktop.

User Role	Notes
	<p>Note Not available to self-service tenants.</p>
Agent (Operator)	<p>Lets users access the Admin Portal to modify existing users and sign on to Agent Desktop.</p> <p>Note Not available to self-service tenants.</p>
Supervisor	<p>For contact center supervisors:</p> <ul style="list-style-type: none"> • Full control over users, such as setting skills and deleting users. • Manage, for example, the media scripts and other resources for queue progression, the address books and blacklists used in Agent Desktop. • All reports for the contact center. • Force log out agents from Agent Desktop (agents with the same or lower user role). <p>Note Not available to self-service tenants.</p>
Manager	<p>For managers of a single contact center (and any contact center units it contains). Gives additional permissions to change the way the contact center is configured.</p> <p>For tenants with contact centers, give the ability to force log out supervisors from Agent Desktop or any user with the same or lower user role.</p>
Global Manager	For managers of multi-center contact centers.
Studio Administrator	<p>For application configurers who develop and maintain CE Studio apps.</p> <p>Since this role has the highest permissions, Studio administrator can also grant the right to view unmasked phone numbers. For details, see Masking phone numbers.</p>

User Role	Notes
	<p>Note Once the CE deployment is operational, you should review who has the Studio administrator role in order to limit or remove third-party access to sensitive information.</p>
Technical	The highest permission level and reserved for IFS Services who set up and manage the CE deployments.
Custom	<p>A custom role. You start from one of the pre-existing roles and then remove the Read, Write, Edit and Delete permissions not required for the role.</p> <p>Note You can only create a custom role from your current role or lower. For example, a Supervisor can't create a custom role from the Manager role.</p> <p>Note To add a translation for the role name so that it displays as <code>A Role</code> and not as <code>{{A Role}}</code> go to Studio > Message Store and add a message where the message type is Label and the Message Id is <i>A Role</i>.</p>

Adding portal users

A portal user is someone, such as a customer, supplier, partner, who needs to sign onto the tenant's portal.

Start by adding a portal user for each person who will use the portal as described below, and then invite the end-users to sign up.

Note You must also assign each portal user to one or more user groups (see below). This step gives the user access to the corresponding area of the portal.

Each tenant has its own portal. If an organization has multiple tenants then a user may need to register separately with each of the portals.

To add a portal user:

1. In the Admin Portal, go to **User Management > Users**.
2. Click **New**.
3. Enter their details.

Field	Description
First Name, Surname, Initial	Only the first name and initial is mandatory.
Contact Center	Not required for a portal user (but the default contact center is always selected).
Display Name	The name that may be shown in the portal.
User ID	<p>The email address that identifies the user when they register on the portal's sign up page and later whenever they sign on. This is also the email address that will be used to verify the individual when they register on the sign up page.</p> <p>The user ID can be one of the following:</p> <ul style="list-style-type: none"> • Email address local to the portal. • IFS Cloud email address – the email address you enter must therefore match the <i>user email</i> address in the user's IFS Cloud user account.

Field	Description
	<p>Note When using IFS Cloud as the identity provider, users sign on by clicking the Keycloak-oidc button and then enter their username and password. The email address recorded in their user account will be validated against the email address recorded in the Admin Portal.</p>
Email Address	Optional, for example, for a secondary email address.
User Role	Select the Portal User role.
Portal Landing Category	<p>This determines which landing page the user sees after signing on to the portal.</p> <ul style="list-style-type: none"> • Leave this empty if there is only one landing page. • If there is more than one landing page category then you can leave this empty if you want the portal user to use the default landing page. • Select the category that corresponds to the landing page you want to use. Note that the landing page must belong to the same user/access group as the portal user otherwise the portal user will see an error after signing on to the portal.
Timezone	The timezone of the user's current location.
Language	Not required for a portal user (but the default language will always be selected).

4. Click **Save**.
5. Assign the portal user to one or more user groups on the **User Management > User Group** page. This step gives the portal user access to the corresponding area of the portal. A portal user that does not belong to any user groups will see an access denied error after signing on to the portal.

Adding agents for staffed contact centers

Note Users must have a Microsoft account as all users sign on to Agent Desktop and the Admin Portal using their Windows credentials.

To add a user for an agent who will be working in Agent Desktop:

1. In the Admin Portal, go to **User Management > Users**.
2. Click **New**.
3. Enter their personal details.

Field	Description
First Name, Surname, Initial	Only the first name and initial is mandatory.
Contact Center	Select the contact center for the agent. They will be able to sign on to any of its contact center units. A default contact center is required for making outbound calls from the home page.
Display Name	The name that's shown in Agent Desktop and the Admin Portal.
User ID	The email address that identifies the agent's Microsoft account and which is used when the agent signs on.
Email Address	For future use.

