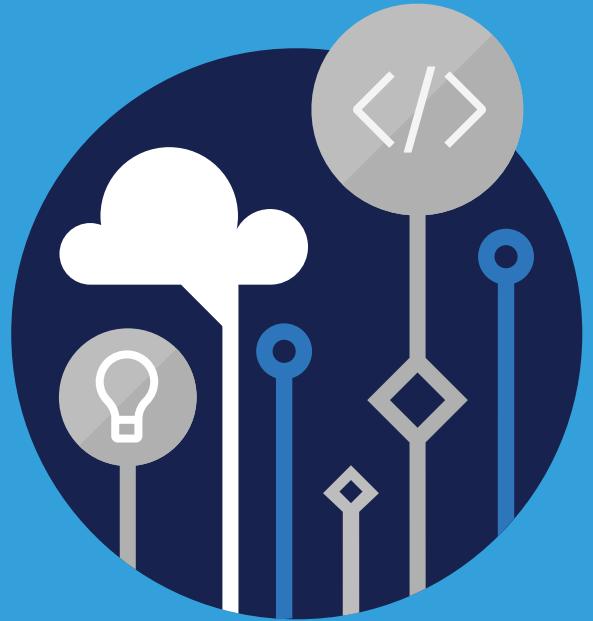


Microsoft
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Course



MB-230T01

Microsoft Dynamics 365
Customer Service

MB-230T01
Microsoft Dynamics 365
Customer Service

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Revised April 2019



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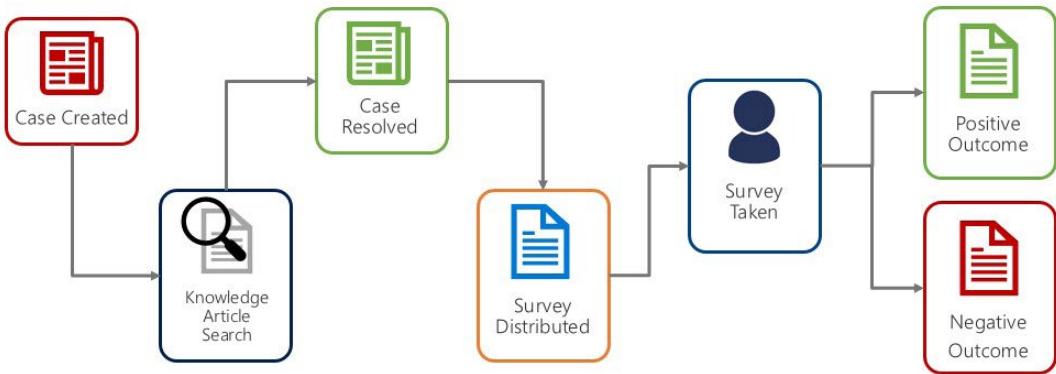
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Module 0 Course Introduction

Dynamics 365 Customer Service Introduction

Customer service is a key aspect of any customer relationship management strategy. Microsoft Dynamics 365 for Customer Service has many features that organizations can use to manage the services they provide to customers.

Customer Engagement



Overview of the customer service landscape

To help you better understand the context of customer service, let's review some real-life customer scenarios.

Today's Customer (Customer 2.0)

- Wants it all and wants it now
- Wants to be in control of the experience without interference



Addressing and solving customer or product issues: Paul Cannon is a customer of Contoso Bicycles. He recently discovered that the suspension on his Contoso mountain bike is defective and isn't working correctly. Paul contacts Contoso Bicycles to discuss the issue and get help with his bike. The issue is logged in the Mountain Bikes Support Request queue.

Rob, the Mountain Bikes Support Specialist for Contoso Bicycles, receives the issue through Customer Service. He then works with Paul to schedule a service activity to repair or replace the defective suspension.

Receiving and answering customer questions: Jim Glynn is a customer of Fabrikam Furniture. He recently received a table that he bought through the Fabrikam website. Jim tries to assemble the table, but he isn't sure he's doing it correctly. He contacts Fabrikam Furniture to ask questions and get help with his table.

Sidney, a Customer Support Specialist at Fabrikam Furniture, receives Jim's questions. He uses the Knowledge Base in Customer Service to find a frequently asked questions (FAQ) document for the table. He then uses that document to help answer Jim's questions.

Collecting and applying customer feedback: Maria is the Products Manager for Tables and Chairs at Fabrikam Furniture. She wants to collect feedback about the at-home assembly process when customers contact Fabrikam. She uses the case management functionality of Customer Service to capture this feedback. She can also analyze the tables and chairs that cause the most issues during at-home assembly, and those that are easier to assemble. Additionally, Maria can determine which instructions for at-home assembly of tables and chairs must be prioritized for editing and review.

Understanding today's customer

Customers today are more informed than ever. Customers are used to getting what they want, when they want it, the way they want it.

Think of the typical process of buying a TV:

1. Before you go to the store to buy the item, you probably do some research on the internet.

-
2. You might select several TVs and compare the different options and features.
 3. You'll likely check out customer reviews and determine which TV you think is best before you set foot in a store.
 4. After you're in the store, you might engage with a sales rep, but you already have a good idea of what you're looking for.

The same process can be applied across different experiences. Customers want to be in control of the experience, and they prefer little or no interference as they work through the process. Customers should have the flexibility to drive the engagement experience but still be able to engage with live agents. But any such engagement should be on *their* terms.

Trends influencing customer service

There are many trends that are currently affecting how customer service works. As a service organization, it's important that you understand what those trends are and how you can take advantage of them to enhance and drive the customer experience. Here are some of the trends influencing service today:

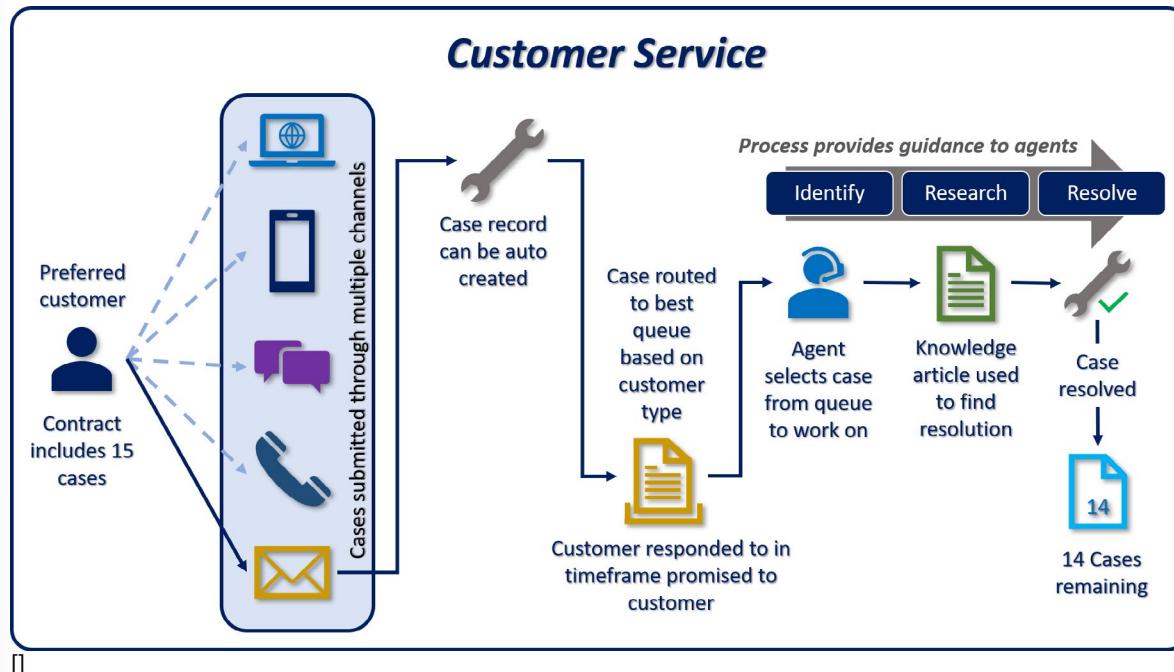
- **Mobile devices:** With so many mobile devices available today, people are no longer engaging with customer service just through a phone call or email. They want to be able to access portal information on their mobile devices or engage with an agent through a chat that they initiate on their device.
- **Social media:** People aren't usually shy when it comes to expressing their thoughts and opinions on social media. You must be able to take advantage of this platform to ensure that customer issues or complaints are handled the same way they would be if the customer engaged directly with support.
- **Self-service:** Self-service can mean different things:
 - It can be as simple as providing a knowledge base that customers can use to find answers to simple procedural questions.
 - It can involve letting customers manage their accounts.
 - Sometimes, it can involve giving customers a way to engage with other customers who are in the same situation.
- **Internet of Things:** With more and more devices connected to the internet and communicating back and forth, it's important to take advantage of the technology used on these devices to engage in service calls. Here are some of the ways this can be done:
 - Anomaly detection
 - Predictive maintenance
 - Using the data that's collected to help drive service offerings in the future
- **Customer engagement:** Engagement is more than just reaching out to gain customers opinions. It can include knowing these details:
 - When is the right time to engage?
 - What channels should be used?
 - What information should you collect?

Module 1 Work with Cases in Dynamics 365 Customer Service

Get started with Cases

Introducing Dynamics 365 Customer Service

Customer service is a key aspect of an organization's customer engagement strategy. Your customers perception of you is often directly tied to the service that you are providing them. As an organization it's important that you find out what your customers' expectations are as well as understand what they consider to be good customer service. Once you better understand what your customers are expecting, you can more effectively implement a strategy to servicing your customers. Microsoft Dynamics 365 Customer Service has many features that organizations can use to manage the services they provide to customers.



Overview of the customer service landscape

To help you better understand the context of customer service, let's review some real-life customer scenarios.

Addressing and solving customer or product issues: A customer at a local bicycle shop recently discovered that the suspension on their mountain bike is defective and isn't working correctly. They contact the shop to discuss the issue and get help with their bike. The issue is created and routed to the organization's Mountain Bike Support Request queue.

Rob, the Mountain Bike support specialist for the shop, receives the issue through Dynamics 365 Customer Service. After speaking with the customer, he schedules service activity to repair or replace the defective suspension.

Receiving and answering customer questions: A customer recently purchased a new table from a furniture stores website. After the table arrives, the customer is trying to assemble it, but they are not sure they are doing it correctly. They contact the furniture company to ask questions and get help with the table.

Sidney, a customer support specialist, receives the customers questions. She uses the company's knowledge base in Dynamics 365 Customer Service to find a frequently asked questions (FAQ) document related to the table. She then uses that document to help answer Jim's questions.

Collecting and applying customer feedback: Maria, a product manager for tables and chairs at the furniture company wants to collect feedback related to the at-home assembly process when customers contact support. She leverages the case management functionality available in Dynamics 365 Customer Service to capture this feedback. By analyzing case data, she can identify the tables and chairs that cause the most issues during at-home assembly, as well as those models that are easier to assemble. Additionally, Maria can determine

which instructions for at-home assembly of tables and chairs must be prioritized for editing and review.

Proactive support: A customer recently purchased a whole home monitoring system from a regional security company. In addition to security cameras, the system included security, smoke, and moisture sensors along with other smart devices. During the evening, one of the moisture sensors located in the customers basement goes off. This triggers an alert that automatically creates and escalates a support issue in Dynamics 365 Customer Service.

Jennifer, a home protection expert, receives the issue and initiates an investigation call to the check on the customer. The customer indicates they are getting water in their basement. They can identify that the customers sump pump isn't working. Since the customer has a backup pump, they unplug the old pump and plugin the new one. The water in the basement subsides before it does any damage.

Understanding today's customer

With all the information and platforms available, Customers today are more informed than they ever have been before. They are used to getting what they want, when they want it, and the way they want it.

Think of the typical process of buying a TV:

1. Before you start the process, you likely do some research on the internet to identify important information like new features & technology, customer satisfaction scores, and top brands.
2. You'll likely check out customer reviews and determine which TV you think is best before you visit the retailer website where you are going to purchase it.
3. While on the site, you might select multiple TV's and do a side by side comparison.
4. If you have questions, you might use the chat option to engage with someone.
5. If you are still unsure, you might visit their brick and mortar store where you can engage with a sales rep. You already know what you are looking for, but now you can put eyes on the TV and touch it.

The same process can be applied across different experiences. Customers want to be in control of the experience. More and more customers prefer little or no interference as they work through what-ever the process is. They want the peace of mind in knowing someone is there if they need them, but they want the flexibility to drive the engagement experience themselves and engage with live individuals on their terms.

Trends influencing customer service

There are many trends affecting how customer service is provided to customers today. As a service organization, it's important that you understand what those trends are and how you can take advantage of them to enhance and drive the customer experience.

Here are some of the trends influencing service today:

- **Mobile devices:** With so many mobile devices available today, people are no longer engaging with customer service just through a phone call or email. They want to be able to access portal information on their mobile devices or engage with an agent through a chat that they initiate on their device.
- **Social media:** People aren't usually shy when it comes to expressing their thoughts and opinions on social media. You must be able to take advantage of this platform to ensure that customer issues or complaints are handled the same way they would be if the customer engaged directly with support.
- **Self-service:** Self-service can mean different things:
 - It can be as simple as providing a knowledge base that customers can use to find answers to simple procedural questions.
 - It can involve letting customers manage their accounts.
 - Sometimes, it can involve giving customers a way to engage with other customers who are in the same situation.
- **Internet of Things:** With more and more devices connected to the internet and communicating back and forth, it's important to take advantage of the technology used on these devices to engage in service calls. Here are some of the ways this can be done:
 - Anomaly detection
 - Predictive maintenance
 - Using the data that's collected to help drive service offerings in the future
- **Customer engagement:** Engagement is more than just reaching out to gain customers opinions. It can include knowing these details:
 - When is the right time to engage?
 - What channels should be used?
 - What information should you collect?

Customer Service core components

Now we'll look at the basic record types that are used for service management.

Types of records

Customer records: In Microsoft Dynamics 365 Customer Service, customer service requests are typically managed in relation to an existing contact or account record. These contacts and accounts are also used by other areas of business operations, like sales or marketing.

- A *contact* represents a person, just as it does in Microsoft Outlook.
- An *account* represents a company, organization, or group of people.

Although these are the typical uses of accounts and contacts, different Customer Service deployments might use these record types differently. But they're both typically referred to as *customers*. For example, when entering the customer on a case, you can select either an account or a contact.

Cases: Cases are the fundamental record type in service management and represent a single incident of any requested service. Different organizations might use different terms to refer to cases: *incidents*, *tickets*, *service requests*, and so on.

In other words, cases are anything in the context of a customer interaction that requires some type of resolution or answer. Many cases can be associated with a single customer record at the same time. In Customer Service, customer representatives can view open and resolved cases from the customer record.

Activities: Interactions between a business and its customers that are considered important enough to track in Customer Service are known as *activities*. Activities can be associated with many kinds of records in Customer Service. You can open the record and find the activities under **Closed activities** or **Open activities**.

- Closed activities are those that have been marked as completed.
- Open activities either haven't been marked as completed or are waiting for completion at a different date and time.

Entitlements: Entitlements can be used to specify how much support services a customer is entitled to. For example, a customer's entitlement in Customer Service might allot ten support cases that the customer can use at his or her discretion.

Entitlement channels: Entitlement channels can be used to specify the type of service a customer is entitled to. Out of the box, there are six entitlement channels:

- Phone
- Email
- Web
- Facebook
- Twitter
- IoT

Knowledge Base articles: The Knowledge Base in Customer Service is a repository of informational articles that help customer service representatives resolve cases. In some organizations, the information in the knowledge base helps employees not only resolve issues but also ask follow-up questions.

Typically, this information is about the company, product questions and answers, and any other kind of information that can help employees better handle customer inquiries, requests, or issues.

Resolution activities: After all the activities for a case are resolved, the case itself can be resolved. After the case is resolved, an activity of the **Resolution Activity** type is created. This activity is found in the closed activities associated with a case. Resolution activities show the case's resolution and how much time was spent on the case.

Queues: A queue is a place to organize and store activities and cases that are waiting to be processed.

For example, an organization might have a support team that has the email address support@contoso.com. If the support team receives an email that's sent to this address, a member of the team handles the support case and works to resolve the issue for the customer.

Queues in Microsoft Dynamics Customer Service work the same way.

Products: Products in the Microsoft Dynamics CRM Product Catalog can be related to a customer service case. Therefore, they can help provide a more detailed view of cases, resolutions, and customer feedback at a product level.

Although products can be associated with cases to better categorize the types of cases, this association will not have an impact on pricing or invoicing. In addition, using products together with cases is optional and might not be applicable to all organizations.

Goals: In addition to reporting on and analyzing the information in Customer Service, organizations can use the Goal Management features to establish and track progress against target values for key performance indicators (KPIs). For service management, these KPIs might include metrics like resolved cases or in-progress cases.

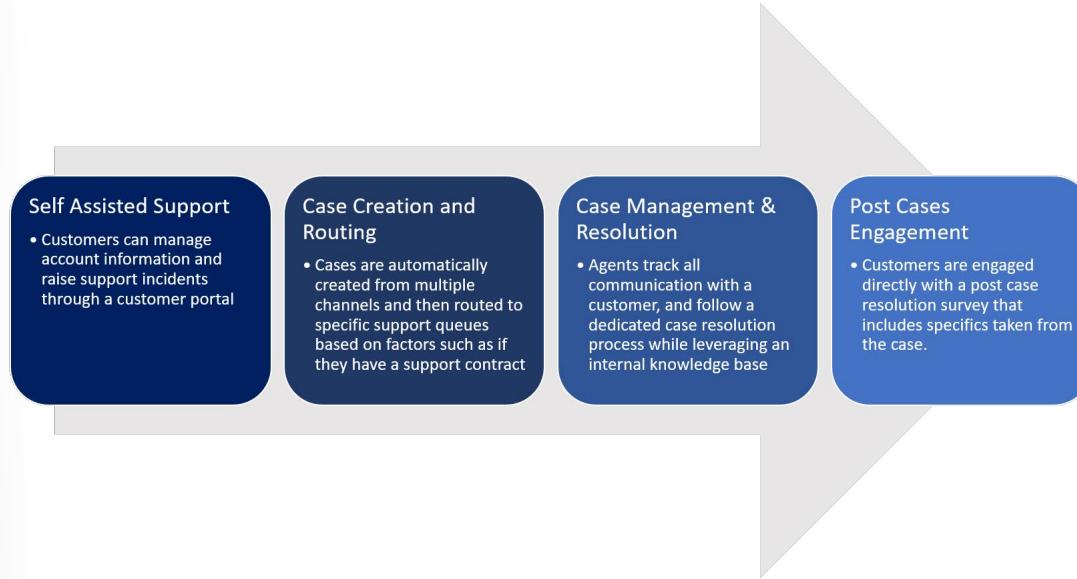
Service level agreements: Service level agreements (SLAs) are a way of tracking and defining what should happen when a case is opened. You can track things like when a case was first taken by a support engineer and how long it took to resolve the case. You can also send emails based on specific warning and failure timelines.

Understand the modern customer journey

Service has changed drastically over the last five to ten years. In the past, a customer would call and be put on hold until somebody picked up the phone to help. Today, the support landscape looks very different.

Today's customer can start a support journey from multiple starting points. Customers have different channel preferences and expect an effortless experience across all channels.

Scenario: Typical Customer Support Journey



With the advent of self-service capabilities, customers can now start educating themselves by using any of these resources:

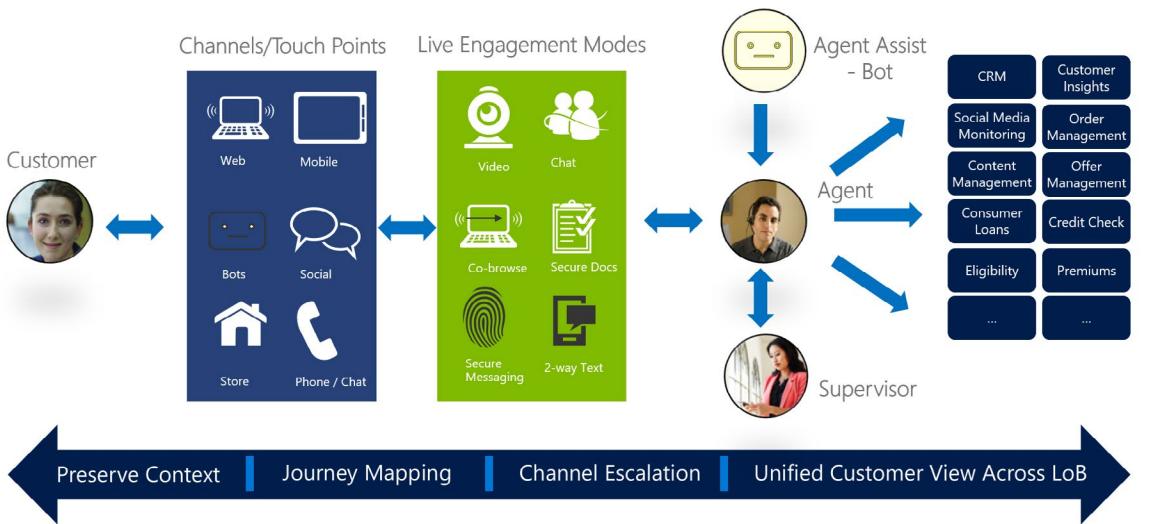
- Portals with an interactive bot
- Live chat capability
- SMS communication
- Interactive kiosks
- A mobile app deployed by the customer's organization

- Remote sharing of screens between a service agent and the customer
- Any number of social networks, including Facebook and Twitter

As this list shows, we can never be certain just where the customer is coming from. Therefore, we must be prepared, with all possible channels and media open and listening.

Omni-channel Experience

Improve agent productivity and reduce effort to serve across disparate channels & LoB apps



Customer perspective and expectations

It isn't enough just to have a bunch of different channels. Your service organization must be integrated, so that:

- All the support channels have the same information. You don't want the advice that your bots give to differ from the advice that a customer representative would give.
- Your support channels are seamlessly connected. You want information to be able to pass easily from one channel to the other.

The complexity doesn't stop there. In general, the modern service company must consider the following:

- **Social media:** Customers are highly active on social media. They don't just leave comments about the things they like. They'll also comment—loudly—about what they don't like. What's more, many of their friends—your potential customers—are listening to those comments and forming their own opinions of your company.
- **Company size:** Companies often want to target both small and enterprise customers through the same set of channels.
- **Support for contract and non-contract customers:** Everyone gets support, not just those with service level agreements (SLAs). Again, you don't know where new customers are coming from.
- **Fast response times:** Customers expect fast response times. If you can't give them a timely response, they'll go elsewhere—maybe even to your competitors, who might have a better support channel in place.

- **On-site support:** Sometimes, customers can't be helped online. In this case, they often expect the service company to visit them at their place of business or in the field to resolve an issue.

Typical customer journey

The typical customer will follow a specific path to get a resolution to an issue:

1. **Self-assistance:** When people need help, the first thing they do is go on the internet and see if they can fix the issue themselves. They'll visit a few forums and newsgroups, and ask a few questions, hoping for a quick fix. They might visit the company's website and do some research while looking around in the documentation.
2. **Initial case creation and routing:** Cases will be generated from multiple channels. They can then be routed to specific queues, based on factors like whether there's a contract, whether the customer is a preferred customer, or whether a technician who's qualified to handle the issue is available on a specific queue.
3. **Case management and resolution:** A service agent will now track all communication with the customer and follow a dedicated case resolution process while using an internal knowledge base. At this point, customer communication can be through email, text messages, or a phone call. Cases are typically tracked to create a historical log of what happened with the customer. The Knowledge Base will also be built out, so that other service representatives can take advantage of knowledge from past cases.
4. **Post-case activities:** Customer service organizations are paying more and more attention to what they do *after* a case is resolved. These post-case activities are now seen as critical. Companies now want to get feedback from customers about the quality of the interaction, as a way to keep channels open and encourage the customer to stay with the company. To gain more insights from the case and further build out their knowledge base, companies might send customers a survey with specifics of the case.

In the modern world, this is typically how customers interact with a support organization within companies.

Summary

Let's do a quick review of what we covered in this first module.

We reviewed Customer Service from a holistic perspective, including common scenarios, such as addressing customer or product issues, answering customer questions, and collecting and applying customer feedback.

We reviewed how customers are likely to interact, including mobile devices, social media, looking for their own answers.

Finally, we looked at the core records that can be stored in Customer Service, including cases, activities, entitlements, knowledge base articles, queues, products, goals and KPIs, and service level agreements.

Next steps

In the next module, you'll get a chance to set up automated case management.

Managing cases

Creating case records overview

When it comes to creating cases in Dynamics 365, there are multiple ways that cases can be created to accommodate the specific scenarios that your organization may receive cases. This might include automatic creation of cases based on a social media interaction, manual creation by an agent as they take a call from someone, or even through a self-service portal. It is important to consider all the potential scenarios that your organization supports when implementing a case management strategy.

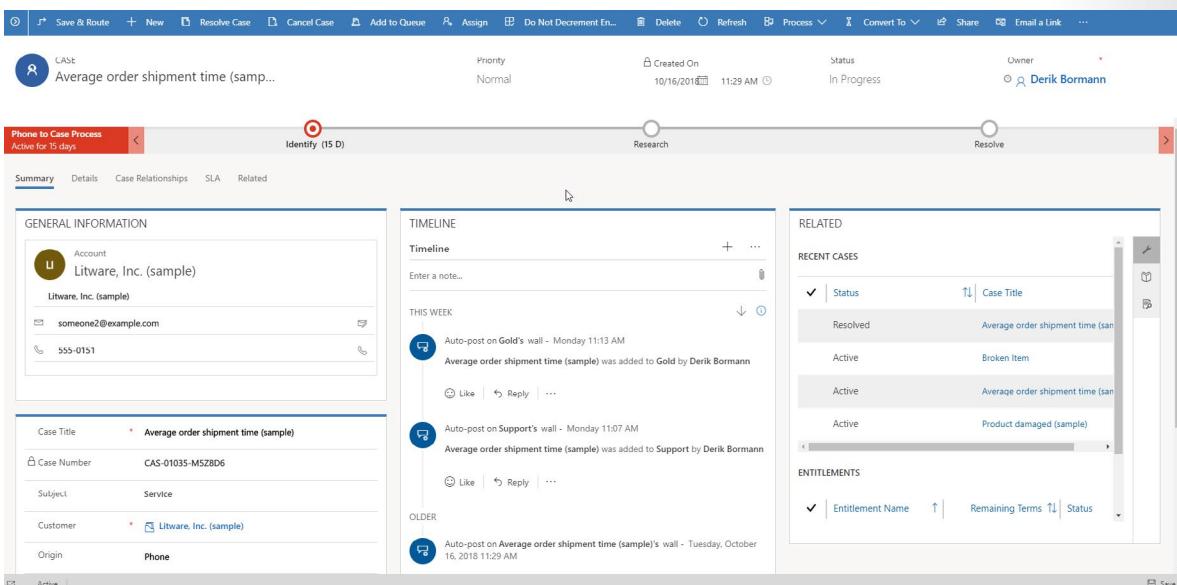
Dynamics 365 contains several ways that cases can be captured and entered into the system. How cases are created may vary depending on an organization's specific need (such as through a self-service portal), but the most common way is generally manually or by converting an activity.

Creating Cases Manually

In many instances, cases will need to be manually entered by a service agent. As the agent enters the case, they will capture relevant information such as the customer, point of contact, issue and so on. There are two primary ways that this can be done.

The most commonly used method for entering cases is the case form. As the case is being entered, the agent entering the case will note specific details about the case such as the case title, customer, case origin, etc.

The case form contains fields that are available for the case and provides quick access to related records such as knowledge articles. The case form also provides access to the active business process flow that is being used by that case. Many items such as the timeline and access to related records are not available until the case has been initially saved.



The case quick create form is a trimmed down version of the case form that only contains the more important fields on the case table. The form is used to quickly enter case information to save time. It is also used when you are creating a case within the context of another record. For example, if you add a case directly from an account in Dynamics 365, the case quick create form will be used.

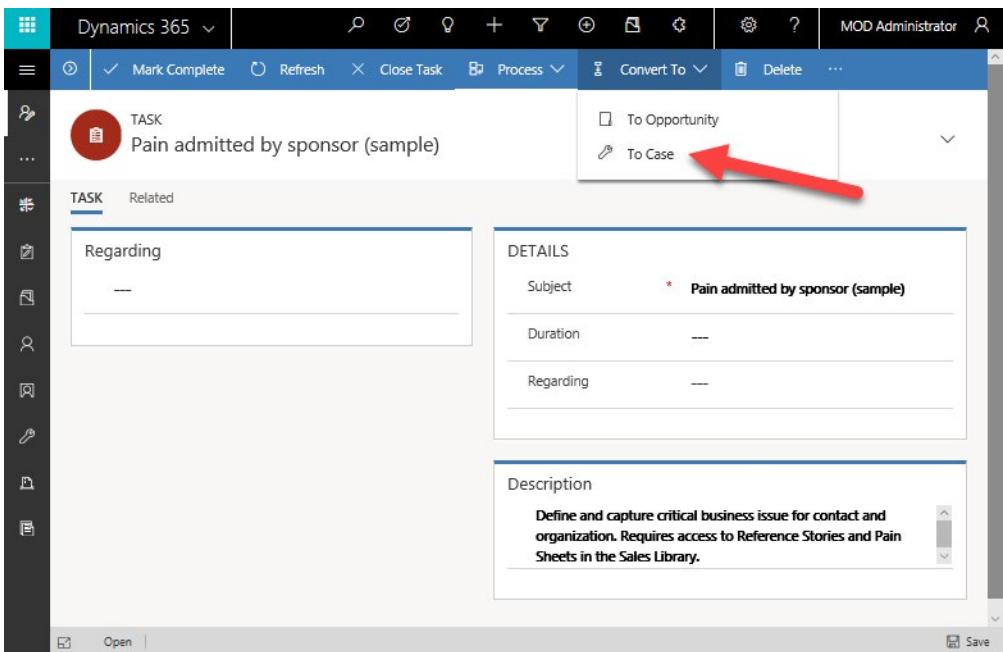
Quick Create forms can be accessed from the top navigation bar in the application, or from the related panel or an attached sub-grid on a parent record. Not all entities have the quick create form enabled by default, but the case table does, so when you add a case from a related record that is the form that is used.

The screenshot shows the 'Quick Create: Case' dialog box. It has two main sections: 'Case Details' and 'Other Details'. In the 'Case Details' section, fields include Customer (Adventure Works (sample)), Case Title (Trouble Printing), Subject (Service), Case Type (Problem), Contact (Nancy Anderson (sample)), and Assign to Others (Derik Bormann). There is also a 'Parent Case' field with three dots. In the 'Other Details' section, fields include Origin (Phone) and Product (three dots). The 'Entitlement' field contains 'Adv Works Phone Sup...' with a search icon.

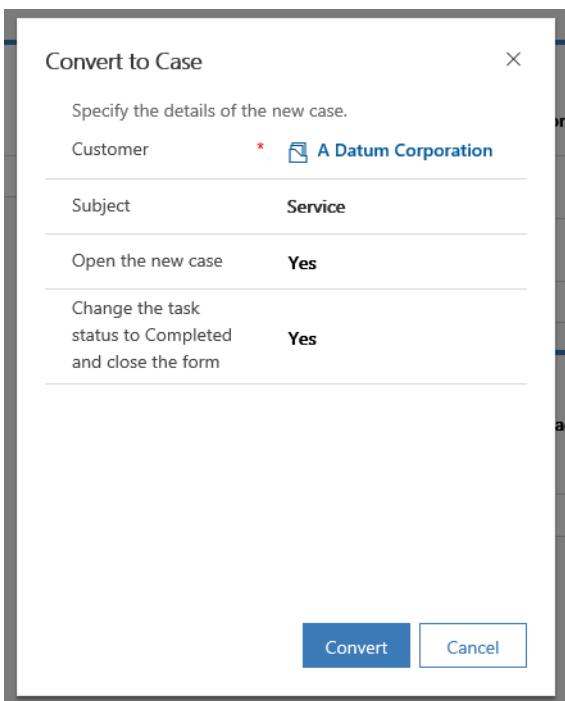
Creating a Case from an Activity

Sometimes a case may be the result of an activity such as an email, phone call, or task. For example, a support agent might directly receive an email from a customer requesting service. Dynamics 365 provides the ability to convert activities directly into case records. This ability is leveraged by record creation and update rules to convert specific activities into records automatically. It can also be manually done on an individual record.

From within a specific activity, you can select the Convert To button on the command bar. You can choose from opportunity or case.



Once to case is selected, the convert to case screen displays that provides additional information like the ability to close the activity as completed.

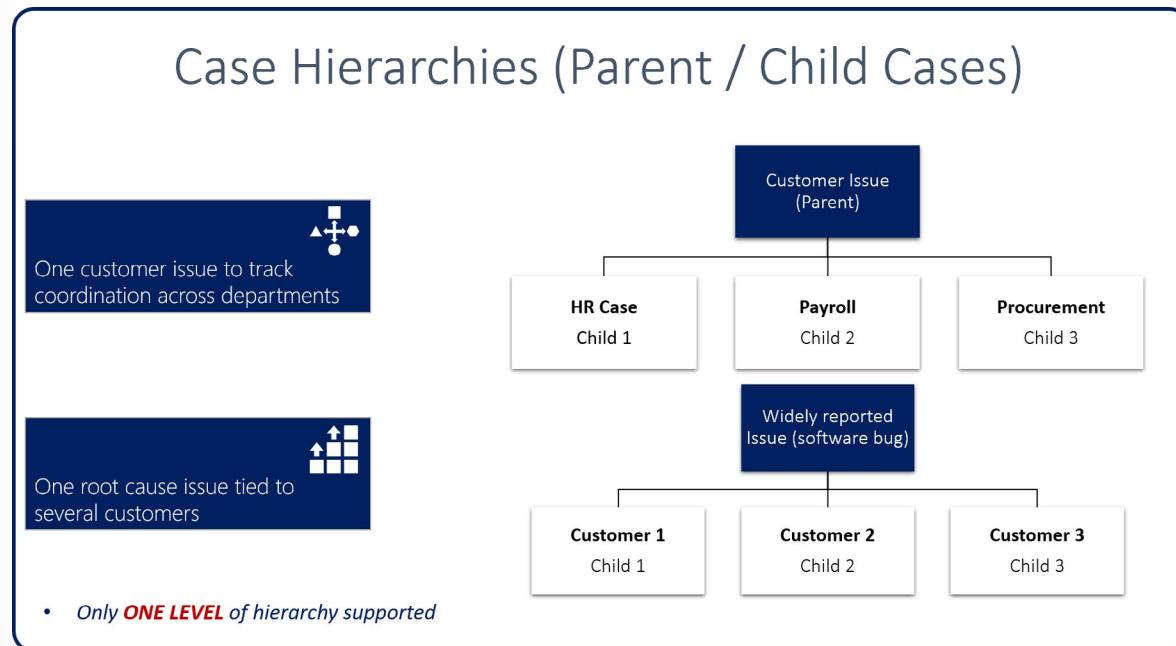


Cases hierarchy

There may be times when multiple cases are created that are all related to the same master case. Dynamics 365 supports the ability to create parent/child cases out of the box using its case hierarchy structure. For example, if you work for a software company that just put out an update to one of your software applications and it contains a bug. It is possible that many different customers will call in to report the

issue resulting in multiple cases. Using case hierarchies, you can associate all of the reported cases to a single case. When the bug is resolved in the master case, all the child cases could also be resolved and closed at the same time.

The image below shows some potential examples of how case hierarchies could potentially be leveraged in a customer support organization.



Considerations

A parent/master case can have no more than 100 child cases associated with it. If you need more than 100, you may need to create a custom case hierarchy manually.

Only one level of hierarchy is supported. Case field mappings can be created to auto-populate child case fields. Mapping only applies when a child case record is created in the context of a parent. Case attribute mapping does not keep records in sync.

The case hierarchy feature supports three cascading closure preferences when the parent case is closed. Only one can be defined per organization.

- **None**: Closing the parent case does not affect child cases. Any child cases must be closed individually.
- **Close all child cases when parent is closed**: Will automatically close any open child cases when the parent case is closed.
- **Don't allow parent case closure until all child cases are closed**: Requires that all child cases are closed before the parent case can be closed.

System administrators and customizers can configure and organizations parent/child settings in the service management area of settings and selecting parent and child case settings.

Summary

As you've seen, Microsoft Dynamics 365 for Customer Service helps organizations better serve their customers and manage agent caseloads by providing a wide range of case management options.

Whether agents are looking for more efficient ways to create cases or better ways to manage the case lifecycle, the case management tools in Microsoft Dynamics 365 can help them throughout the management process.

In this module, we looked at several key components that Dynamics 365 provides for case management, including:

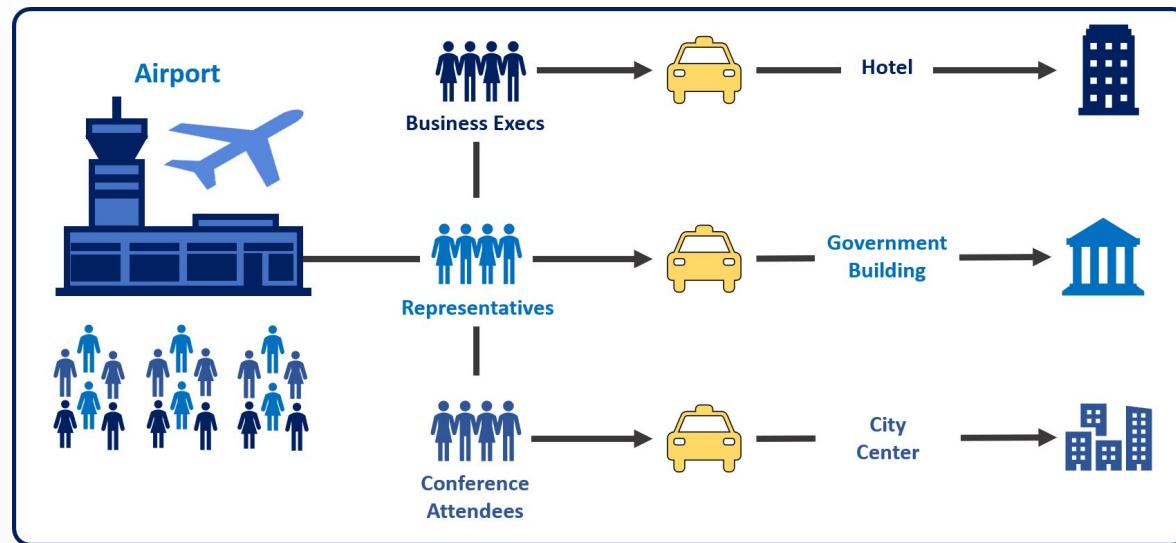
- The different case creation options that are available to organizations. For example, agents might manually create cases, or activity records like emails or phone calls might be converted to case records.
- How organizations can take advantage of the automatic record creation and update rules in Dynamics 365 to automatically create cases from records like emails or social activities.
- How you can use the Dynamics 365 unified interface to easily identify and manage caseloads. For example, you can use items like interactive dashboards to filter and organize data, or you can use business process flows and supporting activities to guide agents through the case resolution lifecycle.
- How Dynamics 365 case hierarchies and merging functionality can make it easier for organizations to manage duplicate and related cases.
- Where status reasons are used in the case management process, and how an organization can define custom transition paths to help guarantee that agents don't select reasons that don't apply to the current state of the case.

From here, the next steps are to learn more about how you can use Dynamics 365 queues in conjunction with cases to more efficiently route cases to the most appropriate person, for better management of agent caseloads.

Use queues to manage case workloads

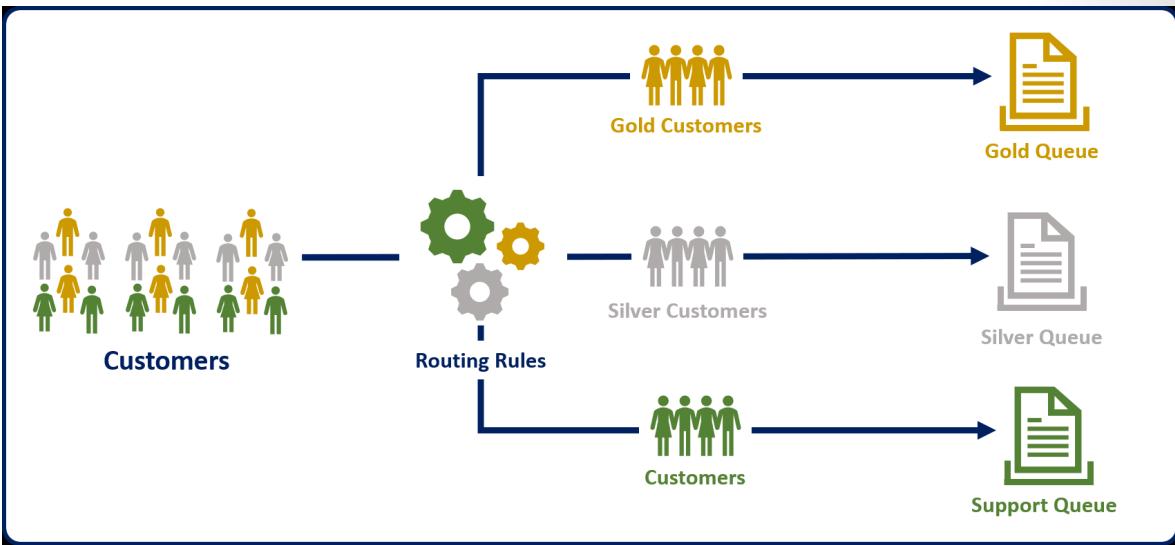
Overview of Dynamics 365 queues

Customers expect that their requests or issues will be handled in an organized and timely manner. Imagine that you're waiting for a cab at a hotel, and there's a long line of other people who are also waiting for cabs. If everyone is competing for the same cab, the result will be chaos. Therefore, to better manage lines of cab riders, hotels often use a queue system, where an organized line is formed. As a resource (cab) becomes available, a rider or group of riders gets a cab and leaves for its destination in a timely manner.



The same concept can be applied to customer issues, questions, and requests. Many customer support centers use queues to manage the routing of cases that come in.

For example, a customer who has bought a gold support contract is typically entitled to a different level of service than a customer who hasn't bought a support contract. To help guarantee that gold customers get the level of service that they're paying for, you can use routing rules to direct cases that those customers submit to a gold service queue. That queue might be staffed by senior support agents who focus solely on gold customer support. All other customers can be sent to a standard support queue that has a larger volume of cases in it. Both types of customers are still being supported, but gold customers will probably get support faster, because they're in the higher-priority gold queue.



Microsoft Dynamics 365 uses queues to manage work items like cases, activities, or other record types.

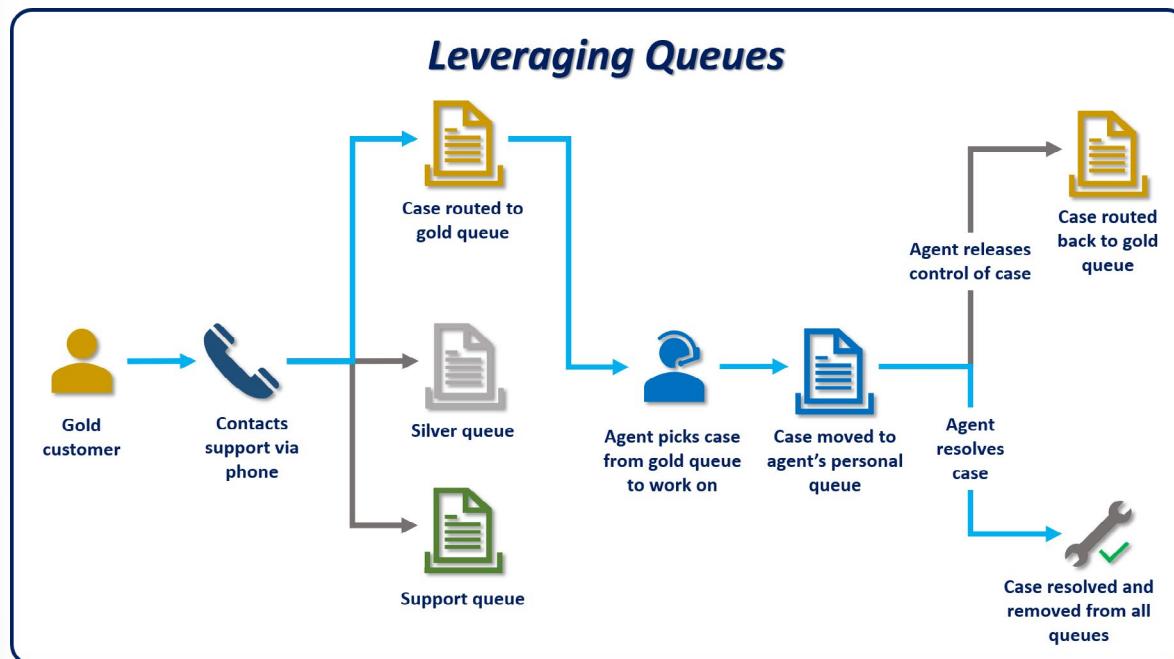
Several types of queues are available in Dynamics 365:

- **Public:** These queues are visible to the whole organization.
- **Private:** The queues are visible only to users who have been designated as queue members.
- **Personal:** These queues are associated with a specific user or team, and are visible only to that user or team.

Public and private queues are created to support an organization's needs. By default, personal queues are automatically created when a new user or team is defined. They route important activities and records that are assigned to a specific user or team. Additional queues can also be used to support service management in a team-based collaborative environment.

Cases can be routed to queues in several ways. For example, an agent can manually put a case into a specific queue. But an organization that's taking in hundreds or thousands of cases a day might find that process too labor-intensive. Therefore, in most instances, cases are routed to queues as part of an automated service management process. This process will be covered in a later unit.

The following image shows a typical example of how queues can be used in Dynamics 365.



1. A gold customer opens a new case by calling in to support.
 2. The case is routed to a gold queue.
 - Records in the gold queue are visible only to members of that queue.
 3. An agent picks the item from the queue to work on it.
 4. The item is put into the agent's personal queue.
 5. After the agent resolves the case, it's removed from his or her personal queue.
 - If the agent can't finish the work on the queue item, he or she can release the item. It will then be put back into the gold queue, so that another agent can work on it.

Over the remaining units, we'll examine, in more detail, the role that queues play in case management. For example, you'll learn how to create queues, work with the items in them, and create automation rules that route cases to them.

Configuring tables for queues

Out of the box, queues are preconfigured only for cases and activities. They provide tremendous value for specific business scenarios in Microsoft Dynamics 365. You can use queues to enhance and streamline sales-related activities, or to provide better and faster processing of inspections, paperwork, or applications.

Here are some of the scenarios where queues can be applied

- **Sales enhancement:** A sales manager can route new leads to a public *Inquiry* queue. Each lead in that queue can then be inspected and routed to the account executive who's most qualified to work on it.
 - **Claims processing:** An insurance company can route insurance claims to different queues, depending on the type of claim that's being filed (for example, home, auto, or business). A claims agent who

specializes in one of those claim types can then select a claim to work on, and move it to his or her personal queue.

- **Approval processing:** A loan officer can route loan applications to a different manager's queue, depending on the type of loan that's involved. The manager can then either approve or reject the loan, and can move it back either to the loan officer's personal queue or to a public *Approved* queue.

Regardless of the business reason, the ability to route records from one queue to another helps organizations manage the operational aspects of their business as it relates to their strategy for customer relationship management.

Most record types can be routed to queues in Dynamics 365. But for tables other than cases and activities, the capability to use queues isn't turned on by default. To let other tables use queues, you must do a simple customization.

[!IMPORTANT]

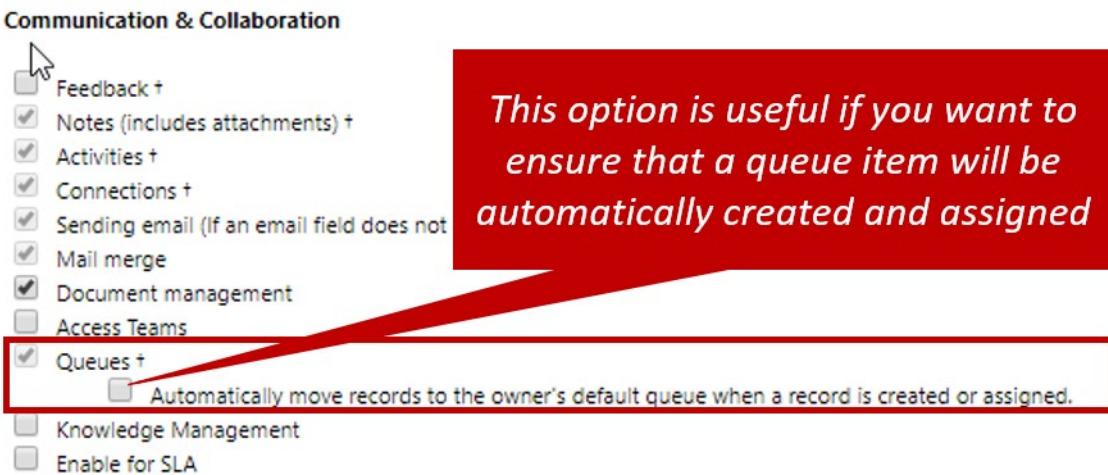
Because system customization is required to set up other tables for queues, you must have the appropriate customization privileges in your Dynamics 365 organization.

For more about Dynamics 365 security roles, see [Security roles and privileges](#).

Set up an table to use queues

To set up an table to use queues, you must go to **Settings > Customizations > Customize the System**.

After you're in the default solution, select the table that should be able to use queues. Then, under **Communication & Collaboration**, you'll see an option to turn on queues. You can also define whether a queue item should be created automatically and moved to the personal queue of the record's owner. This functionality can be handy if you know that the person who creates the record will be responsible for it, and you want to make sure that the item won't appear in queues that it shouldn't be in.



After you've finished setting up the table to use queues, you must save and publish your changes before records of that type can be routed to queues.

[!IMPORTANT]

After you set up an table to use queues and save your changes, you can't turn queues back off. But you can choose not to use queues for that table.

Creating a Dynamics 365 queue

When an organization is ready to start using queues, they can be created based on specific organizational needs. Before you add queues to an organization, take some time to consider the total number of queues that will be needed and what they will be used for.

To create queues, go to **Settings > Service Management**, and select Queues from case settings with record creation and update rules section. When a new queue is created, the name and queue type are required. You can specify other information too, but the queue can't be saved unless those two properties are defined.

Different types of queues are available:

- **Personal:** These queues are associated with a specific user or team. They're created by the system.
 - Personal queues are automatically created by the system when a user or team is added to Dynamics 365. They can't be created manually.
 - Membership in the queue can't be edited manually. By adding and removing team members, you adjust membership for queues that are associated with a team.
- **Public:** All users can see and access these queues, depending on their security role.
 - Users pick items from the queue. The items that a user picks are then moved to that user's personal queue.
- **Private:** Access to these queues is assigned to specific users. (Members are defined on the queue record.)
 - Users pick items from the queue. The items that a user picks are then moved to that user's personal queue.

Email considerations

If a queue will receive email, it must have an associated email alias. That email alias must be associated with a working mailbox record in Dynamics 365. System settings can be used to specify whether a queue that has an email alias is approved to accept incoming email items.

For more about setting up Dynamics 365 mailboxes, see Connect Dynamics 365 (online) to Exchange Online.

In addition to specifying a mailbox record for a queue, you can define which emails that come into the queue will be converted to email activities.

You have several options:

- All email messages
- Email messages in response to Dynamics 365 email
- Email messages from Dynamics 365 leads, accounts, or contacts
- Email messages from Dynamics 365 records that are email enabled

Selecting an email option is important because it specifies what will be defined as email activities and what email activities can be automatically converted to case records in the system. For example, a support queue might receive email messages from customers that are in your Dynamics 365 application, but it might also receive email from those that are not Dynamics 365 customers. In this scenario, you might want to use the *All email messages* setting.

[!IMPORTANT]

Before a queue can receive email, the mailbox that's associated with the queue must be approved and turned on. In this way, you indicate that it's OK for the mailbox to receive email, and that it's ready to do so. Select the **Open Mailbox** button on the command bar, select **Approve Mailbox**, and then select the **Test and Enable** button.

For more about approving and turning on mailboxes, see Approve email.

After a queue is saved for the first time, if it has been designated as a private queue, you can define its members. Only the members that you assign to a private queue can work with it. Additionally, when items are routed to the queue, you can see which items are in the queue. You can also see any record creation and update rules that are associated with the queue.

The screenshot shows the Microsoft Dynamics 365 Queue Management interface. It includes three main sections:

- Summary Tab:** Displays basic queue details like Name (Premier), Type (Private), and Email address used by queue for receiving email (Support@training.com). A callout box highlights this email address.
- Items Tab:** Shows a list of queue items such as "Major Problem with item" and "Product average service time". A callout box highlights this section.
- Members Tab:** Lists members assigned to the queue, including Alex, Lilly, and Tom. A callout box highlights this section.

Annotations provide additional context:

- Controls which emails are converted to email activities:** Refers to the "Convert Incoming Email To Activities" setting in the Summary tab.
- Associated creation & update will display here:** Refers to the "Record Creation and Update Rules" section in the Summary tab.
- Additional members can be added as needed:** Refers to the "Add Existing User" button in the Members tab.
- Displays a list of all members assigned to a private queue.** Refers to the list of members in the Members tab.
- NOTE: Members cannot be added to public queues.** Refers to the note at the bottom of the Members tab.

For more about record creation and update rules, see Set up rules to automatically create or update records.

After a queue is created, it has a status of *Active*. If the queue won't be used for some reason, you can deactivate it. If you find that the queue is needed again later, you can reactivate it.

[!IMPORTANT]

Queues can be deleted only if there are no queue items in them. All items in a queue must be removed (finished, deleted, or moved to another queue) before the queue can be deleted.

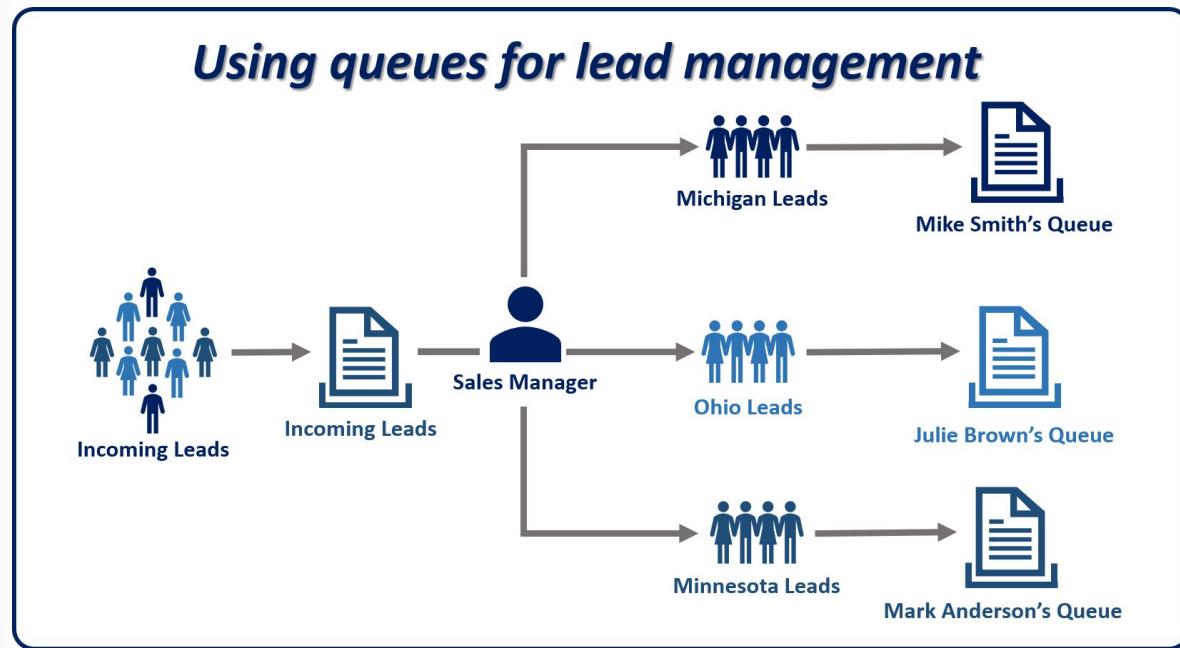
For more about creating Dynamics 365 queues, see Create a queue (Customer Service Hub).

After a queue is created and members are assigned to it, it's ready to be used to help organize information, and cases can be routed to it.

Work with queues

As we mentioned in Configuring Entities and Queues, most record types can be set up to use queues in Microsoft Dynamics 365. But only cases and activity record types are preconfigured to support queues. After a record type is set up to use queues, items can be put into queues.

Organizations can use personal, private, and public queues to support their sales and service processes. For example, a sales manager might route leads to a public queue, inspect the queue items, and select some of them to be routed to a user's personal queue. By routing records from one queue to another, organizations can manage the operational aspects of their business as it relates to their strategy for customer relationship management.



[!NOTE]

The preceding image provides a visual for the example that's described earlier. Although the primary focus of this module is using queues for case management, remember that queues can be used to support multiple sales-related or service-related scenarios.

Queue items

When a record like a case or an activity is routed to a queue, a separate record called a *queue item* is created. A queue item is a representation of the case, activity, lead, and so on, in the queue. Basically, there's a one-to-one relationship between the queue item and the record that it's associated with (for example, the previously mentioned case, activity, or lead).

Queue items are what agents see in the queue, and they're what agents use to select and work on specific records.

[!IMPORTANT]

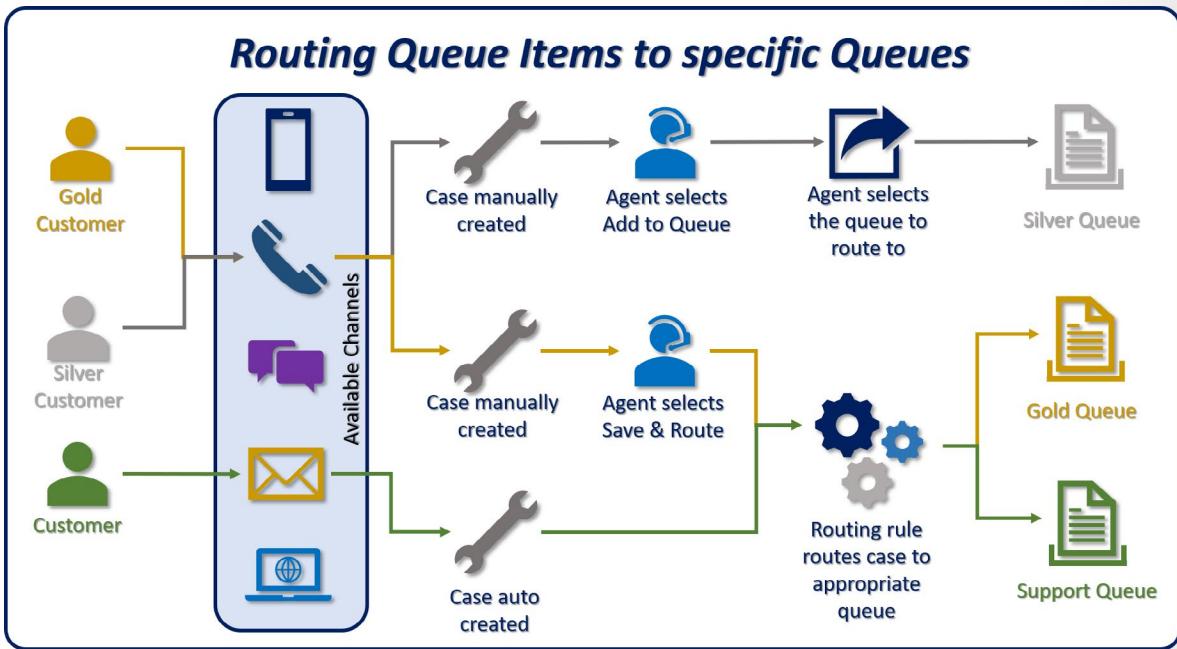
A record (for example, a case) can have a queue item in only one queue at a time.

Queue items for case records can be created and put into a specific queue in multiple ways:

- **Manually:** The agent selects the **Add to Queue** or **Save & Route** button on the command bar.
 - **Add to Queue:** The agent manually selects the queue to route the record to.
 - **Save & Route:** Dynamics 365 uses predefined routing rules to evaluate details in the case and route it to an appropriate queue.
- **Automatic:** When a case is automatically created, Dynamics 365 automatically applies predefined routing rules to evaluate details in the case and route it to an appropriate queue.

[!IMPORTANT]

Automatic routing applies only if a case is created automatically (for example, by a workflow, a record creation rule, or Power Automate).



[!NOTE]

Defining routing rules will be discussed in more detail in Routing Rule Sets.

Working with queues and queue items

To work with queues, agents must first open them. They can use either the site map or a dashboard stream that has been set up to show a queue. The site map is the most common method for opening queues.

The queue items grid behaves differently than other grids in Dynamics 365. It offers two options for filtering the data in it:

- **Queue Items drop-down list:** You can filter by the properties of queue items. For example, you can filter for cases that you're working on, cases that are available to be worked on, or all items.
- **Queue drop-down list:** You can select the queue that the filter will be applied to. For example, you can apply the filter to all queues, all public queues, or a specific queue.

These drop-down lists work together to determine which queue items will be shown in the grid. Therefore, agents have the flexibility to make sure that they see what's needed.

For example, if you select *Items I am working on* in the **Queue Items** list and *Gold* in the **Queue** list, the grid will show only cases from the gold queue that you've picked to work on.

The screenshot shows a list of queue items with the following columns: Title, Entered Queue Date, Owner, and Worked By. A red callout points to the 'Queue Items drop-down' which filters the list of queue items displayed in view. Another red callout points to the 'Queue Drop-Down' which allows selection of specific queue(s) for the filter.

Title	Entered Queue Date	Owner	Worked By
Required Service (sample)	10/29/2018	Premier	...
Service information required (sample)	10/29/2018	Premier	...
Service requested (sample)	10/29/2018	Premier	...
Service required (sample)	10/29/2018 11:08 AM	Premier	...
Shipment question (sample)	10/29/2018 11:08 AM	Premier	...
Shipping time information (sample)	10/29/2018 11:08 AM	Premier	...
Trouble Logging In	10/29/2018 11:08 AM	Premier	...
Product damaged (sample)	10/29/2018 11:08 AM	Premier	...

After queue items have been put into a queue, agents have several options that they can use to manage them.

Work on and Pick buttons

Each queue item has a **Worked By** field that's used to assign working responsibility for the queue item to a user. When a specific user or team works on a queue item, the value in the **Worked By** field refers to the queue item only. The owner of the underlying record isn't affected. The case itself keeps the same owner. If an agent can't finish the necessary work on an item, he or she can release the item.

Removing queue items

Queue items can be *removed* from a queue at any time by users who have sufficient security permissions. When an agent removes a queue item from a queue, the associated record (for example, a case) isn't affected. Only the queue item is removed.

[!IMPORTANT]

Don't confuse the remove with the delete action.

- **Remove:** This action just removes the queue item from the queue.
- **Delete:** This action removes the queue item from the queue **and** deletes the original record (for example, a case).

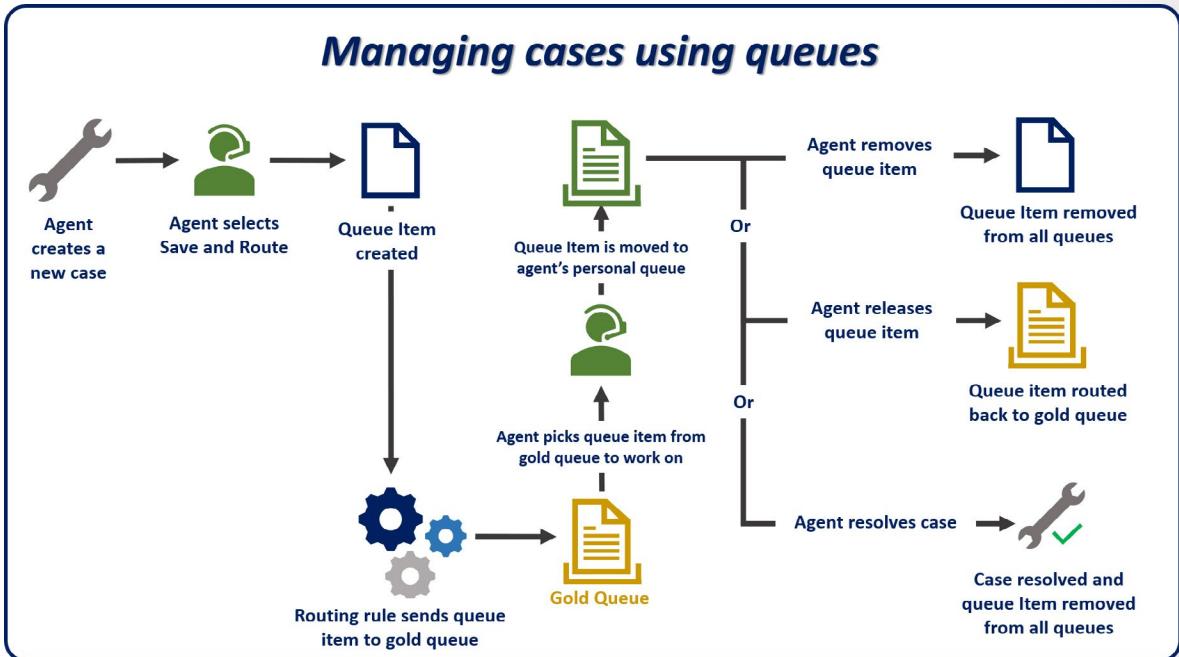
Releasing queue items

Releasing a queue item from a queue removes the name of the person who's currently working on the queue item record.

For example, Connie Watson will be on vacation for two weeks. Although she can give her Coho Winery cases to a specific agent, she can also release the cases, so that other people on the Tier 1 support team that manages the queue can work on them. In this example, Connie will release the cases and remove her

name as the person who works on them. Now, anyone who has access to the Tier 1 support queue will see that the cases are available and can start to work on them.

Now that we've discussed the mechanics, look at the following image to see a typical case resolution process that uses queues.



<https://www.microsoft.com/videoplayer/embed/RE2IJmr>

Summary

As you can see, by enabling and leveraging Dynamics 365 queues, organizations can ensure that cases are always being routed and worked on by agents who are most qualified to do so. Queues can be leveraged for more than just cases. They can be used to support a wide variety of business scenarios.

We looked at several key features and components of leveraging queues including:

- How to enable additional entities such as leads, opportunities, and custom entities for use with queues to support other business scenarios such as sale or custom scenarios.
- Examining the process for creating and defining queues and controlling queue membership with public and private queues.
- Reviewing how queue members can see which items need attention in which queues, and how to claim responsibility for specific items in those queues.
- Exploring the ability to define custom logic with routing rules that can be used to ensure that queue items are routed to the best queue based on predefined business criteria.

The next steps from here would be to gain a deeper understanding of how Dynamics 365 can be used to define and manage service KPI's for organizations, as well as how to leverage maintenance contracts for their customers.

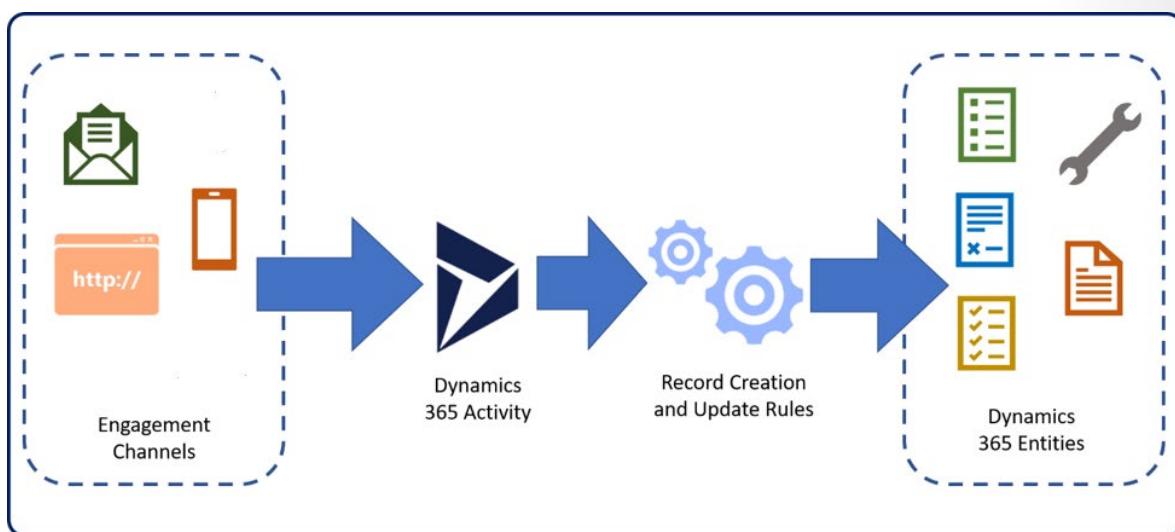
Create or update records automatically

Introduction

In the recent past, most customers opened cases with organizations over the phone. Typically, as a call came in, the agent who received it would create the case as they engaged with the customer. Today, customers might engage and submit cases in any number of ways, often without speaking to an agent. For example, a customer might send a request for support to an organization's email alias like support@microsoft.com. When the request has been received, the email needs to be converted into a case record. This approach ensures that the request will be available for agents to work on, and that it can be routed to a different queue based on the contents of the email or whom it was from.

Microsoft Dynamics 365 Customer Service provides the capability to automatically create records and update rules, which provide a foundation for users to consume information from different channels. Additionally, you can automatically convert customer requests into a Microsoft Dynamics 365 case record.

The following image demonstrates the basic concept of this activity flow.



As a customer engages with your organization through an engagement channel such as email, social media, or an online case request, the item is captured as a Dynamics 365 activity.

For each configured activity type, you can define record creation and update rules to evaluate details from the activity. Then, you can compare them against conditions that are stored in the rule. Based on the results of the condition, Customer Service will create a corresponding Dynamics 365 record, such as a case.

A typical update and creation rule must include the following three items:

- **Activity type to monitor** - Defines which of the available activity types in the organization that the creation and update rule will apply to.

- **Conditions to evaluate** - Defines what criteria the record must meet to be converted to a case. For example, you might specify that the email activity must come from a gold-level support customer.
- **Actions to take** - Defines what actions that the rule should take when the condition is met. For example, if the email is from a gold-level customer, create a new case record and associate it with the customer whom the email was received from.

The rest of this module will examine the record creation and update rules actions in more detail and will explain the process of defining them.

Set up rules to create or update records automatically

After you've identified a scenario where you want to automatically create records, such as cases, you can use the record creation and update rule functionality to do so. You can access the record creation and update rule functionality from the **Service Management** area of the Customer Service Hub app.

When you create a rule, you'll first need to define the following information:

- **Rule name** - Defines the name of the rule.
- **Queue to monitor** - Specifies which queue (if any) that the rule will be monitoring to look for records. For example, you might specify monitoring your organization's default support queue.
- **Activity type to monitor** - Specifies which type of activity record that the rule will look for when applying the rule.

Rules and queues

Queues can play a major part in record creation rules. When you define a queue to monitor, when the rule is active, it will monitor all incoming activities to that source queue. If the activity type matches the activity type that is specified for the queue, such as an email, the rule will process the incoming activity to create or update records.

[!IMPORTANT]

For an email source type, specifying a queue is mandatory. For all other source types, including custom activities, it's optional.

For more information, see Create or change a queue.

Activity types

In Dynamics 365, activity records often represent interactions with customers, such as an email that was received from a customer. One advantage of activities is that they can be converted to different types of records, such as cases or opportunities (when using Microsoft Dynamics 365 Sales). When you create a rule, make sure that you specify which type of activity that the rule applies to. This specification ensures that the system knows what types of activities it's looking for when creating the record.

The types of Dynamics 365 activities that you can convert to a case by default include:

- Appointments
- Campaign responses
- Emails
- Faxes
- Letters
- Phone calls
- Service activities
- Tasks
- Social activities

In addition to the preceding activities, you can use other activity records, such as activities that are added as part of an installed solution or custom activities.

[!IMPORTANT]

While you can create multiple rules for a single source type, you can have only one active rule for the same source type and queue at any time.

For example, you have an active rule called **Email to Case** that is defined for a queue named **Support** with a source type of **Email**. If you create another rule for the same **Support** queue with **Email** defined as the source type, the **Email to Case** rule is deactivated when you attempt to activate the **Email to Case 2** rule.

[!NOTE]

The previous scenario is also true if you have two rules that are not associated with a specific queue but have the same source type. Be aware of this factor as you design rules.

After saving a rule for the first time, you can modify other items that affect when records will be created. These options are available on the **Advanced** tab. Based on the type of activity that you select, the available options will vary.

For example, when the source type is set to **email**, the conditions are as follows:

- **Allow emails from unknown senders** - Specifies if you'll allow cases to be auto created that come from email addresses that are not attached to a Dynamics 365 account or contact.
- **Require a valid entitlement on the connected case** - Specifies that a valid entitlement record must exist for the customer who sent the email. It doesn't check for specifics on the entitlement, only that one exists. If a customer has multiple entitlements, a record will be created.
- **Wait for a specific amount of time after the connected case** - Determines if the email is related to a recently resolved case and whether it should be treated as a new case.

Basic Advanced Activity monitor Related

Before evaluating conditions...

Allow emails from unknown senders	No
Require a valid entitlement on the connected case	No
Wait for a specific amount of time after the connected case ...	Yes
Select the amount of time	3 days

Advanced settings

Owner whose permissions the rule uses to run: System User

[

These conditions only represent the available options for the **email** activity type. Make sure that you verify the options that are available for other activity types, such as social activities.

Now that the initial settings of the rule are defined, you need to define the conditions and actions to use in determining when and how to create records.

Configure rules for creating or updating records automatically

Within a rule, you might have multiple conditions and actions that are defined to help ensure that it's flexible enough to handle the different scenarios that it encounters. Rule items define the conditions to evaluate and the actions to take based on the conditions. Likely, a single rule will have multiple rule items defined for it. As the rule is applied to an incoming record, each rule item evaluates in the order that is defined in the rule.

For example, an email to case rule might have the following three rule items:

- **Rule Item 1** - Check if the sender's account in Dynamics 365 is shown as **gold customer**. If yes, then create a gold-level service case for that customer with an origin of **email**.
- **Rule Item 2** - Check if the sender's account in Dynamics 365 is shown as **silver customer**. If yes, then create a silver-level service case for that customer with an origin of **email**.
- **Rule Item 3** - Create a case with no service level defined and an origin of **email**.

Basic Advanced Activity monitor Related

Step one: details

Rule name * Rule 2

Queue to monitor Support

Activity type to monitor Email

Step two: conditions to evaluate and actions to take

+ New ⌂ Refresh ⌂ Flow ⌂ :

✓ Name

- Gold Customer
- Silver Customer
- Bronze Customer
- Check

Conditions

Conditions can evaluate specific contents in the activity to convert to a Dynamics 365 record or from records that are related to it. For example, you can define a condition that looks at the account or contact record that is associated with the sender of the email. Then, it will check if the account's service level field (custom column that you add) equals gold. This verification provides more flexibility to use the contents of the emails as criteria, in addition to other relevant data from Dynamics 365.

Condition builder Related

Condition

Condition name * Gold Customer

And

Condition that must pass to continue (pass if blank)

+ Add

+ Add

Senders Account (Acc...) Contains data

And

Service Level (Account) Equals Gold

Within a single condition, multiple items can be specified as **and/or** conditions or as having a more specific scope. For example, you might create a condition that searches for the word "Urgent" in the subject of the email messages and whether they're sent from a gold customer.

Actions to take

After you've defined the conditions to evaluate, you need to specify the action to take when the condition is met, such as creating a case record. The two main parts to actions are:

- **Record to create** - Specifies which type of record that the rule will create.
- **Configure in Microsoft Power Automate** - Uses Microsoft Power Automate to define the specific details of the record that will be created.

Actions to take

Record to create Case

Configure in Microsoft Power Automate [Save and open Power Automate](#)

ⓘ Power Automate creates a flow based on the action you selected. Please confirm the information within the action that you are creating. You can also add or edit actions in Power Automate [Learn more](#)

When you select the record that you want to create, that information will be used to prepopulate which table is preselected in the Power Automate flow.

Next, you'll learn more about using Power Automate with record creation rules.

Map records manually with Power Automate

After you've defined the details of the condition to be evaluated in the rule item, you can configure the action to be taken. Typically, the action to take consists of creating a new record, such as a case, in the application.

When you define the action to take, you need to specify two main parts:

- **Record to create** - Identifies the type of record that will be created.
- **Configure in Microsoft Power Automate** - Uses Power Automate to populate fields in the record, such as the customer, case origin, or service level.

Actions to take

Record to create Case

Configure in Microsoft Power Automate [Save and open Power Automate](#)

ⓘ Power Automate creates a flow based on the action you selected. Please confirm the information within the action that you are creating. You can also add or edit actions in Power Automate [Learn more](#)

Power Automate is used because of the flexibility it provides around automation. With Power Automate, you can connect to network Microsoft Dataverse tables that

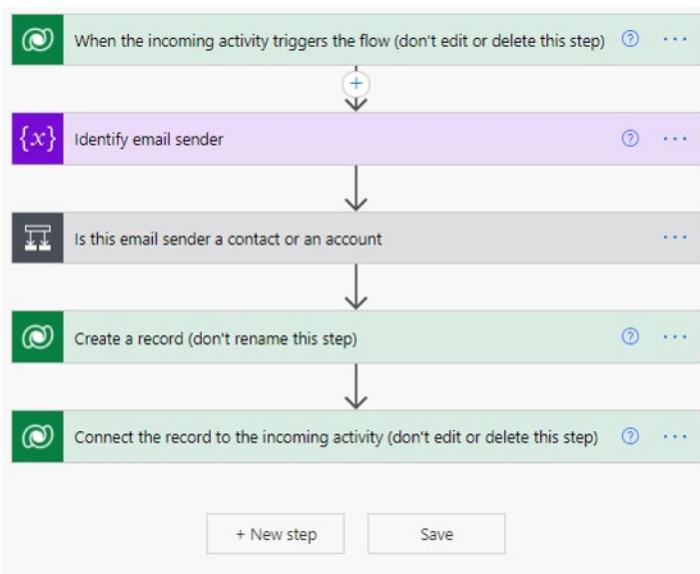
are used by Customer Service, and you can also use other available Power Automate connectors to incorporate data from other applications or services if needed. For example, your organization might have latitude and longitude data included on case records if it needs to be escalated and worked on in person. By using Power Automate, details from the associated customer's address can be passed to a geolocation service. The latitude and longitude that are returned from the service can be entered into the case record when it's created.

Before you configure the rule in Power Automate, you'll need to specify the record to create. You should complete this step first because when the Power Automate flow is created, it automatically inserts a step to create a record in that Dataverse table.

When you select **Save and open Power Automate**, a Power Automate flow will open on a new tab. The flow needs to connect to the Microsoft Dataverse connector to populate data, so you might need to sign in to the connector. After you've signed in, the flow will appear.

Initially, the flow will include five items:

- **When the incoming activity triggers the flow** - The flow triggers based on information that is coming from Dynamics 365.
- **Identify email sender** - Captures the name of the person whom the email came from.
- **Is this email sender a contact or an account** - Determines if the email was received from an existing account or contact in the system.
- **Create a record** - Creates the new record in the system.
- **Connect the record to the incoming activity** - Associates the created record with original incoming email activity record.



You should consider the template as a good starting point for creating the record. If used in its current form, the template will help you create

the record; however, you should examine the record closely and make changes as needed.

Three steps where editing or deleting is limited:

- **When the incoming activity triggers the flow** - Don't edit or delete this step.
- **Create a record** - You can modify this step as needed, but make sure that you don't rename or delete it.
- **Connect the record to the incoming activity** - Don't edit or delete this step.

Other than the preceding steps, other steps can be edited, added, or removed to better fit your needs. Before you start making major changes to the flow, you should be aware of what each step does and how the information is used throughout the flow. The ensuing sections examine each default step in greater detail.

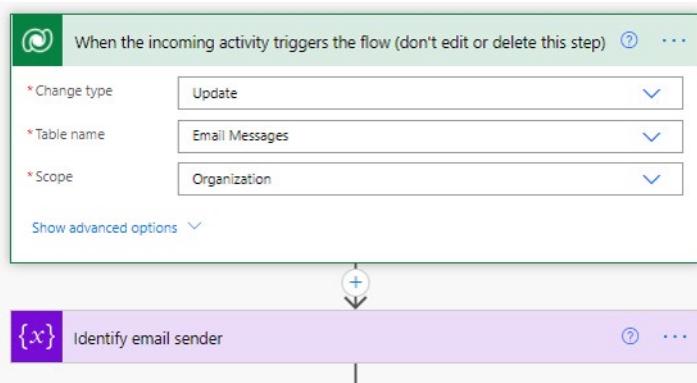
When the incoming activity triggers the flow

The triggering step that defines how the flow is getting triggered is **When the incoming activity triggers the flow**.

All information in the step is predefined and based on the activity type that was specified when the rule was created.

Two main items that this step specifies:

- **Change type** - Defines what record event will trigger the flow. In this case, it's triggered after an email activity that was created in the system is updated, which happens when the rule runs against the item.
- **Table name** - Defines the Microsoft Dataverse table that the activity is associated with. In this case, because the rule is associated with an email activity, it's using the Email Messages table.



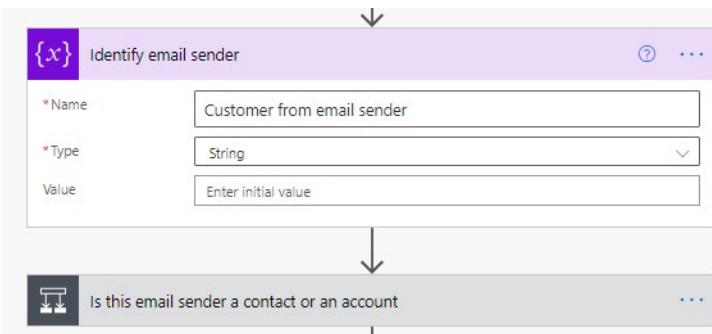
[!IMPORTANT]

Remember, you shouldn't edit or delete this step from the flow.

Identify email sender

To ensure that you have associated the created record with the correct contact or account record, you need to identify whom the email was sent from. To

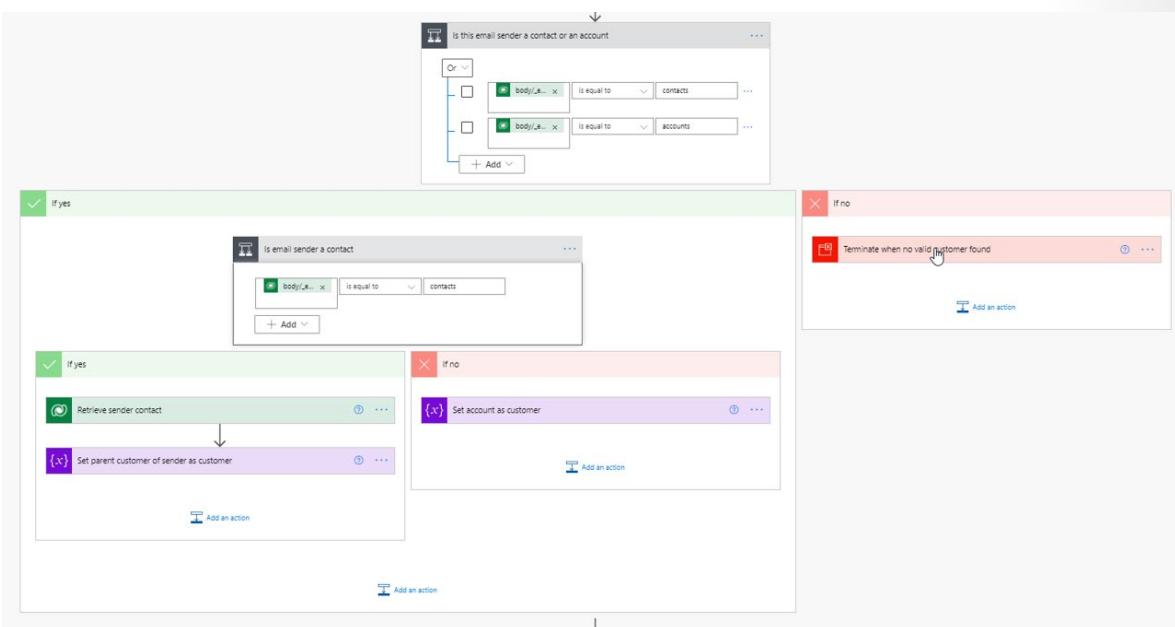
complete this task, you will enter an initialize variable step to capture what you need. The **Identify email sender** step grabs the name of the sender of the email and stores it. After you have captured the sender's information, you can match it against potential contact or account records in a future step.



Is this email sender a contact or an account

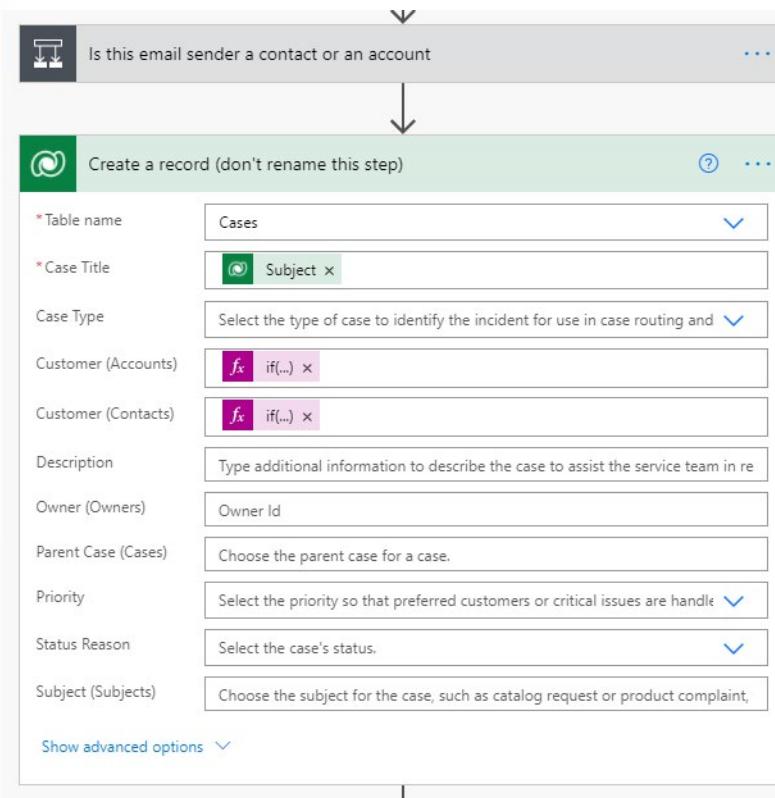
The **Is this email sender a contact or an account** step determines if the person whom the email was received from is an account or contact. After you have identified that information, you can associate the email activity with the correct record in the application later in the flow. Additionally, you will use this step when the case record is created to ensure that the case is associated with the correct customer.

In this case, a condition step has been inserted that evaluates if the sender type is an account or contact record. If the sender type isn't an account or contact, the flow is canceled. Otherwise, it determines which type it is and then captures it as a variable to use later in the flow.



Create a record

The **Create a record** step creates the record in Dynamics 365. Other than potentially adding more steps to the flow, this step is the one that you'll likely modify the most to ensure that data is populating on the record as it should. For example, you might want to set the case origin field to **email**, or you might want to have the flow set the value on the service level field to a value like **gold**. This step could help make routing the case easier in the future, if needed.

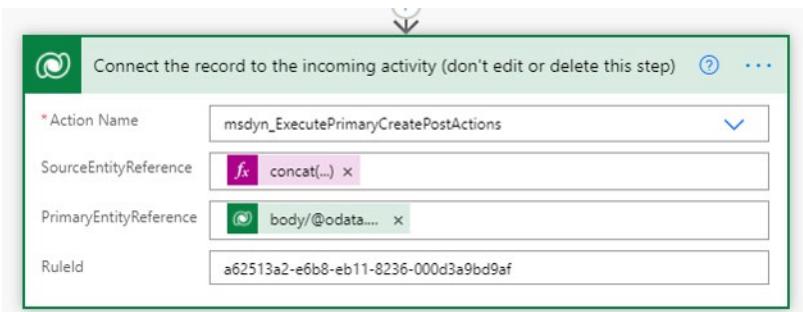


Some data is predefined, such as expressions that set the **Customer Accounts** or **Customer Contacts** fields based on whether the item came from an account or contact record. You can edit or remove those expressions based on your needs. As you modify this step, follow the standard practices for working with the Microsoft Dataverse connector in a Power Automate flow.

For more information, see [Microsoft Dataverse](#).

Connect the record to the incoming activity

The final step in the flow will connect the record back to the incoming activity, such as the email that was originally received. Like the triggering step, all information in the **Connect the record to the incoming activity** step is prepopulated, so you should leave it in its current state. Any editing or deleting will affect the flow.



After you've finished modifying the flow based on your needs, you can save and exit the flow to return to your rule.

Complete and activate your rule

After you've created your rule items, you can activate your rule so that it can be used. One final decision that you should make is if you want to send an email to the customer after a condition has been matched and a case is created. For example, after the system identifies and creates a case for a gold customer, you can send an email notifying them that a case was created. This process is done as part of step three on the rule. You can set the **Automatically reply to email** field to **Yes** and then specify the email template that you want to use. By default, a **New Case Acknowledgment** email template is available. Otherwise, more email templates can be added under the templates group in **Service Management**.

Change the rule order

Another step that you'll want to take is to make sure that your rule items are being implemented in the proper order. As mentioned previously, rule items are checked in the order that is defined in the rule. When the rule finds a matching rule item, it will apply that rule item and stop checking for more matches. You can control the order in which it checks rule items, so it's best to place the most specific rules first and then work your way down the list.

Step two: conditions to evaluate and actions to take

▼ Name ▼

Gold Customer

✓ Silver Customer

Bronze Customer

When you're ready to make your rule live, you can select the **Activate** button on the command bar. After the rule is activated, it will start defining cases for email activities that are sent to a specific queue.

For more information, see Activate a rule for creating or updating records automatically.

Use the activity monitor to review and track rules

As activities come in and are evaluated, not all will meet the criteria for being converted to a case for many different reasons. For instance, based on how a rule was configured, the email might not have come from an existing account or contact in the system, or a case might be associated with the record already.

You can review and track the overall health of your automatic record creation rules and resolve issues around them by using the activity monitor. The activity monitor tracks and evaluates rules while they are being implemented in Customer Service Hub and before the rule is run in Power Automate.

You can access the activity monitor in two different ways:

- From the **Activity monitor** for each individual rule.
- By selecting the **View Activity Monitor** button on the command bar from the **Automatic record creation and update rules** list.

Regardless of the method that you select, the following details are available for the rules:

- **Current state** - Displays the state of the rule.
Three primary outcomes will display:
 - **Failed** - Identifies that the system tried to run the rule, but it failed for some reason.
 - **Skipped** - Identifies that the system didn't attempt to run the rule on the record for some reason. For example, the sender doesn't have an entitlement record associated with them.

- **Ready for Power Automate** - Indicates that the system processed the rule on the Customer Service end and that it's ready for Power Automate to take over.
- **Rule name** - Defines the name of the record creation rule that was monitored.
- **Monitored activity type** - Defines the activity type that the rule was associated with such as email, task, or appointment.
- **Monitored activity item** - Displays the subject of the activity type.
- **Condition name** - Identifies the name of the condition where the issue was found.
- **Reason** - Displays information on how the rule was handled.

For example, if the value in **Current state** for a rule is **Skipped**, no action was taken because, on the **Advanced** tab of the rule, a rule condition such as **Allow emails from unknown senders** was set to **No**. Therefore, if the email was from an unknown sender, no further action was required.

- **Evaluated on** - Displays the date and time of the issue.

Current state	Rule name	Monitored activity type	Monitored activity item	Condition name	Reason	Evaluated on
Failed	Email to case with static contact	Email	Email 5	...	A contact was not created for this sender. This can be that the rule o...	12/15/2020 5:51 PM
Ready for Power Automate	Email to case with static contact	Email	Email 5	Email to case item with static ci	...	12/15/2020 5:48 PM
Skipped	Email to case with inline expression in case cus	Email	Email with resolved case 3	...	An active case is already connected with this record.	12/15/2020 5:43 PM
Skipped	Email to case with inline expression in case cus	Email	Email that has valid entitlement	...	Email is coming from an unknown sender.	12/15/2020 5:42 PM
Skipped	Email to case with inline expression in case cus	Email	Email with resolved case 3	...	A resolved case is already connected with this record.	12/15/2020 5:41 PM
Ready for Power Automate	Email to case with inline expression in case cus	Email	Email with resolved case 3	Email to case with inline expres	...	12/15/2020 5:41 PM
Skipped	Email to case with inline expression in case cus	Email	Email with resolved case 2	...	Email is coming from an unknown sender.	12/15/2020 5:40 PM
Skipped	Email to case with inline expression in case cus	Email	Email with resolved case 2	...	Email is coming from an unknown sender.	12/15/2020 5:38 PM
Skipped	Email to case with inline expression in case cus	Email	Email with resolved case 2	...	Email is coming from an unknown sender.	12/15/2020 5:37 PM
Skipped	Email to case with inline expression in case cus	Email	Email with resolved case	...	Email is coming from an unknown sender.	12/15/2020 5:36 PM
Skipped	Email to case with inline expression in case cus	Email	Email from unknown sender	...	Email is coming from an unknown sender.	12/15/2020 5:35 PM
Ready for Power Automate	Email to case with inline expression in case cus	Email	Email from unknown sender	Email to case with inline expres	...	12/15/2020 5:32 PM
Ready for Power Automate	Email to case with inline expression in case cus	Email	Email from unknown sender	Email to case with inline expres	...	12/15/2020 5:31 PM

By default, the activity monitor only captures failed events where the rule couldn't complete the creation process. Based on your needs, when you're viewing records from the rules list view, you can select the **Monitor options** button on the command bar to change which outcomes are displayed.

Summary

The automatic record creation and update rules functionality that are available in Dynamics 365 Customer Service are powerful automation tools. These tools help organizations broaden how records are created and help simplify the case creation process. Organizations can define multiple conditions in a single rule and create records differently based on the results. When you add the flexibility that is provided by Power Automate when you are creating records, you have a highly tailorabile way to streamline your case creation process.

This module examined how to create records by using the automatic creation and update rules functionality, including:

- Describing the feature and reviewing instances where it might be used.
- Explaining the process for defining rules by using the Customer Service Hub app.
- Examining rule items, how they're used within a rule, and the process for defining them within a rule.
- Explaining how Power Automate is used to create the record in the application and how to configure the Power Automate flow to manually map a contact.
- Describing how to use the activity monitor to review the status of rules that are being processed.

Your next step would be to gain a deeper understanding of the features and functionality that are available when you are creating cloud flows in Power Automate. This extended learning will help you create more powerful record creation rules. Based on your organizational needs and purchased products, it might be beneficial for you to examine other aspects of Dynamics 365 Customer Service, such as Customer Service workspace and Omnichannel for Customer Service.

Unified routing

Introduction

Dynamics 365 for Customer Service contains many features that work together to provide an end-to-end case management solution. One of these components is the routing of cases to the most appropriate users, teams, or queues.

Basic queues

Queues help you to organize, prioritize, and monitor the progress of your work. In Dynamics 365 Customer Service, queues are containers used to store anything that needs to be completed or requires an action, for example completing a task or closing a case. You can think of a queue as an inbox of work that you need to perform some type of action on.

By default, a queue is created for each user and each team in Dynamics 365 Customer Service. You can use this default queue to track all your work items, or you can configure new queues to manage work for different groups and processes in your organization.

Dynamics 365 Customer Service uses basic routing rule sets to allocate cases to users and queues based on the properties of the case.

For more information on basic queues see the module **Use Microsoft Dynamics 365 Customer Service queues to manage case workloads¹**.

Unified queues

Unified queues were introduced with Omnichannel for Customer Service but are now also available in core Customer Service. Unified routing distributes work items to the best-suited queues and agents using multiple factors including matching the work item with the agent's capabilities and availability.

Existing queues can be configured for Unified Routing to provide automatic work distribution.

Unified routing

Unified routing can distribute:

- **Records:** Cases and emails can be routed using more than just the properties of the records.
- **Conversations:** Conversations that originate from channels like Chat for Dynamics 365 Customer Service, SMS, and Facebook in Omnichannel for Customer Service.

In scenarios where your organization has a mix of Omnichannel for Customer Service agents and Customer Service Hub agents, you can have a unified and single view of routing rules for all the cases.

Unified routing has two main stages:

- **Classification:** rules and machine learning (ML) models can be used to add information on the work item, which can be used to find the best-suited agent.
- **Assignment:** requests are prioritized and then assigned to agents based on the nature of the work, related tables, agent skills, and the current state of the agent workforce in terms of availability and workload.

¹ <https://docs.microsoft.com/learn/modules/using-dynamics-365-queues-to-manage-case-workloads/>

[!IMPORTANT]

Agents must use either the Customer Service workspace or the Omnichannel for Customer Service app to be assigned work through unified routing.

Basic routing

Basic routing is available without enabling unified routing. Basic routing can add cases to queues based on predefined logic and uses the properties of the case to determine which queue to route the case to.

You can create routing rule sets in Customer Service Hub to automatically route cases. To define routing rule sets, go to **Settings** -> **Service Management** -> **Routing Rule Sets**.

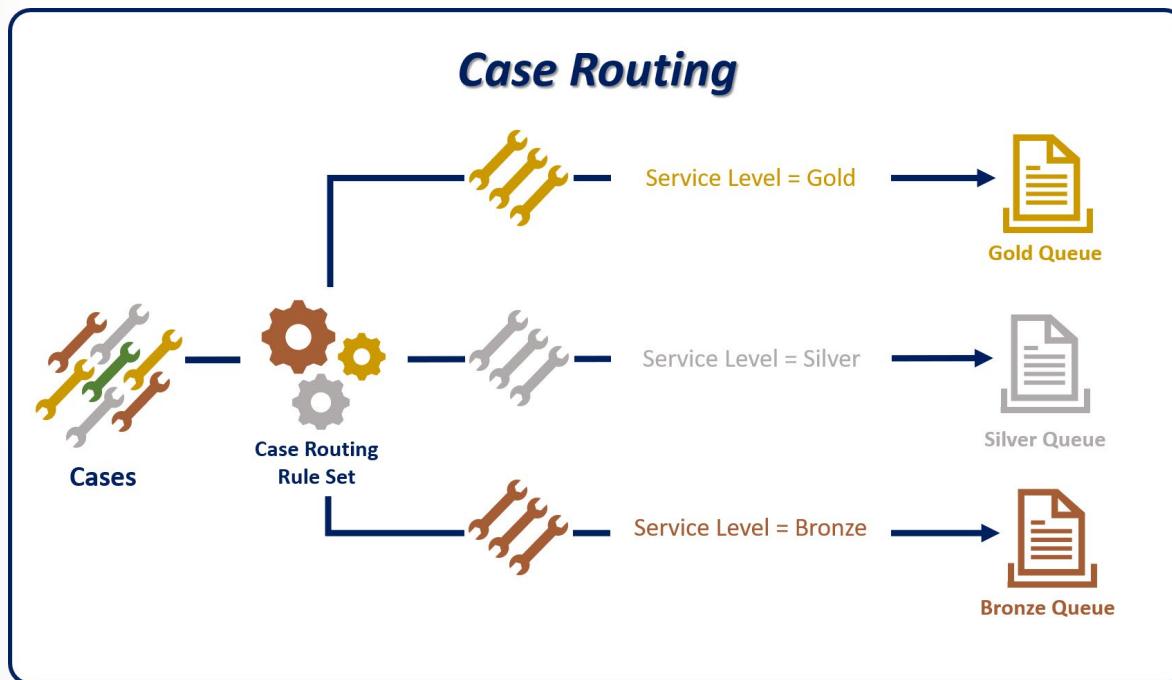
[!NOTE]

Routing rule sets are associated with the case table. Although you can set up the same type of behavior for other tables that are set up to use queues, that logic requires that some other automation scenario be used, such as classic workflows or Power Automate cloud flows.

When a rule is first created, a rule name is required. After you define the name and save the rule, rule items can be added to the rule. Rule items define the "what" and "where" for the rule set. A rule items specifies the conditions that will be evaluated for routing cases to a queue, an agent, or a team.

For example, a routing rule set named Case Routing might have the following rule items:

- **Gold route:** Route any case that has a service level of Gold to the gold queue.
- **Silver route:** Route any case that has a service level of Silver to the silver queue.
- **Bronze route:** Route any case that has a service level of Bronze to the bronze queue.



Each rule item has two sections:

- **Rule Criteria:** Defines the specific conditions that are used to determine whether the rule item applies. Conditions can evaluate fields from the case record, or from related records in Many-to-One relationships such as the Customer account. Multiple AND or OR conditions can be used in a single rule item.

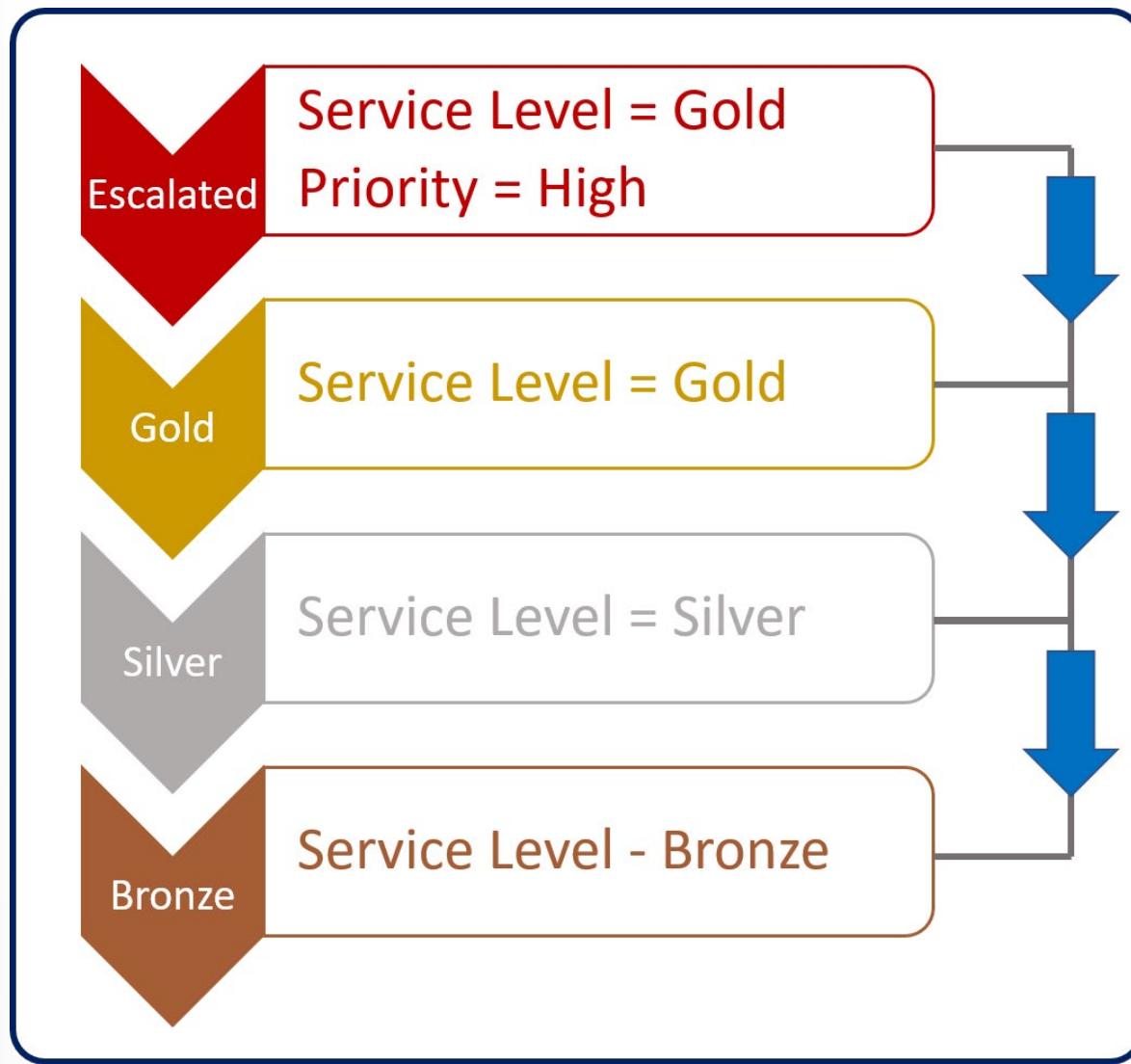
- **Action:** Specifies where the case should be routed to:

- **Queue:** Route the case to a specific queue (public or private).
- **User/Team:** Route the case to a specific user or team.

The screenshot shows the 'Gold Customer Routing' rule item configuration. It has two tabs: 'General' (selected) and 'Notes'. The 'General' tab contains 'Rule Item Information' with fields for 'Name' (Gold Customer Routing) and 'Description' (Routes cases with a "Service Level" of gold to the "Gold" Queue). The 'Rule Criteria' section shows a condition: 'Service Level Equals Gold'. A red callout box points to the '+ Add' button with the text 'Conditions support AND / OR combinations'. The 'Action' section shows 'Route to Queue' with 'Add to Queue' selected and 'Gold' chosen. A red callout box points to the 'Gold' button with the text 'Conditions support AND / OR combinations'.

Rule items are applied in the order in which they are listed in the rule set. The first matching rule item whose conditions are met is applied to the case. The rule set doesn't evaluate the remaining rule items to try to find a better match. We highly recommend that you put more specific rule items higher in the rule set, so that they're checked first. You should consider adding a catch all rule item at the bottom of the list to route cases not matched by the other rule items.

For example, in the following image, both the Escalated and Gold rule items refer to the Gold service level. Because the Escalated rule item has a priority of High, it must be evaluated before the Gold rule. Otherwise, the Escalated rule item would never be checked.



You can control the order that rule items are checked in by using the up and down arrows on the rule items sub-grid.

Name	Queue	User/Team
Gold Customer Routing	Gold	
Silver Customer Routing	Silver	
Bronze Customer Routing	Bronze	

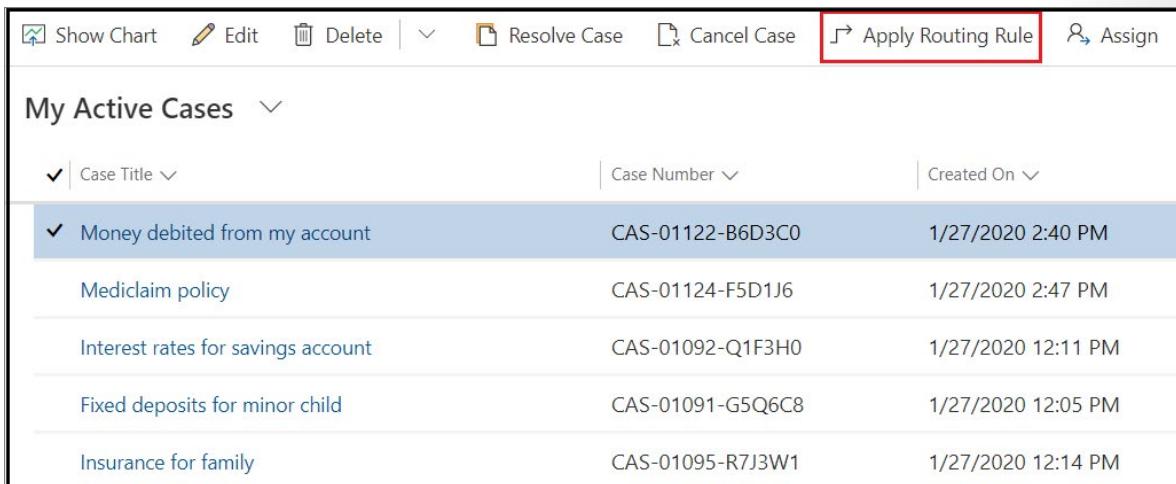
After you've defined all the rule items for a rule set, you must **Activate** the basic rule set. After the basic rule set is activated, you can't change it unless you first deactivate it.

[!IMPORTANT]

Although you can define multiple basic rule sets in Dynamics 365, only one basic rule set can be active at a time. If you try to activate a basic rule set when another basic rule set is active, it will deactivate the currently active rule set. Make sure that enough rule items are defined in your rule set to cover all the possible routing scenarios that you need to support.

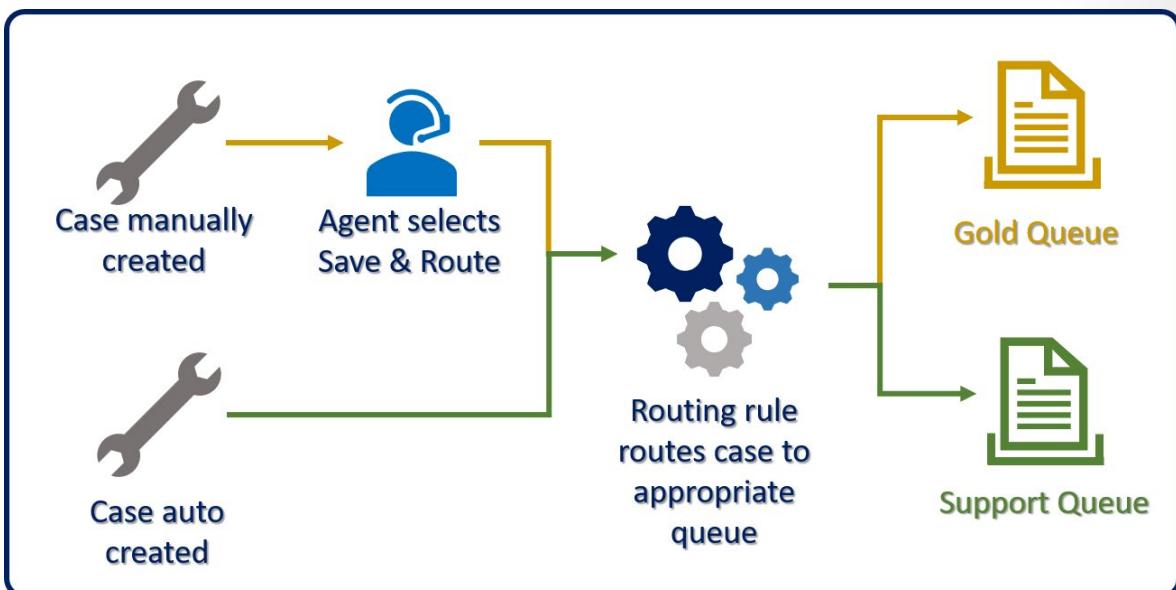
Once a basic routing rule set has been activated, it can be applied to a case in one of two ways:

- **Manually:** In the case form by using the **Save & Route** button or from a case view by using the **Apply routing rule** button. When an agent selects the button on the command bar, the routing rule set is applied, and the case is routed to the most appropriate queue.



Show Chart	Edit	Delete	Resolve Case	Cancel Case	Apply Routing Rule	Assign
My Active Cases						
Case Title	Case Number	Created On				
Money debited from my account	CAS-01122-B6D3C0	1/27/2020 2:40 PM				
Mediclaim policy	CAS-01124-F5D1J6	1/27/2020 2:47 PM				
Interest rates for savings account	CAS-01092-Q1F3H0	1/27/2020 12:11 PM				
Fixed deposits for minor child	CAS-01091-G5Q6C8	1/27/2020 12:05 PM				
Insurance for family	CAS-01095-R7J3W1	1/27/2020 12:14 PM				

- **Automatically when records are created:** When a case is automatically created (for example, by a classic workflow, a record creation rule, or Power Automate cloud flow), Dynamics 365 automatically applies the routing rule set, and the case is routed to the most appropriate queue.

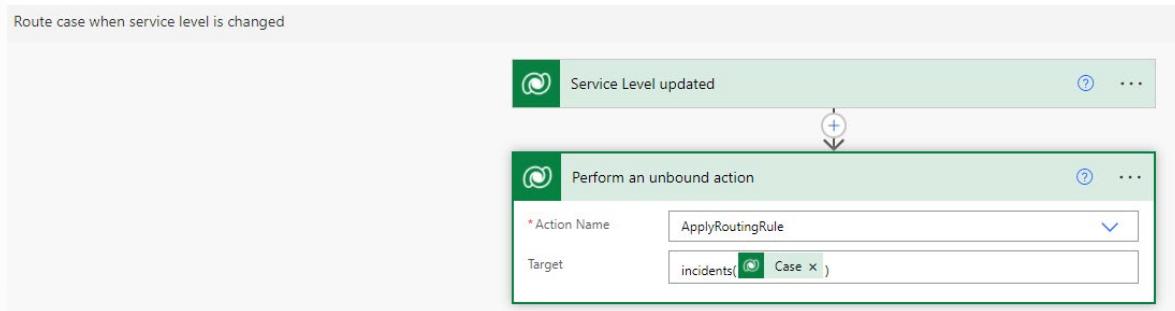


Because the case row is generally the key table that organizations want to use with routing, an out-of-the-box trigger is included with the solution to route the cases automatically. Routing is based on the Route Case column value on the case table row. The trigger is only evaluated when case rows are created.

Automatically routing cases

Cases are automatically routed by the basic routing rule set when a case is created with the Route Case column set to Yes. This column is not visible in Dynamics 365. By default, the Route Case column is set to No when a case is created manually. Therefore, no routing is triggered when a case is manually created.

You could use a Power Automate cloud flow to trigger the routing of a case for your specific business scenario, for example when the service level is changed. You use the **Perform an unbound action** and the **ApplyRoutingRule** action to route the case.