4. Set up the audio connection options that will be available to the agent in Agent Desktop.

Field	Description
Work Number Extension Number	These must be phone numbers configured for the contact center.
Allow Call Delivery to...	Select this option to set the number as an audio connection option for the agent in Agent Desktop.
Home Number	For agents working remotely.
Mobile Number	To deliver calls to a mobile phone.

Field	Description
Other Number	For any other type of phone number.
Default Call Delivery Number	The default audio connection option for the agent in Agent Desktop.
Nailed-up connection	<p>Use this option for agents making campaign calls.</p> <p>The system will keep the connection (Agent call) open until the agent either signs out of Agent Desktop or manually disconnects using the Audio options in Agent Desktop. This maximizes dialing efficiency during the campaign.</p> <div> <p>Note When the first campaign call is dialed for an agent, the system makes a call to the browser (VoIP) - this is the agent call. It also simultaneously dials the outbound call.</p> <p>If the agent call fails then the outbound call is immediately disconnected and the recipient of the call sees a missed call on their phone (but the phone does not ring). The Outbound Call report will show that the agent call has <i>Call Failed</i> status and the Progressive dialler call has the status <i>Call aborted</i>.</p> </div>
Agent Call Disconnect Delay	When the Nailed-up connection option is cleared, you can enter a delay in the field (where, for example, 1 is 0.1 of a second). If nothing is entered then the disconnect delay is the system default (2 minutes).
Call Answer Timeout (Secs)	Automatic call answering takes over after the number of seconds entered here.
Enable Integrated VoIP EndPoint	Allows calls to be delivered to the agent over the internet. Agents must use the Chrome browser and the browser must have access

Field	Description
	to the microphone. See <i>IFS Customer Engagement Agent Desktop User Guide</i> .

5. Select their user role from the **User Role** list. See [User roles](#) for details.
6. Complete the setup of their user account:

Field	Description
Require Time Keeping	<p>Select this option if you want to the agent to select a reason every time they make themselves unavailable.</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>Note This can also be set for the contact center on the Contact Center > Contact Centers page.</p> </div>
Enable Ability to Assist/Coach	<p>Select this feature for supervisors who will use Agent Desktop for:</p> <ul style="list-style-type: none"> Monitoring: allows you to listen to the call without the agent being able to hear you. Coach: allows you to listen to the call and prompt the agent, without the caller being able to hear you. Assist: allows you to join the call.
Do Not Allow Multiple Concurrent Logons	<p>For users working in the Admin Portal only, select the option to prevent that person from logging on to both the Admin Portal and Agent Desktop.</p>
Allow to View Unmasked CLI	<p>When selected, the user can view caller IDs. You must have the Studio Administrator role in order to grant this permission to the user.</p> <p>For background information, see Masking phone numbers.</p>

Field	Description
Default Caller ID	<p>Enter a Caller ID (phone number) if the agent needs to make outbound calls. It is not possible to dial out using a number that is unknown to the system.</p> <p>You can hide the number from the recipient and show the contact center unit default caller ID instead. This is controlled by the Use Agent Caller ID for Outbound Calls on the Media Management > Advanced Settings page.</p> <div> <p>Note If you enter a number that is not one of your phone numbers then you will need to request IFS Services to verify that the number belongs to you.</p> </div>
Default Associated Contact Center Unit	The name of the contact center unit where the agent works most often.
Call Recording Option	<p>Whether you want to record the agent's calls:</p> <ul style="list-style-type: none"> • Retain All Calls: stores recordings of all the agent's calls for inbound numbers where call recording is enabled. These are stored for the maximum number of days set for the contact center. • Retain Sample: stores a percentage of the agent's calls. The percentage is set for the contact center. • If you do not want to record any calls then leave the field set to Select an option.

Field	Description
Disable Auto Answer	Where the contact center is configured for auto answering: <ul style="list-style-type: none"> • Clear this option to use auto answering for agents handling campaign calls. This maximizes call efficiency. • For agents working in other areas, select this option to disable auto answering. Agents must click to accept calls in Agent Desktop.
No. of Chat Sessions	Allows the agent to handle more than one simultaneous chat session up to the maximum you enter here. Leave this empty if you do not want to deliver chat sessions to this agent.
Timezone	The timezone of the agent's current location.
Language	Select a supported language, for example English (United States).
Avatar	You can upload an image. We recommend uploading a small file.

7. Click **Save**.
8. Assign the user to a contact center: go to **User Management > User Contact Centers**.
 - a. Click **New**.
 - b. On the right, select the user you have just created.
 - c. Choose which contact centers they have access to:

Add	The right column shows the access the user has. Select a contact center on the left and click Add to give the user access to it.
Remove	The left column shows the access they <i>do not have</i> . Select a contact center on the right and click Remove to remove the user's access.

The final step is to assign skills to the user. See [Assigning skills to agents](#).

Adding managers

You can set a user as the manager of a contact center unit:

1. In the Admin Portal, go to the **Contact Center Unit > Contact Center Units** page.
2. Select the contact center unit.
3. Select the user's name in the **Manager** field.

To find out which contact center unit, a user is the manager of, use the Contact Center Unit List:

1. Go to **User Management > User Contact Center Units**.
2. Select the user.
3. The contact center unit managed by the user is listed below.

Removing and restoring users

Note Whilst the user's profile is deleted, their username remains in the system for purposes of historical reporting.

You can remove users that are no longer required in the Admin Portal.

Removing a user

To remove users, go to the **User Management > Users** page, select the name of the user you wish to remove, and then click **Delete**.

To report on users who are deleted, go to the **User Management > Deleted Users** page.

To find out when a user was deleted and who by, go to the **Standard Reports > Audit History** page.

Restoring a user

To restore a deleted user, go to the **User Management > Deleted Users** page, select the user and click **Restore**.

Permanently deleting a user

To permanently delete a user, go to the **User Management > Deleted Users** page, select the user and click **Delete Permanently**.

User groups

User groups are used to control access to tenants and to portal apps.

Note User group names can only contain alphanumeric characters, spaces and underscores.

Creating user groups

A user group can contain both individual users and other user groups.

You create user groups in the Admin Portal on the **User Management > User Group** page.

Portal access groups

You control access to CE Studio portal apps by creating user groups and then assigning the user group to one or more portal apps. In CE Studio a user group is called an access group.

Anyone who requires access to a portal app must belong to the relevant user group. A user that does not belong to any user groups can still register on the portal and sign on the portal but will see an access denied error after signing on to the portal.

SSO deployments

When controlling sign on using SSO then you control how users sign on by configuring a user group. Users belonging to the group sign on with their SSO credentials and users not belonging to the group sign on with the credentials for their Microsoft account.

See [User groups and SSO deployments](#) for details.

User groups and SSO deployments

To create SSO deployments, you need to raise a request in IFS Service Center. Once the SSO deployment is created for you, you can view the details in the Admin Portal, on the **Studio > SSO Deployment** page.

You can control who the SSO deployment applies to by configuring a user group. Users belonging to the group sign on with their SSO credentials and users not belonging to the group sign on with the credentials for their Microsoft account.

Note The SSO deployments are also used in CE Studio when creating providers for endpoints that require single sign on.

SSO Deployment Name	The name given to the SSO deployment when it was created through the IFS Service Center request.
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Type	Is always type 1, that is OpenID Connect (OIDC)
URL	The URL of the Azure AD deployment used by the tenant.
Disabled	<p>A readonly check box that shows the status of the SSO deployment.</p> <p>When Disabled displays as selected, then the SSO deployment is not in use. This means that:</p> <ul style="list-style-type: none"> • Users cannot sign on with SSO credentials. • In CE Studio apps, calls to any providers using the SSO deployment will fail. • Portal users cannot sign on with SSO credentials even if the deployment is enabled for the portal.
Enable for Portal Realm	A readonly check box that shows the status of the SSO deployment for the tenant's self-service portal. When it displays as selected, then the SSO deployment is used for sign on to the tenant's portal (provided that the SSO deployment is not disabled).
User Group	<p>Controls who must sign on with their Azure AD credentials:</p> <ul style="list-style-type: none"> • Select a user group to require the users in that group to sign on with Azure AD credentials. Users not in the group sign on with their Microsoft account credentials. • When no group is selected then everyone signs on with their Microsoft account credentials.

Configuring SSO with a new IAM client

When configuring SSO with IFS Cloud, it is recommended that you create a new IAM Client. This is because redirect URLs are reset in **"IFS_ce"** and **"IFS_ce_sso"** clients with every IFS Cloud upgrade monthly.

When you create a new IAM client and specify a custom redirect URI, it remains unchanged even after an IFS Cloud upgrade.

You can create a new custom IAM client

1. In IFS Cloud, go to IAM Client.
2. Select the option to create a new client.

Important: Avoid using the default 'IFS_ce` and 'IFS_ce_sso' clients in production

3. a) Configure Client Settings

b) Enable the following options :

Enabled , Public Client, Direct Access Granted

c) Set Redirect URI : You need to enter the required redirect URI(s) for the client.

4. Save the configuration

ABOUT IFS

IFS develops and delivers enterprise software for customers around the world who manufacture and distribute goods, maintain assets, and manage service-focused operations. The industry expertise of our people and solutions, together with commitment to our customers, has made us a recognized leader and the most recommended supplier in our sector. Our team of 3,500 employees supports more than 10,000 customers world-wide from a network of local offices and through our growing ecosystem of partners.

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