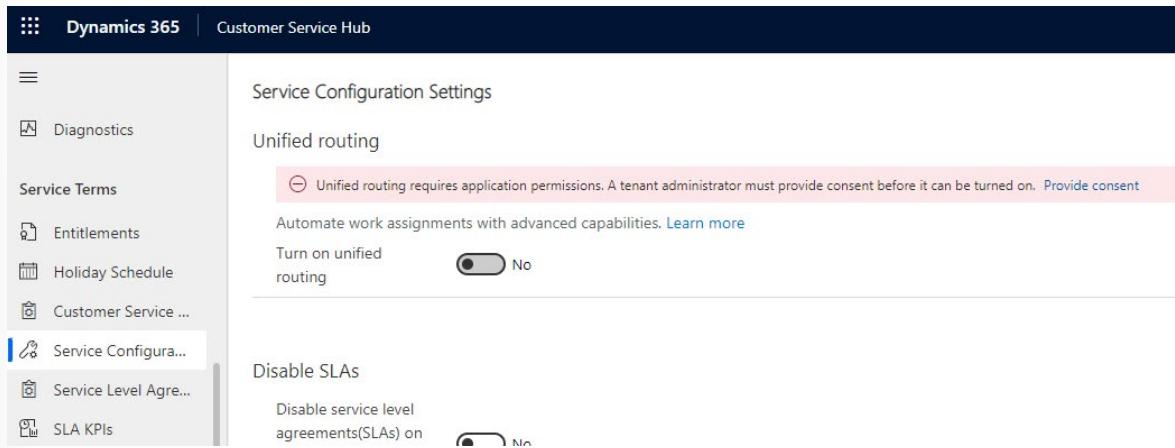
Queues

By default, unified routing is not enabled. You can configure unified routing through the Omnichannel admin center or the Customer Service Hub app.

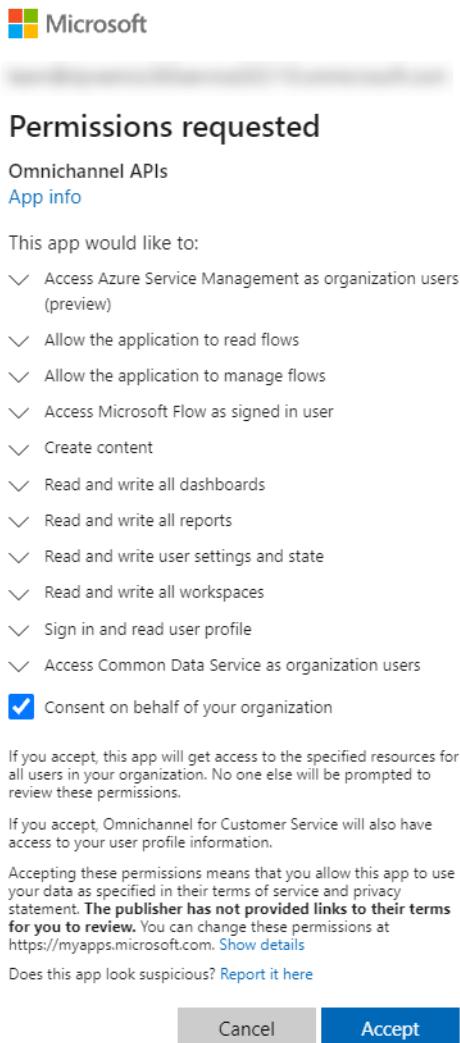
Provision unified routing in Customer Service hub

To provision unified routing in Customer Service, open the Customer Service Hub app and perform the following steps:

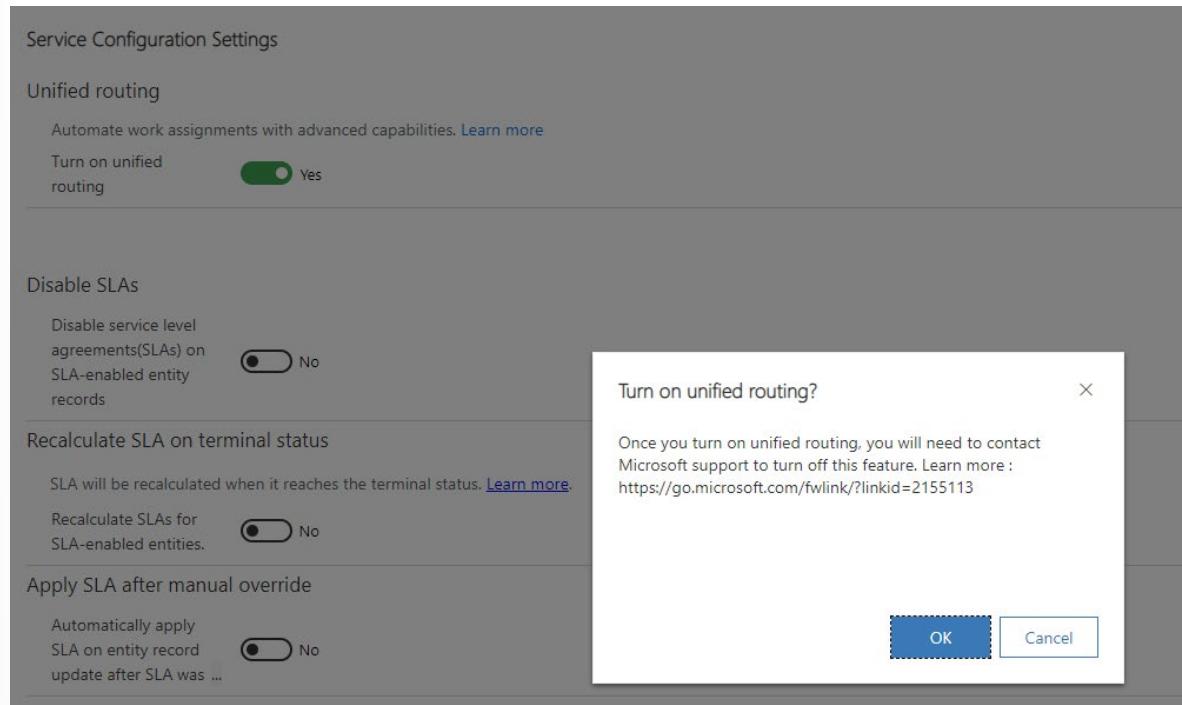
- Navigate to **Service Management, Service Terms, Service Configuration Settings**.



- Click on **Provide consent**



- Click **Consent on behalf of your organization**, and click **Accept**.
- Toggle **Turn on unified routing** to Yes.



- click **OK**

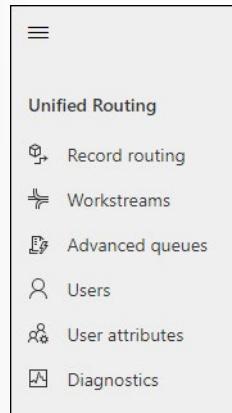
Unified routing

i Unified routing is provisioning. Please allow few hours for the process to complete.

Automate work assignments with advanced capabilities. [Learn more](#)

Turn on unified routing Processing...

After unified routing is provisioned, Unified Routing appears in the site map.

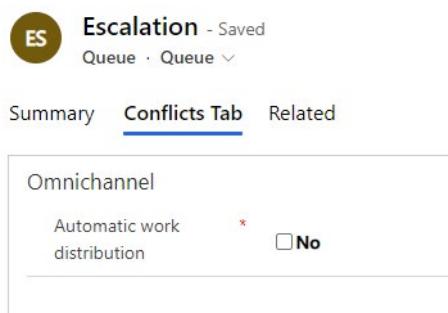


Enable existing queues for unified routing

In unified routing, queues are used for collecting and distributing workload among agents. Workload includes records, such as cases and emails, and conversations, such as chat or SMS. Agents are added as

members to the queues and the workload is distributed among these agents based on assignment methods.

To configure existing queues for unified routing navigate to **Service Management, Case Settings, Queues**. Edit the queue and check the **Automatic work distribution** field.



After this checkbox is set, a different form is displayed to allow users to be added to the queue and assignment methods specified.

Specialist [Edit](#)

Record Type Owner

Users * Required

Add users to this queue

Work items in this queue will be assigned to these agents based on your work assignment and work distribution settings. [Learn more](#)

+ Add users

Assignment method [Learn more](#)

Highest capacity Read-only

Work items will be prioritized in the order they enter the queue. Among the agents who match skills, presence, and capacity, work will be assigned to the agent with the most capacity.

See more

Operation hours Optional

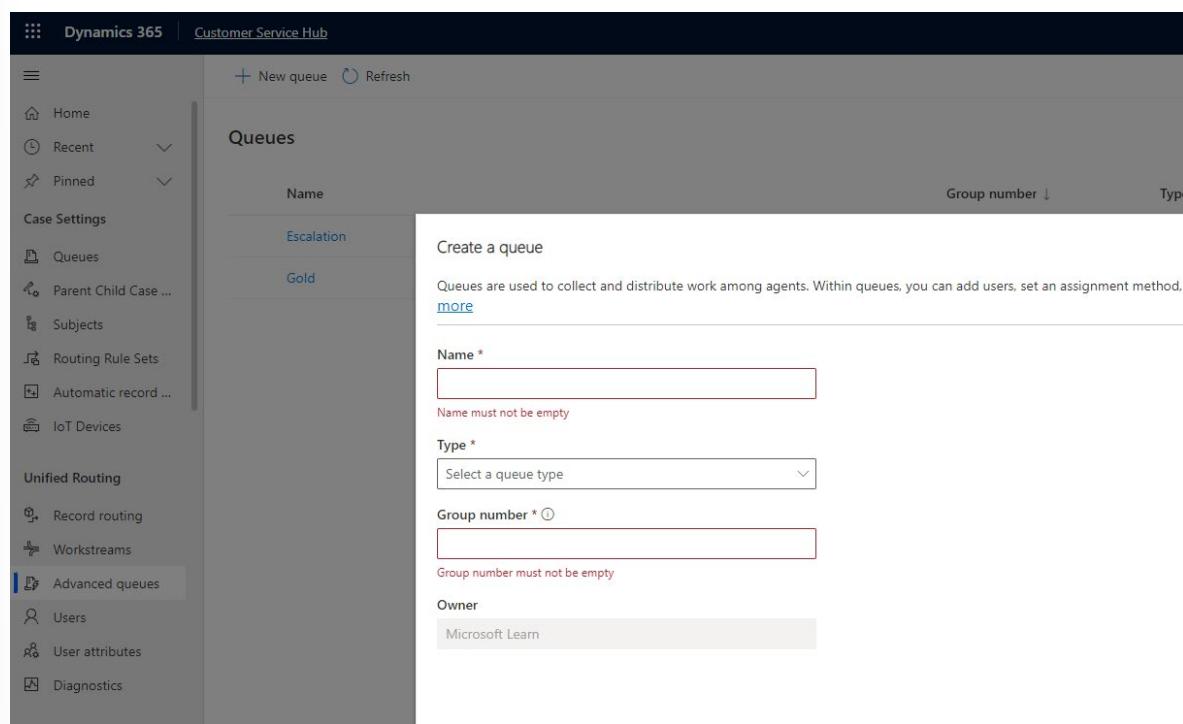
Set your operation hours

Choose the days and hours for this queue to be active—agents will only receive work during these hours. If no operation hours are set, this queue will be active 24/7.

+ Set operation hours

Create new queues for unified routing

Queues that have been enabled for unified routing are visible under **Service Management, Unified Routing, Advanced Queues**. You can create a new queue for unified routing from this location. Clicking on **+ New queue** opens the following dialog.



In the Create a queue dialog box, enter the following:

- **Name:** A name for the queue.
- **Type:** Select **Messaging** or **Record**.
- **Group number:** A number to organize the queue.

To simplify the routing experience for administrators and supervisors, queues are categorized based on the channel types as follows:

- **Messaging:** To route all messaging conversations pertaining to the live chat, SMS, and social channels.
- **Records:** To route work items pertaining to records, such as cases and emails.

Add users to a queue

In the queue, click on **+ Add users** and select the users who should be part of the queue, then select **Add**.

[!NOTE]

Users require one of the following security roles:

- Customer Service Representative
- CSR Manager
- Omnichannel agent
- Omnichannel supervisor
- Omnichannel administrator

to be added to a queue enabled for unified routing.

Users					
Name ↑	Role	Capacity profile	Capacity	Business unit	Date added
Ty Carlson (Sample Data)	Agent		100		
	Agent		100		
Kelly Krout (Sample Data)	Agent,Supervisor		100		

3 of 3

Users that are available for unified routing are visible under **Service Management, Unified Routing, Users**.

Users should have a capacity defined. The default is 100. If there is no capacity set for the user or you need to amend the user's capacity, edit the user record and select the Omnidchannel tab.

User Details	Omnichannel Queues
Capacity 100	Omni Channel Queues Add Existing Queue Escalation Entity 10/5/2021 9:... Specialist Entity 10/13/2021 5...
Default Presence 	

In this form you can specify the following information.

Field	Description	Default value
Capacity	If capacity units is configured, allocate a value that indicates the capacity of the agent.	100
Default Presence	Assign a default presence status for agent. This is the status that the agent is logged in with.	Available

Bookable resources

For some features of unified routing, users also need to be created as a Bookable Resource. In the Omnidchannel tab on the user record, you will see a section named **Skills Configuration**. Click on **+ New Bookable Resource** and enter the name of the agent as shown in the following screenshot and click **Save & Close**.

New Bookable Resource - Unsaved

General Project Service Field Service Scheduling Omnichannel

Resource Type	* User
User	*
Name	*
Time Zone	* (GMT) Coordinated Universal Ti

Primary Email	*	[REDACTED]
Home Address	---	
Get Directions		
Map is disabled for this organization.		

Capacity and Capacity profiles

Capacity is the amount of work that an agent can perform at any one time. You specify capacity on both the user and on workstreams. The capacity on both records should be the same scale. If you specify the capacity on a workstream as 25 and the user has a capacity of 100, this means that the user can take up to 4 work items for that workstream simultaneously.

Alternatively, you can define capacity profiles. An administrator can create various capacity profiles and associate users with the matching profiles.

Capacity profiles available under **Service Management**, **Unified Routing**, **User attributes**. Select the **Manage** option for **Capacity profile** and select **Create new**.

On the Details tab of the Create capacity profile dialog box, enter the following details:

- **Profile name:** Name for the capacity profile.
- **Work item limit:** Number of units of the work type that the agent can be assigned.
- **Reset frequency:** Period after which capacity consumption can be reset for agents. If you select Immediate, capacity will be reset immediately. If you select End of day, capacity will be reset after the agent's shift ends. Once configured, you'll have to recreate the capacity profile if you want to change the reset frequency.
- **Assignment blocking:** Set the toggle to Yes. When the agent reaches the work item limit of the capacity profile, any new work items won't be automatically assigned to the agent.

On the Users tab, select **Add user**, and in the **Users list**, select the users, and click **Add user**.

[!IMPORTANT]

Users must be configured as a bookable resource to be assigned the capacity profile.

[!NOTE]

You should use either configure capacity units or capacity profiles in your system, but not both.

Set the assignment method for a queue

Assignment methods determine how a work item is assigned. You can use the out-of-the-box assignment methods or build custom assignment rules by configuring the prioritization rules and assignment rule-sets.

The following assignment methods are available out of the box:

- **Highest capacity:** Assigns work item to the agent with the highest capacity, among those who have the skills identified during the classification stage, and have the presence as specified in the allowed presence option of the workstream; selected by default.
- **Round robin:** Assigns work item to the agent in the list order who matches the criteria for skills and presence.

You can also create your own assignment method to suit the business needs.

- **Create new:** Lets you create and use your own custom rulesets and rules to configure priority, severity, and capacity for choosing the queues to which work items need to be routed by setting up the rulesets for Prioritization and assignment.

For more details on assignment methods see **Assignment methods for queues²**.

Operation hours

Operation hours specify when work can be distributed to the queue. If you don't set the operation hours, the queue is considered to be available round the clock.

[!NOTE]

To set operation hours, you must first create an operating hour record.

Working hours

All Day

10/13/2021 

Repeat: Every week 

Occurs every Monday, Tuesday, Wednesday, Thursday and Friday
until 12/29/9999 [remove end date](#)

8:00 AM  to 5:00 PM 

:

² <https://docs.microsoft.com/dynamics365/customer-service/assignment-methods>

Record routing

Set up unified routing for cases

If you navigate to **Service Management, Unified Routing, Record routing**, you will see that Case has been added as a record type.

The screenshot shows the Dynamics 365 Customer Service Hub interface. On the left, there is a navigation sidebar with options like Home, Recent, Pinned, Case Settings, Queues, Parent Child Case, Subjects, Routing Rule Sets, Automatic record, IoT Devices, Unified Routing, and Record routing. The 'Record routing' option is selected. The main content area is titled 'Record routing' and contains a sub-instruction: 'Select a record type to define how work items get automatically distributed. You can add more record types by selecting Add. Learn more'. Below this, there is a table titled 'Record types' with one entry: 'Case' (Name) created on '10/13/2021 1:38 PM'. To the right of the table is a blue circular icon depicting a cloud with various communication and data exchange symbols. At the bottom right of the table are buttons for '+ Add', 'Refresh', and 'Search'.

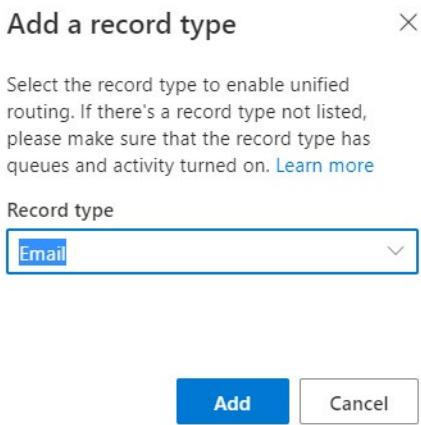
Clicking on Case will open the Case routing hub.

The screenshot shows the 'Case routing hub' page. At the top left, there is a breadcrumb trail: 'Record routing' and 'Case routing hub'. The main content area is divided into three sections: 'Intake rules' (with a '+ Create rule' button), 'Workstreams' (with a '+ Create workstream' button), and 'Basic routing rule sets' (listing one item: 'Basic case service level routing' created on 10/13/2021 at 12:21 PM, status Active). Each section has its own '+ Create' button.

In this page, you configure workstreams and intake rules. You will also see any basic routing rule sets that were configured prior to enabling unified routing.

Set up unified routing for emails

Emails created from a mailbox are records in Dynamics 365. To route emails you need to navigate to **Service Management, Unified Routing, Record routing**. In Record routing click on **Add**, select **Email** and click on **Add**.



Now that you have enabled the record types for unified routing, you need to configure workstreams and intake rules.

Configure workstreams for record routing

A workstream is a container to enrich, route, and assign work items to the right queues and agents. A workstream can be one of the following two types:

- **Messaging:** To route conversations from live chat, SMS, social, and Teams channels.
- **Record:** To route records, such as case and email.

Essentially, a workstream is a collection of routing rules. Routing settings define how records should be routed to queues. Work distribution settings define how conversations should be allocated to agents within a queue.

You can create a workstream from within a record routing hub, or from **Service Management, Unified Routing, Workstreams**. Clicking on **Create workstream** from the Case routing hub opens the dialog as shown in the following screenshot.

Create a workstream X

A workstream is a collection of settings, including channel set up, routing rules, work distribution, and bots. Your workstream settings will be used to route customers to the right queues and agents. [Learn more](#)

Name *

Owner

Type *

Record type *

Work distribution mode

Push
Incoming conversations will be assigned to agents automatically based on capacity and presence. You can also allow picking of open work items that go unassigned.

Pick
Incoming conversations will go to the open work items section of the agent dashboard. Agents will pick the conversations they work on.

Create

In this form enter the following information and click **Create**:

- **Name:** Enter an intuitive name, such as Contoso case workstream.
- **Type:** Select **Record**.
- **Record type:** Select **Case** or **Email**
- **Work distribution mode:** Select **Push** or **Pick**.

Configure intake rules

Intake rules for a record help determine the workstream to be chosen to assign an incoming work item. You can create intake rules independently and you can also map them to basic routing rulesets. However, on any workstream details page, only those intake rules that are mapped to the workstream will be displayed.

You can create a workstream from within a record routing hub, or from within a workstream. Clicking on **Create rule** from the Case routing hub opens the dialog as shown in the following screenshot.

Add conditions and select the basic routing rule set or workstream to direct the records to. [Learn more](#)

Rule Name *

Case origin email

 **Root record:** Case

Root record is the starting record for the conditions and the output below. Starting from the root record you can navigate to its related records and attributes.

Conditions



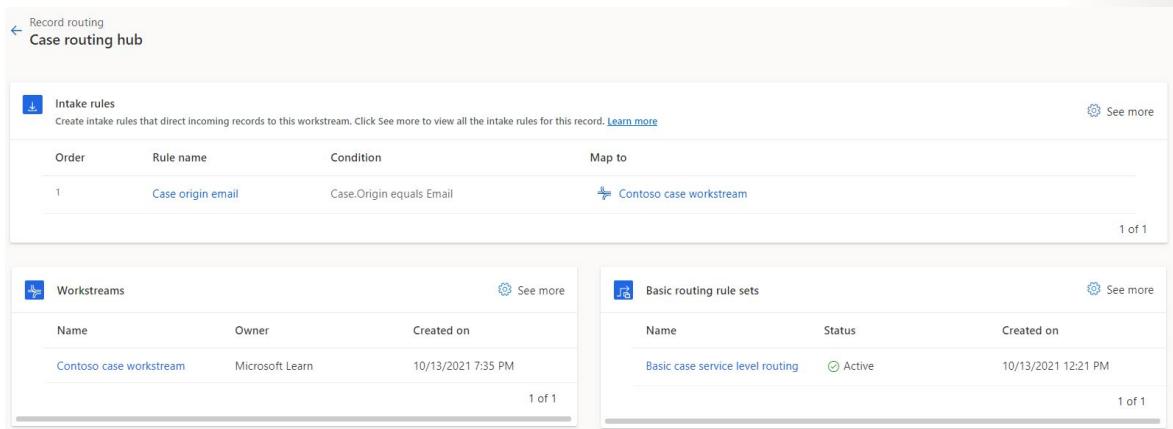
Map to

Workstream Contoso case workstream

In the Create intake rule dialog enter the following information and click **Create**:

- **Name:** Enter an intuitive name, such as Case origin from email.
- **Conditions:** Defines the specific conditions that are used to determine whether the intake rule applies. Conditions can evaluate fields from the case record, or from related records in Many-to-One, One-to-Many, and Many-to-Many relationships such as the Customer account. Multiple AND or OR conditions can be used in a single rule item.
- **Map to:** Select **Workstream** or **Basic routing rule set** and choose the workstream or rule set to map to

The following screenshot shows the Case routing hub with the workstream and intake rules defined.



The screenshot displays the Case routing hub interface. At the top left, there's a back arrow and the title 'Record routing' followed by 'Case routing hub'. The main area is divided into three sections:

- Intake rules:** A table showing one rule: 'Case origin email' with condition 'Case.Origin equals Email' mapped to 'Contoso case workstream'. There are 'See more' and 'Create' buttons.
- Workstreams:** A table showing 'Contoso case workstream' with owner 'Microsoft Learn' and created on '10/13/2021 7:35 PM'. There are 'See more' and 'Edit' buttons.
- Basic routing rule sets:** A table showing 'Basic case service level routing' with status 'Active' and created on '10/13/2021 12:21 PM'. There are 'See more' and 'Edit' buttons.

Configure routing rules

You need to configure how work items that have been directed to the workstream by the intake rules are routed to users and queues. There are two options:

- Work classification rules
- Route to queue rules

The screenshot shows the 'Contoso case workstream' configuration page. At the top, there are navigation links for 'Case' (Channel), 'Record' (Type), and 'Owner'. Below this, the 'Intake rules' section is shown, containing a single rule named 'Case origin email' with the condition 'Case.Origin equals Email' mapped to the 'Contoso case workstream'. The 'Routing rules' section follows, with 'Work classification (optional)' and 'Route to queues' options. Both sections include 'Create ruleset' buttons.

Work classification

In unified routing, work classification lets you define rules to add detailed information to incoming work items that can be used to route and assign the work items optimally. Work classification rules can be written by using the manual declarative decision list or by using machine learning models.

You can create a work classification ruleset from within a workstream. Clicking on **Create ruleset** from a workstream opens the dialog as shown in the following screenshot.

Create work classification ruleset X

Rule type

Manual 

Machine learning model 

Manual

Create conditions to define your rules based on multiple entity attributes.

Name *

Description

[Learn more](#) Create Cancel

You can select Rule Type as either:

- **Manual:** Create rules that use Capacity Profiles, Skills, or attributes of the routed record.
- **Machine learning model:** Select one of the following models; Skill identification, Sentiment prediction, or Effort estimation.

For more details see [Configure work classification rulesets for unified routing³](#)

Route to queues

Queue routing rules send the work item to the right queue. They are written in the format of, "If defined condition satisfies, then route the work item to the defined queue."

Queue routing rules are optional, and if no rules are defined or no rules match, then the incoming work item will be routed to the default queue of the respective channel type.

For a workstream, the route-to-queue ruleset is run after all of the work classification rulesets are run. A workstream can have only one route-to-queues ruleset.

You can create a route to queue ruleset from within a workstream. Clicking on **Create ruleset** from a workstream enable you to create route to queues rules as shown in the following screenshot.

³ <https://docs.microsoft.com/dynamics365/customer-service/configure-work-classification>

Create route to queue rule
Add conditions and select the queue to route to. [Learn more](#)

Rule Name *

Root record: Conversation
Root record is the starting record for the conditions and the output below. Starting from the root record you can navigate to its related records and attributes.

Conditions

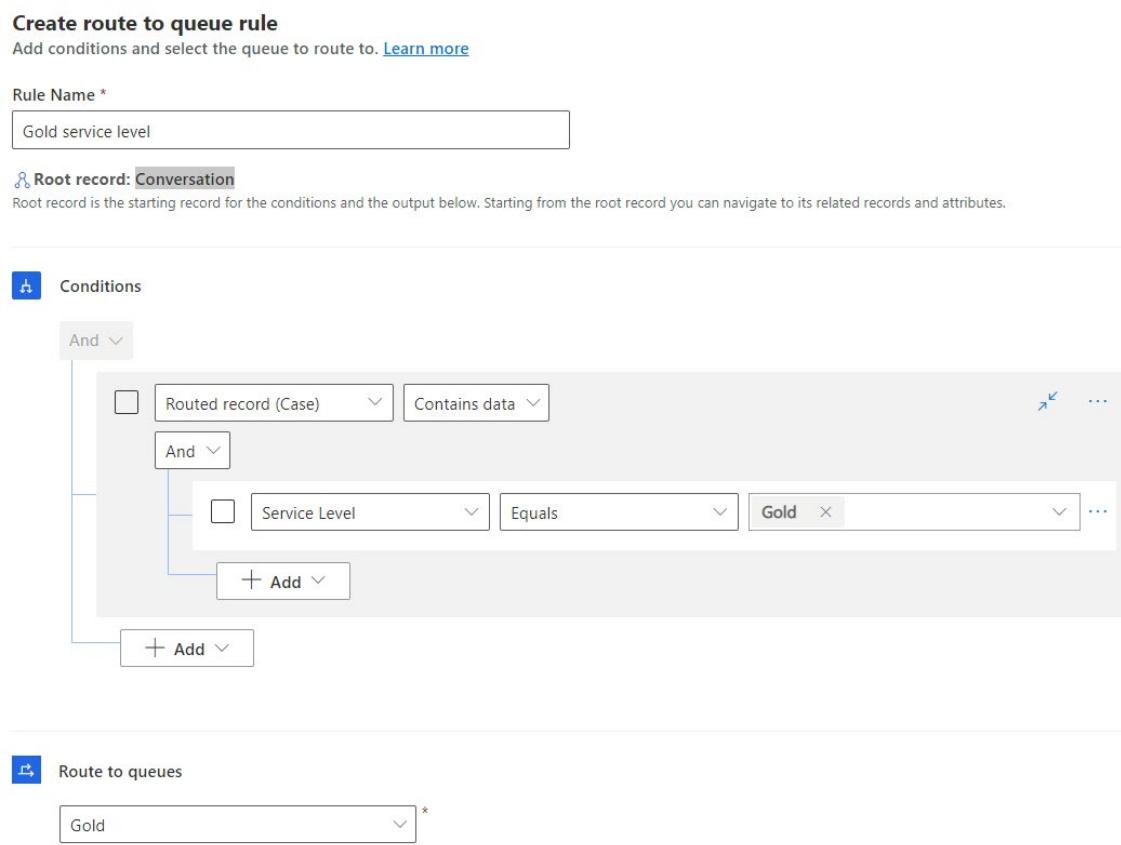
And

Routed record (Case)

Service Level Gold

Route to queues

*



Summary

The standard Dynamics 365 queue functionality can be extended to handle the routing of records to either agents working in Customer Service Hub or omnichannel agents working in Omnichannel for Customer Service.

This module examined how to use Dynamics 365 Customer Service unified routing for records, including:

- How to configure basic routing rule sets.
- How to enable unified routing and configure queues, users, and capacity
- How to configure cases and emails for unified record routing.
- How to configure workstreams and intake rules.

Your next steps from here would be to gain a deeper understanding on how to define and configure unified routing for conversations in Omnichannel for Customer Service and to understand how to configure skills based routing.

Module 2 Work with entitlements and service level agreements in Dynamics 365 Customer Service

Create and manage entitlements

Overview of entitlements

Service-based organizations often provide service contracts that entitle their customers to an allotted amount of support over a specified period. The amount of support might be a specific number of cases or a specific length of time.

Microsoft Dynamics 365 can help organizations manage, track, and enforce these allotments by providing two mechanisms for managing the level of service that a customer is entitled to:

- **Service level agreements (SLAs):** SLAs track and define what should happen when a case is opened, like the initial response time by a support engineer or the time that it takes to resolve the case.
- **Entitlements:** Entitlements are agreements that define the level and type of support that a customer is entitled to.

[!NOTE]

SLAs aren't the primary focus of this module. They will be discussed only as they pertain to entitlements. For more about SLAs, see the "Microsoft Dynamics 365 service level agreements (SLAs)" module on Microsoft Learn.

Entitlements define specific support details that were promised to a customer. These details include the coverage dates (period), and either the number of cases or the length of time that's allotted.

For example, during the period when an entitlement is active, a customer might be entitled to place 35 phone calls to a help desk team. Another customer might be entitled to a total of 100 hours of technical support via multiple channels of communication.

Dynamics 365 entitlements can help support both the preceding examples. They can be used to manage and enforce a variety of scenarios, including:

- Management of warranty contracts.

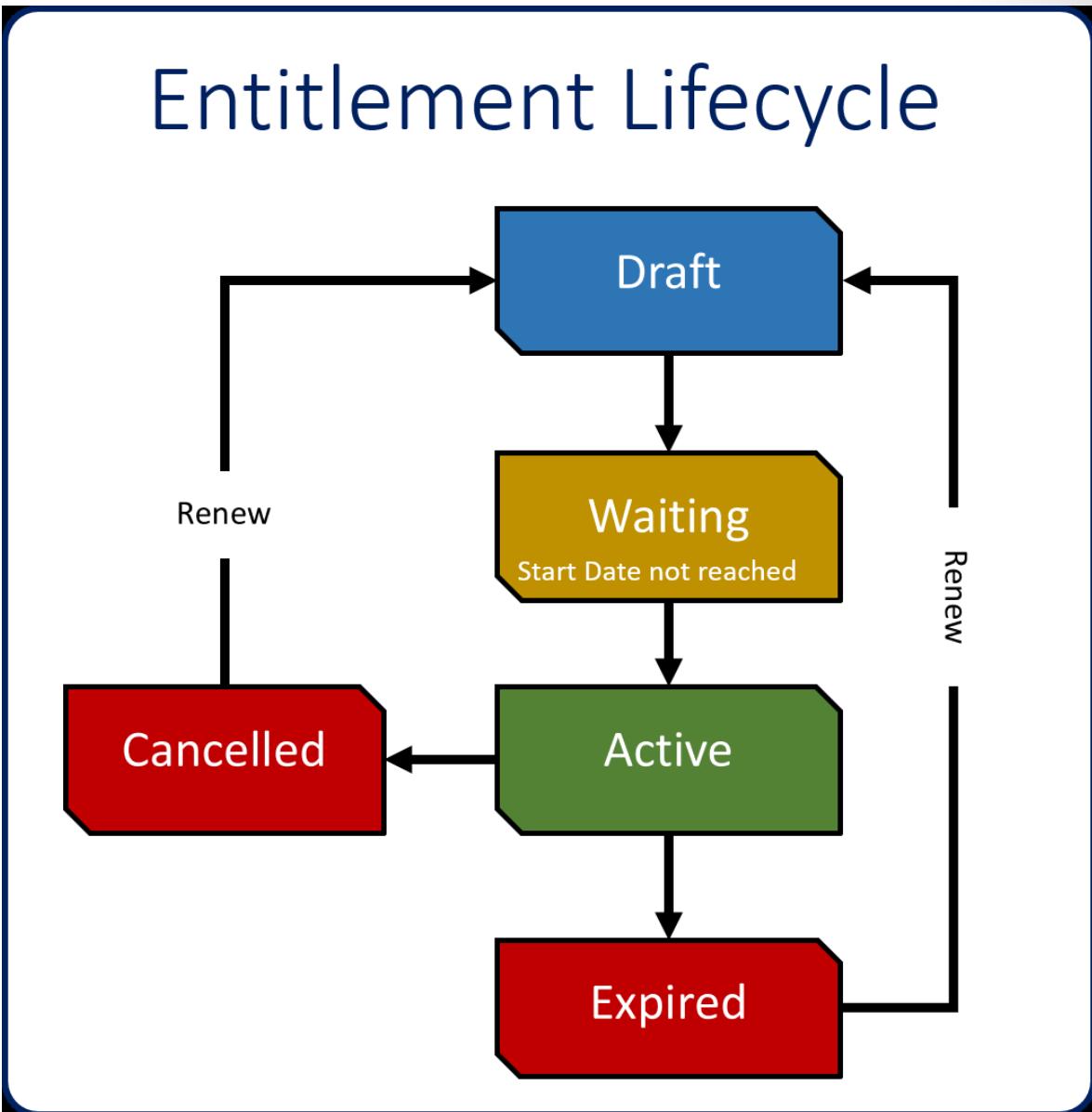
- Service-specific contracts.
- Incident-based support contracts.
- Time-based support contracts.

The Dynamics 365 entitlement management system is based on these elements:

- **Entitlements:** An entitlement is the actual agreement that defines the specific support details that are provided to the customer. A typical entitlement defines the specific coverage period, the allotment types/terms, the supported channels, and the products that are covered.
- **Entitlement channels:** You can define one or more channels that specify the coverage that's provided for a specific product or item.
- **Entitlement templates:** You can use entitlement templates to quickly create and define entitlement options, based on the different types of entitlements that are offered to customers.

Entitlement lifecycle

Each entitlement record follows a specific lifecycle. The following image shows the entitlement lifecycle.



- **Draft:** When an entitlement is first created, it's in **Draft** status. While an entitlement is a draft, you can edit all the details of the record, including the number of cases, the channels and products, and the coverage dates. You can't attach cases to an entitlement that's in **Draft** status.
- **Waiting:** Entitlements that are in **Waiting** status have been activated and are waiting for the entitlement start date to be reached. Because the entitlement has been activated, you can't edit any details of the record. Because the start date hasn't been reached, you can't attach cases to the entitlement.
- **Active:** An entitlement is considered active when it has been activated and the current date is within the specified coverage dates. While an entitlement is active, new cases can be attached to it, but the details of the entitlement record can't be edited. To edit the details, you must first deactivate the entitlement.
- **Expired:** An entitlement expires after the end date is reached. After an entitlement expires, you can't attach any cases to it.
- **Canceled:** An entitlement can be canceled at any point while it's active.

- **Renewals:** Only expired or canceled entitlements can be renewed.

Over the course of this module, we'll examine other aspects of entitlements in more detail. For example, you'll learn how to create entitlements, define terms and channels, and use entitlements with cases. You'll also learn and tips and tricks for using entitlements.

Create entitlement records

Before an organization creates entitlements for its customers, it needs to understand when a specific entitlement might be applicable. Additionally, it needs to consider the specific circumstances that might dictate what's required from the entitlement. This information can help the organization determine what its standard entitlement offering will look like and what situations the standard entitlement might not work in. Although every organization is different and entitlement needs will vary, there will likely be standard things that can help drive you in the right direction.

Here are some of the questions that you might consider:

- Should entitlements be based on time or number of cases?
 - What happens if customers exceed their allotted amount of time or number of cases?
 - When should items be deducted from the available allotment? (For example, should items be deducted when cases are created or when they're resolved?)
- Do we need entitlements that are associated with specific products, like warranty contracts?
 - Is there a standard set of products that will use warranty contracts?
 - Are there specific channels that should be used?
- What channels can cases be opened from?
 - Do we need to limit the available channels?
 - Are the channels limited for warranty work?
- What happens if a customer has more than one entitlement?
 - How will the agent determine which entitlement to attach the case to?
 - Should one of the entitlements be the default entitlement for the customer?
 - Will we limit who can open cases against specific entitlements?
- Are any service level agreements (SLAs) applicable?

These questions can help determine what entitlements are needed from the standpoint of an individual customer, and what situations might be better served by entitlement templates.

Creating entitlements

To create entitlements, go to **Settings > Service Management**, and then, in the **Service Terms** section, selecting **Entitlements**.

When you create an entitlement, you must provide the following information:

- **Name:** Enter the name of the entitlement record. This name will appear in lookup fields when you search for an entitlement.

- **Primary Customer:** Define the customer that the entitlement is associated with.
- **Start Date:** Date cases can be attached to the entitlement after it's set to active.
- **End Date:** The date when the entitlement will expire.
- **Restrict based on entitlement terms:** Specify whether entitlement terms can be exceeded. If you set this option to Yes, entitlement terms are enforced.
- **Allocation Type:** Define the type of entitlement. Two options are available: *Number of cases* and *Number of hours*.
- **Total Terms:** Define the total number of cases or hours that's allotted, depending on the allocation type. Note that, although this field isn't required, it's a best practice to enter a value.
- **Decrease Remaining On:** Specify when the case should be deducted from the remaining terms. Two options are available: *Case Resolution* and *Case Creations*.

The screenshot shows the Microsoft Dynamics 365 Entitlements form. The General tab is selected. In the INFORMATION section, fields include Name (Adv Works Phone Support), Primary Customer (Adventure Works), Start Date (11/1/2019), End Date (10/31/2020), Restrict based on entitlement terms (Yes), SLA (Standard SLA), Owner (a user icon), Description (---), and Is Default (unchecked). Below this is a Timeline section with a note input field and a message stating 'No records to show.' To the right is the ENTITLEMENT TERMS section, which includes Entity Type (Case), Allocation Type (Number of cases), Decrease Remaining On (Case Creation), Total Terms (20.00), and Remaining Terms (20.00). At the bottom is the ENTITLEMENT CHANNEL section, which lists channels (Email, Facebook, Phone) with their respective Total Terms and Remaining Terms values. Navigation buttons like Page 1 are visible at the bottom of the channel list.

Allocation Type and Decrease Remaining On fields

The **Allocation Type** and **Decrease Remaining On** fields both affect when cases are deducted from an entitlement. It's important to understand how the **Decrease Remaining On** field deducts items from the remaining terms on an entitlement, because this can have a significant effect on the number of remaining cases that are currently available.

When the **Allocation Type** field for an entitlement is set to Number of cases, you can set the **Decrease Remaining On** field to either Case Creation or Case Resolution. If you select Case Creation, any new case that's created will decrease the remaining terms by 1. If you select Case Resolution, the remaining terms won't be decreased until the case is resolved.

For example, if a customer's entitlement has five cases available, setting the **Decrease Remaining On** field to Case Resolution might not be the best option, because the customer might have eight active cases that are currently being worked on. As those cases are resolved and deducted from the remaining terms, you might find that there aren't any left when you try to resolve cases 6, 7, and 8. This scenario is

where the **Restrict based on entitlement terms** option comes into play. If you set this option to Yes, you can't resolve cases 6, 7, and 8, because they will cause the entitlement terms to be exceeded. That can be a significant problem, because agents might have spent hours resolving those items, and now they can't be closed.

If you set the **Decrease Remaining On** field to Case Creation and the **Restrict based on entitlement terms** option to Yes, the remaining terms will be decreased as cases are created. You then won't be able to add cases 6, 7, and 8 at all. Therefore, agents won't waste any time on those cases.

When the **Allocation Type** field for an entitlement is set to Number of hours, the **Decrease Remaining On** field can be set only to *Case Resolution*.

For example, if a customer's entitlement has 10 hours available, Case Resolution is the best option, because the total time that's spent on the case is calculated based on the all the "closed activities" that are associated with the case. The total time of those activities is rolled up and then deducted from the remaining terms.

[!NOTE]

When a case is closed, only activities that are marked as finished are included. Open activities aren't included. Therefore, it's important that agents close all relevant activities.

Here are some other points to consider about how the Case Creation and Case Resolution options affect the remaining terms:

- **Case Creation:**

- If you create a new case that's associated with an entitlement, the remaining terms are decreased.
- If you associate an existing case with an entitlement, the remaining terms are decreased.
- If you cancel a case that's associated with an entitlement, the remaining terms are increased.
- If a case is updated so that it's associated with a different entitlement, the remaining terms on the first entitlement are increased.

- **Case Resolution:**

- If you resolve a case that's associated with an entitlement, the remaining terms are decreased.
- If you reactivate a case that's associated with an entitlement, the remaining terms are increased.

- **Changing from Case Resolution to Case Creation:** When a new entitlement is first created, the **Decrease Remaining On** field is set to Case Resolution. Occasionally, people activate an entitlement but realize later that the **Decrease Remaining On** field should have been set to Case Creation. If you just deactivate an entitlement and change the value to Case Creation, open cases that are currently attached won't decrease the remaining terms. Instead, you must remove the entitlement from the case and then add it back.

For more about creating entitlements, see Create an entitlement.

Managing entitlement terms

These days, support organizations offer their customers more ways to initiate contact and request support. When organizations take advantage of multiple channels to support their sales, marketing, or service strategies, the solutions that they offer are referred to as multi-channel or omni-channel solutions. Although these solution types are often mentioned together, they're different.

What's the Difference?

Multi
Channel

VS

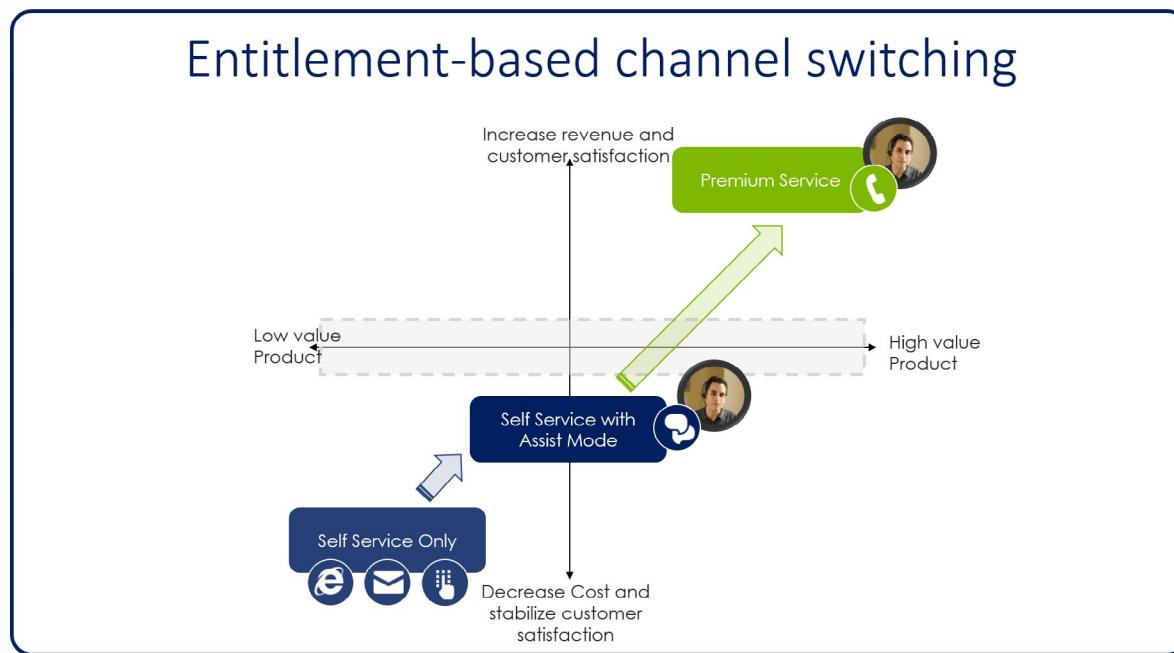
Omni
Channel

- **Multi-channel:** A multi-channel solution offers two or more channel experiences to customers. Data isn't necessarily shared across channels, and the experience isn't consistent.
 - For example, a customer starts a support request via chat but is then transferred to an agent. The customer then has to provide all his or her information again.
- **Omni-channel:** An omni-channel solution offers two or more channel experiences to customers, and the customer experience is consistent across channels. The context of the case and customer is used to streamline the experience across apps.
 - For example, a customer starts on a self-service portal but then starts a chat conversation. All the pages that the customer has opened are available to the agent.

By providing multi-channel or omni-channel solutions to your customer, you help guarantee that each customer can interact with your organization by using the option that's best for him or her. When you provide multi-channel or omni-channel solutions, you must also consider the effect on the organization. Although it's important to make sure that customers have a consistent experience when they work with the different channels, it's also important to remember that each channel is actually different.

For example, an agent who takes a phone call from a customer can work only on that case at that moment. But agents who support customers who are using chat channels can handle multiple cases at the same time. Therefore, those channels help improve efficiency and reduce costs.

By designing omni-channel solutions, you can control the channels that customers use and direct specific types of requests to different channels. As customers engage with a specific channel, they're offered escalation options that start moving them through different channels.



In this example, a customer starts with a self-service option like a portal. He or she is then escalated to a chat with either an agent or a bot. Finally, the customer is routed to a live agent on the phone.

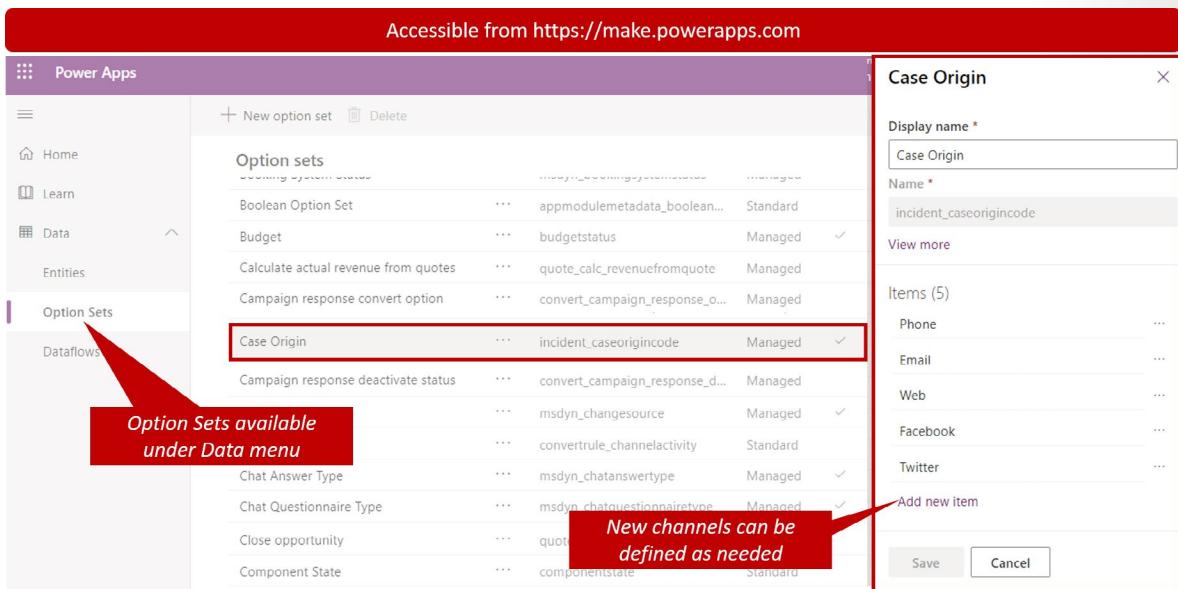
Working with entitlement channels

Microsoft Dynamics 365 lets you specify which channels a customer can use to submit cases against an entitlement. Why is that important? Although more and more customers are embracing different support channels, like chat, email and social media, many customers still want to get support through more personal channels, like a phone call. But customers who prefer phone calls are likely to occupy more of an agent's time. Therefore, agents who provide support over the phone service fewer customers.

You can define the channels that are available for specific entitlements. Therefore, you can limit the number of cases that a customer can open over the phone. You can even create phone-only support contracts that have higher costs associated with them.

When you create entitlements, you can define the specific channels that are available to open cases against that entitlement. You can also define the maximum number of cases that can be opened through a specific channel. Out of the box, the channels that are available for entitlements are the same channels that are listed in the **Origin** field when a new case is created: Phone, Email, Web, Facebook, and Twitter.

You can add more channels by going to **Settings > Customizations > Customize the System > Option Sets** and adding them to the **Case Origin** global option set. After new channels are added to the option set, they can be used as entitlement channels.



When you add an entitlement channel, you just limit the number of cases that can be opened through that channel. You don't limit or prevent the use of additional channels.

Here is an example.

ENTITLEMENT TERMS	
Entity Type	* Case
Allocation Type	* Number of cases
Decrease Remaining On	* Case Creation
Total Terms	15.00
Remaining Terms	15.00

ENTITLEMENT CHANNEL	
Name	Total Terms
Phone	15.00

In the preceding image:

- In the **Entitlement Terms** section, the total number of cases that can be opened against the entitlement is 15. In the **Entitlement Channel** section, 15 is also the maximum total terms for the Phone channel. Therefore, no more than 15 cases can be opened through the phone channel.
- But note that, because we aren't defining any other channels, we aren't limiting the number of cases that can be opened through other channels.

- It's possible to open, for example, 10 cases via email, two via the web, and three via Facebook, and not open a single case through the phone channel, provided that we don't exceed the total terms for the entitlement.

If we want to limit the entitlement so that only phone calls can be used for the 15 total cases, we can set it up as shown here.

The screenshot shows two configuration screens for an entitlement.

ENTITLEMENT TERMS

Entity Type	* Case
Allocation Type	* Number of cases
Decrease Remaining On	* Case Creation
Total Terms	15.00
Remaining Terms	15.00

ENTITLEMENT CHANNEL

Name	Total Terms	Remaining Ter...
Email	0.00	0.00
Facebook	0.00	0.00
Phone	15.00	15.00
Twitter	0.00	0.00

Because we've specified that the total terms for all other channels is 0 (zero), the contract is a phone support-only contract. Therefore, all 15 of the available cases that can be opened against this contract can be through the phone channel.

Entitlements that have these kinds of requirements aren't very uncommon, and they're a great way to take advantage of entitlement templates, which we'll discuss in another module.

Additional considerations

Now that we've looked at some of the basics of entitlements, like initial creation and term definition, let's examine some other considerations that often come up when organizations work with entitlements.

Product-specific entitlements

Because products can be added to an entitlement, entitlements are often used for things like warranty contracts. Let's say that a customer buys a TV and, according to the warranty contract, gets an unlimited number of support calls for one year. In this situation, you can just add the TV to the **Products** section of the entitlement and define the total terms as something like 9,999 (you can't actually specify unlimited terms). When an entitlement includes products, if a product is specified on a new case, the entitlement is available for selection on that case.

Multiple products can be added to a single entitlement

A screenshot of the Dynamics 365 Products list view. The list shows a single item: "12 inch Security Monitor". The context menu, which is open on the right side, contains the following options: "Add Existing Product" (highlighted with a red box), "Refresh", "Run Report", "Excel Templates", "Export Products", and "See all records".

Limiting contacts

Customers sometimes also want to limit which employees can call in and open cases against a support contract. A customer might buy a support contract for a specific reason, like down systems or critical events, and might prefer that the contract not be used for smaller issues, like password or sign-in issues. Therefore, one or more contacts can be added to an entitlement. When an entitlement includes contacts, if a contact is specified on a new case, the entitlement is available for selection on that case.

Multiple contacts can be added to a single entitlement

A screenshot of the Dynamics 365 Contacts list view. The list shows a single contact: "Olivia Wilson". The context menu, which is open on the right side, contains the following options: "Add Existing Product" (highlighted with a red box), "Refresh", "Run Report", "Excel Templates", "Export Products", and "See all records".

After a product or contact is added to a case, only valid entitlements for that product or contact are available for selection.

If no product or contact is added to the case:

- All valid entitlements for the customer are available for selection.
- An error is generated if an invalid product or contact is selected later.

Although the ability to define specific products and contacts for entitlements provides lots of flexibility, there are some things to consider. Most importantly, although multiple products and contacts can be added to a single entitlement, you can't limit specific products to specific people.

For example, the following products and contacts are specified for an entitlement:

- Products:
 - 3D Printer
 - 4K Display
- Contacts:
 - Marcie Henderson
 - Jackson Smith

In this entitlement, you can't limit Marcie to calls about the 3D printer and Jackson to calls about the 4K display. Because both contacts and products are specified, both contacts can open cases for both products by using the entitlement.

To limit each contact to a specific product, you must create two separate entitlement records: one for Marcie and the 3D printer, and one for Jackson and the 4K display.

Additional considerations for entitlements

Restrict based on entitlement terms

By setting the **Restrict based on entitlement terms** option to Yes, you can prevent cases from being opened if they will cause the total remaining terms for an entitlement to be exceeded. By default, this option is set to No. Therefore, it's possible to exceed the number of cases or hours that are available on an entitlement.

Service level agreements

If a service level agreement (SLA) is specified for an entitlement, any new cases that are opened against the entitlement will use that SLA. If a new case is associated with an entitlement that doesn't have an SLA, the default SLA for the organization will be used. If there's no default SLA, no SLA will be used. The following table explains the scenarios in more detail.

Scenario	Applicable SLA
A case is created, but no entitlement is associated with it.	<ul style="list-style-type: none">• If the organization has a default SLA, it's applied to the case.• If the organization doesn't have a default SLA, no SLA is applied to the case.

Scenario	Applicable SLA
A case is created, and an entitlement is associated with it.	<ul style="list-style-type: none"> If the entitlement has an active associated SLA, the associated SLA is applied to the case. If the entitlement doesn't have an active associated SLA, but the organization has a default SLA, the default SLA is applied to the case. If the entitlement doesn't have an active associated SLA, and the organization doesn't have a default SLA, no SLA is applied to the case.

Customers that have multiple entitlements

If multiple entitlement records are associated with a customer, it can sometimes be difficult to decide which entitlement should be used when a new case is opened. In this situation, it can be helpful to use things like products, contacts, and channel terms. The list of available entitlements will then be filtered, depending on the options that are selected.

Another approach is to define a default entitlement for the customer. When a default entitlement is specified for a customer, it will be used if no entitlement is defined on a new case. You can define an entitlement as the default entitlement after it has been activated.

[!IMPORTANT]

If you deactivate the default entitlement to make changes, it won't automatically be the default entitlement when it's reactivated. You must redefine it as the default entitlement after you reactivate it.

Additional links

- Activate or deactivate an entitlement
- Set an entitlement as default entitlement
- Associate entitlements to cases
- Cancel an entitlement
- Renew an entitlement

Define entitlement templates

Because entitlements can cover a wide variety of scenarios, you might find it easier to create and define entitlement templates. Templates help you create new entitlement records by prefilling some of the more common data.

There are many scenarios where entitlement templates can be useful. Here are some examples:

- You want to create a standard service template that serves as a baseline, and that can be used to create entitlements for customers.
- You want to use automation. An entitlement template offers more options than a specific entitlement.

Entitlement templates just prefill some of the data when entitlement records are first created. They don't keep the data synced. Therefore, if you change a template, the change doesn't affect any existing entitle-

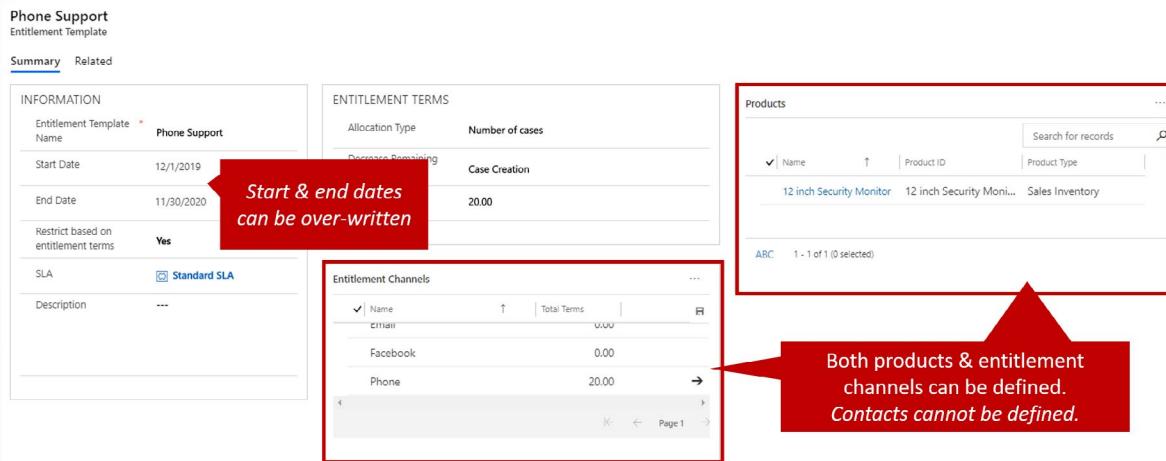
ments that were based on that template. Also, entitlement templates aren't activated or inactivated. After a template is created, it's available for users to select.

Defining entitlement templates

To create entitlement templates, go to **Settings > Service Management**, and then, in the **Template** section, select **Entitlement Templates**. The only information that's required for a template is the name. You can fill in the rest of the information as you require.

Another advantage of using templates is that you can predefine channel terms and products. But as for most records in Microsoft Dynamics 365, you can't add channel terms or products until you first save the template.

Because entitlement templates aren't customer-specific, you can't select a customer for a template. A customer will be selected only when an entitlement is created from the template. Additionally, because templates aren't customer-specific, you can't define contacts on a template. Contacts must be defined on the actual entitlement that's created for a customer.



After the template is saved, you can use it to create new entitlements. Select **New** on the command bar, then select **From template**, and then select a template in the list that's provided. All necessary information will be prefilled in the new entitlement record, based on the template that you selected.

Summary

Dynamics 365's entitlement feature provides a great mechanism for organizations to manage support or maintenance contracts for their customers. They can ensure that customers are able to submit cases associated with their entitlements using the best and most appropriate channels for them. They can also ensure that only people with the appropriate credentials can submit cases.

We looked several of the key components that Dynamics 365 entitlement use to provide the right service for their customers including:

- How to create entitlement records in Dynamics 365 including defining service periods, the type of contract it is, and the total terms for the record.
- Examining how entitlement channels can be leveraged to control which specific channels (email, phone, social media, etc.) can be used to open cases against the entitlement, as well as specific cases where limiting channels would benefit an organization.

- Explaining how products and contacts can be associated with entitlements to ensure that only cases that include those products (or have been submitted by specific individuals) can be opened against a specific entitlement.
- How Entitlement Templates can be created and leveraged to save the organization time when creating individual entitlement records for customers.

The next steps from here would be to gain a deeper understanding of Dynamics 365's Service Level Agreement (SLA) feature. SLA's can be leveraged in conjunction with entitlements to help organizations define and meet specific Key Performance Indicators (KPI's) that are important to them.

Manage Service Level Agreements

Overview of service level agreements

One way that customer service-based organizations track customer satisfaction and set themselves apart from other service organizations is by identifying and tracking key performance indicators (KPIs). A KPI is a measurable value that shows a company's effectiveness at achieving important business objectives. Organizations use KPIs to evaluate how successful they are at reaching their targets.

The specific KPIs that organizations track can vary widely, but there are several common KPIs that can be used to gauge success and improve customer service:

- **Customer Satisfaction Score (CSAT):** This is the most popular KPI and is generally captured by asking customers how satisfied they are with your business, product, or service.
- **Net Promoter Score (NPS):** This KPI measures the likelihood that your customers will recommend you to someone else.
- **First Response Time:** This KPI measures the speed of the initial response to the customer when an issue is created.
- **Call Resolution Time:** This KPI measures how quickly you're resolving customer issues.
- **Customer Retention Rate:** This KPI measures your ability to keep your paying customers over a specific period.
- **Employee Engagement:** This KPI measures how engaged your employees are.

Although this list is by no means complete, it does offer some insight into what customer service organizations typically care about.

Microsoft Dynamics 365 for Customer Service lets you define service level agreements (SLAs) to help you meet the desired levels of service when you provide support to customers. Dynamics 365 SLAs let you track common KPIs, like First Response Time and Call Resolution Time, for every case that's submitted. You can also create custom KPIs to track business-specific items that are important to your organization.

Each SLA can be set up to model different KPIs, based on different case attributes. Each SLA will include multiple SLA detail lines that provide information about the KPI that's being tracked and the actions that are associated with it.

Each detail line defines the following information:

- **SLA KPI:** The KPI that you're measuring.
Example: First Response By or Resolve By
- **Applicable When:** The conditions that must be met for the item to apply to the case.
Example: A case's **Service Level** field is set to Gold, and the **Case Priority** field is set to High.
- **Success Criteria:** What successful resolution of the KPI looks like.
Example: The **First Response Sent** field is set to Yes.
- **Success Actions:** The actions that should be taken if the KPI is met.
Example: Update the case record to indicate that the first response was sent.
- **SLA Item Failure:** How long to wait until an item is considered failed or unmet.
Example: No first response communication is done within one hour of case creation.
- **Failure Actions:** The actions that should be taken if the KPI isn't met.

Example: Escalate the case to the Escalation queue, and notify the service manager.

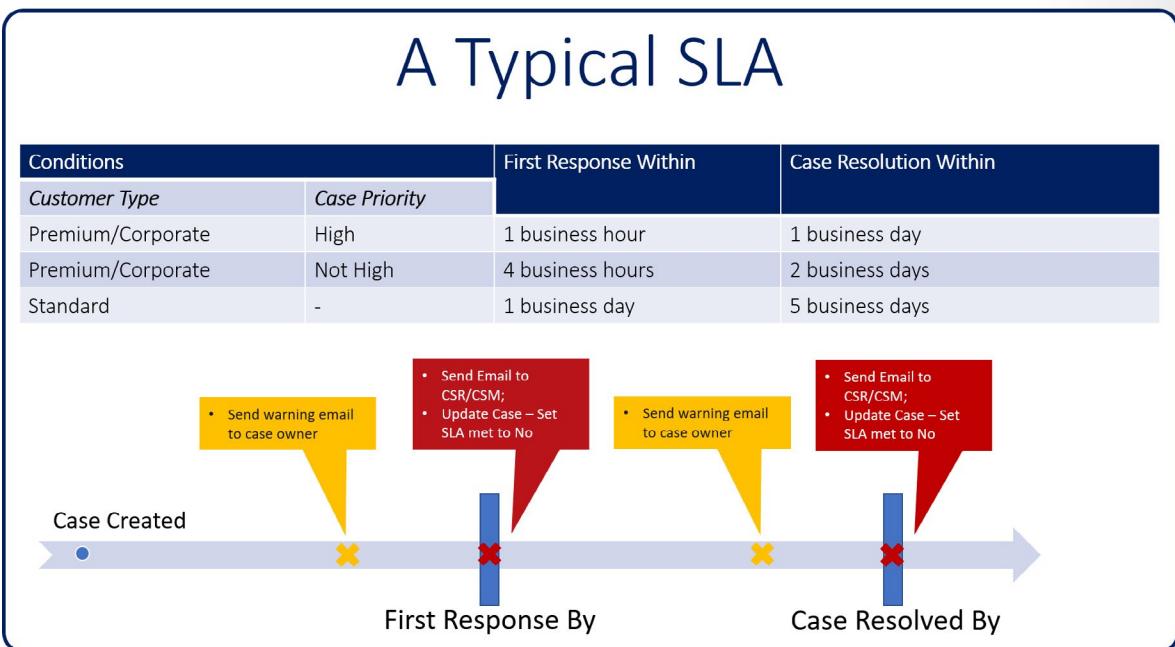
- **SLA Item Warning:** How long to wait before sending a warning that an item is at risk of not being met.

Example: No first response communication is done within 30 minutes of case creation.

- **Warning Actions:** The warning actions that should be taken if the KPI is at risk of not being met.

Example: Send a reminder email to the agent who's responsible for the case.

The following image shows a typical SLA for different types of customers, based on the level of service that has been promised to them.



In this example, three conditions are defined for the SLA:

- **Customer Type** = Premium/Corporate and **Case Priority** = High:
 - First response within one business hour
 - Case resolution within one business day
- **Customer Type** = Premium/Corporate and **Case Priority** = Not High:
 - First response within four business hours
 - Case resolution within two business days
- **Customer Type** = Standard and **Case Priority** = Any:
 - First response within one business day
 - Case resolution within five business days

Based on the type of customer who submits a case and the priority of the case, the SLA takes one of these actions:

- **Send a warning email to the owner of the case if he or she is at risk of not meeting the First Response By KPI.**
 - Send an email to the customer service representative and the customer service manager if they fail to meet the First Response By KPI.
 - Update the case record by setting the **First Response Sent** field for the SLA to No.
- **Send a warning email to the owner of the case if he or she is at risk of not meeting the Resolve By KPI.**
 - Send an email to the customer service representative and the customer service manager if they fail to meet the Resolve By KPI.
 - Update the case record by setting the **Resolution** field for the SLA to No.

Additionally, Dynamics 365 SLAs can consider things like business hours and business closures when they're checking whether a KPI has been met.

For example, your organization is open from 8:00 AM to 5:00 PM, and you've promised a customer a four-hour response time. Those four hours might be based only on the hours that your organization is open. Therefore, a customer who calls in at 3:00 PM must be called back by 10:00 AM on the next business day. But a customer who's associated with a 24/7 SLA must be called back by 7:00 PM on the same day.

As an organization, it's critical that you consider all the different scenarios that you support, to make sure that you can set up and assign the correct SLA to each type of call that comes in.

Another factor that you can consider is time that's spent waiting for customers. If you've promised a customer that a case will be resolved in two hours, every minute counts. Therefore, if you spend one of the two hours waiting for the customer to get back to you with a password, you must decide whether that hour will count against the promised resolution time.

The Dynamics 365 SLA feature supports all these scenarios. Over the remainder of this module, we'll guide you through these scenarios. We'll also walk you through the process of setting up SLAs to meet specific needs.

Business closures and working hours

When an organization starts designing service level agreements (SLAs) to meet the requirements of key performance indicators (KPIs), it should consider the hours during which it provides support to its customers.

For example, an organization is open from Monday through Friday, from 8:00 AM to 5:00 PM. Those hours are the standard times when most of the organization's customers can call in to receive support. But a customer who has bought a support agreement might be entitled to 24/7 support.

When a case is opened, it's important to identify the hours that the case should be associated with, and to apply the correct SLA. Therefore, you must identify the different working schedules that your organization requires. Consider factors like time zone requirements and business closures for holidays.

Holiday schedules

Holiday schedules let organizations to specify the holidays that they observe, and that they're typically closed on. To set up holiday schedules, go to **Settings > Service Management**, and then, in the **Service**

Terms section, select **Holiday Schedules**. When first you create a holiday schedule, you must assign a name to it, like *US Holidays*.

If your organization supports customers in multiple countries or regions, different holidays will be observed in each. Therefore, you must make sure that you set up the necessary holiday schedules for each country or region that you support.

After you've created a holiday schedule, you can start adding holidays to it. A holiday typically includes the following information:

- **Name:** The name of the holiday.
- **Start Date:** The start date of the holiday.
- **End Date:** The end date of the holiday.
- **Duration:** The total duration of the holiday.

For example, if your organization will be closed on New Year's Day in 2019, here's how you set up the holiday:

- **Name:** *New Year's Day 2019*
- **Start Date:** *1/1/2019*
- **End Date:** *1/1/2019*
- **Duration:** *1 Day*

You must define each holiday. Therefore, for New Year's Day, you might add New Year's Day as a holiday in 2019, 2020, 2021, and so on.

Although holidays can be added individually, many of them can be imported (for example, from a Microsoft Excel file) and associated with the appropriate holiday schedule. Holidays are generally the first thing that will be set up.

US Holidays				
<input type="checkbox"/>	Name	Start	Duration	Created By
	Christmas	12/25/201...	1 day	Derik Bormann
	Thanksgiving 2018	11/22/201...	1 day	Derik Bormann
	Labor Day	9/3/2018 ...	1 day	Derik Bormann
	4th of July	7/4/2018 ...	1 day	Derik Bormann
	Memorial Day	5/28/2018...	1 day	Derik Bormann
	Presidents Day	2/19/2018...	1 day	Derik Bormann
	Martin Luther King Day	1/15/2018...	1 day	Derik Bormann
	New Year's Day	1/1/2018 ...	1 day	Derik Bormann

For more about defining holiday schedules, see Create and manage holiday schedules.

Customer service calendars

Next, you must set up *customer service calendars* to define the different working hours that SLAs might use. You typically define service calendars after holiday schedules, because you can associate a service

calendar with a holiday schedule. To set up service calendars, go to **Settings > Service Management**, and then, in the **Service Terms** section, select **Customer Service Calendars**.

When you set up customer service calendars, you can define the following properties:

- **Work Hours:** Select the specific working hours that are associated with the service calendar:
 - **Are the same each day:** Working hours can be the same every day. After you select this option, select **Set Work Hours** to define the working hours, including breaks.
 - **Vary by day:** Each day of the week will be shown. After you select this option, select the days that your organization is open, and then select **Set Work Hours** to define the working hours, including breaks, for each day.
 - **24 x 7 support:** Working hours are automatically set to 24 hours a day, seven days a week. You can't change the hours or days.
- **Work Days:** Select the days of the week that your organization is open. This option is available only if you select **Are the same each day** in the **Work Hours** field group.
- **Holiday Schedule:** Select whether the service calendar observes any holiday closures. If you select **Observe**, you can select the holiday schedule to use.
- **Time Zone:** Select the time zone for the service calendar.

The screenshot shows the 'Customer Service Calendars' setup screen. At the top, there are 'Save and Close' and 'Help' buttons. Below that, there are fields for 'Name *' (set to 'Standard Hours') and 'Description'. A 'Weekly Schedule' button is present. The 'Set the recurring weekly schedule' section contains a 'Work Hours' group with three radio button options: 'Are the same each day' (selected), 'Vary by day', and '24 x 7 support'. It also includes a 'Work Days' group with checkboxes for Sunday through Saturday. The 'Holiday Schedule' group has two radio button options: 'Observe' (selected) and 'Do not observe', with a 'US Holidays' button next to it. At the bottom, a 'Select the time zone' section shows 'Time Zone' set to '(GMT-06:00) Central Time (US & Canada)'.

Your organization will probably have multiple customer service calendars defined for it. Often, organizations have at least two service calendars:

- **Standard:** Working hours are defined as Monday through Friday, from 8:00 AM to 5:00 PM. The US holiday schedule is observed.

- **24/7:** Working hours are defined as 24 hours a day, seven day a week. No holiday schedule is observed.

You can also have calendars that represent the different countries or regions where you offer support. For example, in Dubai, the work week is typically from Sunday through Thursday. Therefore, if you're supporting customers in Dubai, you must set up an additional service calendar for Dubai and defined the work week as Sunday through Thursday.

For more about defining service schedules, see Create customer service schedule and define the work hours.

After you've set up all the necessary service calendars for your organization, you can start defining SLAs in the application.

Create service level agreements

Service level agreements (SLAs) can be created to track and measure specific key performance indicators (KPIs), based on the customer and the specifics of the case. It's important to remember that SLAs aren't specific to a customer but are defined for the organization. They're applied to a customer case either by manually associating the case with a specific SLA or by attaching the case to an entitlement that's associated with a specific SLA. Additionally, a default SLA can be defined for the organization. In that way, if no SLA is defined for a case, the default SLA will be applied automatically.

To create SLAs, go to **Settings > Service Management** and then, in the **Service Terms** section, select **Service Level Agreements**. When you define SLAs, consider which customer service calendar (if any) should be used. In this way, you help guarantee that all KPIs are correctly calculated, based on the working hours and holidays for the center that's servicing the customer. Often, at least one SLA is defined for each service calendar that exists for an organization.

Another key item to consider when defining an SLA is when the SLA will be applicable from. The Applicable From field can be set to any date field associated with that entity such as Created On or Modified On. This defines when the SLA KPIs should start being calculated.

For example: Let's say you want to have a SLA with a 4-hour First Response By KPI defined:

- If you set the Applicable From field to Created On, the agent taking the case will have 4 hours from data and time the case was created on to make a first initial response with the customer.
- If you set the Applicable From field to Modified On, then every time the case record is updated, the First Response By KPI timer will restart.

While using the Modified On field can be helpful in some instances, it is not an ideal trigger for tracking a First response KPI. You need to pay close attention to what you are setting the Applicable From field to since it can have a significant impact on how KPIs are calculated.

The following image shows an example of a 24/7 SLA.

The screenshot shows the 'General' configuration page for an SLA. It includes fields for Name (24 / 7), Entity (Case), Applicable From (Created On), Business Hours (24 / 7), SLA Type (Enhanced), and Allow Pause and Resume (Allow). There is also a Description field.

After you define the information listed above, you can save the SLA. Saving the SLA provides the ability to begin adding SLA detail-line items to the SLA.

Define service level agreement details

Service level agreement (SLA) details define the specific key performance indicators (KPIs) that you want to measure. They also define when a specific item should be applied. As we mentioned in the overview unit, a typical SLA will have multiple SLA detail items defined for it.

For example, a Support Contract Customer SLA might have the following SLA detail items:

The screenshot shows the 'Detail' configuration page for an SLA. It includes sections for 'Applicable When' and 'Success Criteria'. A red callout box points to the 'SLA KPI' dropdown, stating: 'All KPIs defined for the entity will be available to select.' Another red callout box points to the 'Applicable When' and 'Success Criteria' sections, stating: 'Both "Applicable When" and "Success Criteria" provide the ability to define multiple AND / OR items.'

- **Gold Customer – First Response By:** If **Service Level** = Gold for a case: First response within one hour
- **Gold Customer – Resolve By:** If **Service Level** = Gold for a case: Case resolution within four hours
- **Silver Customer – First Response By:** If **Service Level** = Silver for a case: First response within two hours

- **Silver Customer – Resolve By:** If **Service Level** = Silver for a case: Case resolution within one day
- **Bronze Customer – First Response By:** If **Service Level** = Bronze for a case: First response within four hours
- **Bronze Customer – Resolve By:** If **Service Level** = Bronze for a case: Case resolution within two business days

Each KPI that you want to track for each service level tier is added to the SLA as its own SLA detail item. To track the progress for gold customers, you define two separate detail items. For the preceding example above, a total of six detail items are defined for the whole SLA.

For each SLA detail item that you add to an SLA, you must supply the following information:

- **Name:** Enter the name of the SLA item. This field is required,
- **SLA KPI:** Select the KPI that you're measuring. By default, two KPIs are released with the Case entity: **First Response By KPI** and **Resolve By KPI**. You can define additional KPIs for the Case entity as needed.
- **Applicable When:** Defines the conditions that need to exist on the either record the SLA is running against or a related record for the specific SLA item to be applied to the record (Such as a case Service Level being set to Gold.)
 - Be aware of using field that potentially could change frequently when defining applicable when conditions. They can potentially affect system performance.
 - Only active records are available to select as condition or action arguments.
- **Success Criteria:** Define what a successful resolution of the defined KPI looks like. For example, a resolution might be successful if a specific field on the current or related record is updated.

SLA warnings and failures

After you've defined what successful fulfillment of the SLA detail item looks like, you must define how long the success criteria can go unmet before a warning of possible failure is set. You must also define how long the success criteria can go unmet before the item is considered to have failed. To define these behaviors, you set up the SLA item failure and SLA item warnings. Each has a time associated with it, and the times act independently of each other.

[!IMPORTANT]

Be aware that processing delays can occur when failure or warning time are set to less than an hour.

SLA Item Failure	
Failure after	<input type="text" value="1 hour"/>
Failure Actions	
<input type="button" value="Add Step ▾"/> <input type="button" value="Delete this step."/>	
SLA Item Warning	
Warn after	<input type="text" value="30 minutes"/>
Warning Actions	
<input type="button" value="Add Step ▾"/> <input type="button" value="Delete this step."/>	

SLA actions

SLA actions are used to do a specific task, depending on whether criteria are met. Before actions can be defined, the detail item must be saved. Although actions are backed by the workflow engine, you don't have all the same options for actions that you have for traditional workflows. For example, you can't start workflows or custom actions. The options that are available are Send Email, Create Record, Update, Record, and Change status.

Three types of actions can be defined:

- **Success actions:** Define the actions that should be run if the success criteria are met.

[!IMPORTANT]

Success actions are available only for enhanced SLAs.

- **Failure actions:** Define the actions that should be run if the success criteria aren't met within the specified failure time.
- **Warning actions:** Defines what action(s) should be executed if the success criteria is in jeopardy of not being met within the warning time specified.

The screenshot shows two configuration panels for SLA items. The top panel is titled 'SLA Item Failure' and includes a 'Failure after' field set to '1 hour'. Below it is a 'Failure Actions' section containing a sub-grid with two rows. The first row has a 'Send email' button, a 'Create New Message' dropdown, and a 'Set Properties' button. The second row has an 'Update' button set to 'Case', a dropdown menu, and a 'Set Properties' button. The bottom panel is titled 'SLA Item Warning' and includes a 'Warn after' field set to '30 minutes'. Below it is a 'Warning Actions' section containing a sub-grid with one row, identical to the one in the Failure Actions section.

Often, the value of a specific field, like the **First Response Indicator** field, will be used as a success criterion for an SLA item. By default, the values of fields like **First Response Indicator** are automatically updated. You can automate the update of such fields by using a workflow or Power Automate. For the **First Response Indicator** field, you must determine what's considered a first response. For example, an automated response email confirms that a case has been created is considered a first response? (Typically, it isn't.) Does it need to be a manually created email from the technician who's assigned to the case? Can it be a phone call, or is it something else? After you've determined these details, you can design the automations to update the necessary fields.

[!NOTE]

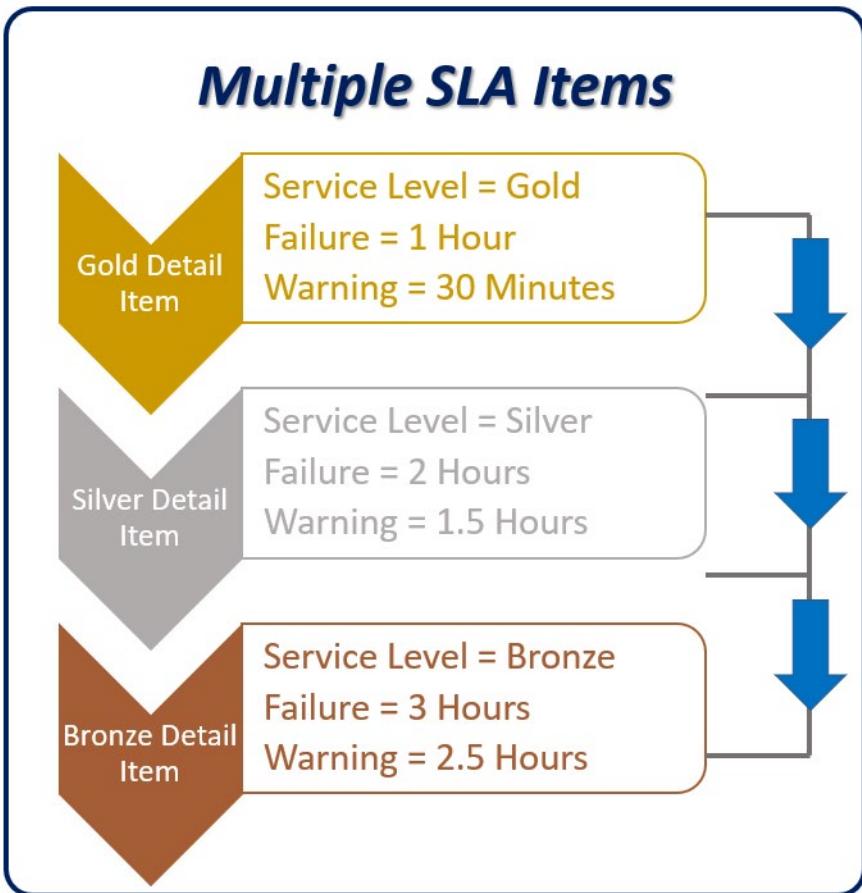
In many cases the timer that calculates remaining time towards the First Response KPI is often determined by the First Response Indicator field. Determining if this field needs to be manually or automatically updated will help to ensure that timer is stopped when it is supposed to be.

For more about creating SLA details, see [Create an enhanced SLA](#).

Working with multiple SLA items

When multiple SLA items are defined for a single SLA, the SLA items are evaluated in the order in which they're listed in the SLA details sub-grid. If multiple SLA items reference the same related field on a

specific record, they're also evaluated in the order in which they're listed. The first SLA item that's applicable for each related field will be applied.



You can change the order that SLA items are evaluated in by using the arrow buttons in the SLA details sub-grid. If some of the SLA items have more specific criteria than others, we recommend that you put the more specific SLA items higher up in the list.

Define custom key performance indicators

By default, the Case entity is the only entity that's set up to be used with service level agreement (SLAs). But Microsoft Dynamics 365 lets you use SLA functionality with any entity. In addition, you can define custom key performance indicators (KPIs) for any entity that's set up to be used with SLAs.

There are many scenarios where you might use SLAs with other entities in Dynamics 365. Here are some examples:

- **Leads:** Track how quickly account executives getting back to new leads.
- **Work orders:** Track how quickly work orders are being scheduled and dispatched.
- **Opportunities:** Track how quickly specific types of opportunities are being closed.

To set up an entity so that it can be used with SLAs, go to **Settings > Customizations > Customize the System**, and select the entity. Then, under **Communication & Collaboration**, select the **Enable for SLA** check box. Then save and publish your customizations.

Communication & Collaboration

- Feedback †
- Notes (includes attachments) †
- Activities †
- Connections †
- Sending email (If an email field does not exist, one will be created) †
- Mail merge
- Document management
- Access Teams
- Queues †
 - Automatically move records to the owner's default queue when a record is created or assigned.
- Knowledge Management
- Enable for SLA

Check Enable for SLA,
then save and publish
your changes.

For more about entities that support SLAs, see Entities (record types) that support SLA.

For more about setting up entities so that they can be used with SLAs, see Add a timer in forms to track time against enhanced SLAs.

Creating custom KPIs

In the previous unit, we mentioned that two predefined KPIs are released with the Case entity:

- First Response By KPI
- Resolve By KPI

You can also define more KPIs for the Case entity and any other entity that has been set up to be used with SLAs.

For example, here are some custom KPIs that you might set up for the previously mentioned scenarios:

- **Lead – Initial Contact KPI:** Measure when an account executive makes his or her initial contact with a lead.
- **Work Orders – Dispatch By KPI:** Measure when a work order has been marked as scheduled.
- **Opportunity – Closed By KPI:** Measure when an opportunity has been closed.

You define custom KPIs by creating a lookup field to the SLA KPI Instance entity. This lookup field represents a one-to-many (1:N) relationship with the entity. To create a lookup field for a specific entity, go to **Settings > Customizations > Customize the System**, select the entity to define the KPI for, and then select fields. Then create a new lookup field for that entity, and set the lookup field to use the SLA KPI Instance entity.

General

Schema

Display Name * Field Requirement *

Name * Searchable

Field Security Enable Disable
⚠️ Enabling field security? [What you need to know](#)

Auditing * Enable Disable
⚠️ This field will not be audited until you enable auditing on the entity.

Description

Appears in global filter in interactive experience Sortable in interactive experience dashboard

For information about how to interact with entities and fields programmatically, see the [Microsoft Dynamics 365 documentation](#).

Type

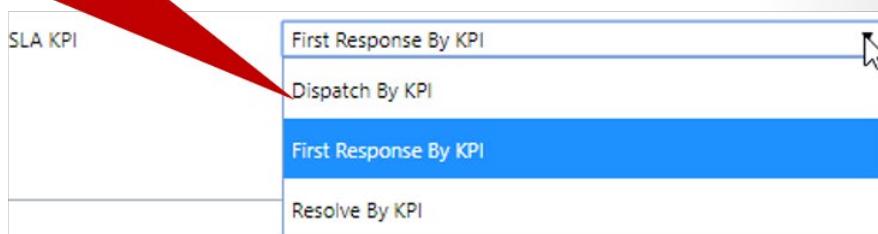
Data Type * Target Record Type * Relationship Name *
[Edit relationship detail\(advanced\)](#)

For more about creating custom KPIs, see [Create SLA KPI fields](#).

For more about using quick view forms for the SLA KPI Instance entity, see [Create quick view forms for the SLA KPI Instance entity](#).

After the KPI has been defined, you can use it as the KPI for any SLA items that you create for SLAs that are associated with the selected entity.

New KPI is available to select from the SLA KPI field on the SLA Detail Item.



Manage service level agreements

As we mentioned at the beginning of this module, service level agreements (SLAs) aren't customer-specific. They're defined at the organization level and applied to cases. Out of the box, the case record doesn't have a lookup field to the SLA entity. Therefore, an SLA isn't applied to a case unless it's set at the default SLA for your organization or associated with an entitlement.

The following table explains how SLAs are applied when a new case is created.

Scenario	Applicable SLA
A case is created, but no entitlement is associated with it.	<ul style="list-style-type: none">If the organization has a default SLA, it's applied to the case.If the organization doesn't have a default SLA, no SLA is applied to the case.
A case is created, and an entitlement is associated with it.	<ul style="list-style-type: none">If the entitlement has an active associated SLA, the associated SLA is applied to the case.If the entitlement doesn't have an active associated SLA, but the organization has a default SLA, the default SLA is applied to the case.If the entitlement doesn't have an active associated SLA, and the organization doesn't have a default SLA, no SLA is applied to the case.

For more about how SLAs are applied, see [How is the SLA applied?](#)

For more about applying SLAs on demand, see [Apply SLA on demand](#).

An SLA can't be set as the default SLA for an organization until it's activated. An organization can have only one default SLA. If you set another SLA as the default SLA, you override the previous default SLA. If you need to temporarily deactivate the default SLA for any reason, you must set it as the default SLA again after it's reactivated.

SLAs must be deactivated any time you want to make changes. When you deactivate an SLA, all entitlements that are associated with it remain active. While an SLA is inactive, no SLA fields on cases that are linked to the inactive SLA will be updated.

For more about deactivating SLAs, see [Disable the SLA](#).

For more about setting default SLAs, see [Set the SLA as default](#).

Pausing and resuming SLAs

Let's say that you're working on a case with a customer, and you need some specific information from that customer. While you're waiting for the customer to get back to you, you might have to pause the calculation time on the SLA, so that the time that you spend waiting doesn't affect the SLA calculation time. For example, a customer has been promised a two-hour response time. After you've been working with the customer on a case for 30 minutes, you put the case into *Waiting for details* status for 45 minutes. When the timer is resumed, only 30 minutes will count toward the SLA calculation.

When you create an enhanced SLA, you can define pause and resume statuses for a specific SLA. You can then place a case on hold. To set up specific statuses for paused cases, go to **Settings > Service Management**, and then, in the **Service Terms** section, select **Service Configuration Settings**. Here, you can specify whether your organization uses the SLA functionality. You can also define the statuses that will be considered pause statuses for each entity that's set up to be used with SLAs. For example, for the Case entity, you might define *On hold* and *Waiting for details* as the pause statuses. After you've set up those statuses, the SLA timer will automatically be paused any time one of them is selected.

For more about setting up pause and resume statuses, see [System Settings dialog box - Service tab](#).

Timer control

From the form customization page, you can add a timer control to any entity to provide countdown information for any KPI that's defined on that entity. When a timer control is added, you can set the following information:

- **Failure Time Field:** Define the date/time-based field that should be used to calculate success or failure (for example, the **Created On** field). (Required)
- **Success Condition:** Define the field and field value that determine successful resolution (for example, a setting of Yes for the **First Response Sent** option). (Required)
- **Failure Condition:** Define the field and field value that determine failure for the time (for example, a setting of No for the **First Response Sent** option).
- **Warning Condition:** Define the field and field value that determine when a warning should be triggered.
- **Cancel Condition:** Define the field and field value that determine when the timer should be canceled (for example, a value of *Resolved* for the **Status Reason** field).
- **Pause Condition:** Define the field and field value that determine when the timer should be canceled (for example, a value of *Waiting for Details* for the **Status Reason** field).

You can add and define timer controls any time you need countdown capabilities. The timer will change color to reflect the different statuses. For example, it might change from green to yellow for warnings or red for failures.

For more about working with the timer control, see [Add a timer control to the Case form to track time against an SLA](#).

Summary

Dynamics 365's Service Level Agreement feature, allows organizations to clearly define and deliver a specific level of service to their customers based on predefined Key Performance Indicators (KPI's). Service Level Agreements can evaluate specific details on a record and apply and assist in the enforcement of the correct KPI's for that case.

We looked at several of the key components included with Dynamics 365's Service Level Agreement functionality including:

- How organizations can define different service calendars and business closures that can be associated with specific SLA's to ensure that customers are receiving the right level of service regardless of time and location.
- Exploring the process of creating and defining SLA's in Dynamics 365.
- Examining how SLA Detail Items are used to define which specific KPI should be applied to records based on predefined criteria in the record.
- How other record types in Dynamics 365 can be enabled for use with SLA's, and the process for defining additional or custom KPIs to support different business scenarios.
- Exploring options for managing SLA's including their relationship with entitlements, working with timers, and defining default SLA's for an organization.

The next steps from here would be to gain a deeper understanding of Dynamics 365's Entitlements. While Service Level Agreements are great for defining and enforcing KPI's, entitlements can be leveraged to manage the number of cases that a customer can open as well as which channels are available to them.

Module 3 Work with knowledge management

Create knowledge management solutions

Knowledge management overview

Knowledge Management is the process of creating, managing, using, and sharing the knowledge and information of an organization. The goal of any knowledge management solution is to make the best possible use of the information that the organization has and to make it as easy as possible to consume that information.

The **Knowledge Manager** module in Microsoft Dynamics 365 lets organizations provide information to both their employees and customers by creating and managing knowledge articles that people might be looking for.

Knowledge articles can address any number of issues that customers and employees encounter as they use an organization's products or services. The types of knowledge articles can include solutions to common issues, product or feature documentation, answers to frequently asked questions (FAQs), and product briefs. By using the rich text editor that's provided, organizations can create knowledge articles, format the content, embed videos or images, and more.

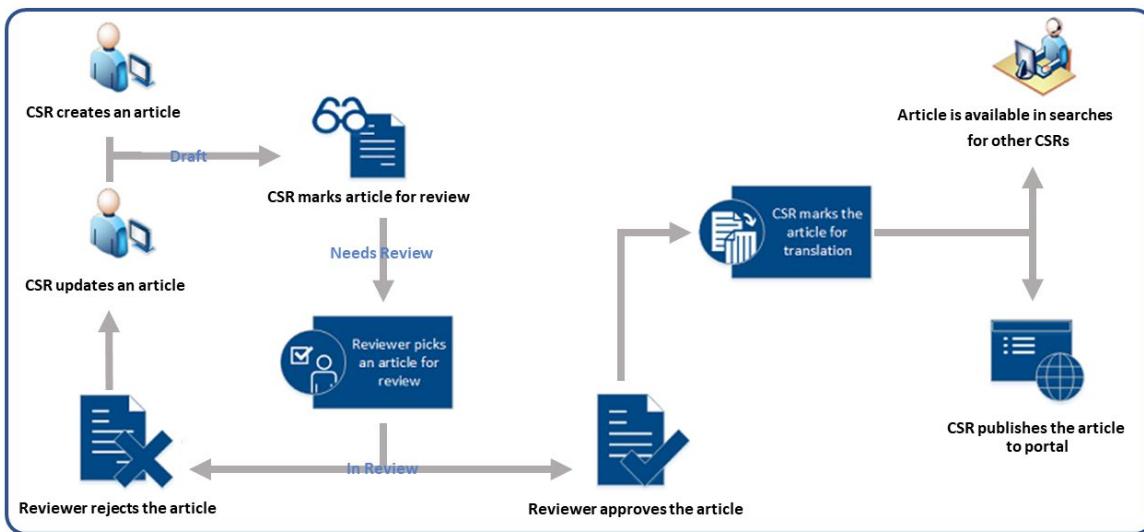
The knowledge management solution lets you:

- **Create and design knowledge articles:** Create rich and well-formatted content for emails and knowledge articles by using rich text editor.
- **Manage the article lifecycle:** Use out-of-box business process flows to manage article lifecycles, or create new processes.
- **Manage the article version history:** Manage updates to articles without disrupting the live or published articles.
- **Translate articles:** Provide translations of an article in multiple languages.
- **Publish articles:** Publish articles as soon as they're approved, or schedule them for later publication. You can also set expiration dates on articles.
- **Track and analyze article statics:** Track how many time an article is used, viewed, and sent to customers.

Dynamics 365 knowledge articles

Knowledge articles are created in the Dynamics 365 Customer Service Hub. The knowledge management solution gives you the flexibility to implement a knowledge management solution that's tailored to your organization's needs. Although it's highly configurable, it's released with a predefined default knowledge management process to help you get started.

The following image shows an example of the default process for creating and using knowledge articles in the Customer Service Hub.



Next we'll examine the process for designing a knowledge management solution in Dynamics 365. You'll learn more about the knowledge management lifecycle, creating articles, working with the article editor, version control, publication options.

For more about the Dynamics 365 knowledge management solution, see Knowledge management process.

Creating and defining knowledge articles

An effective knowledge management solution is more than just a repository of issues and solutions. It should be easy to navigate, provide clear and concise solutions, have current and relevant information, and be easily accessible across platforms.

As you get ready to build a knowledge repository and define specific knowledge articles in Microsoft Dynamics 365, it's important that you understand the overall vision for the repository. Here are some questions to consider:

- What will the article be used for?
- Who will consume the article?
- What must be included in the article to make it most useful to the people who consume it?
- Is the article related to a specific product?
- Will the article need to be available in multiple languages? If so, which languages?

- Is the article time-sensitive?

This list represents just a few of the things that need to be considered. Each organization will have specific requirements that must be met.

Dynamics 365 provides several options that will help you create and manage articles based on organizational requirements. It features a rich text editor that makes it easy to include items like images and videos in articles, to help explain things better and make the articles more engaging. Additionally, you can write, edit, search, publish, and translate articles to make them more effective and relevant to your audience.

A knowledge article has 3 tabs that are used to manage the content, and view analytics.

Those tabs are:

- Content: Includes title, keywords, description and content designer.
- Summary: Includes time line and other related information.
- Analytics: Includes article analytical information.

Article Creation:

Knowledge Articles are created from within the Customer Service Hub. They can be created by anyone with the specific permission to do so. In addition to being able to specify who can create articles, people in an organization can also be designated as article approvers.

When an article is first created, you should define the following:

Content tab

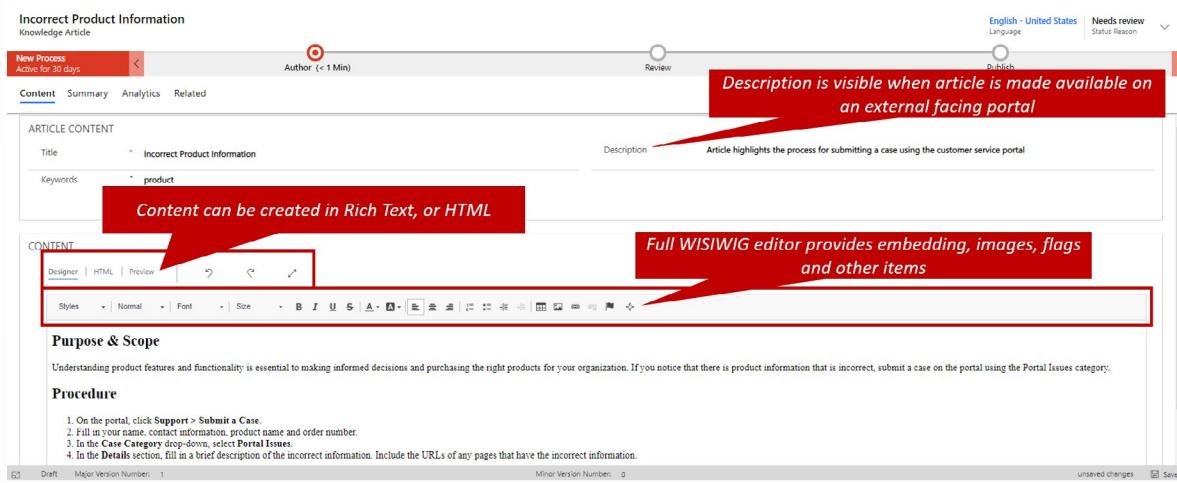
When you first create a knowledge article, you must enter the following information in the **Article content** section on the **Content** tab:

- **Title:** The title communicates the subject and purpose of the article in a concise manner.
- **Keywords:** Keywords are used to search the knowledge base for articles. Separate the different keywords with commas.
- **Description:** The description provides a short overview of the article. This text appears in the search results and is used for search engine optimization.

When you design a knowledge article, you must make sure that the content is not only relevant to the people who will consume it but also easy to consume, so that user can fully ingest all the content that's presented. For example, you can add a link to a video that demonstrates the procedure or process that's presented, links to other relevant content, or embedded HTML to provide more dynamic content. The Dynamics 365 content designer supports these advanced styling features and more.

The content editor is in the **Content** section. It consists of three tabs:

- **Designer:** Write and edit the article content. This tab includes enhanced and rich text editing capabilities.
- **HTML:** View an HTML preview of the article content. You can also write and edit the article on this tab.
- **Preview:** See how your content will look like on devices like desktop computers, tablets, or mobile devices.



For more about the different capabilities of the content editor, see [Create and manage knowledge articles](#).

Summary tab

The **Summary** tab has lots of other information that's relevant to the knowledge article. Much of this information is updated by the system as changes are made to the article. But you can edit some of it. Here are the two main fields that you might need to update:

- **Internal:** You can mark the article for internal use only. In this case, people from outside your organization won't be able access the article (for example, from a portal). This setting can be useful for articles that focus more on internal processes that aren't relevant to external users.
- **Status Reason:** You can specify the status of the article to indicate whether it's proposed, in review, or waiting for review.

Some information on the **Summary** tab doesn't appear until the article record is saved for the first time. For example, **Related information** and **Timeline** are two important panes that become available when the record is first saved.

- **Timeline:** This pane shows all the related activities that are associated with the knowledge article. You can also add activities directly to the record.
- **Related information:** This pane provides access to records that are related to or associated with the knowledge article. You can open the following records by using the buttons along the right edge of this pane:
 - **Related Versions:** This record shows a complete version history of the article. You can view the previous versions of the article, and can even revert to a previous version if you have to.
 - **Related Translations:** This record shows a list of the different translations that are available for the article.
 - **Related Categories:** This record shows the categories that the article is associated with. Categories are used for article location and analytics. They help provide better article organization when articles are used in a portal knowledge base.
 - **Related Articles:** This record shows any articles that are similar to the article or that have been related to it.
 - **Related Products:** This record shows the products that the article is associated with.

Incorrect Product Information
Knowledge Article

New Process Active for 30 days < Author (< 1 Min)

Content Summary Analytics Related

BASIC SETTINGS

- Internal No
- Status Reason Needs review
- Owner [redacted]
- Article public Number KA-01004
- Primary Author Id [redacted]
- Language English - United States
- Major Version Number 1
- Minor Version Number 0
- Created By [redacted]
- Created On 11/17/2019 10:15 AM
- Modified By [redacted]
- Modified On 12/17/2019 10:34 AM

TIMELINE

Timeline + ⌂ ...

Enter a note...

Auto-post on wall Incorrect Product Information reverted the Article to Draft - Proposed 10:32 AM 11/17/2019

Auto-post on wall Incorrect Product Information published the Article into Published - Published 11/17/2019

Auto-post on wall Incorrect Product Information approved the Article into Approved - Approved 11/17/2019

Auto-post on wall Incorrect Product Information created Incorrect Product Information 11/17/2019

RELATED INFORMATION

Related Versions

Language	Major Version	Minor Version	Status Reason
English - United States	1	0	Needs review

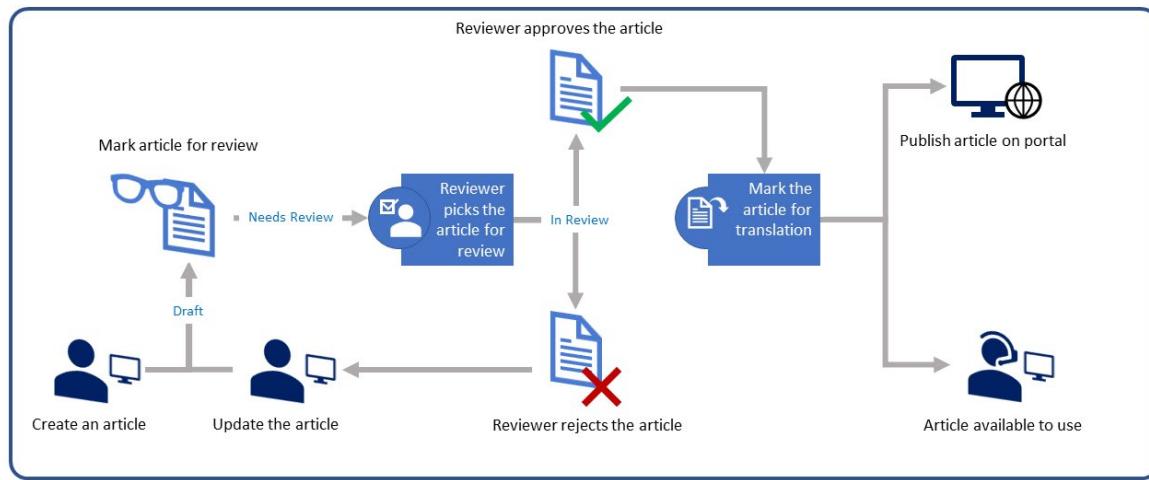
Icons make it easy to navigate to related records such as versions, translations, and associated products

For more about creating knowledge articles, see [Create a knowledge article](#).

Other tasks, like creating article translations, working with versions, and setting publishing options, will be covered in later modules.

Knowledge article lifecycle

As we mentioned in the overview unit, an efficient knowledge management and article approval lifecycle helps guarantee not only that the knowledge content is accurate, but also that the most current and relevant content is available to users. Out of the box, the knowledge management lifecycle resembles the following image.



- **Draft:** The process starts someone such as a customer service representative creating and proposing a Draft version on an article.
 - The article is marked for review by an approver.
- **Approved / Rejected:** A reviewer evaluates the content in the article and can either approve or reject the article.
 - If the article is rejected:
 - It is sent back to the original article author for either edits or updates.
 - The process repeats until the article is ultimately approved.
 - If the article is approved:
 - It is set to an Approve state and is ready for publishing
- **Scheduled:** The article is scheduled to be published. Date information such as publish and expire dates are provided.
 - The article is set placed into a Scheduled state until the publish date is reached.
- **Published:** Once the articles publish date is reached it goes into a Published state. Published articles are available:
 - On case records being worked on by agents
 - Customer facing Portals
- **Expired:** An article that reaches its expire date are moved into an Expired state. (Not Shown)

A knowledge article may go through many revisions, approvals, and reviews in the lifecycle. In many cases, after a knowledge article is expired, it goes back through the process of additional approvals to be republished.

Security roles used in the lifecycle process

Users who are going to create knowledge articles will need to have the necessary permissions to do so. Permissions are defined on the Knowledge Article entity and can be accessed on the service tab of any security role.

The screenshot shows the 'Security Role: Knowledge Manager' page. The top navigation bar includes 'Details', 'Core Records', 'Marketing', 'Sales', 'Service', 'Business Management', 'Service Management', 'Customization', 'Missing Entities', 'Business Process Flows', and 'Custom Entities'. The main content area has a table titled 'Entity' with columns for 'Create', 'Read', 'Write', 'Delete', 'Append', 'Append To', 'Assign', and 'Share'. Rows include 'Article', 'Article Template', 'Bookable Resource', 'Bookable Resource Booking', 'Bookable Resource Booking Header', 'Knowledge Article' (which is highlighted with a red border), 'Knowledge Article Views', 'Rating Model', and 'Rating Value'. Below this is a section titled 'Miscellaneous Privileges' with rows for 'Approve Knowledge Articles' and 'Publish Knowledge Articles'. A button labeled 'Publish Articles' is located to the right of the privilege rows.

After article content is created, it should be reviewed to make sure that it's accurate. Knowledge articles can be reviewed in two ways:

- **Marked for review:** Articles that are marked for review start appearing on the **Knowledge Manager** dashboard. From there, they can be assigned to specific people or to a queue.
- **Directly assigned:** Articles can be assigned directly to specific people or to a queue.

After an article is marked for review and starts to appear on the **Knowledge Manager** dashboard, the knowledge manager can assign it to specific team members or a queue for review.

The screenshot shows the 'Knowledge Manager' dashboard with five cards:

- Proposed Articles:** Shows 4 items modified on 4/1/2019. Items include 'Website Help' (Proposed), 'Requested Shipping Instructions' (Proposed), 'Incorrect Product Information' (Proposed), and 'Travel Instructions' (Proposed).
- Draft Articles Needs Review:** Shows 2 items modified on 4/1/2019. Items include 'Return Authorization' (Needs review) and 'Product Maintenance' (Needs review).
- Expired Articles Needs Review:** Shows 1 item modified on 4/1/2019. Item is 'Incorrect Knowledge Article Information' (Expired).
- Most Popular Articles:** Shows 15 items modified on 4/1/2019. Items include 'Delivery Never Arrived', 'Order Shipping Time', 'Support Request', 'Booking Travel', 'Return Authorization', and 'Product Maintenance'.
- Highest Rated Articles:** Shows 15 items modified on 4/1/2019. Items include 'Delivery Never Arrived', 'Order Shipping Time', 'Support Request', 'Booking Travel', 'Return Authorization', and 'Product Maintenance'.

 A callout box over the 'Proposed Articles' card states: 'Displays articles that have been proposed, as well as articles that are in need of review.' The entire 'Proposed Articles' card is highlighted with a red border.

For more about marking articles for review, see [Mark a knowledge article for review](#).

Reviewing a knowledge article, and rejecting or approving it

Knowledge articles should be reviewed for accuracy before they're published or made available to other people. When an article requires review, a reviewer can perform the following actions:

- Select an article that's assigned to him or her for review.
- Suggest review feedback.
- Approve the content of the article.

There are multiple ways to add feedback and suggestions to an article. First, notes can be added directly to an article in the **Timeline** pane on the **Summary** tab. After a note is added, it appears in the timeline.

The screenshot shows the Microsoft 365 Timeline pane. At the top, there is a red callout box with the text "Notes can be added directly to the article's Timeline". Below this, the Timeline tab is selected. A red arrow points from the "Enter a note..." input field down to the first note in the list. The note itself has a red border and contains the text: "Note modified by [redacted] Overall content is incorrect. You need to update the second line item. It does not include updated information based on the latest release." To the right of the note are edit and delete icons. Below this note, there are two more entries, each with a blue speech bubble icon and a timestamp. A red callout box at the bottom left points to the second entry with the text "Notes appear in the order that they were added to the article".

Time	Note Content
10:51 AM	Auto-post on wall Incorrect Product Information [redacted] reverted the Article to Draft - Proposed
10:32 AM	Auto-post on wall Incorrect Product Information [redacted] published the Article into Published
11/17/2019	Auto-post on wall Incorrect Product Information [redacted] created Incorrect Product Information

Additionally, article feedback can be added to draft articles, approved articles, or even published articles that are currently being used. Feedback lets people do things like add comments that suggest specific edits, or provide an overall rating for an article.

Article feedback can be added and viewed in the **Feedback** pane on the **Analytics** tab. As feedback is captured, ratings can be defined. The **Rating** field shows the current article rating. The value of this field

is recalculated on a predefined schedule, but you can manually trigger a recalculation at any time by selecting the calculator symbol next to the field name.

The screenshot shows a 'Feedback' page. At the top left, there's a 'Rating' section with a value of '0.75'. A red callout box with the text 'Feedback ratings can be recalculated by selecting the calculator icon' points to the calculator icon next to the rating value. Below this, there's a 'Last updated:' timestamp '12/17/2019 10:57 AM'. The main area displays a table of feedback items:

✓ Title	Ra...↑	Comments	Source	...
This is a great article	5 ---		Internal	
We should do an updat	3 ---		Internal	

A horizontal scrollbar is visible at the bottom of the table.

One good way to make sure that articles are current and accurate is to update them, based on article feedback and notes that you receive. After an article has been updated, you can assign it back to the reviewer for approval or publication. Select **Assign** on the command bar, and then select the user or team to assign the article to.

For more about reviewing and approving articles, see Review and reject or approve a knowledge article.

For more about updating knowledge articles to capture feedback, see Update knowledge articles to capture feedback.

Managing knowledge article versions, categories and translations

As you build your knowledge repository, you might find that articles that are in development, or even articles that have already been published, require updates to reflect new features or a new way of running a procedure. As those updates are made, previous versions of the article are stored.

Microsoft Dynamics 365 article versioning helps organizations manage updates to knowledge articles without disrupting the live or published articles. By storing versions of a knowledge article, you can keep articles up to date with the latest information but also keep track of changes throughout the lifecycle of your products and services.

Two types of versions can be created for knowledge articles:

- **Major version:** This version type represents a major change in features or functionality.

For example, a new feature that has been added to a software application completely changes the application functionality.

- **Minor version:** This version type represents a minor change that doesn't necessarily affect functionality.

For example, a screen in an application's user interface changes, but the overall result of the screen isn't affected.

You can add major and minor versions by using the command bar on the page where you define the title, keywords, and detailed information for the article. When a version is first created, it has the same content, information, and permissions as the current version. You can then update and revise the information in the new version. The article will have **Major Version Number** and **Minor Version Number** fields that are automatically updated to reflect the new version number.

The screenshot shows the Dynamics 365 interface with the 'RELATED INFORMATION' panel open. The panel title is 'RELATED INFORMATION'. Below it, there is a section titled 'Related Versions' with a table. The table has columns: Language, Major Versio.., Minor Versio.., and Status Reason. There are two rows of data:

Language	Major Versio..	Minor Versio..	Status Reason
English - United Stat	1	1	Proposed
English - United Stat	1	0	Published

To the right of the table is a vertical toolbar with several icons: a file folder, a magnifying glass, a document, a gear, and a refresh symbol.

[!IMPORTANT]

Fields like **Major Version Number**, **Minor Version Number**, **Language**, and **Article Public Number** are automatically filled in by the system. You can't change the values in those fields.

For more about creating article versions, see Create and manage article versions.

Translating articles into multiple languages

In addition to being easily accessible, articles that you create must also be easily consumed by all your customers, no matter what country or region they're from. Dynamics 365 lets you create translated articles, so that you can provide the same self-help content in multiple languages, but without having to manage multiple copies of the same article. For example, a knowledge article that explains how to replace a printer cartridge might have Spanish, French, and Hindi versions. Those translated versions can then be emailed to customers who speak those languages.

When an article is translated into another language, Dynamics 365 creates a new major version that's associated with that language.

For example, to create a French version of a knowledge article, select the **Translate from** button on the command bar, and then select **French** in the list of available languages.

[!IMPORTANT]

When you create a version of an article for a different language, the article isn't actually translated into that language. You must supply the translated and formatted text for the article yourself. Third-party language translators can help, and tools like Power Automate can provide some automation of the process.

Language	Major Versio...	Minor Versio...	Status Reason
Spanish - Mexico	1	0	Proposed
German - Denmark.	1	0	Proposed
French - France	1	0	Proposed

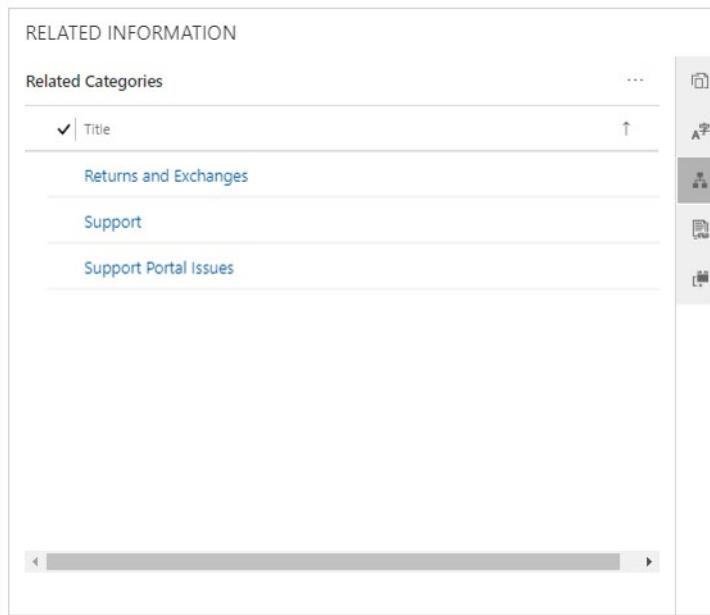
For more about creating article translations, see [Translate a knowledge article in multiple languages](#).

Article categories

By associating an article with one or more categories, you make it easier to find and consume the article in different areas of the application. Users can take advantage of article categories when they search for an article directly from a case. Article categories can also be used to organize articles when users access them through a customer portal.

To create article categories, go to **Settings, Service Management**, and then, in the **Knowledge Base Management** section, select **Categories**. You can also define category hierarchies, like Hardware > Printers > Drums & Rollers. In this way, you can create an article hierarchy for specific categories.

To add a category to an article, select **Associate Category** on the command bar. A single article can be associated with multiple categories.



Managing article versions, translations, and categories

Article management consists of publishing and archiving different versions of each article to provide the most accurate information to your customers and internal employees. Although a single article might have multiple versions to reflect things like translations, major edits, or minor edits, only one version of an article can be published at a time. It's important to keep track of the changes that are made to each version, and to publish versions only at the appropriate time.

You can manage article versions in the **Related information** pane on the **Summary** tab of the knowledge article.

On the right edge of the **Related information** pane, you'll see several buttons that let you work with related records. The following related records are relevant to versions, translations, and categories:

- **Related Versions:** This record lists all the major and minor versions for the current article. From here, you can:
 - Edit or update a version.
 - Create a new major or minor version.
 - Delete a version.

[!IMPORTANT]

If you delete an article version, the action is permanent and can't be undone.

- **Related Translations:** This record lists all the translations that are available for the current article. From here, you can:
 - Edit or update a translation.
 - Create a new major or minor version of a translation.
 - Delete a translation or version of a translation.

- **Related Categories:** This record lists all the categories that are associated with the current article. From here, you can:
 - Add article categories.
 - Edit existing article categories.
 - Remove an article category.

Now that you've learned how to effectively manage and maintain article versions, translations, and categories, you're ready to move on to information about publishing articles. You'll learn how article versions, translations, and categories should be involved in the publication process.

Kowledge article publication

After a knowledge article has been reviewed and approved, it's ready to be published. After an article is published, internal and external users can use it when they resolve cases, or they can access it from a portal.

Microsoft Dynamics 365 provides two options for publishing articles:

- **Immediately:** You can publish the article right away. You might use this option if, for example, the article content is related to sign-in issues that multiple customers are reporting right now.
- **Scheduled publish:** You can delay publication until a specific time. You might use this option if, for example, the organization's merchandise return policy will be changing on the first of the month. An article can be written in advance and published when the new procedures are in place.

Before you publish an article, we recommend that you take one last look at it. Consider whether there's anything else that might help users and customers find it more easily or consume it more effectively. For example, here are some questions that you might consider:

- Is the article somehow related to other articles?
- Should the article be associated with other products or services?
- Should both internal and external users be able to consume the article?

Depending on your answers to these questions, you can use the following buttons on the command bar for the article:

- **Related Article:** Associate the current article with one or more similar articles that are stored in Dynamics 365. Related articles can be viewed from the **Related Articles** record in the **Related Information** pane on the **Summary** tab.
- **Related Product:** Associate the current article with one or more similar Dynamics 365 products that are stored in the product catalog. Related products can be viewed from the **Related Products** record in the **Related Information** pane on the **Summary** tab.
- **Mark Internal:** Mark the article for internal use only. External customers won't be able to consume the article from a portal.
 - To publish a knowledge article, select **Publish** on the command bar. In the dialog box that appears, you can:
- **Define when the article is published:** In the **Publish** field, select whether you want to publish the article right away or in the future.
 - If you select **In The Future**, select the date and time of publication in the **Publish On** field.

Immediate Publish	
Publish	* Now
Published status	* Published
Scheduled Publish	
Publish	* In The Future
Publish On	11/4/2018 * 7:00 AM
Published status	* Published
Scheduled status	* Scheduled

- **Define a status for the published article:** In the **Published Status** field, select the status that the article should be set to after it's published.
 - By default, Published is selected.
 - **Define whether the article expires:** In the **Expiration Date** field, select the date and time when the published article should expire.
 - Expired articles are no longer available in searches.
 - If you set an article to expire, in the **Expiration Status** field, select the status that the article should be set to after it expires.

Expiration Information

Expiration Date	1/31/2019	
	11:30 PM	
Expiration State	* Expired	
Expiration Status	* Expired	

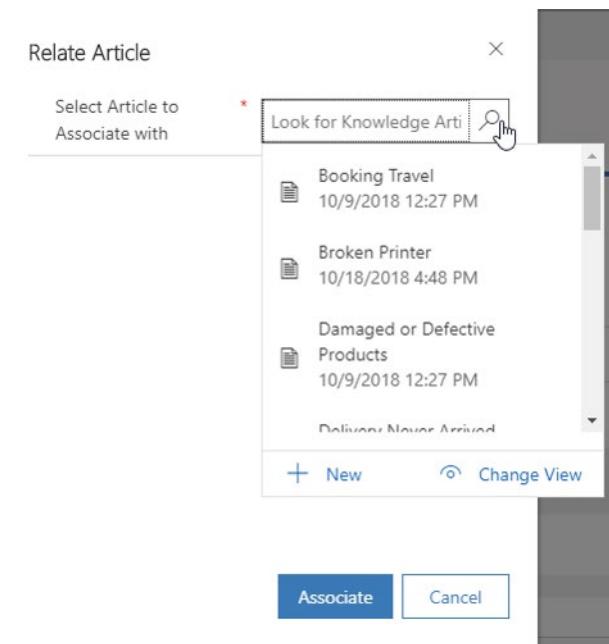
- **Define whether the article translations should be published:** To publish all approved article translations together with the article, in the **Publish approved related translations with article** field, select Yes.
 - Each article translation must be approved before it can be published. Article translations that haven't been approved won't be published.

After an article is published, it will remain published until the expiration date is reached (if an expiration date has been defined), or until the article is manually unpublished.

For more about scheduling and publishing an article, see Schedule or publish an article.

Update published knowledge articles

When a knowledge article is in the Published or Scheduled state, it can be updated directly by users who have the publish privilege associated with their user record. If the article being updated has information that complements an existing knowledge article, the existing article can be associated with the current knowledge article.



For more about updating published articles, see [Update published knowledge articles](#).

Summary

Organizations who have a clearly defined knowledge management solution are in a much better position to ensure that both customers and internal employees have the necessary information at their disposal to address problem and concerns. By creating knowledge articles and defining a clear knowledge management lifecycle, organizations can ensure that the content available is accurate and relevant to those who need to consume it.

We looked at how Dynamics 365's Knowledge Management solution provides a total solution for managing an organization knowledge repository including:

- Examining the process used to create knowledge articles, and how to leverage the design editor to develop rich and engaging article content.
- How organizations can manage an article throughout its entire life cycle from creation, to article review and approval, and to publishing articles to make them available to the masses.
- How leverage versioning to track an articles changes over its entire life and develop multiple versions in several different languages to support customers across all the regions an organization supports.
- Reviewing the article publication process and more specific options, such as when and if articles should no longer be valid, as well as what to do with them at the end of their life span.

The next steps from here would be to gain a deeper understanding of how Dynamics 365 Knowledge Articles are leveraged to provide support agents the ability to search and leverage them from different Dynamics 365 records.

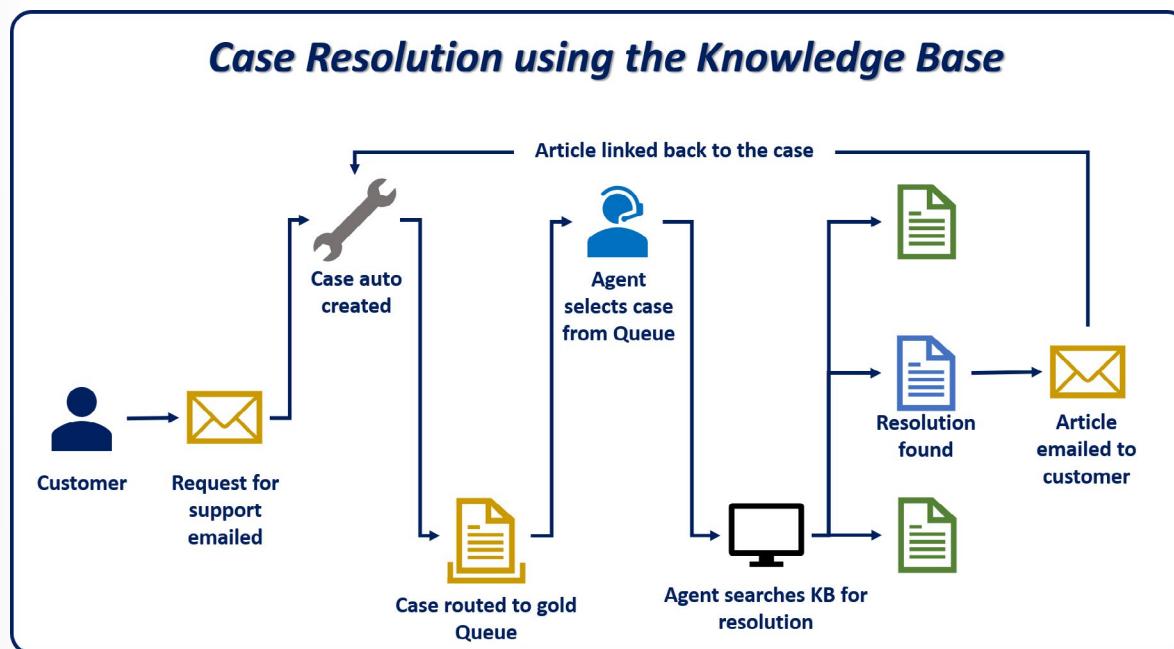
Use knowledge articles to resolve cases

Knowledge article and case resolution overview

One of the major advantages of the Microsoft Dynamics 365 knowledge management solution is that agents can search for knowledge articles directly from a case record while they work to resolve a customer's issue. Out of the box, Dynamics 365 includes a **Knowledge Base Search** control that can be accessed from the **Related** pane for a case. When an agent selects the **Knowledge Base Search** button, the knowledge base is shown, and the title of the case that's being worked on is automatically entered in the search field. Any articles that match the information in the case title are listed in the search results. Therefore, agents don't have to leave the case record that they're working on to look for potential resolutions to the case.

Customer service agents can view, link, or email an article directly from within the **Knowledge Base Search** control. For every article that an agent views in the control, a view is registered and added to the view count. Knowledge managers can use the view count to track the articles that are most often viewed and those that aren't as relevant. If an article provides a resolution to the case that an agent is working on, the agent can link the article to the case or email the resolution to the customer. In both instances, a relationship between the case and article is created. Knowledge managers can consume relationship information on the **Analytics** tab for the article.

The example in the following image shows how all these pieces work together.



By default, only the Case entity can search the knowledge base. But you can set up other entities to search it too, and the **Knowledge Base Search** control can be embedded on the page for those entities. For example, an organization uses Dynamics 365 to follow up on leads, and it has articles that are relevant to leads. In this scenario, the Lead entity can be set up to search the knowledge base, and the **Knowledge Base Search** control can be added to the **Lead** page.

This module will focus on effectively setting up, showing, and consuming article information on the Case entity and other entities in Dynamics 365. You'll also learn what the experience is like for users who resolve cases by using the knowledge base. Finally, this module will showcase some of the analytical options that are available as part of the knowledge management solution.

Enable and configure tables for Knowledge Search

Before the **Knowledge Base Search** control can be used to search for knowledge articles, the knowledge search functionality must be turned on for them. You must also set up the knowledge base functionality for your organization by setting up two items:

- **Embedded Knowledge Search:** Define which entities can use the **Knowledge Base Search** control and which knowledge base is used.
- **Categories:** By defining article categories, you make it easier to find articles during searches and when the knowledge base is surfaced in a customer service portal.

To set up the knowledge base functionality, go to **Settings > Service**, and then, in the **Knowledge Base Management** section, select **Embedded Knowledge Search** or **Categories**.

After you set up knowledge management, users will be able to:

- Search for relevant articles in Dynamics 365 while they're working on a record.
- See the content of the article inline. Any images and videos in the article will also be shown.
- Give timely and consistent information to customers when they work on cases, by using different actions. For example, an agent can open an article and share the information with a customer. Alternatively, the agent can email the customer a link to the article.

Embedded knowledge search

When you're setting up the knowledge base functionality, the first thing that you should set up is the embedded knowledge search functionality to define which entities in Dynamics 365 will be able to use the **Knowledge Base Search** control. By default, the Case entity is the only entity that can use the control, but you can set up additional entities to use it as needed.

[!IMPORTANT]

Turning on knowledge search for an entity just lets the knowledge base search functionality be used on that entity. You must still set up the **Knowledge Base Search** control for the entity on the entity page. For example, if you turn on knowledge search for the Lead entity, agents won't be able to search for articles until you add the control to the **Lead** page.

Information about adding the **Knowledge Base Search** control to a page will be provided in the next unit.

The following knowledge base management settings are available for the embedded knowledge search functionality:

- **Record Types:** Select the record types to turn on knowledge base management for. (By default, it's turned on only for case records.)
- **Knowledge Source:** Define the knowledge base to use.

[!NOTE]

Parature has been discontinued. You'll always select *Dynamics 365* in this field.

- **Support Portal Connection:** Turn on the knowledge base for external portals.
 - You must define the URL format for articles.
 - You don't have to set this field if you're using Dynamics 365 portals. (The use of Dynamics 365 portals is set up by default.)

Embedded Knowledge Search

Record Types

Select the record types for which you want to enable knowledge base search.

Available

- Account
- Bookable Resource
- Bookable Resource Booking
- Bookable Resource Booking Header
- Bookable Resource Category
- Bookable Resource Category Assn
- Bookable Resource Characteristic
- Bookable Resource Group
- Booking Status

Selected

- Case

Select the entity you want enable. Use the arrow button to move it to selected.

Support Portal Connection

Select Yes to share Knowledge Articles as links.

Use an external portal. Select this option to send the ...

No

External links for KB articles are created in the URL format specified below

URL format ---

Knowledge Articles Feedback

Enable users to provide feedback on knowledge articles from search control.

Enable users to provide feedback on knowledge articles ...

Yes

Knowledge Articles Inline Image

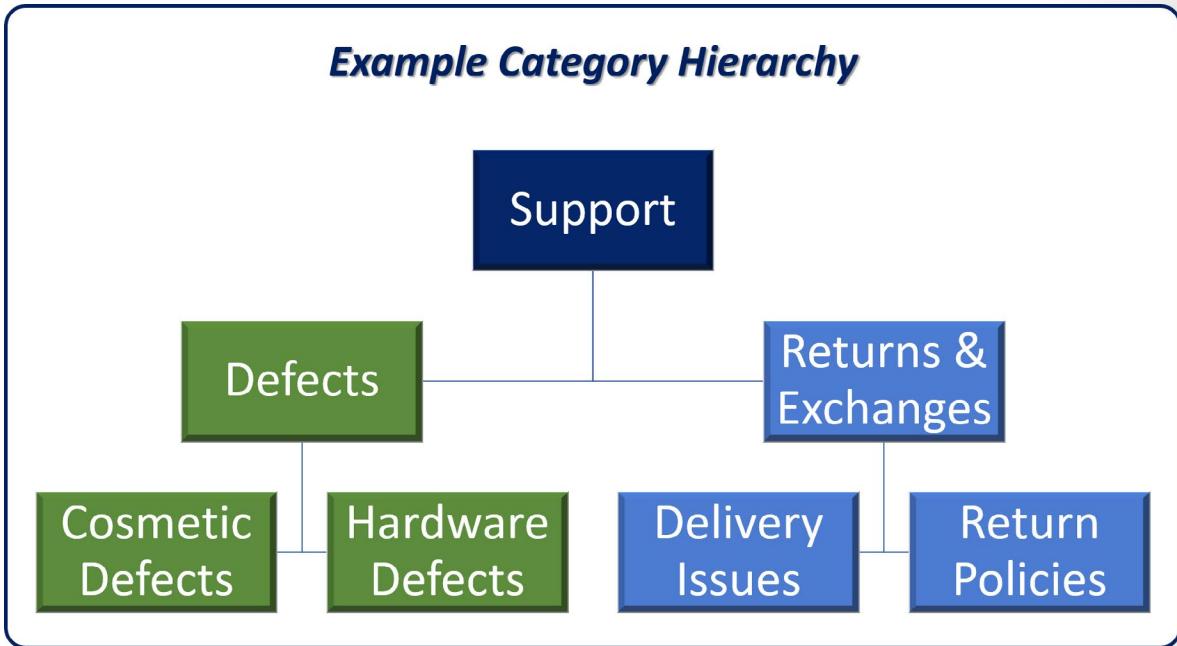
Save

After you've defined the entities to use with the knowledge base, you can select **Next** and then **Finish**. The knowledge base will be turned on for the selected entities, and you can set up the **Knowledge Base Search** control on the entity pages.

For more about setting up knowledge search, see Use embedded knowledge search to set up knowledge management.

Categories

Categories can be used to define a hierarchy structure for organizing articles in Dynamics 365. The example in the following image shows one way that categories can be structured.



As each article is created, it can be associated with one or more categories. These categories are surfaced in Dynamics 365 portals, and agents can expand them to see the articles that apply to each category.

For more about working with article categories, see [Configure and manage category for knowledge articles](#).

Configure article search and display options

After the Dynamics 365 knowledge search functionality has been set up and article categories have been defined, the next step is to set up the **Knowledge Base Search** control for each entity page where it will be consumed. By default, the control is already set up for the Case entity. If you set it up for any other entities, it must also be set up on the relevant page for each of those entities.

Before you begin

To set up the **Knowledge Base Search** control, you must customize the pages where it will appear. If you aren't familiar with the customization of pages in Dynamics 365, see [Customizing Dynamics 365 forms](#).

Working with Customer Service Hub pages

The Dynamics 365 Unified Interface is used for both the Sales Hub and Customer Service Hub apps. Although both apps provide the same navigation, functionality, and visual experience, the pages that you must customize vary, depending on the app that you're using. The Sales Hub app and apps like Field Service and Project Service use the same pages that are used in other apps: **Account**, **Contact**, and **Opportunity**. But the Customer Service Hub app includes special pages that are called Interactive Experience pages. These pages are used for many of the primary entities that appear in the Customer Service Hub. Make sure that you customize the correct page for the app that will show the information.

The following table shows which page you customize for the three entities that are most often used, depending on the app where they will appear.

Entity	Customer Service Hub page	Sales Hub page
Account	Account for Interactive Experience	Account
Contact	Contact for Interactive Experience	Contact
Case	Case for Interactive Experience	Case

As you begin to add or edit the **Knowledge Base Search** control on pages, make sure that you're using the correct page.

Unlocking the Related pane

To add the **Knowledge Base Search** control to specific pages, go to **Settings > Customizations > Customize the System**. From the solution, expand the entity to customize (for example, **Case**), and then select the page to work with.

[!NOTE]

Remember: the **Knowledge Base Search** control on the **Case** page, you must customize the **Case for Interactive Experience** page.

The **Knowledge Base Search** control is available in the **Related** pane on the **Case** page. By default, the **Related** pane is locked, and you can't edit it. To unlock the **Related** pane, select it, and then select **Change Properties**. Clear the **Lock the section on the Form** check box, and then select **OK**. You can now edit the pane.

If the page that you're working with doesn't have a **Related** pane, you can add it. On the **Insert** tab, select **Section**, and then select the **Reference** pane.

[!NOTE]

You might also have to unlock the **Reference** pane on existing pages before you can edit it.

Setting up the Knowledge Base Search control

After you've unlocked the **Related** pane, you can set up the **Knowledge Base Search** control by selecting it and then selecting **Change properties**. The control has the following sections:

- **Tab Details:** This section shows the path of the web resource that's being used for the tab icon in the pane. You can change this icon if needed.

Any icon that you want to use must first be added as a web resource.



For more about using web resources, see Web resources.

- **Name:** This section shows the name of the control and the label that's used for it. You can specify whether the label is shown on the page.

Name —

Specify a unique name.

Name * case_kbsearchcontrol

Label * Knowledge Base Search

Display label on the Form

- **Filter Data:** This section determines which knowledge articles are shown in the control by default. You can specify whether users can change the filters that are used.

You can also specify the default language that articles are shown in. By default, the language is set to the user's default language. (An article translation for the language must exist.) You can specify whether users can change the language filter.

Filter Data —

Filter search results by All published KB articles

Users can change filters

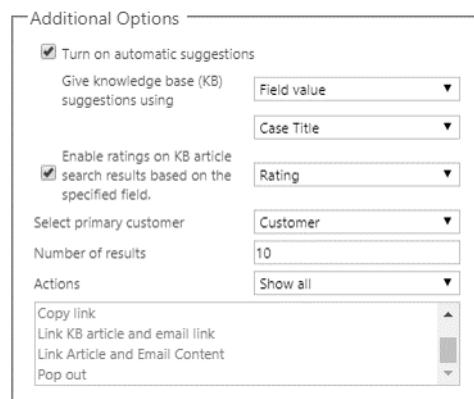
Set Default Language User's Default Language

User can change Language Filter

For more about article translations, see Translate a knowledge article in multiple languages.

- **Additional Options:** This section provides additional settings that determine how the control searches for data, how many articles are returned, and which actions are available to users in the control. It includes the following fields:

- **Turn on automatic suggestions:** Select this check box to turn on automatic article suggestions.
- **Give knowledge base (KB) suggestions using:** Select the field that should provide the search value that's used to provide automatic article suggestions. (By default, *Case Title* is selected.)
- **Enable ratings on KB article search results based on specified field:** Select this check box to turn on ratings for articles, based on the specified field. (By default, *Rating* is selected.)
- **Select primary customer:** Select the field that should be used as the primary customer field for the association. (By default, *Customer* is selected.)
- **Number of results:** Enter the number of articles that should be returned in search results. (By default, *10* is entered.)
- **Actions:** Select the article actions that should be available for each record that's returned in the search results. Examples of actions include copying the link, linking the article, and emailing the link. (By default, *Show all* is selected.)



After you've finished defining the **Knowledge Base Search** control for a page, you must save and publish the customizations before they will be visible in the application.

For more about setting up the **Knowledge Base Search** control, see Add the Knowledge Base Search control to forms.

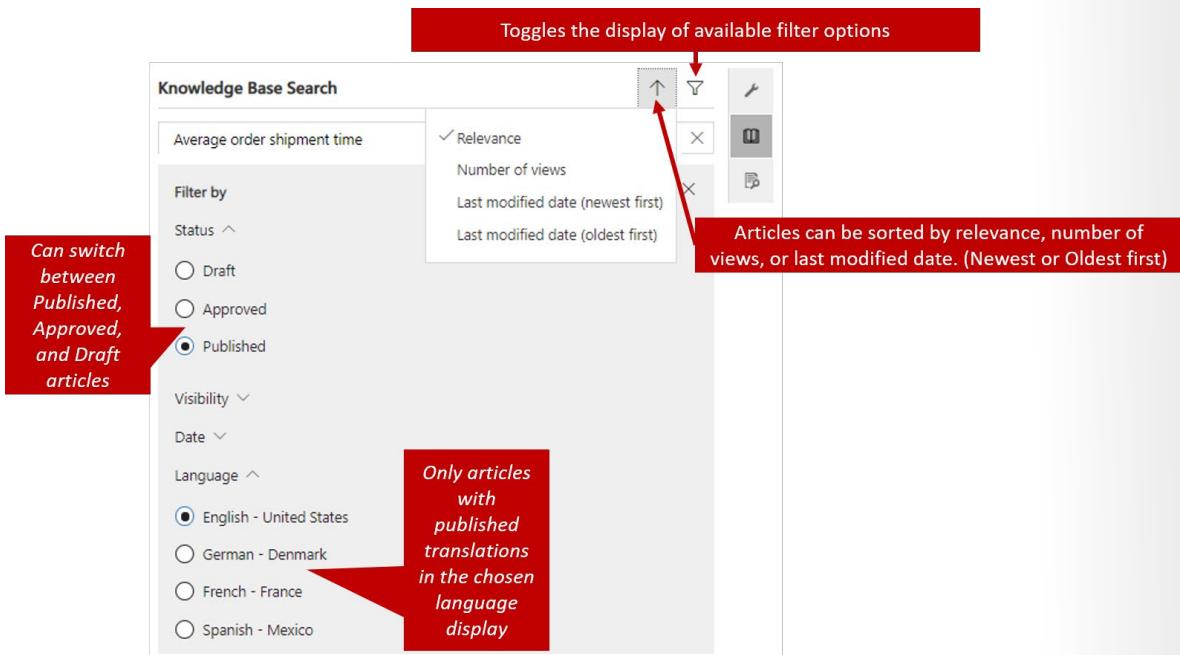
Search for knowledge articles

After the knowledge base is set up, and the **Knowledge Base Search** control has been added to the appropriate entity pages, agents can start using the control to look for knowledge articles.

As agents try to resolve issues for customers, they can use the knowledge base to check for potential resolutions to those issues. To access the **Knowledge Base Search** control, select the **Knowledge Base Search** button in the **Related** pane on the **Case** page.

When the **Knowledge Base Search** control is loaded, the search field is automatically filled with the title of the current case (or the value of whichever other field was specified for the control). Agents can override the field value at any time. For example, if the current results don't provide an adequate answer, the agent can enter keywords. The control will look for those keywords in the case title, article keywords, and article content, and return any matches.

By default, the **Knowledge Base Search** control shows only the published article versions that are in the user's default language. But agents can select the filter button and change the filter to search draft, approved, or published articles. If the ability to change the language filter was set on the control, they can also select the language to see articles in. The articles that are returned from the search can be sorted by article relevance, number of views, and date of last modification (newest or oldest first).



[!IMPORTANT]

Articles in other languages will be presented to agents only if translated versions of the articles are available in those languages.

For more about creating article translations, see [Translate a knowledge article in multiple languages](#).

A short snippet of each article that's returned will be shown. The following information and options for the article are also shown:

- The date when the article was last changed
- The number of times that the article has been viewed
- The current rating value of the article
- An option to link the article to the current case
- An option to email the article to a customer (When you email an article, you also link the article to the current case.)

A color-coded icon next to each article indicates whether the article is currently linked to the case. Multiple articles can be linked to a single case.

For example, a customer calls to ask some questions about the average shipment time for orders. While you're on the phone, the customer expresses concern that the order hasn't arrived. In this example, you can link both articles to the case, because both cover topics that you discussed with the customer, and both offer potential solutions to the issue.

The screenshot shows a knowledge article titled "Order Shipping Time". A red box highlights the title "Currently not linked to case." with a blue document icon. Another red box highlights the "Displays available article actions" button, which has a blue document icon. A third red box highlights the "Article views and rating value" section, which includes a star rating of 1 and 0 reviews. Below the title, there is a description: "We value customer service above all else, so we provide multiple options for shipping. Customers can expect fast and easy shipping for all products. We also provide free returns at any time. Shipping Options". At the bottom left, it says "Last modified 10/9/2018".

When an agent selects the article title in the **Knowledge Base Search** control, the article is shown in the control and is formatted just like the article. The formatted article will have the same view and rating information. The same actions that are available for the snippet will be available for the article.

Emailing a knowledge article

When an agent chooses to email an article to a customer, Dynamics 365 automatically creates an email that includes the content of the article. The article email window uses the same "what you see is what you get" (WYSIWYG) editor that's used to create articles. The agent can completely edit content of the article in the email before it's sent.

The screenshot shows a WYSIWYG editor interface with a toolbar at the top. The toolbar includes icons for bold, italic, underline, strikethrough, superscript, subscript, and various alignment and style options. Below the toolbar, there is a rich text area containing the article content: "We value customer service above all else, so we provide multiple options for shipping. Customers can expect fast and easy shipping for all products. We also provide free returns at any time.". At the bottom of the editor, there is a code preview area showing the HTML and CSS code for the article.

Article analytics

After knowledge articles have been published and are being consumed by customers and agents, knowledge managers might find it helpful to review article analytics to gain insight into what's going on. Microsoft Dynamics 365 includes two dashboard pages that knowledge managers and authors can use to monitor the status of articles:

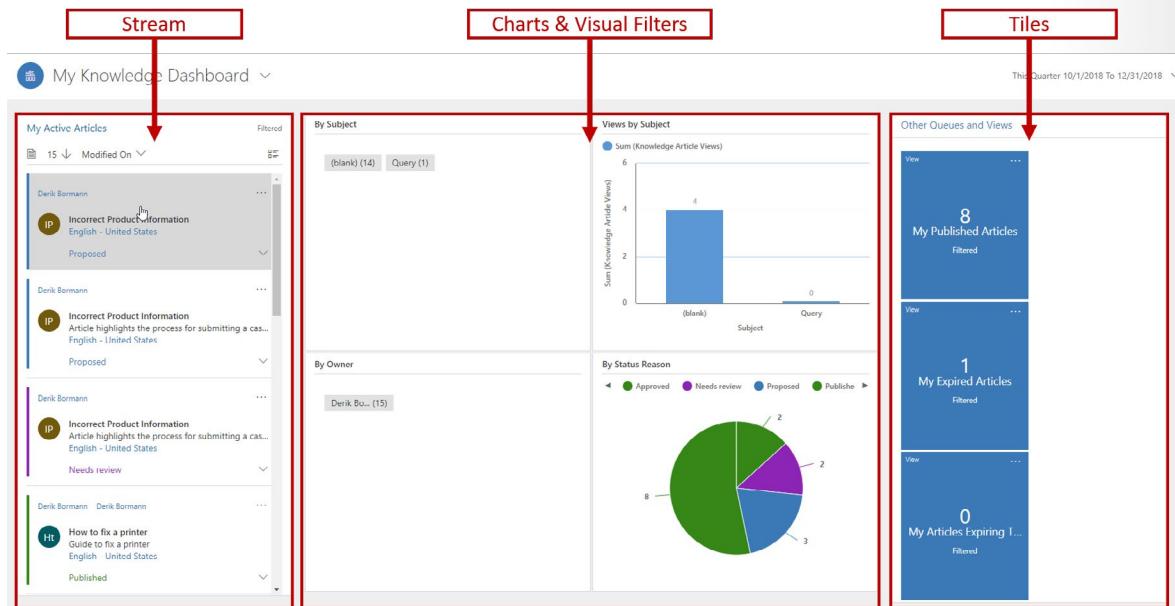
- **My Knowledge Dashboard** page
- **Knowledge Manager** dashboard

My Knowledge Dashboard page

The **My Knowledge Dashboard** page is designed for authors. It gives the author a visual snapshot of the number and status of the articles that he or she is working on. It helps authors quickly learn which articles are expiring during the month, which articles are in review, and so on.

The **My Knowledge Dashboard** page provides the following data:

- **My Active Articles stream:** This stream shows the active articles that are assigned to the author.
- **Charts and visual filters:** The charts provide a count of relevant records in the stream. For example, you can see articles by status, owner, or subject. The charts also act as visual filters. Authors can drill down into a chart to see data that interests them the most.
- **Other Queues and Views section:** The tiles in this section aggregate data in the stream and help monitor the volume of articles. By default, this section includes the following tiles: **My Published Articles**, **My Expired Articles**, and **My Articles Expiring This Month**.



If the **My Knowledge Dashboard** page doesn't provide the specific information that you need, you can create additional or alternative interactive dashboards to satisfy your needs.

For more about setting up interactive dashboards, see [Configure interactive experience dashboards](#).

Knowledge Manager dashboard

The **Knowledge Manager** dashboard is designed specifically for knowledge managers. It lets them quickly find out the most popular articles, articles that need review, or the highest-rated articles. If the articles require any action, knowledge managers can also take it directly from the dashboard.

The screenshot shows the Knowledge Manager dashboard with three main sections highlighted by red boxes:

- Proposed & Articles in need of review:** This section contains two lists: "Proposed Articles" and "Draft Articles Needs Review".
- Expired Articles:** This section contains a list titled "Expired Articles Needs Review".
- Most Popular & Highest Rated Articles:** This section contains two lists: "Most Popular Articles" and "Highest Rated Articles".

Each list displays articles with their titles, modified on date, and status (e.g., Proposed, Published, Needs review, Expired). The dashboard also includes a header with a "Knowledge Manager" dropdown and a date filter "This Quarter 10/1/2019 To 12/31/2019".

For more about monitoring articles by using dashboards, see [Monitor knowledge articles with dashboard](#).

Tracking article information

For each article, two tabs let you track basic article information and analytical information:

- Summary
- Analytics

Summary tab

The **Basic settings** pane of the **Summary** tab has lots of information that's relevant to the article. Much of this information isn't data that you can edit. Instead, it's updated by the system as changes are made to the article. This information includes the article language, public number, and version numbers.

The **Timeline** pane provides timeline information for the article. The timeline shows all the related activities that are associated with the article. It also lets you add activities to the record. You can also use the timeline to view notes that reviewers have made about the article, or to see specific tasks that might be required prior to the article's publication.

Finally, the **Related information** pane provides access to records that are either related to or associated with the article. You can open the following records by using the buttons along the right edge of this pane:

- **Related Versions:** This record shows a complete version history of the article. You can view the previous versions of the article, and can even revert to a previous version if you have to.
- **Related Translations:** This record shows a list of the different translations that are available for the article.

- Related Categories:** This record shows the categories that the article is associated with. Categories are used for article location and analytics. They help provide better article organization when articles are used in a portal knowledge base.
- Related Articles:** This record shows any articles that are similar to the article or that have been related to it.
- Related Products:** This record shows the products that the article is associated with.

The screenshot shows the 'Incorrect Product Information' Knowledge Article page. At the top, there are tabs for 'Summary' (which is selected), 'Analytics', and 'Related'. Below these are sections for 'BASIC SETTINGS' (including fields like Internal, Status Reason, Owner, Article public Number, Primary Author Id, Language, Major Version Number, Minor Version Number, Created By, Created On, Modified By, and Modified On) and 'TIMELINE' (which shows a list of activities such as auto-posts on walls and version approvals). To the right is a 'RELATED INFORMATION' pane showing 'Related Versions' (listing English - United States with 1 major version and 0 minor versions) and icons for navigating to other related records. A red callout box points to the Timeline pane with the text 'Timeline displays activities related to the article'. Another red callout box points to the Related Information pane with the text 'Icons make it easy to navigate to records related to the article such as versions, translations, and associated products.'

Analytics tab

The ability to track content helps you assess the value of that content to your organization and your customers. By knowing and understanding when, where, and how many times an article is viewed, you can determine how much customers and team members rely on the information in the article. This data is extremely useful when you create future content curation plans. It can help you decide what content you'll deliver in the future, how you'll deliver it, where you'll deploy it, and what style or structure you'll use to write it.

Article view counts and other statistics are available on the **Analytics** tab. This tab includes the following panes:

- Views:** This pane shows the total number of times that the current article has been viewed. This number represents the total combined views for all versions and translations of this article. The number is automatically updated every 12 hours, but you can also calculate it manually.

The **Views by day and location** sub-grid shows the individual article views on specific days.

- Feedback:** This pane captures all the feedback and ratings for articles, and updates the articles accordingly.

The **Feedback** sub-grid shows all feedback that has been received for the current article.

The **Rating** field shows the average rating of the article, based on the amount of feedback and the number of ratings that have been received. The rating is automatically updated every 12 hours, but you can also calculate it manually.

- Cases:** This pane lists the cases that have used the current article. You can open each of these cases to view its details. In this way, you can gain valuable insight into the questions that customers are asking

and the approaches that they tried before they asked for help. This data can help you expose your articles better and provide more useful information to your customers and team members.

The screenshot shows a Microsoft Dynamics 365 Knowledge Article details page for an article titled "Incorrect Product Information". The page has three main sections:

- Total article views:** Shows 2 views last updated at 12/17/2019 11:00 AM. It includes a chart showing views by day and location (12/16/2019, Internal).
- Feedback list & rating:** Shows a rating of 0.75 last updated at 12/17/2019 11:00 AM. It lists two feedback entries: "This is a great article" (5 votes) and "We should do an updat" (3 votes), both marked as Internal.
- Cases using this article:** Shows cases where this article was used. One case is listed: "Customer Service requir Reference" created on 12/17/2019 10:59 AM, with a status reason of "No".

A red box highlights the following text at the bottom of the page:

The total number of views and overall feedback rating fields are calculated every 12 hours. They can be manually triggered by selecting the calculator icon, and clicking the Recalculate button.

For more about tracking article details, see [Track basic details of an article](#).

Summary

Knowledge articles are most effective for the people who consume them if they can easily be used in the context where they're needed. It's much easier for agents to find the best articles to resolve customer issues if they can use relevant information in the case that they're working on to search for articles. Microsoft Dynamics 365 gives organizations several ways to define when and where article information should be available to agents.

We looked at many of the components that Dynamics 365 provides for using knowledge articles to resolve issues. Here are some of the things that you learned:

- How to configure the knowledge base and define which entities in an organization should be able to take advantage of articles.
- The process of adding and configuring the **Knowledge Base Search** control for specific entities. This process includes defining what data is used to search for content and how to make sure that the appropriate translated version is available to agents.
- How agents or representatives can interact with articles. These interactions include searching for content, linking articles to records, and emailing article content to customers.
- The different analytical options that are available for articles, and how the analytics can be used to create and deploy better content over time.

The next steps are to learn more about how Dynamics 365 can be used to define and manage service key performance indicators (KPIs) for organizations, and how to use maintenance contracts for customers.

Module 4 Create surveys with Dynamics 365 Customer Voice

Create a survey project

Introduction

This module explains the purpose and functionality of projects in Microsoft Dynamics 365 Customer Voice.

In this module, you will:

- Learn about Dynamics 365 Customer Voice and how it can benefit an organization.
- Create your first project.
- Discover the high-level features and functionality of a project.

Dynamics 365 Customer Voice

Dynamics 365 Customer Voice provides organizations with a powerful survey tool to capture, analyze, and then act on customer and employee feedback. Consider all the touch points where you interact with a client, creating either a positive, neutral, or negative experience.

These experiences are often referred to as *moments of truth*, which generate a lasting impression of your organization. It's at these points that gathering feedback is essential.

Common examples of these experiences include:

- After a client support issue has been resolved and a case has been closed
- After a product has been purchased
- After a training session has been completed by a student

Dynamics 365 Customer Voice can be used to capture opinions and feedback from customers. Surveys can also be used to gather information that is needed, even before a respondent becomes a client.

Use cases of this information capture could include:

- Registering for an event that is being held
- Requesting details about provided services
- Completing a form that has been embedded on an online website product page

Dynamics 365 Customer Voice uses the concept of projects to divide and contain groups of surveys and reports. A project could contain one or many surveys to be used for different events or *moments of truth* throughout the customer relationship journey.

Keeping these use cases in mind, you can create surveys and processes by using Dynamics 365 Customer Voice to provide a smooth and interactive experience for any organization.

The screenshot shows the 'Customer Voice' application interface. At the top, there's a dark header bar with the title 'Customer Voice'. Below it, a light-colored navigation bar has the text 'Create a project' on the left and a user icon on the right. Underneath, there are two main sections. On the left, a sidebar lists 'Project template' (selected) and 'Survey location'. The main area displays four project templates in cards:

- Hello Megan! What kind of feedback do you want to collect?** (Based on Forrester CX best practices)
These project templates will help you get a quick start with a new set of customer feedback surveys and reports.

Periodic Customer Feedback
For regular feedback and relationship maintenance
- 
Customer visit feedback
For feedback on Dynamics 365 Field delivery
- 
Customer Feedback
For feedback on Dynamics 365 Sales delivery
- 
Customer Service Feedback
For feedback on Dynamics 365 Customer Service

The surveys can contain several types of questions: choice, date, Likert, ranking, rating, text, and Net Promoter Score (NPS). NPS is a metric that is used to analyze the overall loyalty of customers. It measures a customer's perception of an organization, product, or service by asking how likely it is that they would recommend to friends or colleagues. Asking an NPS question on a survey then provides an overall Net Promoter Score, which provides another metric to assess customer satisfaction.

Dynamics 365 Customer Voice is included with select Microsoft Dynamics 365 subscriptions and is available as an upgrade for Microsoft 365

subscriptions. The surveys, questions, invitations, and responses are stored in Microsoft Dataverse.

While this information might help if you are using a Dynamics product or want to build a model-driven app in Microsoft Power Apps, it isn't needed when you are accessing and using Dynamics 365 Customer Voice:

- Surveys are created
- Survey questions are added to surveys
- Survey responses are completed by respondents
- Each response has survey question responses that are linked to the survey questions
- Survey invitations are sent out to customers or employees, making it a personalized survey
- The invites and responses are linked together and are both activities
- Contacts can also unsubscribe from Dynamics 365 Customer Voice surveys, which will create an Unsubscribe record to prevent additional survey invitations from being sent

Dynamics 365 Customer Voice uses Microsoft Power BI to display summary information and individual results in rich, real-time analytics. Survey insights are provided to show correlations between one or more questions, which help organizations see patterns in responses and gain a better understanding of customers.

Consider a case closure survey that asks for ratings on various aspects of the support experience (the support representative, the time to respond, knowledge, and so on) and also asks a Net Promoter Score (NPS) question. In an ideal scenario, if all feedback is positive regarding the levels of customer service that was provided, the overall NPS score that was given will likely also be positive. If everything is positive, and the NPS is low, it might be determined that, while the customer service that was provided at that moment was good, the overall opinion that the customer has of the company as a whole is poor; therefore, work is needed to figure out why and improve that opinion.

Projects in Dynamics 365 Customer Voice

Before you create a new project, consider planning it beforehand to ensure that it is as effective as possible. A project should contain elements that are related to one another rather than including all of an organization's surveys into one main project. A project could contain all Customer Service related surveys that are distributed after a customer has purchased a product. From an ongoing account management perspective, a project could be created to contain surveys that are sent after a client visit, on an annual basis, or every six months.

When you are planning how to create a new project, consider the following questions:

- What is the purpose of this project?
- Who are the main stakeholders for this project that need to provide input?
- Does the project cross over multiple departments that have a variety of needs?
- Are clear objectives in place and are deliverables required for the project?
- Who will provide questions for surveys for the project?
- What other roles and collaboration is needed for the project?

- Does the project length have a timeline, or has a deadline been established for when this project needs to be delivered and completed?

Discussing and finding answers to these questions prior to creating the project can help you create a clear path and a solid plan that can determine how successful the project will be. By asking these questions first, you can review a project periodically throughout the duration and then again at the end. This approach helps you acknowledge project achievements and analyze the results. It might also help to learn from the project successes rather than adjust the next project based on the data.

The two main elements of a Dynamics 365 Customer Voice project are:

- Surveys: A project can contain one or many surveys.
- Reports
 - The reports section contains satisfaction metrics that cover all surveys within that project.
 - A response overview report will be created for each survey that is added to the project.

Other elements are included within each survey that provide a potentially unique experience for each one:

- Determining which survey metrics to capture
- Customizing a thank you and footer message
- Adjusting the theme color, fonts, and background
- Adding custom Cascading Style Sheets (CSS) design to style the survey further
- Creating and using survey variables for personalization needs
- Providing up to 23 language translations for a survey
- Formatting elements of the survey, such as displaying a progress bar and question numbers or shuffling questions when appropriate

When all planning is complete, a project can be created in Dynamics 365 Customer Voice.

Create your first project

The planning has been done and the purpose for a project is understood. Now, it is time to create the project. Several project templates are provided in Dynamics 365 Customer Voice. These templates are designed to give the user a quickstart with a suggested survey and processes that relate to a specific type of feedback.

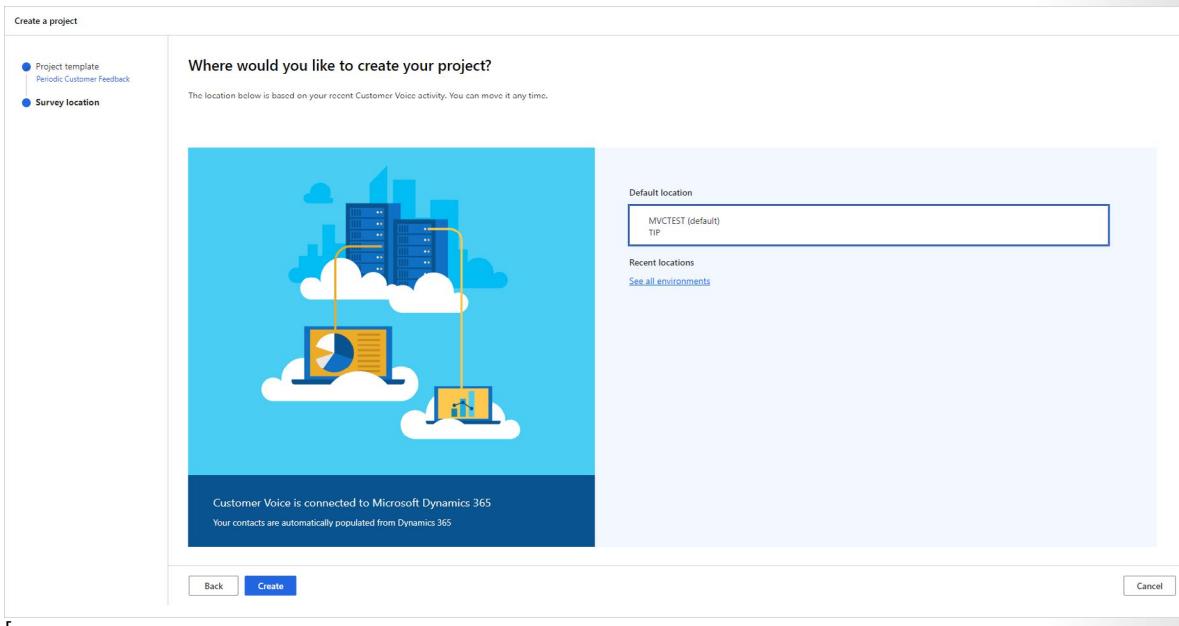
The following project templates are suggested.

Project Template	Template Purpose
Periodic Customer Feedback	For regular feedback and relationship maintenance
Customer Visit Feedback	For feedback on Dynamics 365 Field Service delivery
Customer Feedback	For feedback on Dynamics 365 Sales delivery
Customer Service Feedback	For feedback on Dynamics 365 Customer Service
Blank	Start from the beginning and create a new survey

After selecting the most appropriate project template for an organization's needs, the user should select the location of the project. The number of available locations to select from will be related to the number of different environments that are available to them in Microsoft Dataverse. If only Dynamics 365 Customer Voice is used, it will be the only available location to select from. However, if the organization has

Dynamics 365 Customer Service, for example, a location will be displayed for each one that the user has access to. This environment might be PRODUCTION or SANDBOX. If the organization uses Dataverse and has created other model-driven Power Apps, these environments might also be listed.

A single *default environment* is automatically created and made available in Dynamics 365 Customer Voice. This environment can't be deleted and can be used for adding projects. However, if the purpose of a project is to collect data that is based on triggers such as case closures or product purchases, and these triggers occur in a Dynamics 365 or other Dataverse environment, the same environment should be selected when the user is creating the project.



After the project is created, if one of the templates is used, it will be given a specific name that is related to the template chosen. The project can be renamed to something that aligns more with the organization's objects, if necessary. A project can also be copied, shared, overwritten, and deleted. A project that is created from blank will show as **New project** until it is renamed to something more appropriate.

Selecting a project template also means that a survey template will be added as part of the project. For the Periodic Customer Feedback template, a survey is included with questions asking for feedback on the experience that a respondent has had in the last three months. The survey uses different types of questions, including rating, Likert, and text questions. Included on each question are various settings, which determine if the questions are required, have any restrictions, or have a subtitle displayed. The elements can be adjusted for each question, if necessary. Consider that slight adjustments will be needed to ensure that the questions meet the requirements of the company that the project has been created for.

Additional features might be included within the delivered survey, such as the addition of a variable, as shown in the following figure. In this example, **companyname** has been added as a new variable, and it is then used in the question title and also in some of the statements within the Likert question. If this variable is to be used, the project creator must update the default value with the actual organization name so that any surveys sent using the variable are accurate and make sense.

The screenshot shows the Dynamics 365 Customer Voice survey builder. On the left, there's a preview window titled 'Periodic Customer Feedback' with a blue header bar containing the title. Below it, a question is displayed: '1. How would you rate your overall satisfaction with {{companyname}}?' followed by a five-star rating scale from 'Very dissatisfied' to 'Very satisfied'. On the right, there's a 'Variables' section with three entries: 'First Name' (Default value: First Name), 'Last Name' (Default value: Last Name), and 'companyname' (Default value: the company). A red box highlights the 'companyname' entry. Below this is a '+ Add variable' button.

A project template could include further elements such as specific branding, branching rules, and other formatting. Selecting the blank option when you are creating a new project will provide a new survey without questions added. Though this blank survey provides no guidance for the survey creator, it is a good option to choose for someone who is experienced with creating surveys or who is comfortable with using Dynamics 365 Customer Voice and understands the concepts of a project and all the elements of a good quality survey.

Summary

In this module, you have learned about Dynamics 365 Customer Voice and how to use and create projects. You were given the tools to be able to create your first project, while learning about the purpose and intention behind the process. To ensure that any projects that you create have a clear path and objective, you are now able to ask the right questions to be certain that any surveys and processes that you create within a project fulfill its purpose. Collaboration across multiple departments and teams is important and is another factor that contributes to the success or potential failure of your projects. You can now apply these learnings to future projects and provide a robust feedback solution for an organization that wants to implement Dynamics 365 Customer Voice.

Create surveys

Introduction

Before you create a survey, consider planning it beforehand to ensure that it's as effective as possible. If a survey is too long, respondents might not complete it due to lack of time or frustration. If a survey is too short, it might not be possible to gather effective or valuable insight from the responses that are received.

Think about the purpose and desired outcome of the survey, and then consider the following questions:

- Is the survey at a logical point in the customer journey or after a *moment of truth*?
- What type of information do you need for the purpose of the survey? Only request information that you need. In other words, don't ask for personal data if you are asking for feedback on the closure of a case.
- Will the survey take more than five minutes to complete? People are time deficient. Asking them to complete a survey that takes too long will cause them to stop responding to any future surveys that you might invite them to complete.
- Could a prize drawing be offered for a survey to anyone who responds? This approach might not be appropriate for all surveys, but it could be a good incentive if you are gathering customer feedback on a larger survey once or twice a year.

After you have determined the answers to the questions and have confirmed the purpose of the survey, you can create it. The title of the survey will help explain the reason for it and will be visible to all respondents. A survey also includes a survey alias. Additionally, the alias will be used as an identifier if you are using Microsoft Power Automate and the Dynamics 365 Customer Voice connector. Therefore, make sure that the alias is internally relevant for those who create the surveys and that it makes sense to anyone who completes the survey.

The following question types can be used on a survey.

Question type	Description
Choice	Add options, allow multiple answers to be selected, and display as a drop-down list, if necessary.
Text	Question can capture a short or long answer and be flagged to capture overall sentiment for the survey. Restrictions can be applied to enforce a number, email address, or if a custom regular expression is entered.
Rating	Ratings can be captured by using numbers or stars from 1 to 10 or smiley faces from 2 to 5 on the scale.
Date	The Date column is captured in dd/mm/yyyy or mm/dd/yyyy format based on the default location of the Dynamics 365 Customer Voice environment. The format cannot be modified.
Ranking	Options are added to the question, and respondents will rank the options in a specific order based on the phrasing of the question. For example: Rank the following options in order of preference to your organization.

Question type	Description
Likert	The Likert scale is like a matrix. A series of statements is provided, and the respondent must select one of the options that best suits or meets the statement.
NPS	The Net Promoter Score is a rating on a scale of zero to 10, asking the respondent if they would recommend a product, service, or organization to a friend or colleague.
File upload	A new folder is created in the user's OneDrive for Business account. Responders will be able to upload their files to that folder. This option is not available when the survey is shared externally and the Only people in my organization can respond setting is turned off.

The screenshot shows the Microsoft Customer Voice interface. On the left, there's a navigation sidebar with 'Home', 'All Projects', 'New Survey' (which is selected), and 'Reports'. Under 'New Survey', there are 'Surveys' (selected) and '+ New survey' options. The main area is titled 'Survey 1' and 'Design'. It features a blue header bar with the title 'Case Closure Survey' and a sub-instruction 'Please provide us with your feedback on the recent support case we closed with you'. Below this, there are three questions:

- Question 1: 'Overall, how do you think we did when working on your recent case?' with a smiley face rating scale from 1 to 5.
- Question 2: 'How likely are you to recommend us to a friend or colleague?' with a numeric rating scale from 0 to 10, where 0 is 'Not at all likely' and 10 is 'Extremely likely'.
- Question 3: 'What is the primary reason for your score?' with a text input field labeled 'Enter your answer'.

At the bottom left is a blue button labeled '+ Add new'.

A survey can have up to 100 questions. Likert, choice, and ranking questions, along with their options/statements, count toward the overall 100-question limit. Therefore, if you include a Likert question with 10 statements, it will reduce the number of remaining questions to 90. The preceding figure shows a simple survey with a rating (smiley) question, a Net Promoter Score question, and a text column question. For longer surveys, a new section can be added after a question, creating pagination between blocks of questions. This approach can be a way to cleanly break up a survey that asks questions on different topics.

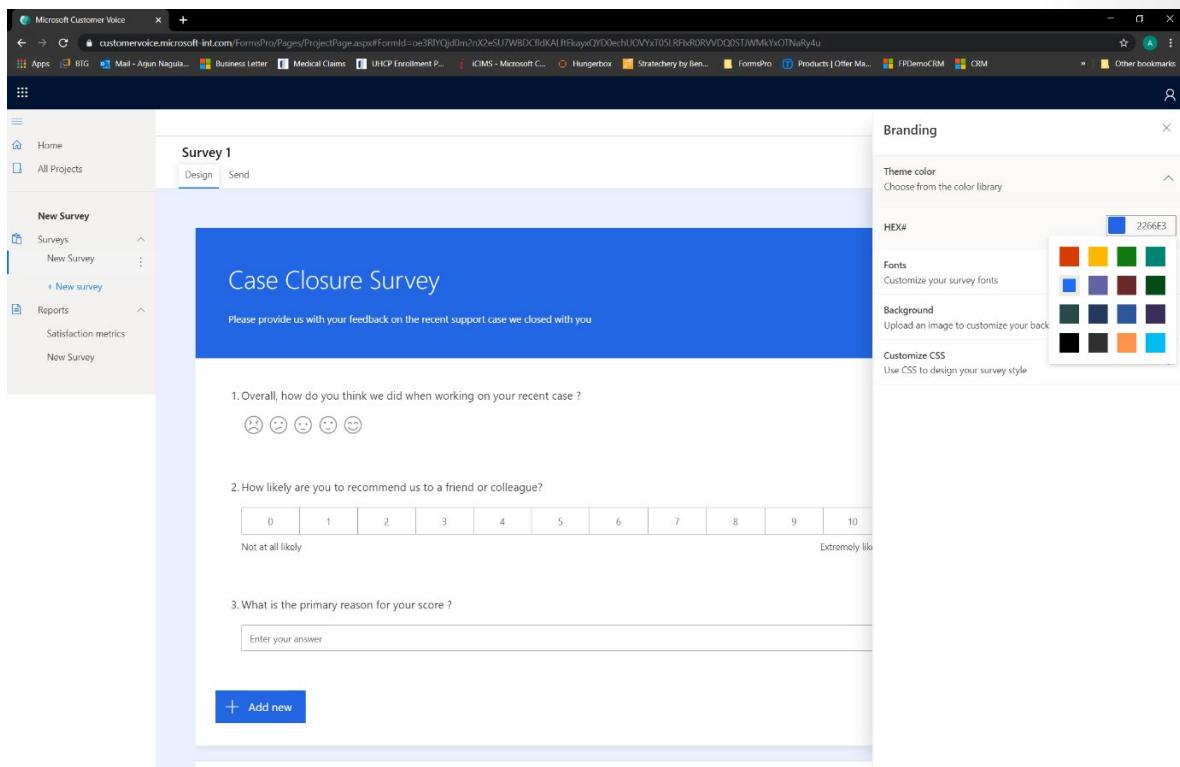
Add a theme and branding

Every organization has its own set of branding and style guidelines. Typically, a company will have a marketing department that is responsible for determining the fonts, logos, and color scheme to be used

for each item of communication between the company and its customers. Consistency is key when you are presenting any type of content to the outside world. Consistency helps you ensure that it's obvious where collateral has come from, providing brand recognition each time.

Dynamics 365 Customer Voice provides several ways in which a survey can be customized to fit in with a set of brand guidelines. This customization can be achieved by using the following elements:

- Theme background image
- Theme color
- Survey image or logo
- Font style, weight, color, and size
- Customized thank you message and footer text

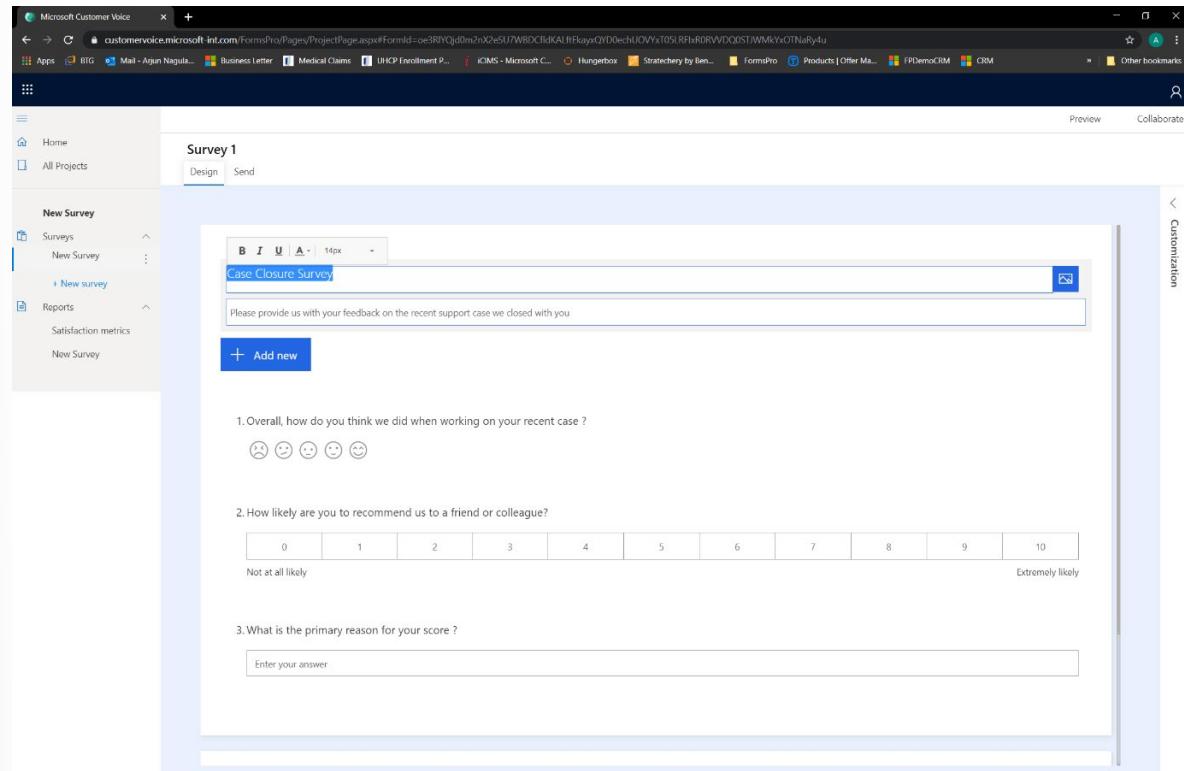


Use a theme

The quickest way to transform a survey and add branding is to apply a theme color and background image. The color can be chosen from the color library of 16 preset colors, or it can be set by using a specific hex number, which can be obtained from an organization's marketing department. A lighter version of the color will be used if no background image is applied. A background image can be added by uploading from a local file or selecting an image from OneDrive. Keep in mind that when customers view a survey on a mobile device, the background image will not be visible and can only be seen while using a desktop or laptop as a workstation.

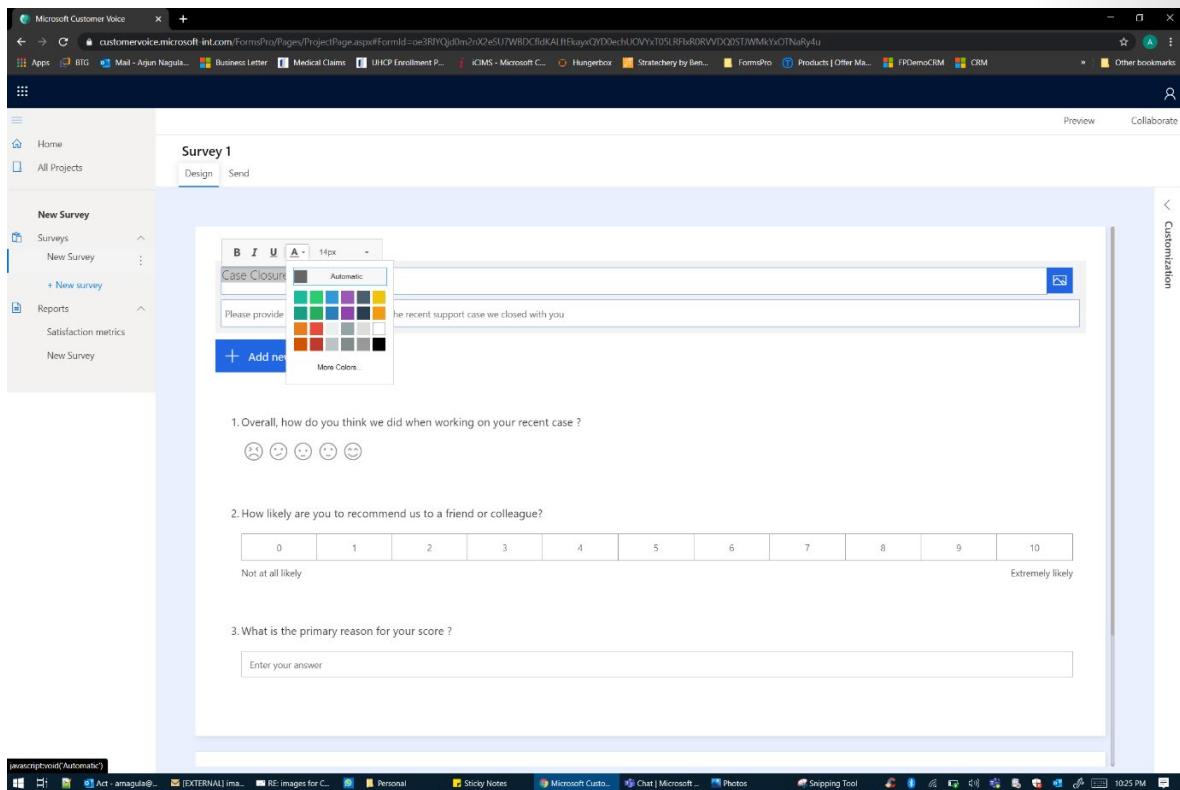
Survey image or logo

An image or logo can be added to the survey header. The image can be uploaded from a local drive or OneDrive. After it has been added, the image will be displayed to the left of the survey title. It will also be applied to an email template by default, which can be removed if necessary.

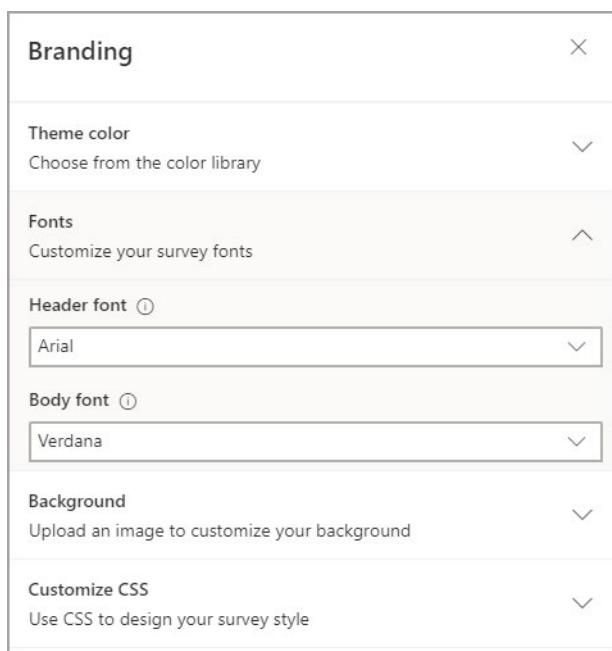


Font style, weight, color, and size

Another way of branding a survey is to adjust the fonts that are used in the survey title, survey subtitle, questions, and question subtitles. The font can be changed to be bold, italic, or underlined. The font color can be set by using a standard option, or you can set the color by selecting **More Colors**, choosing one of the other options, or using a hex number to set a specific color that is used by an organization. Several font styles are available to select from, and the font weight can be set as well.



The font that is used for the header and the font that is used for the body can be changed from the **Branding** section of the survey. This font will then be applied throughout the survey.



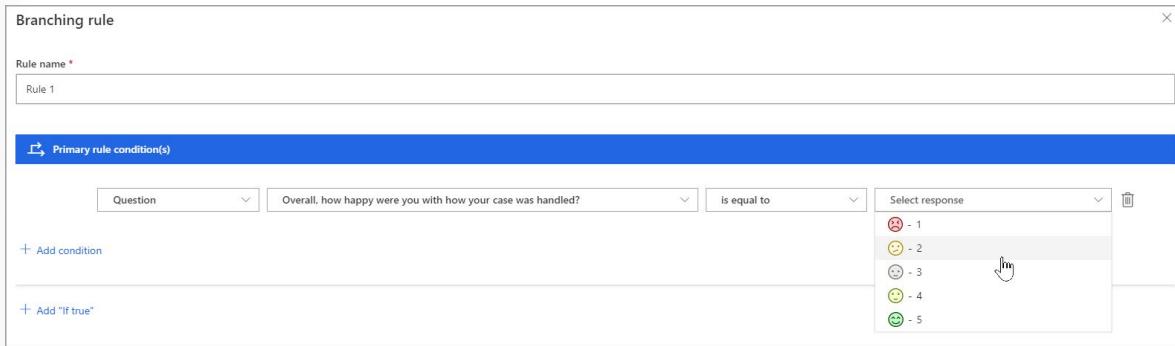
Customized thank you message and footer text

By default, when a respondent submits their response to a survey, a thank-you message will display stating, "Thank you for sharing your feedback. It will help to create better products and services." This text can be modified to show a different message and include hyperlinks, and you can modify it to display a different font by using the methods previously explained. The footer text can also be changed. By default, the footer text displays, "The feedback you submit will be sent to the creator of this survey." You can update this text to show information about an organization, including a hyperlink to terms and conditions or any kind of online privacy statement or policy.

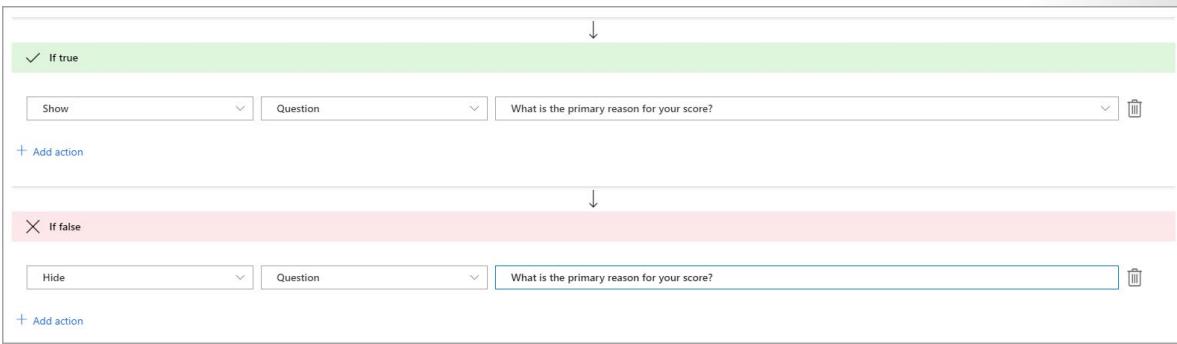
Use branching rules in a survey

A survey can be created in Dynamics 365 Customer Voice with the intent of all questions being answered by a respondent. This approach might be acceptable for many surveys for an organization, but situations might occur where the need to guide the respondent in a specific direction is required. By using one or more branching rules, the flow of the survey can be customized to guide the individual to specific questions, hide a question, or even redirect the person directly to the end of a survey based on their responses to earlier questions. Branching rules are added to a survey from the **Design Customizations** menu.

Your first step is to give the branching rule a name. Use a logical name that would make sense to any person who might need to collaborate on the survey. Make sure that the name isn't vague; give it clear and concise descriptive keywords. Next, you will define the conditions. A condition begins with a survey variable or one of the questions from the survey, and it is then followed by an operator and then a response. For example, if question one is a rating question that uses smileys for the response, you can set a condition against it that runs if the response is less than two. Multiple conditions can be added to a rule, if necessary. For additional conditions in the rule, you can set the logic to one of two options: **AND** or **OR**.



Continuing through the branching rule, an action can be determined if the condition is met, or is true, and an action can be determined if the condition is not met or is false. A false action is optional, but a true option must be added to create the branching rule. An action contains the action itself, a target, and a value. For example, the action could be to show, the target can be a question, and the value is a specific question. In the previous condition, you can have an action to show a hidden question that asks the reason for the low rating.



The following figure shows other options for branching rule actions.

Type	Details	Usage
Action	Show	Used only with a question
Action	Hide	Used only with a question
Action	Navigate to	Used with multiple target options
Target	Question	Can be shown, hidden, or used to navigate to a specific question based on a response that was provided to a question specified in the condition.
Target	End of survey	Takes the respondent directly to the end of the survey, hiding all other questions, based on a response that was provided to a question specified in the condition.
Target	Chained survey	When this option is selected, all other surveys in an environment will be displayed as a list of values. The respondent can be directed to the chained survey on submission of the survey with the branching rule.
Target	URL	A URL can be provided to use as a redirect on completion of a survey. The respondent will then be taken to the URL after the Submission button has been selected on the survey with the branching rule.

The same options exist on both true and false actions. If a rule is used to show a question, a best practice would be to make the question hidden by default and then use a branching rule to **Show** if the condition is met and **Hide** if the condition is not met. Though the question might be hidden by default, if the respondent changes their answer during the process of completing the survey, without a false action, the question will not be hidden again. After a branching rule has been added, it's active immediately. Preview the survey to interact with it and make sure that the branching rule is working as intended. Too many

branching rules or rules that potentially contradict one another might occur, so thinking about and planning the rules carefully is recommended. By implementing rules, the survey can become more dynamic with a clear flow to get the most valuable data from any respondents who are completing it.

Personalize a survey with variables

A significant part in the relationship between any organization and its customers is creating a personal experience to show that their needs are acknowledged and understood and that their satisfaction with a service or product is important. Gathering feedback by using Dynamics 365 Customer Voice can be as simple as sending a link to a generic form, but using variables provides the possibility of turning a detached experience into a fully customized and unique encounter for each person who responds to your surveys.

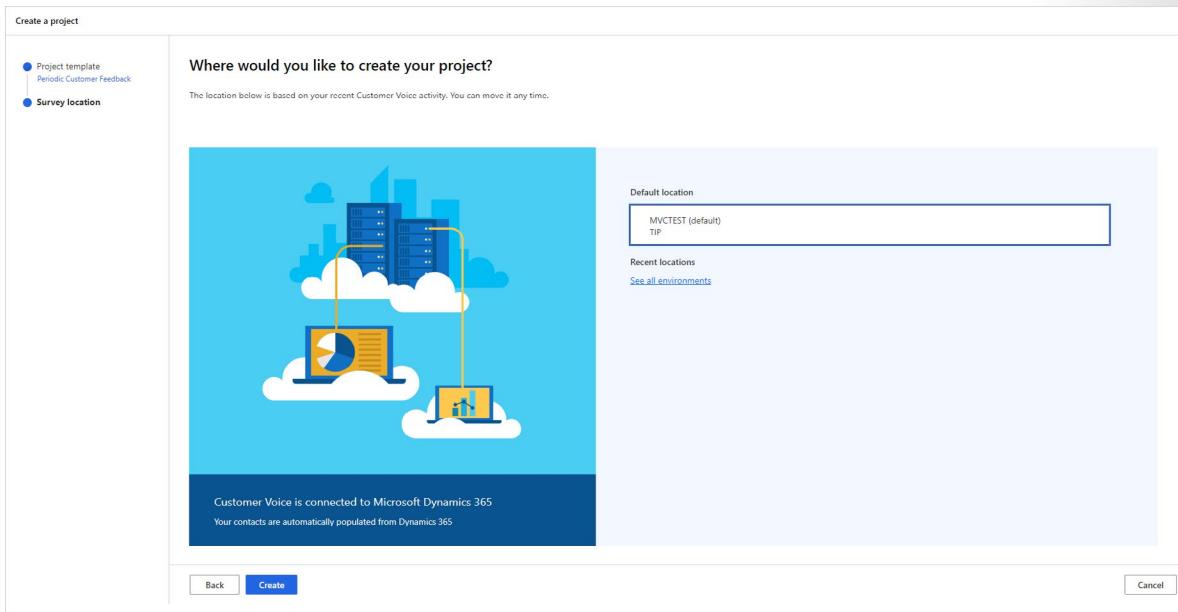
Variables are unique data that is linked to the respondent in some way. The simplest variables would be information such as the respondent's first name or last name. Variables can only be used when a survey is sent directly to a specified person rather than a link that is being shared on social media or on a website where any unknown person can complete the survey. Variables that are used on the survey are passed into the survey invitation in a unique link and are then returned through the related survey response and linked together. Up to 15 variables can be used on a survey.

Variables can be used in the following scenarios:

- Email invitations within templates
- Survey subtitles
- Survey questions
- Embedding surveys into websites
- Hidden variables to use for reporting and analysis

Add variables

The **Variables** section can be accessed from the **Customization** menu on the right side of a survey. When a new survey is created, a few variables are added automatically. The **First Name** and **Last Name** variables are added and cannot be deleted from the survey. An additional variable exists for the locale of the survey, which can be deleted if it isn't required. When a Dynamics 365 Customer Voice survey is created, it uses the default language for its environment, but additional versions of the survey can be created by adding more languages. Using the locale variable provides a method in conjunction with Microsoft Power Automate to set the language of the survey that you are sending to a respondent.

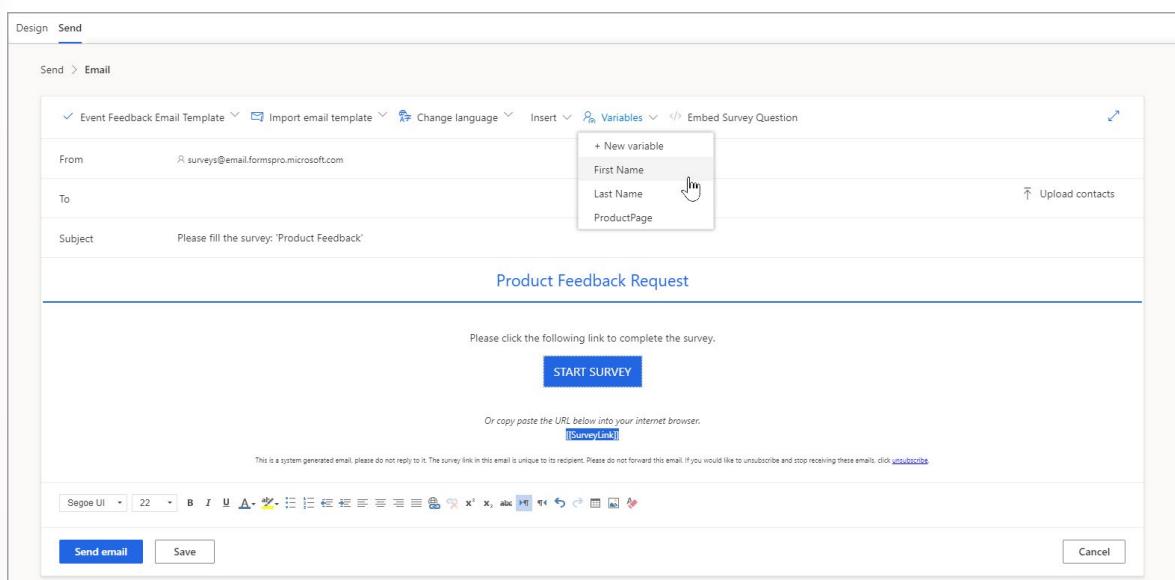


Additional variables can be added by using the **Add variable** option. A variable must be given a name and can also be given a default value. The name will be visible wherever a variable can be added (email template, within the survey, or within Power Automate). The default value will be used as a contingency if data does not exist from the source of your data. For example, if you are using a SharePoint list or a Dynamics 365 Customer Service environment to store information about cases that are closed for your customers, you might want to add a variable for the case title, case number, and a way to indicate the source of the case. If the case source column is blank, using a default value of **Unknown** will mean that any case with that information missing will still have a value populated on the survey or email template where you have used the case source variable.

Use variables

The added variables can be used in different places to pull in data from your data source. If the intent is not to use Power Automate, the only variables that can be used successfully are **First Name** and **Last Name**. This concept is discussed later in this learning path for Dynamics 365 Customer Voice, but capturing the columns to populate the variables must come from somewhere, and Dynamics 365 Customer Voice only knows of the **First Name** and **Last Name** variables. Selecting the main survey description will display a drop-down list of all variables that are available on the survey. When selecting the main title, you will notice that the variables are absent because they can't be used in that specific area of the survey. The variables can be added to questions on the main question text or on the question subtitle.

An email template can be personalized by selecting from the list of variables. These variables are then passed through when you send a survey invitation email. While all your variables can be used, keep the previous logic in mind where, if variables other than **First Name** and **Last Name** are to be used, Power Automate must also be used. In the following image, the **First Name** variable has been added to an email template. When the recipients are selected, the first name of each recipient will be used in place of {{First Name}}. Jane Doe will receive an email that starts with Hi Jane, while John Doe will receive an email that starts with Hi John.



Add satisfaction metrics to a survey and project

When a new project is created, several items are added to the **Reports** section automatically. A report that contains survey responses is created for each survey that exists within the project. A **Satisfaction metrics** report is also created. Nothing will display on this report until satisfaction metrics have been added.

Satisfaction metrics exist on three different levels:

- **Survey response** - Each individual survey response holds the satisfaction metrics for that specific respondent.
- **Survey** - Each survey has satisfaction metrics added to it, and you can review these overall metrics from the **Satisfaction metrics** report by adding a filter and switching from one survey to another.
- **Project** - The default **Satisfaction metrics** report will show the results for all survey responses for all surveys within the project.

Types of satisfaction metrics

Up to 10 metrics can be added to a project, giving an organization the ability to track the levels of satisfaction in a variety of ways.

Three types of metrics can be applied to different questions, as shown in the following figure.

Metric type	Details
NPS	A Net Promoter Score question can be added to a survey to track the overall satisfaction of a respondent by using a scale from zero to 10. A person who responds with a 0 to 6 is known as a Detractor, someone responding with a 7 or an 8 is Passive, and a respondent with a 9 or a 10 is a Promoter.

Metric type	Details
Sentiment	Sentiment is calculated based on the sentiment of a response that is provided to a text-based question. This metric is based on analysis of the words that are used and ends in a result of either Positive, Negative, or Neutral.
CSAT	Customer Satisfaction (CSAT) is an indicator of how satisfied a customer is based on a response given to a ratings question. This metric could indicate how satisfied a customer is with a product, service, or experience.

Satisfaction metrics can be accessed and edited from the Customization menu on a survey. If using a project that was created from a template, this may include one or more satisfaction metrics already mapped to questions. A survey maker can map a metric to a question, making sure to follow the question compatibility for each metric type as per the table above. The satisfaction metrics can be updated and remapped after survey responses have been collected, but they will only be calculated for new responses moving forward, and not applied retroactively to any of the previous responses.

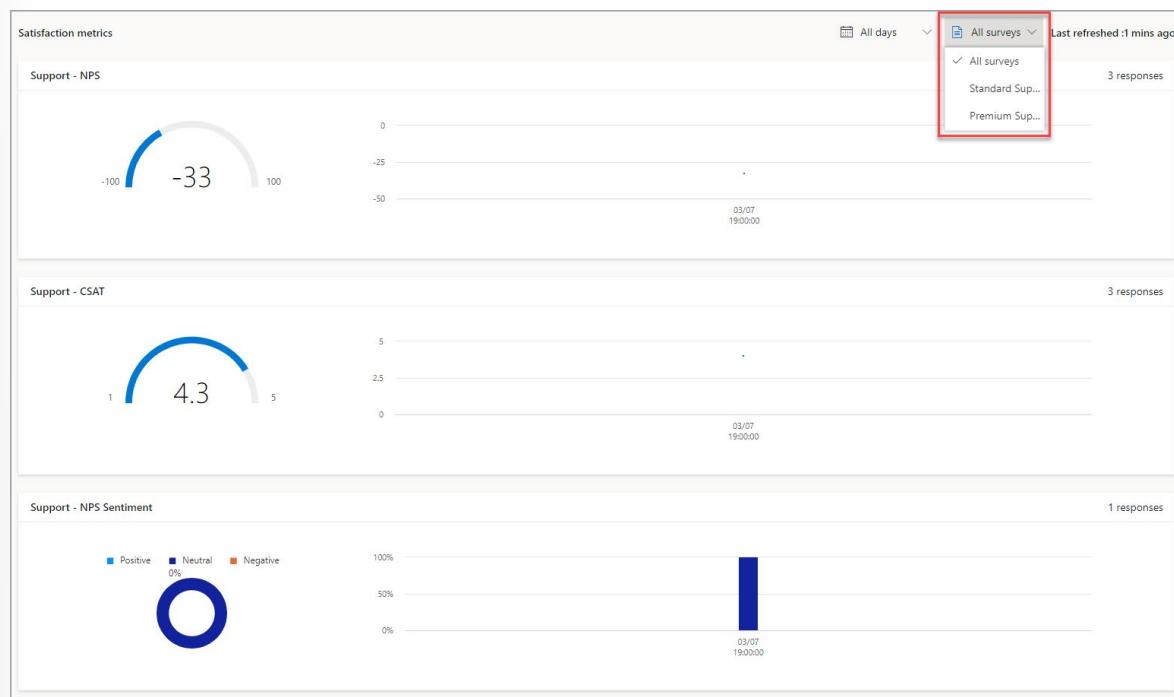
The name of each of the metrics can be changed to make it more obvious what the metric is tracking. This is important for projects with multiple metrics of the same type. To add further explanation, a description can be added to each metric too.

The screenshot shows the SurveyMonkey interface for customizing a survey. On the left, there's a preview of a survey titled "Case Resolution Survey" with a red header. The survey content includes a greeting "Hello {{First Name}}" and a statement "Please provide us with some feedback on your recent support experience." On the right, the "Satisfaction metrics" panel is open. It contains sections for "Support - NPS Sentiment" (Sentiment), "Support - CSAT" (CSAT), and "Premium Support Survey questions *". Under "Premium Support Survey questions *", there's a dropdown for "Overall, how happy were you with how your case was handled?". Below this, there's a section for "Other questions using this metric" with "Support - NPS Net Promoter Score®" and "Support - Team Sentiment". At the bottom of the panel are "Save" and "Cancel" buttons. The overall interface is clean with a light blue and white color scheme.

If you are copying a survey, the satisfaction metrics will be copied along with all questions, branding, variables, and branching rules. However, you will need to review the metrics on the new survey that is being created and select the correct questions to use. The names of the metrics will be the same as what's shown on the original survey, as they are for the project overall. Changing the names on the new survey will result in the names being changed for all surveys that use them. It is also possible to see other questions that are using the same metric being pulled from other surveys.

The screenshot shows the Microsoft Dynamics 365 Customer Voice interface. On the left, a survey titled "Case Resolution Survey" is displayed with a question about handling. On the right, a "Satisfaction metrics" configuration pane is open, showing a section for "Support - NPS Sentiment". A red box highlights the "Other questions using this metric" section, which lists "Premium Support Survey" and "What is the primary reason for your score?".

As survey responses are received, the satisfaction metrics can be reviewed from the **Reports** area on a project. By default, all surveys are shown, but you can filter this view by switching from one survey to another in the drop-down menu. Satisfaction metrics will also be displayed on the home page dashboard in Dynamics 365 Customer Voice. The satisfaction metrics for a specific response are stored in a **Satisfaction metric** value within the related Microsoft Dataverse environment. The data is stored in JSON, which can then be accessed by using Power Automate, with the values being used to generate actions as needed. Using Power Automate will be discussed in detail in another module of this learning path.



Summary

In this module, you've learned about several use cases for Dynamics 365 Customer Voice and the different approaches to gathering feedback from customers, employees, and leads. You were given the tools to create your first survey, learn the right questions to add, and use branching rules to create workflows to further improve the experience of the survey respondents. To help keep in line with an organization's

corporate branding, you learned how themes, fonts, and images can be used on a survey to create recognition with those who receive survey invites and complete your surveys. Personalization can be achieved by using variables, and you learned how to add basic variables to a survey and the survey invitations. You can now apply these learnings to future projects and provide a robust feedback solution for an organization that wants to implement Dynamics 365 Customer Voice.

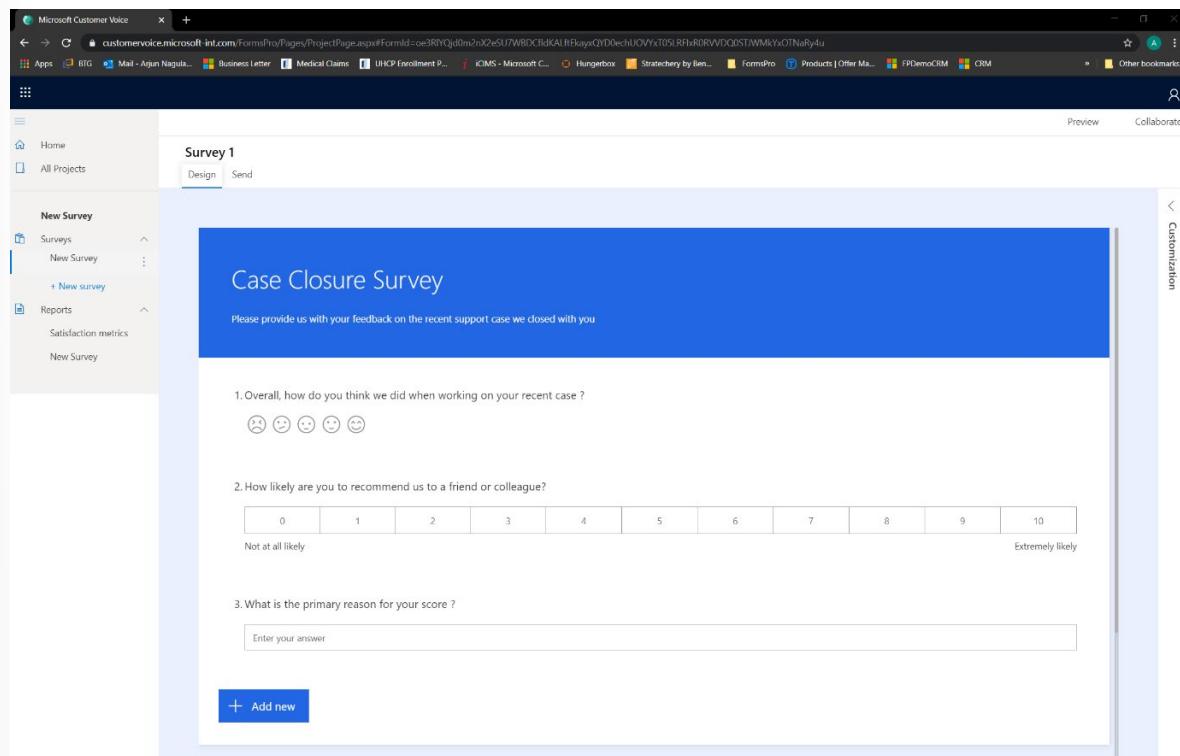
Send surveys

Introduction

Dynamics 365 Customer Voice includes email functionality, providing survey makers and marketers with the ability to send personalized email messages to an email address or recipient from Outlook, Dynamics 365, or by importing recipients from a CSV file. A survey could be customized with a corporate theme by using images, colors, fonts, and logos, providing brand recognition for the respondent who is completing the survey. However, if the received email doesn't show any kind of similar branding, a disconnect could appear between the email and the survey, which could result in the recipient ignoring the email or believing it to be spam.

To keep the experience consistent, you can customize email templates to fit in with the overall customer journey. Each email template is created and owned by a user, but it can be shared across other surveys. Templates can also be imported from other surveys, if necessary. The template can include images, changes to fonts, and the ability to add variables so you can create a personalized email template to send to recipients.

Different projects contain surveys with different standard email templates. Each template contains slightly different wording in the main body and has a different salutation, depending on the purpose of the template.



An email template consists of several components, some of which are required. Other components might improve the overall appearance and help make the email clear and concise. Consider the following elements when you are creating email templates.

Component	Required	Details
Subject	Yes	The survey invitation must have a subject; it is required on any email template that is created. As with any type of email, survey invitations with a subject are more likely to be responded to.
Survey link	Yes	A link to the survey is required. This link can be in the form of a direct link, or it can be with an image and by using [[Survey-Link]] in the URL link. When the email invitation is sent, a personalized link is generated for each survey recipient to allow tracking of the survey responses that are received.
Unsubscribe link	Yes	The unsubscribe link must be included in the email template. This link allows the recipient of the email to unsubscribe from receiving more requests to take surveys that are sent from Dynamics 365 Customer Voice (based on the environment they are sent from).
Variables	No	Variables can be used to show personalized information such as first name or last name. These variables can be used when you are sending directly from Dynamics 365 Customer Voice. Other variables must be used in conjunction with a flow in Microsoft Power Automate to pull information such as company name, case title, and so on.
Logo	No	If an image has been added to the survey, it will be added to the top of the survey template by default. It can be removed if it's not required, but it can help with brand recognition.
Images	No	Images can be added to other areas of the email template and used in social media profile links, headers, or further brand recognition.

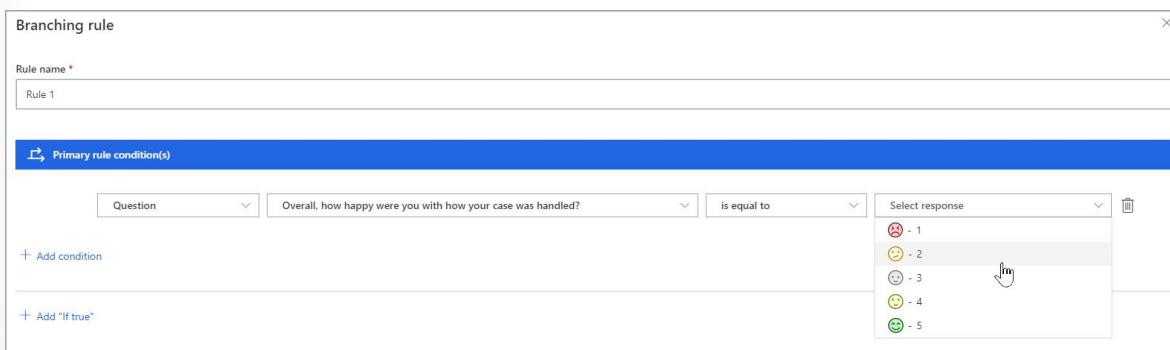
With some planning and modifications, a marketer can create a full library of email templates that are ready and available for a survey creator to select from. Keeping the branding consistent with the rest of an organization's methods of communication can help encourage a higher rate of survey responses and feedback.

Email a survey

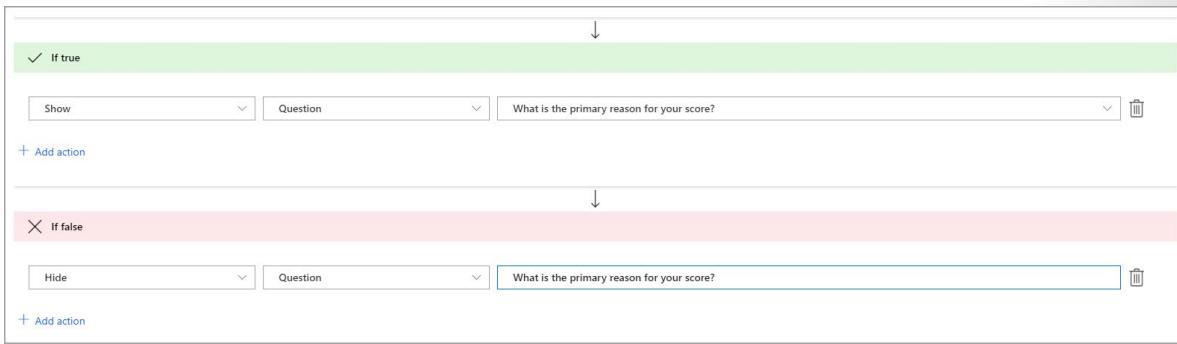
After a survey has been completed and branding has been added to a customized email template, it's time to start sending out the survey and asking for feedback. The action of sending a survey creates a survey invitation record, which is stored in Microsoft Dataverse. When the survey is responded to, it creates a survey response record that is also stored in Dataverse, which is linked to the survey invitation. This feature provides you with the ability to see which invitations have been responded to with a completed survey, which invitations have been started but not responded to, and which invitations haven't been opened.

Sending an email is done directly from the **Send** tab on a survey. By using the email option, you can review the email prior to sending it. Next, you would select a default or customized email template and then determine the recipients. Dynamics 365 Customer Voice has a direct integration with Outlook and Dynamics 365. You can enter an email address directly into the **To** column, followed by a semicolon. Though the email will be sent, using this method means that no personalization of the survey is possible because it's only the email address being used and the first name and last name are not provided. A setting on each survey also determines if any respondents, where the email address cannot be found in Dataverse, will be created as a contact record or not. By default, this setting is turned on but can be turned off so new contact records are not created.

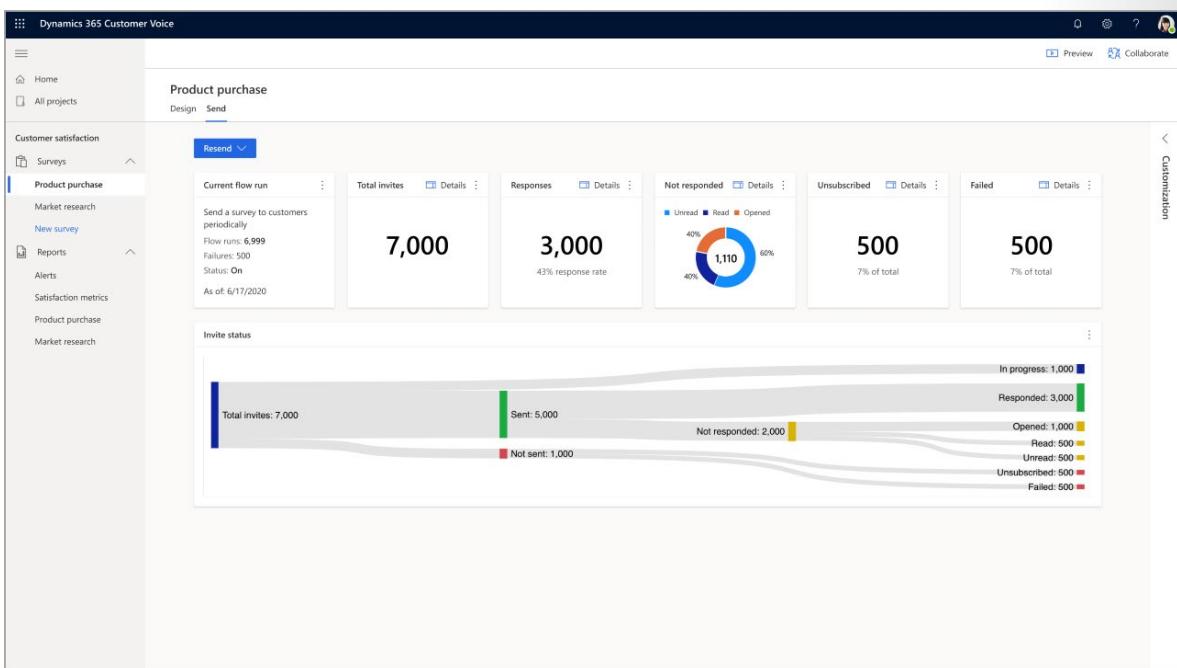
By typing the name of a person, or an email address where this information already exists in either Outlook or Dynamics 365, you will be presented with a list of suggested people who meet the value that was typed. When the required contact is displayed, you can select their name, which will add the contact into the **To** column. Multiple recipients can be added, and each person will receive their own individual email, without any indication of whom else the email was sent to.



Another option for Dynamics 365 customers is to search for and send a survey invitation to all contacts who are returned from a view. Views are created as system or personal views, either of which can be selected for sending. By typing the name of the view in the **To** column, a list of any views matching that criteria are displayed. The email can then be sent with a copy going to each person that meets the search criteria of the view that was selected.



After the survey has been sent once, the **Send** tab will then display a dashboard. The dashboard will provide you with access to resend the survey, and it will give an overview with widgets that display the total number of invites and responses for the survey. The dashboard will also show how many unsubscribes and failed invitations have occurred.



Selecting the **Details** option for the different widgets will open a recipients panel. For example, if you select the **Details** link on the **Failed** section, any email addresses that survey invitations could not be sent to will be displayed in a list. These entries can then be reviewed to ensure that they are valid email addresses. Sent emails are tracked, meaning that you will be able to monitor when recipients open the survey invitation and will be provided with an overview that is found on the **Not responded** widget. Selecting the **Details** option will provide more information. Though it isn't possible to guarantee that none of the emails will be blocked and marked as spam or junk mail, the emails do include reputation management, which reduces the likelihood of this situation from happening.

The possible survey invitation status values are shown in the following figure.

Status	Meaning
In Progress	The survey invitation email is queued to be sent.
Sent	The survey invitation email has been successfully delivered to the recipient.

Status	Meaning
Read	The survey invitation email has been read or opened.
Started	The survey has been started by the recipient but is not yet complete.
Responded	The recipient has responded to the survey.
Failed	The survey invitation email wasn't delivered to the recipient due to an incorrect email address or other error.
Unsubscribed	The recipient has unsubscribed from receiving the survey-related emails.

By default, surveys are sent from a generic email address for Dynamics 365 Customer Voice. However, the sender's email address can be customized to provide an organization with the ability to select an email address from their own domain. Customization helps with brand recognition and makes it more likely that respondents will review, open, and take action when receiving an email from an organization that they are familiar with. Information on how to customize the sender's email address can be found at [Customer Voice email details¹](#).

A recipient can also unsubscribe from receiving further surveys that are sent from Dynamics 365 Customer Voice. A required link at the bottom of each email template provides recipients with the option to unsubscribe. After the recipient has unsubscribed, their email address is added to Dataverse to an environment's unsubscribe list. Any further surveys that are sent from the same environment will first be checked against the unsubscribed list and, if a matching email address is found, the recipient will be excluded from the email distribution.

Upload a csv file

The ways to send out a survey invitation by email include sending an email to an Outlook contact, a Dynamics 365 contact, and sending an email to all contacts who are returned in a Dynamics 365 view. These methods are user-friendly and ideal to use when the contacts already exist. Consider the scenario of an organization, Contoso, that has hosted an industry event. During the two-day event, the sales team took time to gather names and email addresses of all who attended and added them to a spreadsheet. Now, it's time for the marketing team to request feedback.

The first step that the marketing team should take is to determine if these attendees should be added to the Microsoft Dataverse environment as contact records. By default, on each survey, a setting determines that all unknown email addresses that are sent a survey invitation will be created as a new contact record. If the email address is found as a match, the survey invitation record will be linked to that contact. This approach might not be appropriate for all circumstances, so this function can be turned off on a survey-by-survey basis. The setting for **Add respondents as Contacts** can be accessed from the **Send** tab and then the **Customization** menu. Select **Distribution settings > Respondent settings**, which will provide the switch to turn on or off this function, depending on the requirements for the survey.

¹ <https://aka.ms/CustomerVoiceCustomEmail>

The screenshot shows the 'Support Survey' distribution settings. It includes sections for 'Respondent settings' (allowing only people in the organization to respond, anonymizing responses, and limiting one response per person), 'Survey response restrictions' (configuring when the survey will accept responses), 'Link expiration settings' (setting time validity for personalized links), 'Email settings' (configuring email distribution channel), and 'Notifications' (configuring response notifications). The 'Add respondents as Contacts' option under 'Respondent settings' is highlighted with a red box.

To send the survey invitations to all email addresses that were captured by the sales team at the Contoso event, the marketing team needs to make sure that the spreadsheet that the sales team used is in the correct format for Dynamics 365 Customer Voice to read. The spreadsheet must be a CSV file and must meet the following criteria:

- The CSV file should contain the following comma-separated values for each contact in the sequence:
 - Email address (mandatory)
 - First Name
 - Last Name
- The first row in the file is assumed to be the header and it will not be imported.
- Only 10,000 recipients can be imported at once. If more than 10,000 recipients exist, split them into multiple CSV files before importing them.

In addition, it is possible to associate a survey invitation and response to a table in the same Dataverse environment by adding the following columns and information to the CSV file:

- **RegardingID** - ID of the table to associate with the survey invitation and response.
- **RegardingtableName** - Name of the table to associate with the survey invitation and response.

When the format is correct, the marketing team can import the information by going to the **Send** tab for a survey and selecting **Email**. The **Upload contacts** option is located to the right of the **To** column. After browsing for the file of records from the event, a team member can select and import the file. A list of the contents will be displayed, which the team can review prior to selecting the **Import recipients** button. An option is also provided to update the contact information if the imported recipient already exists as a contact in Dataverse, based on the email address. Because the import file only contains three columns of data for each record, only the **First Name** and **Last Name** columns could be updated. After the import is complete, the **To** column will show how many recipients will be emailed. After an email template is selected, it can be sent.

Upload contacts

Upload contacts using a .csv file in programs such as Excel.
[Download a template here.](#)

Contacts

If using a .csv file:

1. Include email, first name, and last name separated by commas.

Email	First name	Last name

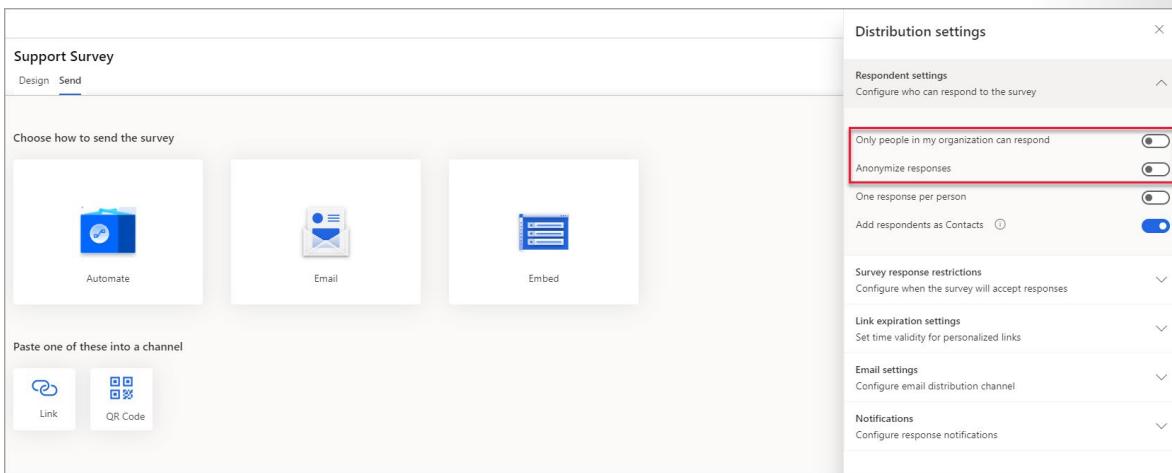
2. The first is assumed to be a header and won't be included.

3. Up to 10,000 contacts can be uploaded from one file. To add more, divide contacts into separate files of no more than 10,000 each.

Use links and QR codes

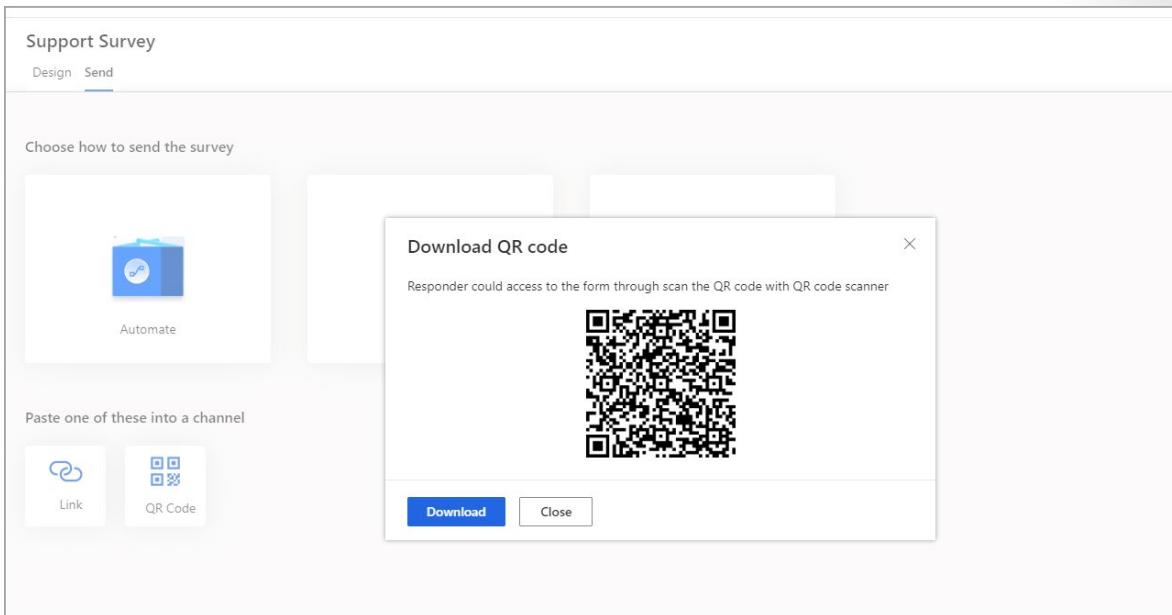
Sending an email to request feedback from a specified recipient is one way to get a Dynamics 365 Customer Voice survey out to people. Using email makes the survey respondent known, and the survey response is tied back to the original survey invitation. Surveys can also be shared with others who are anonymous by using a direct link or a QR code. Consider a situation when a survey is used to gather feedback about an event. The event has a corresponding group on a social media channel, and the organizers want to find out about what people thought of the various sessions and keynote speaker. Sharing the link directly means that the organizers can capture the name of each individual response. In this circumstance, adding a **First Name**, **Last Name**, and **Email** column to a survey would make sense so that organizers will know who provided the feedback.

The **Distribution settings** area of a survey provides information about who can fill in the form and submit a response. The **Only people in my organization can respond** option can be turned on or off, depending on whether you want to allow anyone with the link to the survey to respond. The **Anonymize responses** option can be turned on or off as well. If the setting is turned off, and the survey is also set to only allow people within the organization to respond, and the recipients are sent the link without it being shared in a personalized email from Dynamics 365 Customer Voice, their name can still be captured because they will need to be signed in to respond. If the link is shared and the setting is for anyone to respond, their name cannot be captured because no link is provided to a unique email address.



In the **Send** area of the survey, you can review all the ways to distribute the survey. The **Link** option provides the full URL to the survey, which can then be shared on social media or within an email. This link is a non-personalized survey link, and any variables that are added to the survey will not contain any kind of personalization for the respondents, so keep this aspect in mind when you are creating the survey.

Next to the **Link** option is the **QR Code** option. This option is provided as an image that can be downloaded by the survey maker in Dynamics 365 Customer Voice. The QR code is *snapped*, much like taking a photograph with a phone or tablet device. This action can be done directly with the camera on some phones or by using a QR code reader app on others. After the image has been captured, you can then select the link behind the QR code, which will take you directly to the Dynamics 365 Customer Voice survey to complete.



QR codes can be used in many different ways. Some of the following methods can be implemented by an organization that wants to take advantage of this functionality:

- Add a QR code to a job posting to assist with recruitment, allowing job seekers to fill out a form and apply for the job directly from their phone.

- If a company is running a contest or sweepstakes, adding a QR code to flyers or posters around a building, or to the bottom of receipts or invoices, helps make it easier for people to submit their entry.
- Using Dynamics 365 Customer Voice internally on an employee feedback survey gives members of the team the ability to provide suggestions and ideas directly to the Human Resources team.
- When a company hosts training, either internally or externally for clients, feedback is a must. Displaying a QR code at the end of the session helps make the students' ability to share their thoughts and evaluate the course and instructor quicker and easier.

Summary

In this module, you learned about the ways that a Dynamics 365 Customer Voice survey can be distributed to customers and employees. Additionally, you learned how the survey can be shared online for respondents to submit feedback anonymously. You were shown how to create your own email templates and customize them to fit in with an organization's corporate branding. You were given the tools needed to email a survey from within Dynamics 365 Customer Voice to Outlook, Dynamics 365 contacts, or by using a Dynamics 365 view. To share surveys to capture feedback online, you learned how it could be shared by using the direct link, using a QR code, or by embedding a survey directly within a website. You now have the tools to send surveys based on specific triggers and have learned about the best method for sharing each survey on a case-by-case basis.

Automate surveys

Introduction

Dynamics 365 Customer Voice can be used to send surveys to customers, prospects, and internal employees and to view and analyze responses. These tasks can be accomplished directly within Dynamics 365 Customer Voice. The strength of this service is revealed when you use it in conjunction with Microsoft Power Automate.

Power Automate provides you with the ability to create workflows of varying complexity so that you can automate processes between apps and services to run when they are triggered by specific actions such as a case being closed, a product being purchased, and a visit being completed.

When using Dynamics 365 Customer Voice, you might have a variety of reasons for needing Power Automate, such as:

- Sending surveys automatically based on customer activities within business applications. For example, you might need to send a survey after a customer service call or after an order has been delivered.
- Sending a tracked survey link through a text message, messaging app, or social media channels.
- Populating survey variables with customer information to use in survey questions and branching rules, which results in a personalized survey experience.
- Setting the survey language explicitly for each survey recipient by using the default locale variable.

Setting automatic follow-up actions based on the scores for specific satisfaction metrics that are set up on a survey.

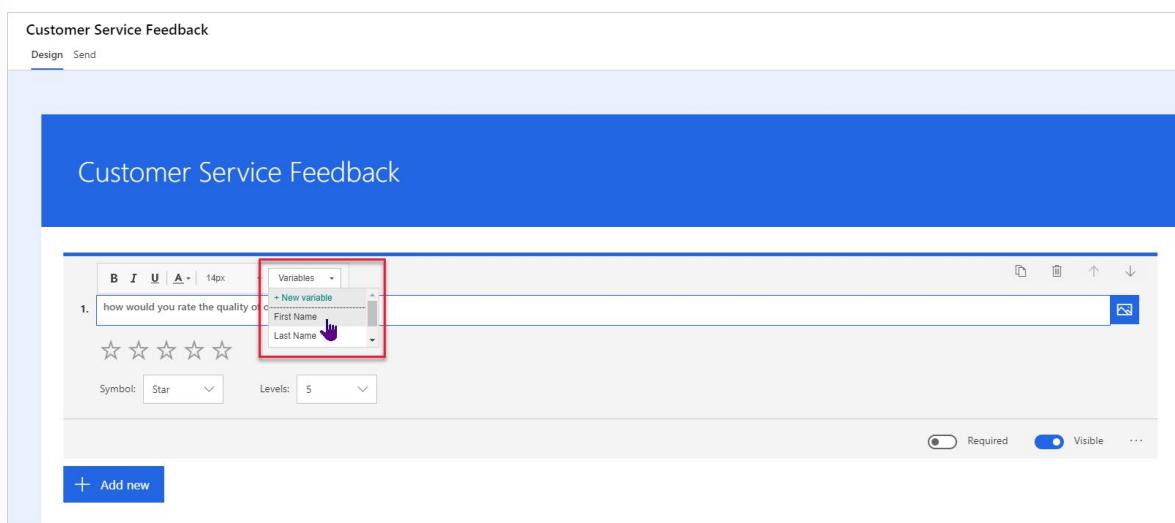
Using Power Automate as part of the Dynamics 365 Customer Voice projects will provide a significant extension to the features and functionality of the entire survey feedback solution that is used by any organization. Power Automate has over 300 connectors (and counting), which provides people with the ability to use triggers and actions to link Microsoft services and other solutions. This module will explore some of the many ways that you can add Power Automate to your Dynamics 365 Customer Voice survey feedback processes.

Send a survey with Power Automate

The various ways of sending out a Dynamics 365 Customer Voice survey include sending emails directly from Dynamics 365 Customer Voice, sharing the survey through a link or QR Code, and embedding the survey directly within a website. This section reviews how to send surveys by using Microsoft Power Automate.

Creating a flow provides the survey maker with the ability to send a survey or create an invitation by using the Dynamics 365 Customer Voice connector in Power Automate. Using this method rather than sending an email helps make creating and using variables a powerful tool for any organization. Variables can be populated with actual values that are linked to the respondent, creating a personalized and unique customer feedback experience for each person.

Consider a scenario where a Customer Service Feedback survey has been created by the Contoso organization. In addition to asking for feedback on the support process and how a case was handled, the company wants to include some personalization so that the customer sees their name as part of the survey. By default, three variables are included on each survey: first name, last name, and locale. (Variables will be covered later in this module.) Adding a variable to a survey element is simple, and you can access variables from the **Variables** drop-down list, as shown in the following image. They can be added to the survey description, into the question text, and into the question subtitle.



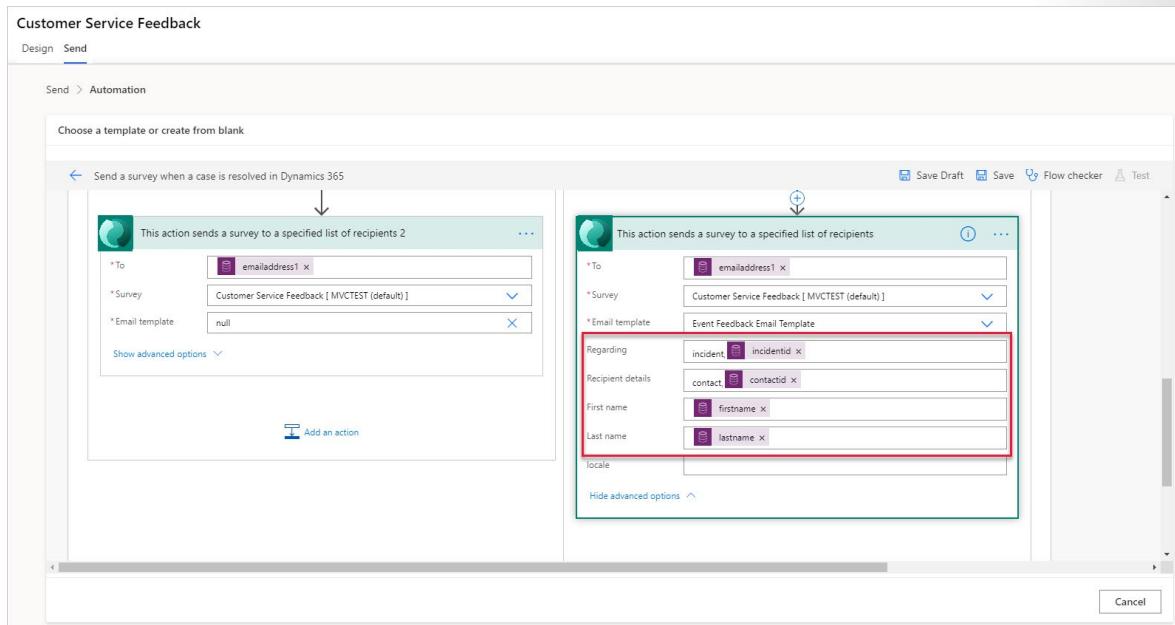
After the **First Name** variable has been added to the survey, it is now time to set up the flow in Power Automate. Selecting the **Send** tab at the top of a survey will show all methods that you can use to distribute the survey, including the option to configure a flow by using Power Automate. A flow can be created directly from Power Automate rather than through the method where the user creates each step of the flow themselves. Using the flow templates that are available within Dynamics 365 Customer Voice can help you view the various steps that are included and begin to understand how the connector actions work.

For Contoso's requirement, the **Send a survey when a case is resolved in Dynamics 365** template is the best option. After the flow has been configured, you can access it by returning to the **Home** area and then selecting the number that shows a flow that is configured. Additionally, you can review all flows that are linked to a survey and see the name of the flow, the email template that was used, how many times the flow has run, how many times it has failed, and if the flow is currently turned on or off. To make modifications to the flow, select the pencil edit icon next to the flow.

Reviewing the flow in the automation section will show that the template has used the Dynamics 365 Customer Voice **Send a survey** action from Power Automate. As part of the creation of the flow, several values on this action step have been populated. The survey invitation that is generated is an activity in Microsoft Dataverse. An activity has a **Regarding** column, which indicates a specific record that it is related to. The survey invitation can be linked to any record type that has activities enabled. In this example, the **Regarding** column is used to link the invitation to the case that has been resolved. As a result, when you navigate to the case in Dynamics 365, the survey invitation will be displayed in the timeline.

Use the **Recipient details** column to associate the activity (and any related survey response) to the appropriate contact record that the survey invitation will be sent to. The activity will be displayed in the recipients record timeline in the related Dataverse environment.

Using the template means that the **First Name** and **Last Name** variables are automatically populated in the **Send a survey** action step in the flow. However, you can add these variables if you are creating a new flow or adjusting a flow. You can complete this action by adding the first name dynamic value from the related contact that is linked on the case (or other record, as required). Though the last name is populated, unless it has been used somewhere on the survey or in the email template, it is not needed. However, keeping the variable in the flow will not cause an issue.



The entire Power Automate template that is used for the organization will be triggered when a case is resolved in Dynamics 365. The flow will determine if the customer is a contact or an account. Next, the flow will use the Dynamics 365 Customer Voice connector to send an email by using the survey and email template that was selected in the flow, and will then pass through the **First Name** and **Last Name** variables. The customer will receive an email with a link to take the survey. The survey will contain the dynamic value of first name that is displayed in place of the variable name.

You will be able to view any configured flows for a survey on the **Send** tab under Power Automate. This screen will show the last time that the flow was run, how many times it has run, and the number of failures that occurred. You can also access the flow by selecting the ellipsis (...) in the upper-right corner of the flow details tile, where you can make changes, if necessary.

Create an invitation

Using the Dynamics 365 Customer Voice connector in Power Automate is the right solution when you need to send a survey by using the Dynamics 365 Customer Voice mail service. Additionally, it's the right solution when you are using an email template that has been created and saved within Dynamics 365 Customer Voice.

Another Dynamics 365 Customer Voice connector action is also available for you to use: the **Create an invitation** action. Creating an invitation still creates the survey invitation activity record, similar to the process with the **Send a survey** action. However, using the **Create an invitation** action creates a personalized link that is accessible throughout the rest of the flow. Consider the following examples as reasons to use the **Create an invitation** action:

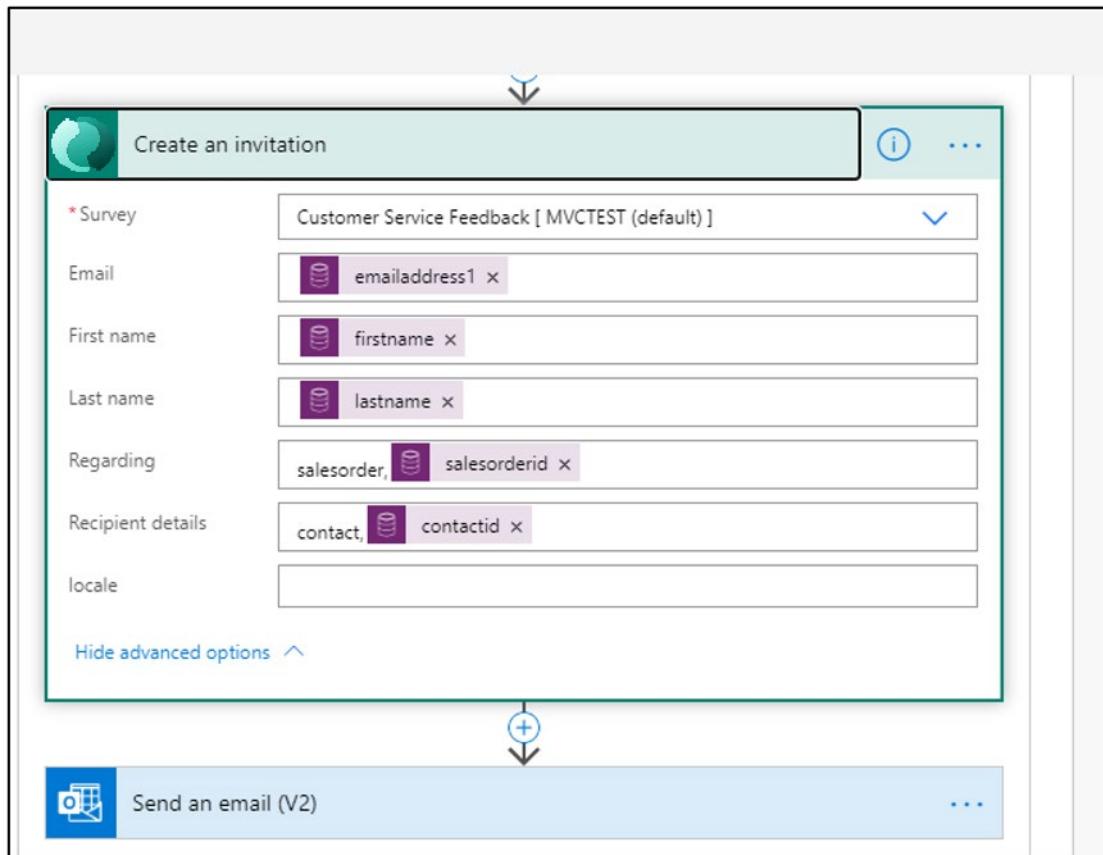
- Sending a feedback request to a customer through email platforms such as Outlook or Gmail rather than within Dynamics 365 Customer Voice
- Using an SMS (text messaging) service and using the link as part of the message, which provides a different way to keep customers up to date and a way of communicating with them
- Generating an invitation and using the invitation link to add to a custom column on a contact record in your Microsoft Dataverse environment, and then using the column as part of a customer journey in Dynamics 365 Marketing

- Creating a unique link for a survey invitation, which can then be used to conduct a survey over the phone with a customer who doesn't have access to complete the survey on their own

These reasons should help you determine whether the **Send a survey** action or the **Create an invitation** action would better fulfill an organization's survey requirement. To create a new flow, go to **Send > Automate** and then select one of the provided templates. For experienced Power Automate users, or if none of the templates will meet the needs of the organization that is sending out the survey, a new flow can be created from blank.

In this example, the **Send a survey when an order is fulfilled in Dynamics 365** template is selected. You can delete the **Send a survey** step and search for and add the **Create an invitation** action instead.

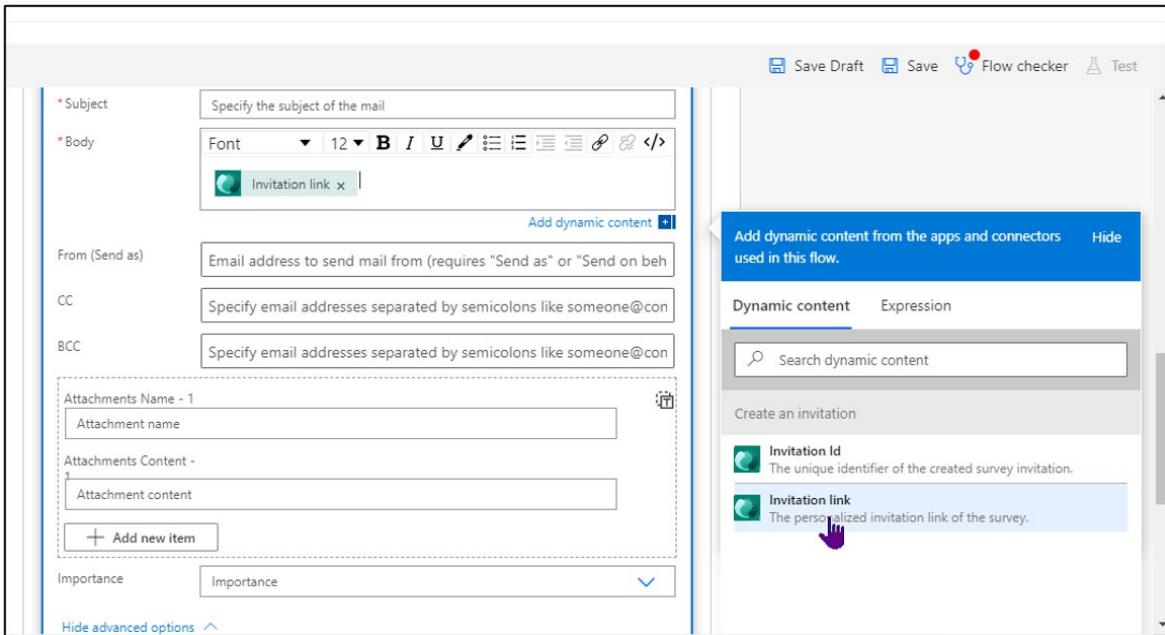
Similar to the **Send a survey** step, you can use dynamic values to populate the email, first name, and last name variables. The **Regarding** column is linked to the sales order, and the **Recipient details** column is linked to the contact that will receive the survey invitation.



The next step will be to add the action that is needed to send the invitation. You can accomplish this task in many ways; however, the following example uses Outlook connector. Outlook is not a marketing tool, so sending hundreds of survey invitation emails in this way is not advisable. Any survey maker or flow creator should consult with their IT department before using this option on a mass email basis. Columns such as **Subject**, **To**, and **From** should be populated as required. In the body of the email, you can add dynamic content from the **Create an invitation** step. The invitation link should be added as well. Using the direct link will result in a long string appearing in the email. Instead, you can create a shortened link by using simple HTML tags. Select the HTML `</>` button to show the HTML view, and then add the following logic:

```
<a href="[InvitationLink]">Complete Our Survey</a>
```

When the email is generated and sent out, the respondent will see **Complete Our Survey** underlined as a hyperlink. Selecting this link will take them to the survey to complete. After the survey has been completed, the survey response will be linked to the records that are added in the **Regarding** and **Recipient details** columns that are set in the flow in Power Automate.



Expand variables to further customize surveys

First Name and **Last Name** are two default variables that are applied to every survey (and can't be deleted). A variable is an element that changes based on the recipient. Consider the Contoso project, where the company sends the Customer Service Feedback survey every time a case is resolved. The Customer Service manager knows that many support cases could be closed for the same contact in a short space of time. Therefore, the manager needs a clear indicator to highlight which case the feedback has been requested for.

To achieve this task, you can create and add new variables to the Customer Service Feedback survey. Select the **Customization** menu to the right of the survey and then select **Variables**. You can add up to 15 variables, including **First Name**, **Last Name**, and **locale**. In this example, two new variables called **Case Number** and **Case Title** will be added. The variable name can only include letters and numbers, without spaces in between. The default value is replaced with the actual value when a survey is sent. For example, if a variable is added, and it is possible that the column passed through to that variable could be blank, the text that is added in the default value is displayed instead. Consider this method as a contingency mechanism for missing data on records in the related Microsoft Dataverse environment.

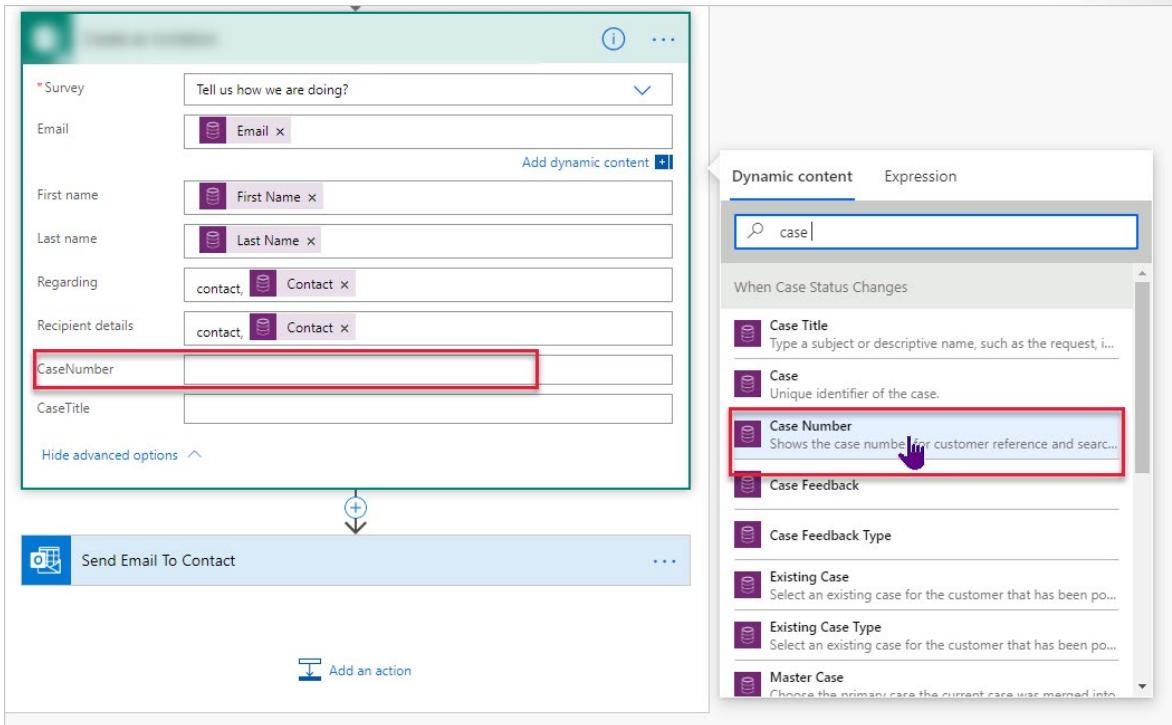
The screenshot shows the SurveyMonkey interface for creating a survey titled "Customer Service Feedback". On the right, a "Variables" panel is open, listing variables like First Name, Last Name, locale, CaseNumber, and CaseTitle, each with a default value field. The "CaseNumber" and "CaseTitle" fields are highlighted with a red box. Below the variables is a "+ Add variable" button. The main survey area contains three questions: 1. A 5-star rating scale for service quality. 2. A multiple-choice question about case resolution time. 3. A satisfaction rating scale for the representative. At the bottom right are "Save" and "Close" buttons.

When a new variable is added, it is immediately available for you to add to the survey. The variables can be added to the survey description, survey questions, question subtitles, and email templates. In the following example, the **First Name** variable has been added to the first question, addressing the contact by name. On the second question, you can provide clarity regarding for which case the feedback is requested by adding the **Case Number** and **Case Title** variables.

This screenshot shows the SurveyMonkey interface with the "Design" tab selected. The survey title is "Customer Service Feedback". The first question is "1. {{First Name}} how would you rate the quality of our service overall?", where {{First Name}} is highlighted with a red box. The second question is "2. How long did it take us to address your recent case: {{CaseID}} - {{CaseTitle}}?", also featuring dynamic content. The "Variables" panel on the right is open, showing the "CaseNumber" and "CaseTitle" variables, both of which are highlighted with a red box. A cursor is hovering over the "CaseTitle" variable. The bottom of the screen shows survey navigation icons.

Until the variables are defined in Power Automate, if the survey link is shared in some way, the survey will show {{CaseNumber}} and {{CaseTitle}} rather than the actual values from the case that was closed. To fit everything together, you need to define the new variables for any flow that is used to send a survey or create an invitation. The dynamic content for these two variables can be pulled from the original trigger

that runs when the case is closed. Searching by entering the word **case** will cause all columns with the word "case" in the column name to display. When the correct column is found, you can select to add it to the variable in the Dynamics 365 Customer Voice action step in the flow. Next, you can add the **Case Title** variable. Now, when the flow is triggered, the **Case Number** and **Case Title** variables will be populated with the correct values from the case that was closed.



Use the locale variable for multilingual surveys

For any organization that requests feedback, delivering content and communications to customers in their preferred language is important. Dynamics 365 Customer Voice provides the option to create multilingual surveys. If you create your survey by using multiple languages, a respondent is shown the right version automatically based on the language setting in their browser. Each survey will have a default language, based on the default language of the Microsoft 365 environment where Dynamics 365 Customer Voice is set up.

Adding more languages is a straightforward process. Access the functionality from the **Customization** menu from the right of any survey and then select the **Languages** option. The survey maker must then translate and update each additional language that is added. By using the **Add language** button, you can add up to 23 languages to a survey. After you have added all languages that you want, select the pencil icon next to a language, which will provide a new screen with the default language. This screen provides a column where you can add the translation for the new language that is being edited. A fast approach is to edit the languages in a Microsoft Excel file, which can then be uploaded. An Excel template can be downloaded and includes all questions that are added in the default language, with a column for each of the languages that are added to the survey.

The screenshot shows the SurveyMonkey interface. On the left, a survey titled "Customer Service Feedback" is displayed with questions about service quality, response time, and satisfaction. On the right, a "Languages" panel is open, showing "Default" set to "English (United Kingdom)" and "Additional" languages added: "français" and "Deutsch". A red box highlights the "Additional" section. Below it, there's a section for "Upload language file" with a "Upload" button.

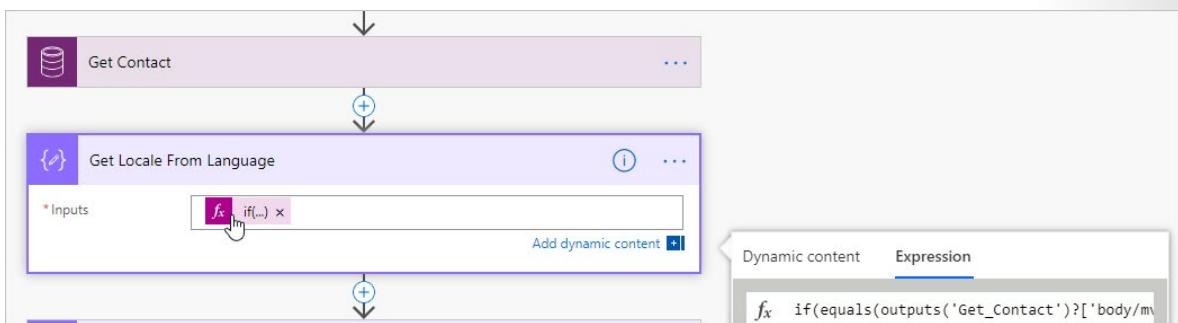
With the additional languages added, if a match occurs between those languages and the language that is set on a respondent's browser, it will be the language that is displayed to them. You can also use a variable to determine which version should be displayed to the respondent when you send a survey or create an invitation by using one of the actions from the Dynamics 365 Customer Voice connector in Power Automate. The variable is one of three defaults that are added each time a new survey is created, and it can be deleted if it's not required. To use it, make sure that the variable is still in place, and if not, it can be added again with the variable name of **locale**.

The screenshot shows the SurveyMonkey interface with variables settings. In the "Variables" panel on the right, "locale" is listed with a placeholder "Enter default value". A red box highlights the "locale" input field. The survey preview on the left shows the same questions and rating scale as the previous screenshot.

To use the **locale** variable with success, a method must be set up to determine the preferred language for each customer. One approach is to add a new **language** choice column to the contact record in the same Microsoft Dataverse environment where your projects and surveys have been created. When the choice column is complete, note the value that is assigned to each added language. For example, the first language that is added might be French, and the value that is assigned to this label might be

916,780,000, with additional languages having a value increment by 1 each time. Save the values in Notepad but remove the commas. This column can then be used to identify the preferred language for an individual.

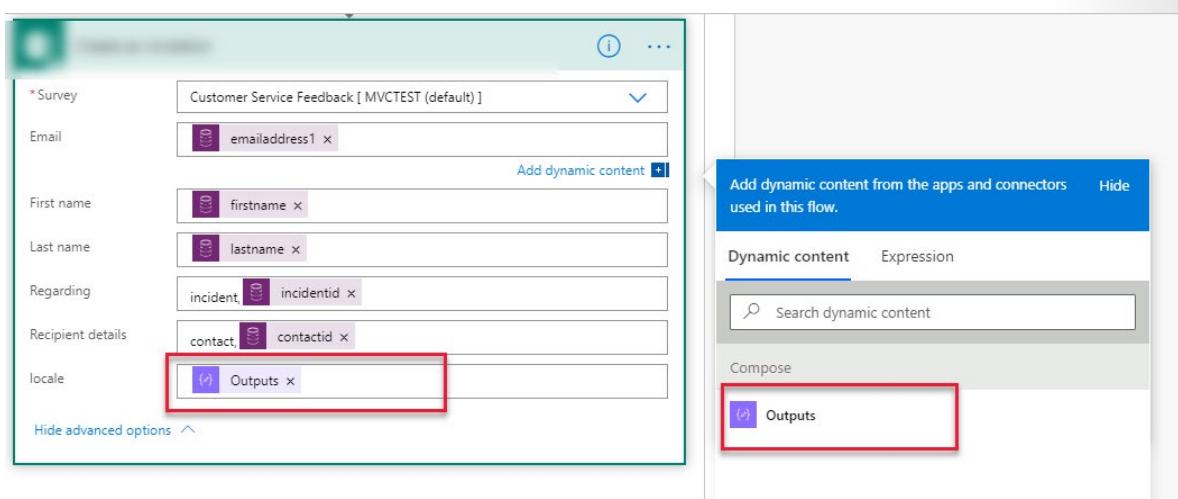
You can use several approaches when structuring a flow in Power Automate, but in this example of using the locale variable, assume that a case has been closed, which will trigger the flow to run. It's important that a **Get record** action step from the Microsoft Dataverse connector is used to get the contact that is related to the case. Next, a **Compose** action step is required so that the locale can be translated from the language on the contact record.



Use the custom column name that was previously added to add a required expression along with the value for each language that was added to the choice column. The following example shows how to format the expression. An **if** statement is needed for each language that a contact could possibly have from the choice column. After the value, the correct language code needs to be used. To be sure that the correct code is used, download the Excel translations file from the **Languages** section on the survey in Dynamics 365 Customer Voice; the code for additional languages is at the top of each column.

```
if>equals(outputs('Get_Contact'))?['body/custom_column'],916780000,'fr',
if>equals(outputs('Get_Contact'))?['body/custom_column'],916780001,'de',
'en-gb'))
```

The **Compose** step has an output, which is one of the locale codes that are set in the expression. The **Outputs** parameter is then added to the **locale** column from the dynamic content area and included in either a **Create an invitation** step or a **Send a survey** step in the flow. After the flow has been triggered, and a recipient is sent a link to the survey by email or some other mechanism, selecting the link will take them to the survey that is displayed in their preferred language.

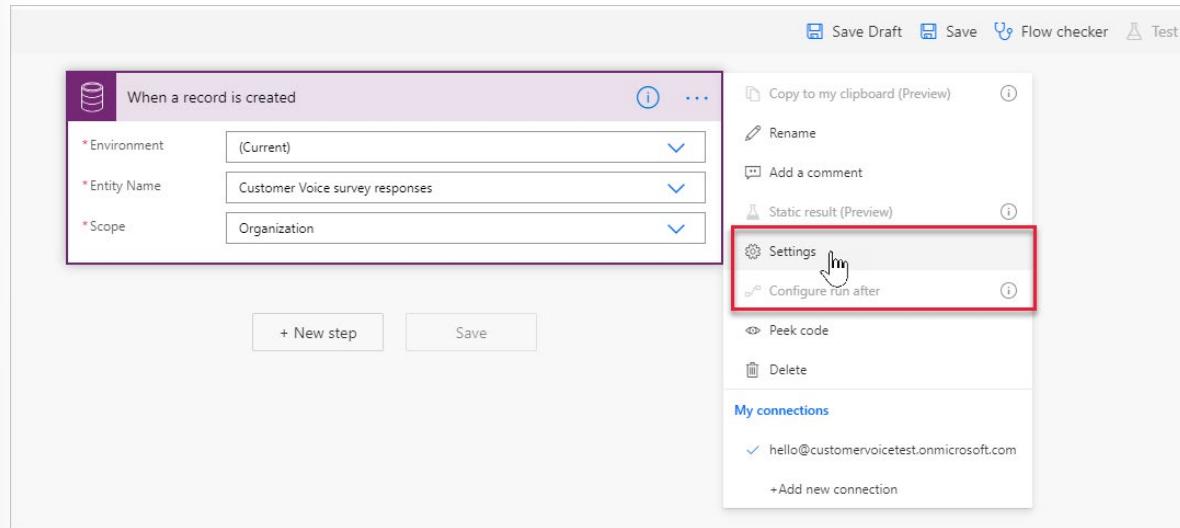


Use variables for follow-up actions

In this module, variables have been used in survey invitations to assist in creating a personalized experience for the recipient. The ability to display a name or data that is related to the feedback request is an important part of providing exceptional customer service and making customers feel valued and appreciated. You might be wondering, then, what happens to those variables after a response has been received. They are actually passed through to the response and can be retrieved and used to act on the data as required.

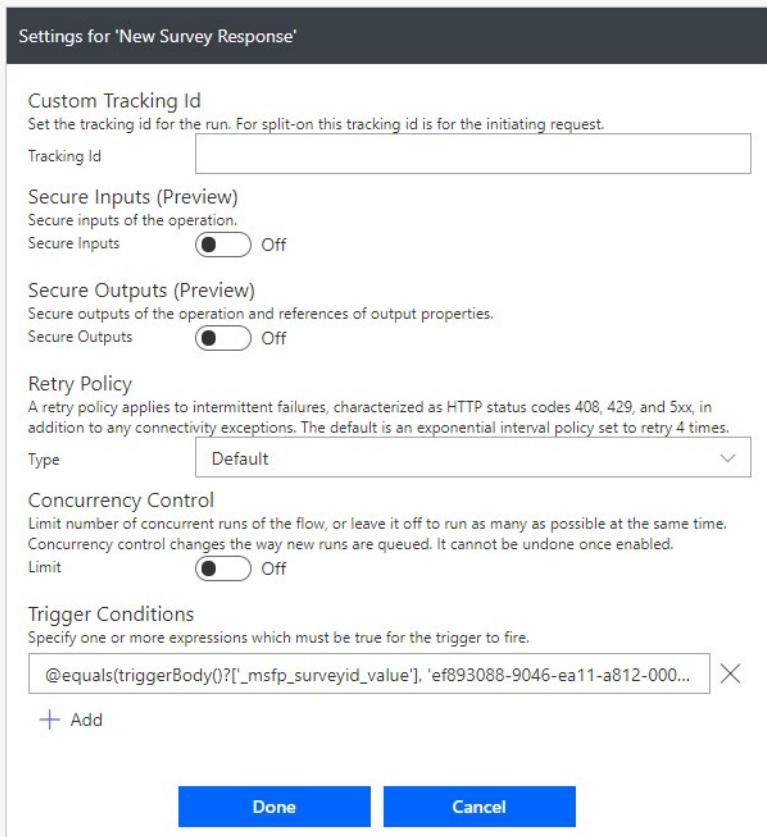
Consider that different types of variables can be added to a survey. As previously mentioned, variables can be used to display data. However, a variable could also be used as a hidden variable to link responses from multiple surveys together or to be used as a trigger condition to determine when a flow in Power Automate should run.

When a response is received, a flow can be triggered by using the Microsoft Dataverse connector on the **Customer Voice survey responses** table. You can access the **Settings** area on the trigger to ensure that this flow only runs for a specific survey, if required.



By using an expression similar to the one in the following example, you can update the **Trigger Conditions** section so that the flow only runs if the response is for a survey with a specific ID.

```
@equals(triggerBody()?['_msfp_surveyid_value'], 'SURVEY_ID')
```



After the trigger condition is met, the flow will continue to run and go to the next step. The first action that is needed in the flow is to get the survey response details. By using the Microsoft Forms connector, you can use the **Get response details** action to get the details. For the response ID, the following expression is required to parse the source response identifier value from a string into an integer value.

```
int(triggerBody() ? ['msfp_sourceresponseidentifier'])
```

Next, you need to access the variables that have returned in the survey response. All variables that were used in the survey invitation are stored in a survey response in the **Context Data** column on the record in Microsoft Dataverse. For organizations with licenses for Microsoft Power Apps, a model-driven app can be created, which gives users direct access to the survey response records. The **Survey Response** form can be customized to clearly show the **Context Data** column. Users can then see the variable name, followed by the value that was passed through in the survey invitation. The following example shows that the **First Name** is Jane and the **Last Name** is Doe. The information in the **Context Data** area can be copied and pasted for use in the flow.

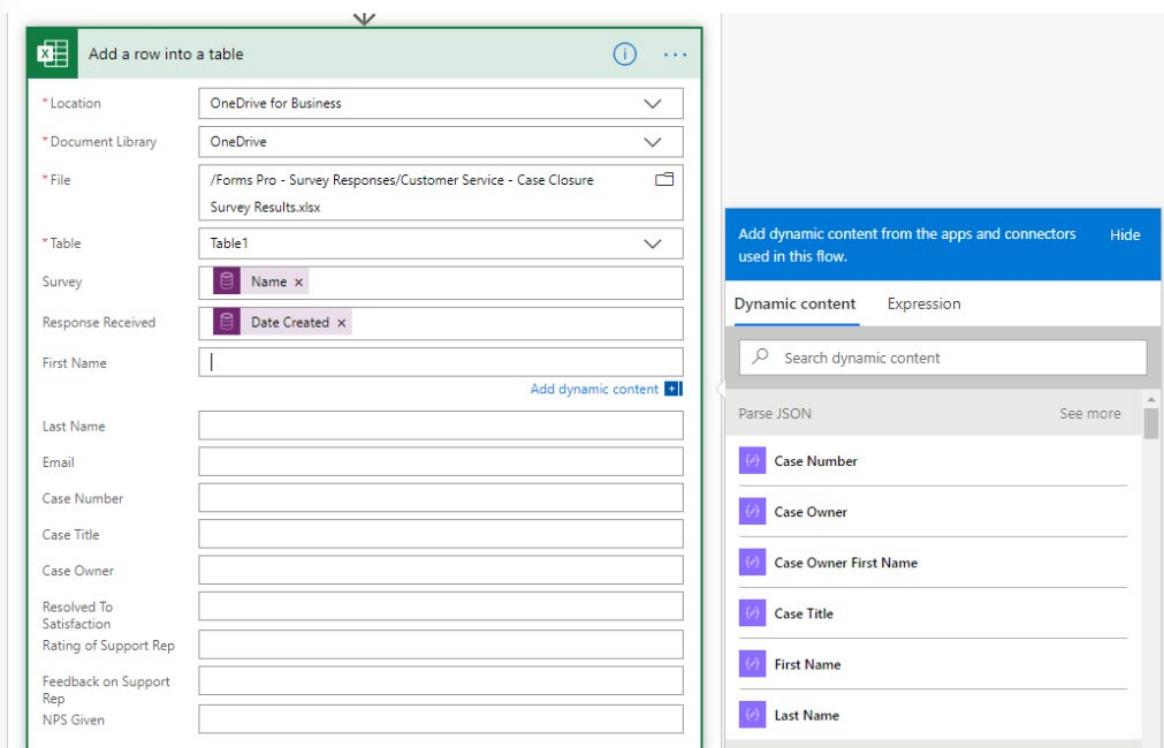
General		Responses		Conflicts Tab		Related	
General □ Subject: * Seeking feedback on product □ Survey: Product Feedback □ From: Jane Doe □ Regarding: Product launch campaign		□ NPS Score: 7 □ Sentiment: Posit... Neut... Negat...		□ Respondent: Jane Doe □ Survey Invite: Seeking feedback on product		□ Context Data: {"EmbedContextParameters":null,"PipeData":{"First Name":"Jane","Last Name":"Doe","locale":""}} □ Respondent email address: janecontactdoe@gmail.com □ Survey response URL: https://forms.office.com/FormsPro...	

For organizations without a Power Apps license, accessing the context data is still possible through Power Automate as part of the same flow. Search for and add a **Compose** step directly after the **Get response**

details step. Then, on the **Dynamic content** tab, search for the **Context Data** column from the initial trigger step and add that column into the inputs for the **Compose** step. This part is only needed once so that the **Context Data** column can be accessed and used in the next steps of the flow. If the survey is completed as a test, the flow will run and ideally will be successful. By selecting the successful run to view the flow, the **Compose** step should include the context data JSON file in the output.

From this point on, it shouldn't matter if an organization has a Power Apps license or not. Continue to edit the flow and add a **Parse JSON** step. Add the context data to the content value, and then select **Generate from sample** at the bottom of the action step. Paste in the context data values that were copied either from the **Compose** step (in the situation without access to Power Apps) or from a survey response record in a Power Apps model-driven app (with access to Power Apps).

For the rest of the flow, the variables and the related values will be accessible as dynamic content from the **Parse JSON** step. This feature provides excellent possibilities in terms of acting on the data. Use the values to create new records, update records, or send notifications. Values for specific questions can be verified and actions can be carried out based on an organization's requirements. Variables are important for customization of a survey and for follow-up actions based on the results that are submitted by respondents.



Summary

In this module, you have learned about the power of using Microsoft Power Automate together with Dynamics 365 Customer Voice to create an effective survey feedback tool. Additionally, you have learned about the need for variables in your surveys and how to add them to a flow in Power Automate. Variables that you send through a survey invitation can be captured and accessed in the related survey response and then used for follow-up actions. Using the locale variable helps make it easier to ensure that the correct language is used in any survey that is sent to your customers and you can access it through Power Automate and add it into your own custom flows. You can now apply these learnings to future surveys to create efficient flows in Power Automate to meet requirements from any organization.

Module 5 Schedule services

Configure Customer Service Scheduling

Getting started with Customer Service scheduling

Many organizations perform service-based activities such as repairs, health & beauty, product or specialized product installation for their customers.

Depending on the organization, workers can be dispatched into the field to perform work, or often the services are performed at their service locations. For example, as a customer, you may drop a pet off at the groomers, take an automobile in for service, have a piece of clothing altered, or have an aftermarket item installed. No matter what service model an organization uses, they need to easily identify their available resources and schedule them to perform a service. As the organization providing the services, it is important to execute those services in the most effective manner possible. This not only means scheduling and performing the service in a timely manner, but also ensuring that who is performing the service is qualified and has the right equipment to do the job. Regardless of how skilled a technician is, if they do not have the necessary equipment available to them, they will not be able to complete the service.

Dynamics 365 Customer Service helps organizations more effectively schedule services for their customers through its Customer Service Scheduling feature. It leverages Dynamics 365's Universal Resource Scheduling (URS) to provide organizations the ability to schedule resources for any scenario where a resource needs to be scheduled to complete work or have items noted on their schedule, like service activities and work orders.

With Customer Service Scheduling, organizations can efficiently identify and fulfill scheduling requirements. When a service needs to be scheduled, the system will examine what is needed to complete the service, such as the amount of time required, the necessary facilities and equipment, and the resources needed. It then provides multiple scheduling options to allow the person who is

doing the scheduling to identify the best time based on the organizations current workloads. Schedulers don't have to spend time working different resource schedules to ensure that no one is being double booked. Customer Service Scheduling takes into consideration items that technicians are already scheduled for and only suggests resources that are truly available to perform the service.

How Customer Service Scheduling works

When scheduling anything, it is important to understand not only what needs to be done, but also what will be needed to accomplish it. Customer Service Scheduling leverages two key components to not only define what needs to be scheduled and for which customer, but it also defines what resources are required to complete it.

Those two items are:

- **Services:** Represents what the organization is providing to their customers. A service might be an oil change for an automotive company or a hair color treatment for a salon. The service record defines how many resources of a specific type would be needed to complete it. For example, an oil change might require one technician and one service bay.
- **Service Activities:** Activity record that represents the delivery and execution of a service to a customer. Service activities include details such as which service is to be delivered and what customer it is for.

Services and service activities are used in conjunction with each other. For example, an auto service center that wants to deliver oil changes to customers might set it up as follows:

1. **Create Oil Change Service:** Service would specify the type and quantities of resources required to deliver an oil change. (Important: The service only defines what type or resources are required to complete it. It does not specify who will deliver the service)
2. **Create a Service Activity:** The Oil Change service is added to the service activity as the service that will be provided. The service activity record also contains additional details such as the customer the activity is being created for, and where the activity will take place.
3. **Schedule the Service Activity:** When a service activity is scheduled, the system looks at the resource requirements for the attached service (ex. Oil Change) and identifies which qualified people, facilities, and equipment resources are available to complete the service activity.

How Service Activities are scheduled

[!NOTE] Customer Service Scheduling leverages Universal Resource Scheduling (URS) to schedule service activities. URS is the base scheduling solution that allows organizations to schedule and dispatch items. It provides the core scheduling functionality. It is the key component in Dynamics 365 first party solutions that leverage scheduling capabilities such as Dynamics 365 Customer Service and Dynamics 365 Field Service.

There are three primary record types that are used to schedule an item.

Those records are:

- Service Activity
- Resource Requirement
- Bookable Resource Booking

![Diagram showing the records involved in scheduling](./Linked_Image_Files/1-how-customer-service-scheduling-works.png)

Service Activity

When a resource needs to perform a service for a customer a service activity is created in Dynamics 365. The service activity typically includes information that will affect how it is scheduled.

A service activity typically includes items such as:

- The service that is being provided.
- The customer the work is being done for.
- Preferences for service delivery such as time windows, preferred technician, etc.

Resource Requirement

Once the service activity is created, a resource requirement record is created. The resource requirement record is used to schedule the item in the system. It defines the specific details that are required to schedule the record. The requirement record is what is used to locate qualified resources that meet the requirement.

Requirements for a service activity might include:

- The type or resource that is needed.
- The service center where the resource should be located.
- Any Resource preferences.
- Additional relevant scheduling information, such as if you want to schedule less busy technicians first.

Bookable Resource Bookings

After a resource requirement is scheduled, and record called a bookable resource booking is created that provides the specific details around the resource who is responsible for completing the Service Activity.

A resource booking for a resource requirement would include:

- The resource (person) responsible for completing the service.
- Estimated vs. actual times and status related information.
- Total time spent working on the item.

Customer Service Scheduling component overview

The Dynamics 365 Customer Service Hub app includes an area that organizations can use for scheduling purposes. It can be accessed through the Scheduling area.

[!NOTE] You can also access Scheduling in the Customer Service workspace app.

Customer Service Scheduling components are broken out into three types of items:

- **Scheduling:** Used to setup and configure items like resources, facilities/equipment, resource categories, services, and fulfillment preferences.
- **Tools:** Represents the schedule board that it used for manual scheduling of resources.
- **Settings:** Used to configure supporting scheduling components, such as organizational units and business closures.

Scheduling Components

- **Resources:** Defines the specific people, facilities, or equipment that can be scheduled to work on items. Resources could represent internal employees, third party contractors, facilities, or equipment. Once your resources are defined, they can be easily associated with the services you provide to your customers.
- **Services:** Represents the services your organization provides to customers. The service record defines the resource types and number of resources required to complete it. For example, winterizing a personal watercraft (PWC) might require one marine technician and PWC lift.
- **Service Activities:** Activity record that represents the delivery and execution of a service to a customer. Service activities include details such as which service is to be delivered and what customer it is for.
- **Facilities/Equipment:** Defines facilities and equipment that might need to be scheduled as part of a service activity. For example, a facility record would be created to represent a service bay, or a specialized equipment used to complete a job. Once defined, resources that represent those items are created and associated with facilities/equipment records.
- **Resource Categories:** Define the different roles or categories that resources might have in an organization. For example, an organization might create resource categories for positions like developer, consultant, or project manager.
- **Fulfillment Preferences:** Fulfillment preferences are customizable entities that let you choose how schedule assistant results are displayed, like with neat hourly appointments or morning and afternoon time windows. For example, by default, available resources are based entirely their earliest available time, such as 10:39 AM. With fulfillment preferences set to hourly, the same resource's availability shows as 11:00 AM. This makes it simpler for the scheduler to view and understand availability and communicate it to the customer.

Tools

- **Schedule Board:** Interactive calendar used to schedule specific resources for different items. The schedule board can be filtered as needed and can be viewed as a map to make it easier to schedule items.

Settings

- **Organizational Units:** Represent containers that can be used to group resources together. Organizational Units might represent a location that resources can be dispatched out of, or they could be used to group together resources based on a region or service center.
- **Business Closures:** Specifies when an organization is not open, such as holidays.

Installing Customer Service scheduling

Customer Service scheduling should be available within the Customer Service hub for new environments. If you have an older installation and cannot see the Scheduling area in the app, you should go to the **Power Platform Admin Center**¹, expand **Resources**, and **Dynamics 365 apps**.

The screenshot shows the Power Platform Admin Center interface. On the left, there's a sidebar with various navigation options like Environments, Analytics, Resources, Capacity, Portals, Help + support, Data integration, Data (preview), and Data policies. The 'Dynamics 365 apps' option is highlighted with a red box. The main content area is titled 'Dynamics 365 apps' and contains a table of installed apps. The table has columns for Name, Status, and Publisher. One row for 'Dynamics 365 Service Scheduling' is selected, indicated by a checkmark icon. A context menu is open over this row, with the 'Install' option highlighted. Other options in the menu include 'Details' and '...'. The table also lists other components like 'Dynamics 365 Service Extended', 'Dynamics 365 Service Management - SLA And RR', 'Dynamics 365 Service scheduling migration', 'Environment variables', and 'Finance + Operation Managed Data Lake'.

Name ↑	Status	Publisher
Dynamics 365 Service Extended	Enabled	Microsoft Dynamics 365
Dynamics 365 Service Management - SLA And RR	Enabled	Microsoft Dynamics 365
Dynamics 365 Service Scheduling	Enabled	Microsoft Dynamics 365
Dynamics 365 Service scheduling migration	Enabled	Microsoft Dynamics 365
Environment variables	Enabled	Microsoft Dynamics 365
Finance + Operation Managed Data Lake	Enabled	Microsoft Dynamics 365

If the Service Scheduling component is not installed, you can click on the ellipses (...) and **install** the component into your Dynamics 365 environment.

¹ <https://admin.powerplatform.microsoft.com>

Security roles

There are four security roles associated with Customer Service scheduling. Two of these roles were associated with the legacy service scheduling that has been replaced with scheduling powered by Universal Resource Scheduling (URS).

- **Scheduler Manager:** Set up and manage the service scheduling experience and can access and set up all service scheduling tables.
- **Scheduler:** Can create and schedule legacy service activities.
- **Customer Service Schedule Administrator:** Manage the service scheduling in URS.
- **Customer Service Scheduler:** Can create and schedule service activities in URS.

[!IMPORTANT] To ensure that all scheduler managers are able to set up the scheduling experience and access the scheduling tables, they should also be assigned both the Customer Service Schedule Administrator and Schedule Manager security roles.

Configuring Service scheduling

Before your organization can begin to start scheduling service-related items using Customer Service Scheduling, there are several components that need to be configured first to ensure that items can be effectively scheduled based on your needs.

Organizations should consider items such as the following:

- What types of services are we scheduling?
 - Does it require multiple resources?
 - Does it require different types of resources?
- What does an unscheduled item look like?
 - Does a service activity go through different statuses or stages before it is scheduled?
- What does a scheduled item look like?
 - Is there a difference between the item just being scheduled and when someone is working on it?
 - What about items like breaks? How does that impact booking statuses?
- What factors can impact scheduling of a resource?
 - Where will the service be executed?
 - Is a specific type of resource required?

While the list above is nowhere near a complete list, it does help in identifying the types of items that need to be considered to ensure that when you are configuring scheduling settings, you are considering everything that could potentially impact how items are scheduled.

Organizational Units

Organizational Units are used to group resources together in containers for scheduling purposes. For Customer Service Scheduling, an organizational unit would typically represent a location where services

are provided to customers. For example, a large automotive service provider might have multiple locations throughout a city.

An organizational unit is created for each physical service center location. Resources such as people, facilities, and equipment would then be associated the organizational unit for their service center. This helps to ensure that when a service activity is scheduled for that location, only resources for that organizational unit are suggested.

[!IMPORTANT]

Every organizational unit must have a valid latitude and longitude address defined. Scheduling will not function correctly without it. The organizational unit table is not geo-coded like other table. You will need to use a mapping provider (e.g., Bing) to find the physical location address and copy the latitude and longitude information to the organizational unit.

Downtown - Bellevue
Organizational Unit

General Scheduling Related

Latitude	46.81327
Longitude	-95.78339

Latitude and longitude should be defined for all organizational units. Not defining them can impact your ability to effectively configure resource records.

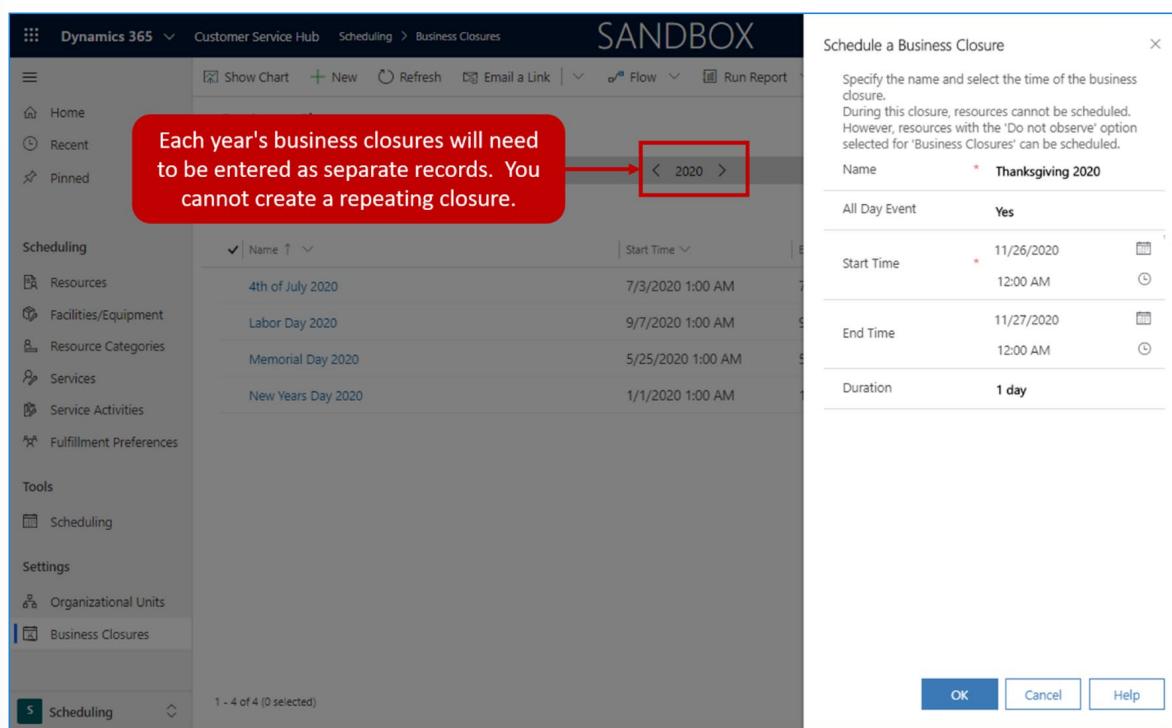
Business Closures

There are going to be occasions when a service center is going to be closed, such as holidays. When scheduling items, it is important to know what those dates are to ensure that service activities are not being resources on those days.

Those days are defined as business closures in Customer Service Scheduling. When you create a business closure you must define the following:

- **Name:** A descriptive name such as the holiday name
- **All Day Event:** Defines whether it is an all-day event or just a specific length of time.
- **Start Time:** Start time of closure
- **End Time:** End time of closure

When setting up business closures, you do not have the ability to setup recurring closures. Each business closure must be defined separately. For example, if your organization is always closed on January 1st, you will need to setup a business closure record for January 1st 2021, 2022, and so on.

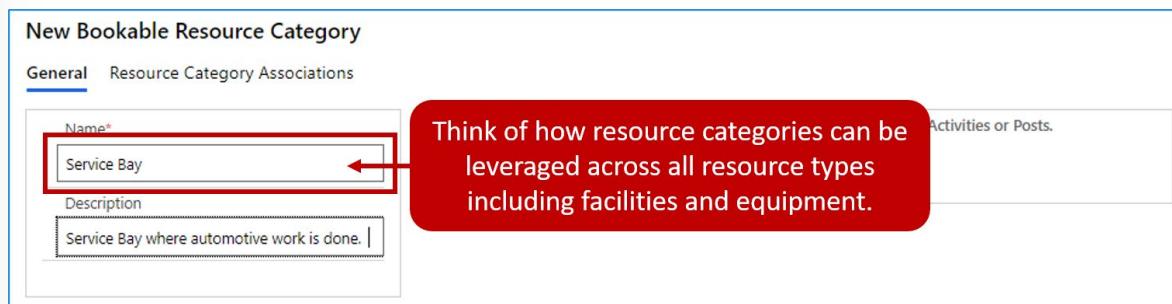


During a defined business closure, resources will not be able to be scheduled. However, resources that have the *Do not observe* option selected for business closures will be able to be scheduled. We will examine defining resources in more later.

Resource Categories

Often when scheduling a type of service, it may require a specific type of resource to be able to complete the service. For example, to replace the break assembly on an automobile, the resource being scheduled must be a certified technician.

To assist in these scenarios, service scheduling includes the ability to define resource categories. Once created, categories can be added to specific resources and schedulable items like a service, to ensure that only resources with that role are suggested as people to work on an item. Examples of resource roles might include technician, service bay, consultant, exam room, or stylist. A single resource can have multiple roles assigned to them. For example, a resource may have a developer and technician role assigned to them.



Facilities and Equipment

In addition to people, organization will use facilities and equipment when performing service work for a customer. For example, an automotive repair company might have seven service bays available at a specific location. The same is true for specific pieces of equipment. Some services may require a diagnostic machine, but the organization may only own a few of them. When service is being scheduled, it can be just as important to make sure that there is a service bay and diagnostic machine available as it is ensuring a qualified technician is available.

To assist with this, you can define facility and equipment record in the application. Facilities and equipment can be associated with facility or equipment resource records and scheduled as part of services in the application.

When you create a facility/equipment record, you will need to define the following:

- **Name:** The name that will be used to reference this piece of equipment.
- **Organizational Unit:** Specifies the organization unit this facility or equipment is associated with.
- **Business Unit:** Specifies the business unit that this resource belongs to.
- **Time Zone:** Which time zone this item is located in.
- **Description:** General description of the item.

The screenshot shows a software interface for creating a facility/equipment record. The title bar says 'Paint Room' under 'Facility/Equipment'. Below the title are three tabs: 'General' (which is selected), 'Work Hours', and 'Related'. The main area contains several input fields:

- Name:** Seattle - Paint Room
- Organizational Unit:** Main Ave - Seattle (highlighted with a red box)
- Primary Email:** ---
- Time Zone:** (GMT-08:00) Pacific Time (US & Canada)
- Description:** (empty text area)

A red callout box points to the 'Organizational Unit' field with the text: 'Defining the organization unit for facilities and equipment records help ensure the right item is being scheduled.'

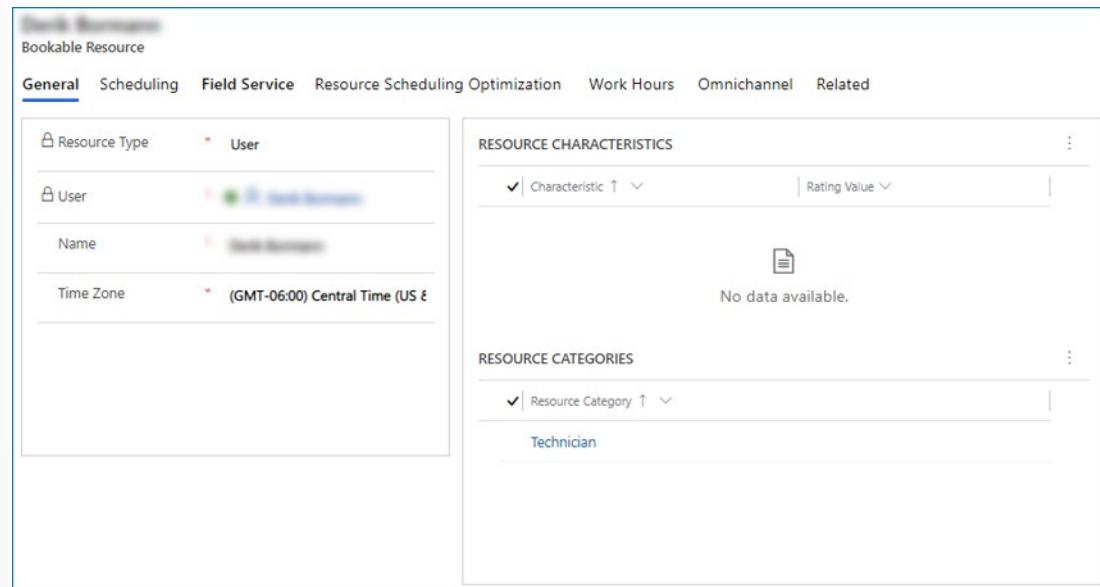
Once you have defined the initial details about the facility/equipment record, you can also define the specific work hours this item is available to be scheduled. We will examine work hours in more detail later. Any settings defined will carry over automatically to any the resource record associated with this item.

Resources

Resources are people, facilities, or pieces of equipment that are needed to execute a service. Depending on the organization, the resources will be used a little bit differently. For example, a hair salon might define resources for items like stations, tanning beds, stylists etc. A service center might define resources for technicians, lifts, docking bays, or other large pieces of equipment that they may have limited quantities of. Resources are a key element in the service scheduling solution because they represent the people and/or equipment that are assigned to execute a service.

Because Universal Resource Scheduling (URS) handles scheduling across all potential applications, any defined resource would be used in other applications such as Field Service. Due to the nature of service scheduling when you are defining service resources you will typically use the following resource types:

- **User:** Specifies the resource as an internal user mapped to a Dynamics 365 user record. This is likely going to be the most common type of resource that will be used with service scheduling.
- **Generic:** Generally used as a place holder to define a type of resource that is needed until a specific named resource can be used in its place.
- **Contact:** Specifies that the resource is associated with a Dynamics 365 contact record.
- **Account:** Specifies that the is associated with a Dynamics 365 account record.
- **Equipment:** Defines the resources as a specific piece of equipment.
- **Facility:** Represents a facility that can be scheduled such as a building or room.
- **Pool:** Resource pools allows you to assemble groups of similar resources to manage capacity and give schedulers the option to assign specific resources at a later time.
- **Crew:** Resource crews allow you to search and schedule multiple resources at once.



Depending on the type of resource you create and the different solutions that you have deployed to your environment, different fields will appear in the resource record. This will allow you to associate the resource with records like an account, user, or contact record.

Each resource you define will have two tabs that can be used for configuration. Those tabs are general and scheduling. After you save a resource for the first time, additional items will be available that you can associate the resource. For Customer Service scheduling, resource categories are used to define any roles associated with a resource. Additional tabs may be present for organizations that are using other Dynamics 365 first part solutions such, as Field Service or Omnichannel for Customer Service.

Scheduling tab

The scheduling tab is where you define scheduling details that will control how resources are presented in the schedule board, and what scheduling options are available.

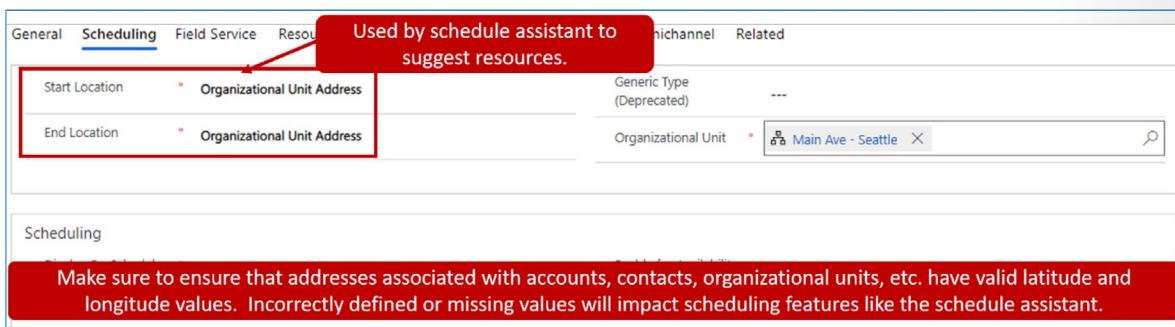
One of the most important items that needs to be defined is the location information that will be used by the schedule board for the resource.

The items that need to be defined are:

- **Start Location:** Defines where the resource begins their day.
- **End Location:** Defines where the resource ends their day.
- **Organizational Unit:** Defines the specific organization unit that the resource belongs to and will be scheduled out of.

When you define a starting and ending location, you have three options that you can define:

- **Organizational Unit Address:** Uses the latitude and longitude associated with the organizational unit that the resource belongs to.
- **Resource Address:** Uses the latitude and longitude associated with the corresponding record based on the resource type.
- **Location Agnostic:** Does not have a specific location defined. Can be useful when resources do not have a clearly defined starting and ending location.



Unless your organization's resources are performing services out in the field. Most human resources will have their starting and ending locations set to Organization Unit. Facility resources must have their starting and ending locations set to Organization Unit.

Working Hours

When scheduling resources to work on service activities, we want to verify that we are selecting available resources. Each resource will have specific working hours when they are available to be scheduled to work on things. These working hours can vary depending on multiple factors such as the type of resource, how shifts are structured, and so on. For example, a service center that runs sixteen hour working days, might have human resources that work specific morning or evening hours. They also might have facilities and equipment that are available for the entire 16 hour working day.

The work hours tab allows you to define the working hours for individual resources. This is used by the schedule board and the schedule assistant when locating resources to schedule for service activities.

Within the work hours tab, you view the work hours for a resource by year and month. You can easily switch the year and month as needed to ensure that you are defining work hours correctly based on the time frame. This is especially important in an organization with resources that may work in shifts that rotate on regularly.

You can define a resource's working hours by clicking the new button and selecting one of the following options:

- **Working hours:** Defines set working hours for a resource.
- **Non-working:** Defines specific non-working time for a resource.
- **Time off:** Specifies that a resource has time off, such as vacation or paid time off.

After you have specified the type of entry you are creating, you will need to define the specific details related to the work hours record.

Based on which type of record you selected, you will have the following options available:

- **All Day:** Toggle switch that specifies it is an all-day event. This is typically used when setting up time off entries for items like vacation.
- **Capacity:** Toggles on capacity scheduling for a resource. This is only available when setting up working hours.

- When enabled, you can specify a resources capacity in increments of one.
- **Date:** Defines first day this item should start.
- **Start and End Times:** Sets the time range for this item. For example, selecting 8:00 AM to 5:00 PM for working hours will allow the resource to be scheduled during that time.
- **Repeat:** Defines the time frame for the item. Items can be defined as follows:
 - **Never:** Specifies this is a one-time event
 - **Every day:** Allows you to define which day this should apply to such as Mon-Fri.
 - **Every Week:** Allows you to define which days on a weekly basis.
- **Observe Business Closure:** Specifies that business closures should be taken into consideration.

If you were going to create a working hour record for a resource that works Monday – Friday from 8:00 AM to 5:00 PM with an hour for lunch, it might look like the image below:

The screenshot shows a calendar interface for scheduling work hours. The top navigation bar includes General, Scheduling, Field Services, Resource Scheduling, Configuration, Work Hours, Omnichannel, and Related. The 'Work Hours' tab is active. A red callout box points to the 'New' button in the top-left corner of the calendar grid, with the text 'Working, non-working, and time off records can be defined.' A red arrow also points to the 'New' button. The calendar displays dates from Aug 30 to Sep 26. Most days show a 9-hour workday from 10:00 AM to 7:00 PM, indicated by blue bars labeled '10:00 AM Working'. On Sep 15, there is a light blue shaded area from 10:00 AM to 7:00 PM, with a tooltip 'Working from 10:00 AM to 07:00 PM'. On Sep 15, there is also a small grey box labeled 'Labor Day 2020' indicating a holiday. The days of the week are labeled Sunday through Saturday at the top of each column.

It is important that you spend the necessary time making sure that each resource has the correct working hours defined. Otherwise it will result in issues when you attempt to schedule items.

Defining facility resources

Facility resources are helpful when you need to reserve a physical space, such as a room for an event or party, or a repair bay at a mechanic shop. Facilities are also useful when you might need to schedule an appointment with a person at a facility, such as an appointment for someone to fix a laptop at a Microsoft retail store, or a wealth management consultation at a bank.

Since facilities represent a physical location such as a conference room or meeting space, they are required to be associated with an organizational unit that contains a valid latitude and longitude address. The starting and ending locations for a facility need to be set to the organizational unit address.

The screenshot shows the 'Seattle Service Bay 1' resource configuration page. The 'General' tab is selected. In the 'Resource Type' section, 'Facility' is chosen. The 'Name' field contains 'Seattle Service Bay 1'. Under 'Time Zone', '(GMT-08:00) Pacific Time (US & Canada)' is selected. In the 'Facility Equipment' section, 'Seattle Service Bay 1' is listed. The 'Scheduling' tab is selected. In the 'Start Location' and 'End Location' fields, 'Organizational Unit Address' is specified. A red callout box points to these fields with the text: 'A facilities starting and ending locations must be set to use organizational unit address.' Below this, another red callout box points to the 'Organizational Unit Address' fields with the text: 'Must be associated with an organization unit with valid latitude and longitude values.' Other tabs visible include 'Field Service', 'Resource Scheduling Optimization', 'Work Hours', 'Omnichannel', and 'Related'.

Summary

In this module you saw how Dynamics 365's Customer Service Scheduling solution can be leveraged to more effectively schedule services provided to customers.

Service centers, facilities, equipment, and people can be defined as resources used to perform services.

This module examined how to configure Customer Service scheduling, including:

- The record types used in Customer Service scheduling.
- The components used in Customer Service scheduling.
- How to configure settings such as Organization units and Business closures.
- How to create resources and facilities and equipment.
- How to define working hours.

The next steps from here would be to learn how to create services and schedule service activities.

Schedule Services

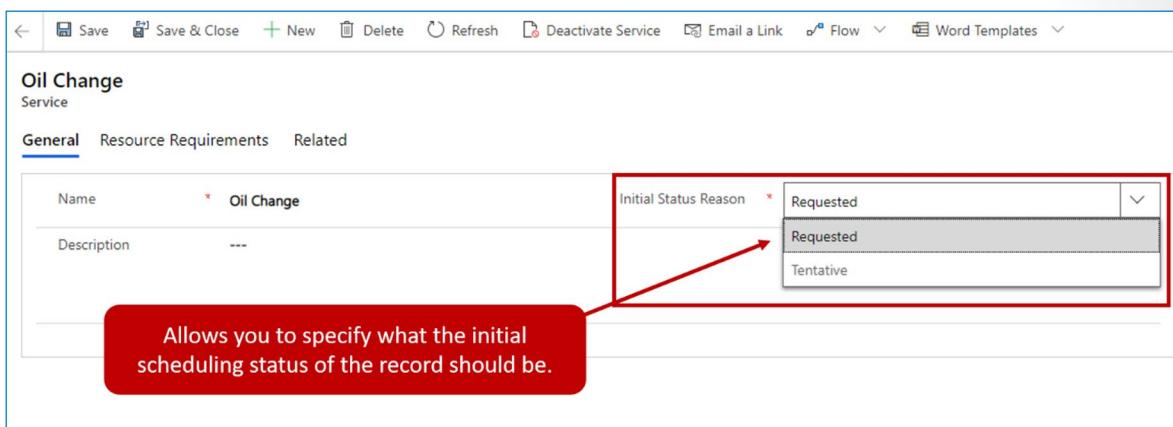
Define Services

Services represent specific schedulable items that can be performed for a customer. For example, a computer company may use services to define types of work they provide such as tune-ups, virus removal, or data recovery. An automotive service center may define services for oil changes, tire rotations, engine tune-ups, or factory recalls. Dynamics 365 Customer Service Scheduling allows you to configure which services your organization provides. When creating a service, you can easily predefine how long it should take, as well what resources are needed for the service activity.

Service

Services are created by clicking the new button. When you initially create a service will need to define the following:

- **Name:** Specifies the name of the service.
- **Initial Status Reason:** Specifies how the item should appear on the schedule board. You can select either Requested or Tentative



After the record is saved, the Resource Requirements tab will be displayed. This is where you can define the specific details related to resources needs to perform the service.

Resource Requirements

Each service will require different types of resources to schedule and execute the service. When defining a service, you can specify which types of resources are needed to complete this item. For example, an oil change may only require an automotive technician and a service bay, whereas an engine overhaul may require two technicians, a service bay, and an engine lift.

When you define a service, you can define the required resources for the service. The requirements will be grouped together for scheduling. This enables dispatchers to schedule an entire team of resources for a single service activity. For example, in the previous mentioned scenario, an oil change service

would be created that includes the requirements for a technician and service bay. An engine overhaul service would include multiple technician requirements, a service bay, and engine lift.

Name	Select	Duration	Part of Same	Fulfillment Prefere...	Organizational Unit	Resource Categories	Characteristics	Preferred Resource	Sort Option	Effort Required
Oil Change...	All	30 min	Organizationa							
Technician						TE	Technici		None	1
Service Bay						SB	Servic		None	1

Sometimes you run into situations where multiple combinations of resources would be acceptable for a solution. In this case, additional sub-groups can be added to provide additional flexibility.

Requirements can be added directly to the main requirement group, or to one or more sub-groups that might be defined. For example, a senior technician might be able to do a service such as an oil-change by themselves, when it might take two less experienced technicians to complete the service. Although it is requiring more people, two technicians would be preferred over one senior tech because we want to keep senior techs available for larger jobs.

To accomplish this, we could set the service to contain two sub-groups:

- Preferred Oil Change Group
- Technician
- Technician
- Service Bay
- Secondary Oil Change Group
- Senior Technician
- Service Bay

When service is created, it is possible to specify if all the requirements need to be fulfilled, or if only some need to be fulfilled. This can be accomplished using the select column. The select column contains two options:

- **All:** Specifies that all defined requirements need to be fulfilled.
- **Any:** Specifies that only one of the defined requirements needs to be fulfilled.

For example, we can see in the image that any was selected for the oil change service. This states that we only need to fill either the preferred oil change group or the secondary oil change group requirement, but not both. We have also defined that for each sub-group, we would need to fulfill all the resource requirements.

Another consideration is the order in which the sub-groups and requirements are showing. Since the oil change group is set to any, and the preferred oil change

group is listed first, this is the requirement that it will attempt to fill first. If it cannot fulfill the requirement, it will move to the secondary oil change group which has only one technician resource.

Name	Select	Duration	Part of Same	Fulfillment Prefer...	Organizational Unit	Resource Categories	Characteristics	Preferred Re...	Sort Option	Effort Required
Oil Change	Any	30 min	Organizational Unit							
▼ Preferred Oil Change	All									
Technician										
Service Bay										
▼ Secondary Oil Change	All									
Senior Technician										
Service Bay										

The grid provides many options to assist in the creation of the individual requirements. This includes duplicating requirements, deleting requirements, and even the ability to edit groups, sub-groups, and requirements inline directly on the grid. Some of the settings available that can be edited on the grid can be defined at a group level, as well as an individual requirement level.

For example, requirement group items are defined such as:

- **Part of same:** Allows you to define if the resources should belong to the same organizational unit, resource tree, or location.
- **Fulfillment preferences:** Defines if there are any fulfillment preferences that should be used when suggesting resources.
- **Organizational unit:** Defines that all resources should come from a specific organizational unit.
- **Resource categories:** Defines which resource role should be associated with this resource.

It is important that you take the time necessary to define the service selection criteria. While you can save a service without defining the criteria, you will not be able to schedule that service.

Additional items to consider at a requirement level are:

- **Sort option:** Defines how resources should be presented in the search results. There are four options to choose from:
 - **None:** Does not perform any sorting.
 - **Randomized:** Presents a randomized available resource.
 - **Most Busy:** Presents the available resource that has the most bookings.
 - **Least Busy:** Presents the available resource that has the least bookings.
- **Effort required:** Defines the number of resources that are required for that type. While booking, this option allows you to view all the resources who satisfy the minimum effort requirement. For example, if the effort required is defined as 100, only the resources with the capacity value of 100 and more will be displayed in the list while booking the service in the schedule board.

Activate or deactivate a service

You can make a service available or unavailable for scheduling by activating or deactivating it. To do this, in the list of service records, select a service, and then select activate or deactivate in the command bar. You can only deactivate a service if there are no open or scheduled service activities associated with it.

Fulfillment Preferences

Service scheduling uses the schedule assistant to locate and display potential resources back to the scheduler in the schedule board. When the schedule assistant displays results, they are entirely based on resource schedules and their earliest available time. For example, if the schedule assistant is initiated at 10:41 AM it is going to start looking for resources who are available starting at that time. It is possible the schedule assistant may determine that the earliest time a resource would be available is 10:41 AM. Scheduling someone to work for a call at 10:41 might make it difficult to schedule other appointments around it. An organization might prefer that times are suggested in intervals that are more reflective of real-world scenarios, such as 15 minute, 30 minute, or 1 hour intervals. Instead of 10:41, that resource would be available starting at 10:45 or 11:00 AM.

Another consideration is when organizations do not schedule technicians during specific times of the day. For example, an organization may choose not to schedule technicians from 12:00 PM to 1:00PM. This not only represents lunch time for resources but could also act as a buffer to allow technicians to make up time if they are running behind. These options make it simpler for the scheduler to view, understand, and communicate to the customer.

To deliver these options, Universal Resource Scheduling provides what are called fulfillment preferences. Fulfillment preferences are customizable tables that allow you to choose how schedule assistant results are displayed, such as hourly appointments or morning and afternoon time windows.

Fulfillment preferences break down into two features:

- **Intervals:** display schedule assistant results in time slots that dictate start time of subsequent bookings.
- **Time groups:** Enable schedulers to search and view results as blocks of time when using the schedule assistant. Typical examples might include mornings, afternoon, nights, and 2-hour windows.

Fulfillment preferences are associated with requirements, records. When the schedule assistant is executed against the requirement, it will suggest items based on the fulfillment preferences defined. Fulfillment preferences are defined by navigating to Scheduling > Fulfillment Preferences and selecting the new button.

Defining intervals

Intervals for the interval scheduling are defined on the interval tab of the fulfillment preference record. There are three key settings that are defined for an interval record.

- **Interval:** Defines the duration between available time slots, such as 30 minutes, 45 minutes, 1 hour, and 2 hours.
- **Intervals begin:** Defines when to begin counting the interval.
- **Results per Interval:** Dictates how many options a scheduler will receive for each interval. If left blank, the system defaults to 1.

Interval	30 minutes
Intervals Begin	8:00 AM

Results per Interval	10
Reset Intervals Per Time Group Detail	Yes

In the image above, the interval is 30 minutes with intervals beginning at 12:00 AM. This indicates that the available options to display results are 12:00 AM, 12:30 AM, 1:00 AM, and so on. The results however depend on resource availability and working hours.

[!NOTE] If the intervals begin field is left blank, the interval will begin at the time of booking. For example, if your interval is 30 minutes and interval begins is blank, when you attempt to book at 11:13 AM, your time slot options are 11:13 AM, 11:43 AM, 12:13 PM, and so on.

Intervals work in conjunction with the results per interval setting. If an organization has 50 resources who are all available at 9:30 AM, and results per interval is set to 50, then all resources will show. If the results per interval field is set to 5, then only the 5 best results will show.

Defining time groups

Unlike intervals, time groups do not dictate the start time of subsequent bookings. Time groups organize results but leave the start time/arrival time as is, based on the particular resource's schedule. Time group details cannot be defined until a fulfillment preference record has been saved for the first time. Once saved, times groups are defined from the details tab by clicking the Add Time Group button in the time groups sub-grid.

When specifying a time group, you will need to provide:

- **Name:** Descriptive name for the group such as morning, afternoon, or evening.

- **Start Time:** Defines the first time that a booking can be scheduled within the time block.
- **End Time:** Defines the last time that a booking can be scheduled within the time block.

[!Important] The end time defines the last time that an appointment can start within the window. For example, if the time window is 8:00 AM to 12:00 PM, it is possible that an item that has a duration could be booked at 11:30 AM or 12:00 PM even though in both instances, the end time would be beyond the time window.

The image below shows a typical example where time windows are being defined as morning and afternoon. An hour gap is being left between 12:00 and 1:00 PM.

Morning Afternoon

Fulfillment Preference

General Interval Details Related

Name	Start Time	End Time	Status	Created On
Afternoon	9/15/2020 1:00 PM	9/15/2020 5:00 PM	Active	9/15/2020 10:35 AM
Morning	9/15/2020 8:00 AM	9/15/2020 12:00 PM	Active	9/15/2020 10:34 AM

Separate time windows defined for both morning and afternoon time blocks.

Associating fulfillment preferences with requirements

For fulfillment preferences to be taken into consideration for a requirement, you need to ensure that they are attached to the requirement record. The easiest way to add fulfillment preferences to a record is on the resource requirements for the service. It could be defined manually or populated by using a Power Automate flow or other automation scenario.

General Resource Requirements Related

Refresh Subgroup Requirement Delete Move Up Move Down Columns

Name	Select	Duration	Part of Same	Fulfillment Preferences
Oil Change	Any	30 mins	Organizational Unit	

Fulfillment preferences can be defined within a service's resource requirements.

Search

Fulfillment Preferences

30 minute interval

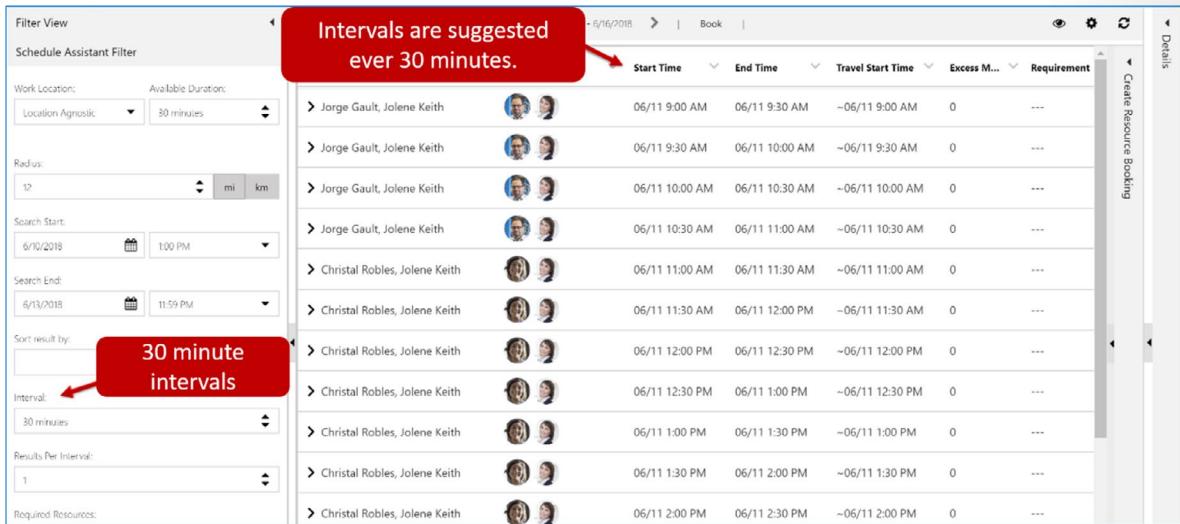
Morning Afternoon

Create

Booking the requirement with the schedule assistant

When you are working with a requirement record that has time intervals defined, the intervals/time groups defined in the fulfillment preference will be loaded when the book button is selected. This will launch the schedule assistant.

- Intervals:** Presents options available based on the interval screen selected. For example, the image below is using the 30-minute interval schedule that we defined.



The screenshot shows the 'Schedule Assistant Filter' interface. On the left, there are filter settings: 'Work Location' (Location Agnostic), 'Available Duration' (30 minutes), 'Radius' (12 miles), 'Search Start' (6/10/2018, 1:00 PM), 'Search End' (6/13/2018, 11:59 PM), 'Sort result by' (Interval), 'Interval' (30 minutes), 'Results Per Interval' (1), and 'Required Resources'. A red callout box highlights the 'Interval' dropdown with the text '30 minute intervals'. Another red callout box highlights the top of the results table with the text 'Intervals are suggested ever 30 minutes.' Red arrows point from both callout boxes to their respective targets. The main area displays a table of booking suggestions for Jorge Gault, Jolene Keith, and Christal Robles, showing start times from 06/11 9:00 AM to 06/11 2:00 PM, end times, travel start times, excess minutes, and requirements.

	Start Time	End Time	Travel Start Time	Excess M...	Requirement
Jorge Gault, Jolene Keith	06/11 9:00 AM	06/11 9:30 AM	~06/11 9:00 AM	0	---
Jorge Gault, Jolene Keith	06/11 9:30 AM	06/11 10:00 AM	~06/11 9:30 AM	0	---
Jorge Gault, Jolene Keith	06/11 10:00 AM	06/11 10:30 AM	~06/11 10:00 AM	0	---
Jorge Gault, Jolene Keith	06/11 10:30 AM	06/11 11:00 AM	~06/11 10:30 AM	0	---
Christal Robles, Jolene Keith	06/11 11:00 AM	06/11 11:30 AM	~06/11 11:00 AM	0	---
Christal Robles, Jolene Keith	06/11 11:30 AM	06/11 12:00 PM	~06/11 11:30 AM	0	---
Christal Robles, Jolene Keith	06/11 12:00 PM	06/11 12:30 PM	~06/11 12:00 PM	0	---
Christal Robles, Jolene Keith	06/11 12:30 PM	06/11 1:00 PM	~06/11 12:30 PM	0	---
Christal Robles, Jolene Keith	06/11 1:00 PM	06/11 1:30 PM	~06/11 1:00 PM	0	---
Christal Robles, Jolene Keith	06/11 1:30 PM	06/11 2:00 PM	~06/11 1:30 PM	0	---
Christal Robles, Jolene Keith	06/11 2:00 PM	06/11 2:30 PM	~06/11 2:00 PM	0	---

- Time Groups:** Results displayed will be based on the time group setting defined in the calendar. The image below shows how resources are noted based on the time group and displayed.

The screenshot shows a software interface for managing resources and scheduling. On the left, a list of resources is displayed with their availability, start times, end times, distances, and estimated travel durations. On the right, a detailed view of time groups is shown, with a specific time group highlighted by a red box and a callout bubble. The callout bubble contains the text: "The time group that the suggested resource falls into is provided." Below this, there is a summary table with various details like name, proposed duration, territory, and status.

Name	00220	Proposed Duration	0 min	Territory	WA	Created On	09/18/2018
From Date	10/17/2017	Fulfilled Duration	0 min	Time From Promised			
To Date	11/30/2018	Remaining Duration	2 hrs	Time To Promised			
Duration	2 hrs	Priority	Emergency	Status	Active		

Using Intervals and time groups together

At times, you may want to use a combination of intervals and time groups together. It is possible to define a fulfillment preference that uses both intervals and time groups, however, there are some key differences to consider when using both.

- You cannot add a value for interval begins. The interval will begin at the time of the earliest time group.
- If the reset interval per time group detail option is set to yes, the intervals will reset once a new time group detail overlaps with an interval.

The screenshot shows a list of appointments scheduled for November 6, 2018. A red box highlights the 'Start Time' dropdown set to '8:00 AM'. A callout bubble states 'Interval suggested based on earliest time group.' Another red box highlights the 'Time Group Detail' column, which shows two distinct time groups: 8:00 AM to 12:00 PM and 1:00 PM to 5:00 PM. A callout bubble for the second time group states 'Time Suggested based on the intervals defined on the fulfillment preference record.'

Start Time	End Time	Duration	Estimated Travel Duration	Time Group Detail 1	Time Group Detail 2
11/6/2018 9:00 AM	11/6/2018 11:30 AM	14.06 miles	17 min	8:00 AM	12:00 PM
11/6/2018 10:00 AM	11/6/2018 12:30 PM	14.06 miles	17 min	8:00 AM	12:00 PM
11/6/2018 11:00 AM	11/6/2018 1:30 PM	14.06 miles	17 min	8:00 AM	12:00 PM
11/6/2018 12:00 PM	11/6/2018 2:30 PM	14.06 miles	17 min	8:00 AM	12:00 PM
11/6/2018 9:00 AM	11/6/2018 11:30 AM	7.46 miles	12 min	8:00 AM	12:00 PM
11/6/2018 10:00 AM	11/6/2018 12:30 PM	7.46 miles	12 min	8:00 AM	12:00 PM
11/6/2018 11:00 AM	11/6/2018 1:30 PM	7.46 miles	12 min	8:00 AM	12:00 PM
11/6/2018 12:00 PM	11/6/2018 2:30 PM	7.46 miles	12 min	8:00 AM	12:00 PM
11/6/2018 9:00 AM	11/6/2018 11:30 AM	12 min	8:00 AM	12:00 PM	
11/6/2018 10:00 AM	11/6/2018 12:30 PM	12 min	8:00 AM	12:00 PM	

Consider the following scenario. A traditional brick-and-mortar business offers appointments every 90 minutes, so intervals are set to 90 minutes. Additionally, they separate into morning and afternoon time groups of 8:00 AM to 12:00 PM and 1:00PM to 5:00 PM, with a 1-hour lunch in between. Therefore, both intervals and time groups are useful for this business.

- **Reset Interval per Time Group Detail = No, the appointments would be:**
- 8:00 AM, 9:30 AM, 11:00 AM (not 12:30 PM because this is blocked for lunch), 2:00 PM, and 3:30 PM.
- **Reset Interval per Time Group Detail = Yes, the appointments would be:**
- 8:00 AM, 9:30 AM, 11:00 AM, (not 12:30 PM because this is blocked for lunch), 1:00 PM (resetting for the next time group detail), 2:30 PM, and 4:00 PM.

Create service activities

Service activities are a type of activity record that specifies the customer, location, and the type of work the customer wants to be performed. The main benefit of using services and service activities is that the complexity of the resourcing needs is contained in the service and its requirement groups. The user simply needs to select the service and the customer.

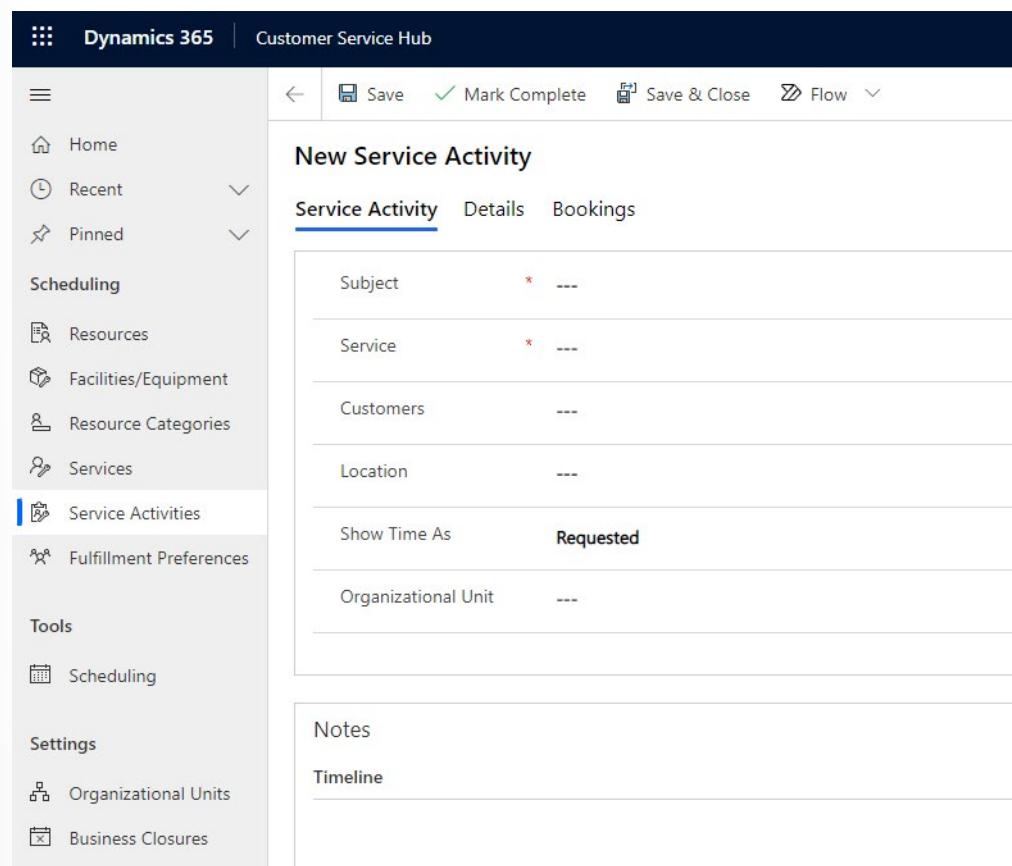
You can then schedule the service activity and find the times resources are available to be able to provide the service.

[!NOTE] You can't create a recurring service activity. You need to create individual service activities as needed.

Create a service activity

Service activities are created from **Scheduling > Service Activities** in the Customer Service hub.

Clicking the **Service Activity** button in the Command bar will open the new Service Activity form.



On the Service Activity form you should:

- Enter the Subject of the service activity.
- Select the service requested by the customer.
- Select the customer who requested the activity.
- Set Show Time As either Requested or Tentative.
- Choose the Organizational Unit where the service will be performed.

[!NOTE] Service activities can also be created from Activities under My Work and from related activities on account records. You cannot create a service activity from the Timeline control and they do not appear in the Timeline by default. You can customize the Account form and enable Service activities in the Timeline.

Booking a service activity from the service activity

You can schedule a Service activity directly from the Service activity record by clicking on the **Book** button in the command bar.

This launches the schedule assistant in a popup window where available resources and their time slots are listed.

The screenshot shows the Microsoft Dynamics 365 Schedule Assistant interface. On the left, there is a 'Filter View' section with various search and sort criteria. In the center, a list of team members is displayed with their availability. A specific entry for 'Cheri Castaneda' is highlighted with a green border. On the right, a 'Create Resource Booking' panel is open, showing details for booking Cheri Castaneda. The booking is set for 10/5/2021 at 9:00 AM, with an estimated arrival time of 9:45 AM and a duration of 45 minutes. The status is 'Reserved'. At the bottom right of the main list area, there is a 'Book & Exit' button.

Schedule Assistant - Repair drone for Adventure Works

You select a resource and a time slot and click on the **Book & Exit** button to book the service.

A Bookable Resource Booking is created and can be seen in the Bookings tab.

The screenshot shows the 'Repair drone for Adventure Works' Service Activity page. The 'Bookings' tab is selected. A single booking entry is listed for 'Cheri Castaneda' from 9:00 AM to 9:45 AM on 10/5/2021. The booking type is 'Solid' and the status is 'Reserved'. The top navigation bar includes buttons for Save, Mark Complete, Save & Close, Book, Delete, Refresh, Check Access, Close Service Activity, and To Opportunity.

The service activity is also updated with the starting and ending times of the booking.

Schedule service activities

Schedule board overview

The schedule board assists those who book service activities in scheduling items. The schedule board makes it easy to see which service activities are currently unscheduled items, as well as the availability of all resources.

(people, facilities, and equipment). Items can be scheduled directly from the schedule board making it easy to visually see who is doing what.

In the schedule board you can perform the following tasks:

- View your organization's daily, weekly, and monthly schedule of service activities.
- View work schedules and service activity schedules for a variety of resources.
- Schedule service activities.
- Change the status of an existing service activity.
- Search for conflicts in the schedule.

The schedule board provides multiple components that can be leveraged to schedule items. Below is a brief overview of the panels and components that are most often used.

The screenshot shows the Schedule Calendar interface. At the top is a header bar with various buttons and a date range (Monday - 9/21/2020). Below the header is a 'Schedule Calendar' section containing a grid of resources (Derik Bormann, Jackie Johnson, Jennifer Smith, Lance Fisher, Mike Smith, Nick Anderson) with their availability percentages (2%, 2%, 0%, 0%, 1%, 2%) and scheduled service activities. To the left is a 'Hourly view' filter and map panel with sections for Filter, Map View, Characteristics - Rating, Roles, Territories, and Organizational Units. To the right is a 'Details' pane showing initial public view settings and alerts. At the bottom is a 'Resource Requirements' table with columns for Service Activity (Resource Requirement), Service (Service Activity), Duration (Resource Requirement), Status (Service Activity), Created By (Service Activity), and Date Created (Service Activity). It lists two entries: 'Arlen Oil Change' and 'Nelson Oil Change', both scheduled for 30 min by Derik Bormann on 09/18/2020 at 12:03 PM and 12:02 PM respectively.

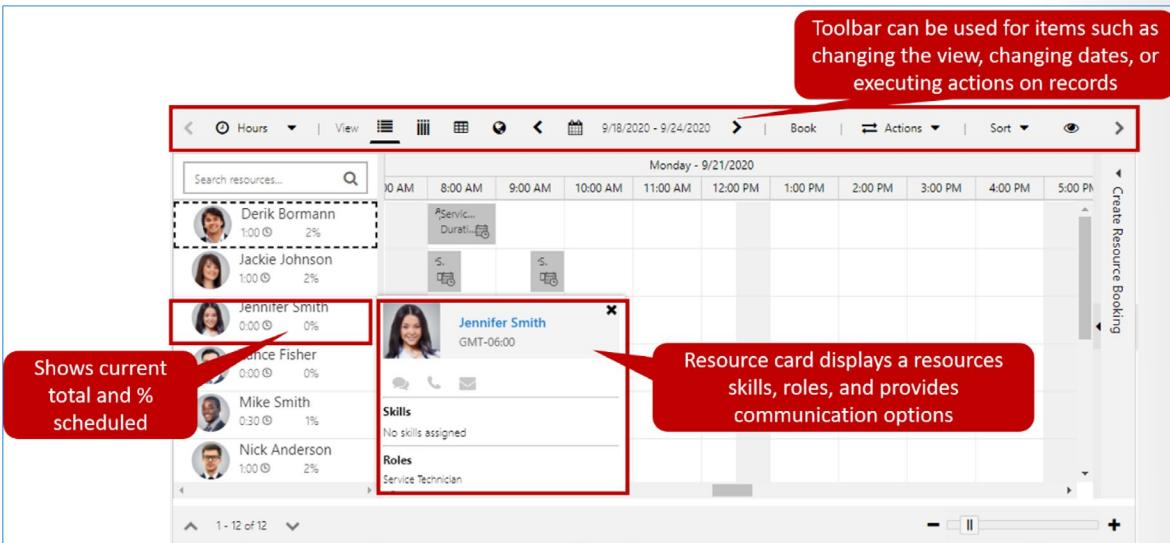
Service Activity (Resource Requirement)	Service (Service Activity)	Duration (Resource Requirement)	Status (Service Activity)	Created By (Service Activity)	Date Created (Service Activity)
Arlen Oil Change	Oil Change	30 min	Open	Derik Bormann	09/18/2020 12:03 PM
Nelson Oil Change	Oil Change	30 min	Open	Derik Bormann	09/18/2020 12:02 PM

- **Resource Requirements:** Provides a list of active requirements such as service activities that need to be scheduled.
- **Filter and Map Panel:** Provides access to interactive filters and maps that can be leveraged to assist in scheduling.
- **Details:** Provides additional details of the item that is currently selected.
- **Schedule Calendar:** Displays a list of resources and currently scheduled items. Can be used to schedule new items, as well as interact with existing scheduled items.

Resources in the schedule board

The schedule board displays all the resources that are available to be scheduled in the application. As resources are scheduled, the time they are scheduled for and the percent they are scheduled will be displayed on their resource record.

The percent scheduled is based on the resources capacity and the date range being used on the board. As you hover over a resource, you can right-click on it to view its resource card. The resource card shows specific information about the resource, such as skills they have and their roles. You are also provided with multiple communication options to interact with the resource.



The schedule boards toolbar make is easier to view information based on specific needs and interact with the board to do things like get directions, book a resource, and sort items on the board. The list below describes the options available from the board toolbar.

- **View Mode:** Defines scale that will be used when presenting resource schedules on the board. There are four options to choose from: hours, days, weeks, and months.
- **View:** Defines how the resources on the board will be presented. There are four options to choose from: horizontal, vertical, list, and map.
- **Dates:** Allows you to specify the specific date(s) that will be displayed on the board.
- **Book:** Allows you to create a booking for a specific resource.
- **Actions:** Provides a list of actions that can be executed against items on the schedule board. Those actions include:
 - **Get Driving Directions:** Allows you to get directions from one location to another. Directions can be shared with a resource in multiple ways.
 - **Move Booking to a Different Day:** Allows you to move a booking to a different day. For example, if a resource is running behind on a specific day, those bookings could be moved tomorrow.
 - **Print Schedule Board:** Allows you to print the entire schedule board or just specific elements.
 - **Create Booking Alert:** Allows you to create an alert that will be presented to the dispatcher in the alerts section of the board. Alerts can be used to communicate important or unique information to the dispatcher.

For example, you might use a booking alert if a piece of equipment has broken and should not be scheduled.

- **Sort:** Allows you to how items on the board are sorted. By default, they can be sorted by name or rating value.

Working with the Filter view

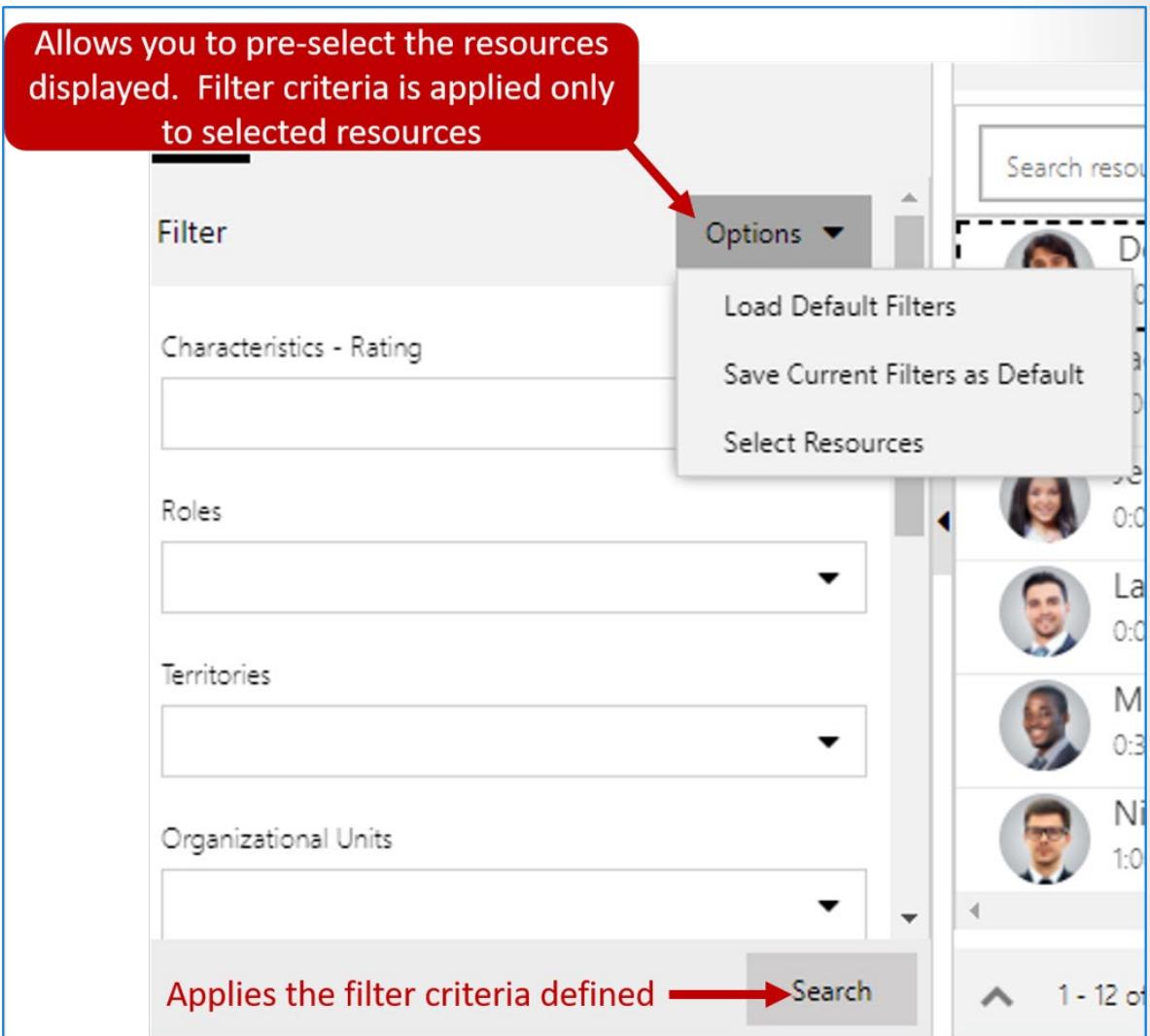
The filter view can be accessed by expanding the filter and map view. The filter lets dispatchers filter the specific resources displayed on the board, based on the criteria defined within the filter. The filter provides the following options:

- **Define filter criteria:** By default, resources displayed can be filtered by characteristics, roles, territories, organizational units, resource type, pool type, teams, and business units. (Additional filtering criteria can be added through filter customizations.)
- **Modify how resources are sorted:** By default, the resources returned are displayed in alphabetical order. If desired, they can be sorted by name or rating value.

For example, if you are filtering the resources by characteristics, you may want to sort the board to display resources with the highest proficiency first. (Additional sorting options can be used through filter customizations.)

- **Default filters:** A default filter can be defined that will be loaded when that schedule board tab is loaded. It can be re-applied at any time.
- **Select resources:** Using the select resources, you can specify the resources you want to display on the schedule board tab. Once those resources are defined, the filters can be applied just to those resources.

After the filter criteria has been defined, the search button will filter the resources displayed based on the criteria provided.



Requirements panel

Requirements allow schedulers to see a list of the currently active resource requirements that need to be scheduled. In the case of customer service scheduling, requirements will represent service activities that need to be scheduled. The requirement record will display any preferences that have been defined for the item such as priority, preferred resource, etc.

The tabs displayed in the requirements panel will vary depending on what the installed solutions include. For organizations that are using Customer Service Scheduling the tabs will include:

- **Open Requirements:** Displays a list of all active requirement records related to any table enabled for URS.
- **Unscheduled Service Activities:** Displays a list of all active requirement records related to unscheduled service activities.

Additional tabs can be added as needed. For example, you could define a tab that only shows active resource requirements for unscheduled service activities for a

specific location or organizational unit. Items for the requirement panel can be scheduled by dragging them or clicking the find availability button.

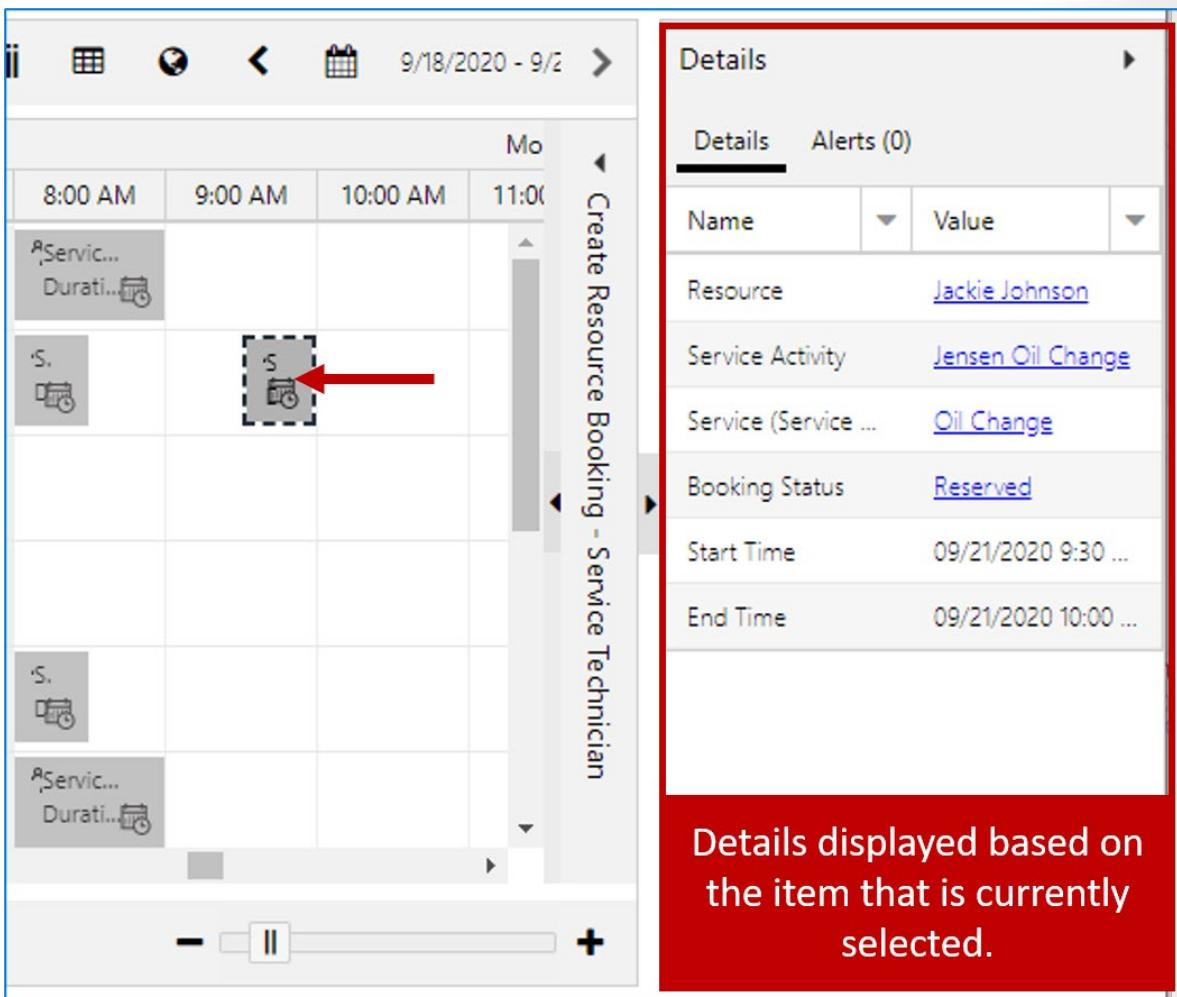
The screenshot shows a software interface for managing requirements. At the top, a red callout box says "Easily switch between different types of requirements" with an arrow pointing to a tab bar. The tabs are "Open Requirements", "Unscheduled Service Activities" (which is selected), and "Unscheduled Work Orders". Below the tabs is a search bar with dropdowns for "Service Activity (Resource Requirement)", "Service (Service Activity)", "Duration (Resource Requirement)", "Status (Service Activity)", "Created By (Service Activity)", and "Date Created (Service Activity)". Two service activity entries are listed:

Service Activity (Resource Req)	Service (Service Activity)	Duration (Resource Requirement)	Status (Service Activity)	Created By (Service Activity)	Date Created (Service Activity)
Altieri Oil Change	Oil Change	30 min	Open	Derik Bormann	09/18/2020 12:03 PM
Nelson Oil Change	Oil Change	30 min	FIND AVAILABILITY	Derik Bormann	09/18/2020 12:02 PM

A red callout box at the bottom left says "Items can be scheduled directly from the requirements panel" with an arrow pointing to the "FIND AVAILABILITY" button in the second row.

Details pane

The details pane will provide additional information about the item that is selected. For example, if a service activity requirement is selected, the details section will display information about the requirement. If a scheduled service activity known as a booking is selected, it will display information about the booking. The details pane is also where any booking alerts that have been defined will be displayed.



Find availability with the Schedule assistant

The easiest way to schedule an item from the schedule board is to use the Find Availability feature. When a requirement is selected, clicking Find Availability will open the schedule assistant.

Similar to when it was initiated from the service activity itself, any available resources that meet the criteria specified in the requirement will be displayed. The criteria used will be displayed in the filter view. If you need to expand the results, the criteria can be modified as needed for that specific request.

For the resources that are returned by the assistant, blocks of time will be displayed based on their availability. The scheduler can select any time within that block to schedule the resource for the item. Once a time is selected, a resource booking screen is presented where the details can be modified. Once you are ready to book the item, click the book or book & exit button to create the booking.

Scheduling directly from a service activity

As mentioned earlier, you may find that it is just as easy to schedule the item directly from the service activity. This is done by clicking the book button directly on the service activity. When the schedule assist loads, it will show potential resources that could be scheduled. A single resource could be returned multiple times depending on their availability during the period specified in the filter. As was mentioned previously with the schedule board, the filter criteria used can be modified to expand or reduce the number of results returned.

The screenshot shows the Dynamics 365 Customer Service Scheduling interface. On the left, the 'Hourly view' pane displays a list of service bays and their availability. A specific entry for 'Service Bay 1 - West Fargo, Jackie Johnson' is highlighted with a green border. On the right, the 'Create Resource Booking - Service Technician' panel is open, showing booking details for this resource. The booking starts at 9:00 AM on 9/21/2020, ends at 9:30 AM, and is currently in a 'Reserved' status. The distance is listed as 0.00 miles and travel time as 0 minutes. A 'Book & Exit' button is visible at the bottom right of the booking panel.

There are several reasons why resources might not be displayed in the Schedule assistant. You may need to check values on records to ensure that they can be returned by the assistant. The most common things to check first are:

- **No resources meet the roles defined:** Look at the filter criteria that is being used. Make sure that you have resources that meet those requirements. You can remove criteria to see if results are returned. If you are still not seeing results, it could be an address issue.
- **Starting and ending locations associated with the resources:** If the address associated with a resource cannot be located, the resource will not be returned. A resource's starting and ending locations are defined on the resource record. Typically for service scheduling these should be set to organizational unit address. When using the organizational unit, ensure that it has valid latitude and longitude values.

Summary

Dynamics 365's Customer Service Scheduling provides organizations with a simple to use and highly configurable scheduling tool for scheduling the services they provide to their customers. Organizations can easily define the services that they provide to their customers in the application. These services will contain resource requirement definitions that define the resources that would be needed to complete the service. Service activities are created when the service needs to be provided at a specific location. Once created, the service can be

scheduled by using the schedule assistant to help identify resources that meet the needs of the requirements.

This module examined how to define and schedule services with Customer Service scheduling, including:

- How to create services and requirement groups to define the service provided to customers.
- How to create fulfillment preferences to control the number and timings of slots offered to customers.
- How to create service activities.
- How to schedule service activities with the schedule assistant and schedule board.

The next steps from here would be to learn how to customize the schedule board to tailor the scheduler experience for their organization.

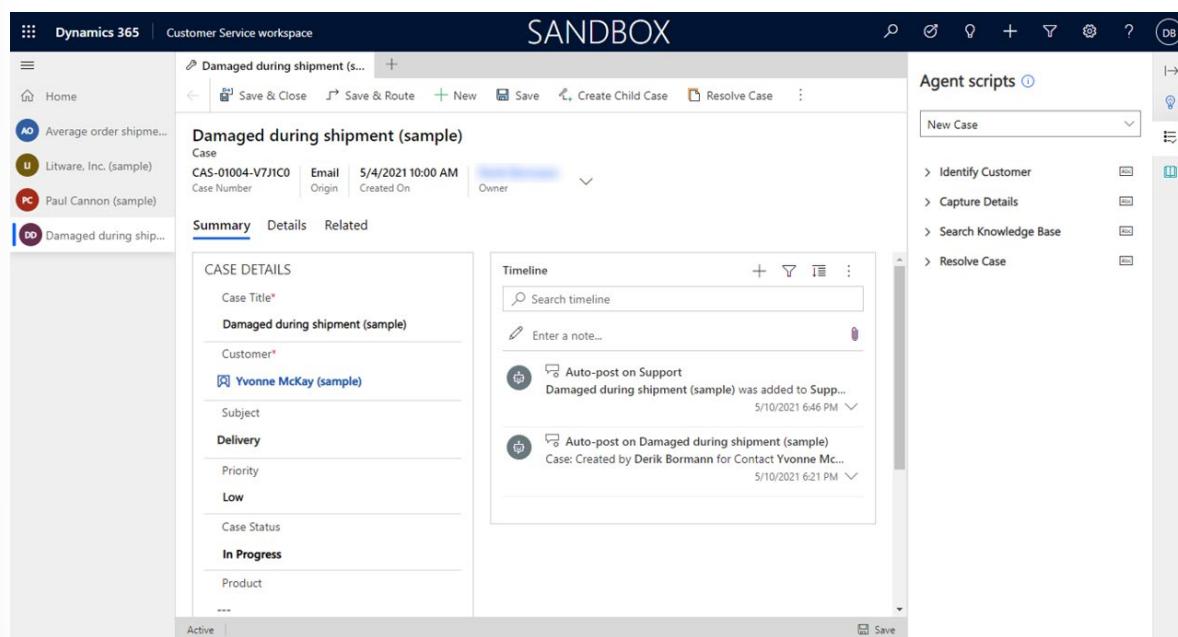
Module 6 Work with Dynamics 365 Customer Service workspaces

Enhance agent productivity

Introduction

In many organizations, agents need to work with multiple customers simultaneously. This aspect can become challenging because agents need the necessary details about the individual whom they are working with at that moment. Additionally, agents want the ability to transition to another customer if needed without losing details about the current customer.

With Microsoft Dynamics 365 Customer Service workspace, you can ensure that agents are equipped with the core customer service capabilities that they are accustomed to using with the Customer Service Hub app. The workspace will also provide them with the ability have multiple sessions open at a time in a single workspace experience.



Within an individual session, agents can open multiple tabs that include related data. For example, within a single session, you might have a tab that displays the account details while another tab includes case details. As you switch from one session to another, all tabs in that session will remain open so that they are still available when you switch back. After you have closed the session, all tabs in that session will also be closed.

This module examines the features of Customer Service workspace in more detail.

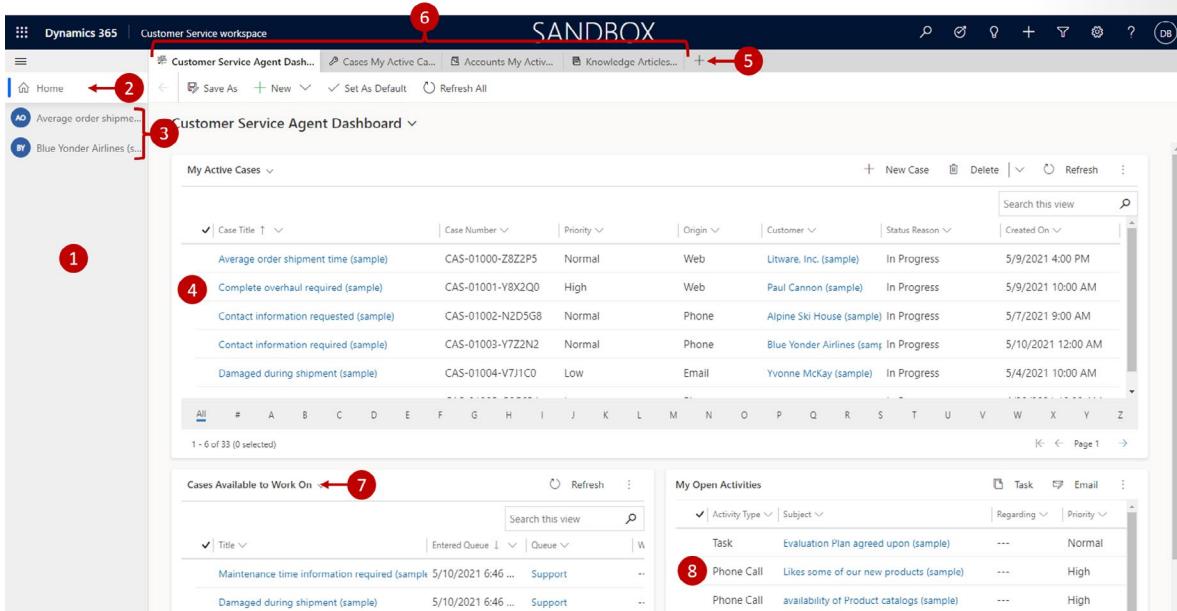
Explore the Customer Service workspace user interface

Organizations that have purchased Microsoft Dynamics 365 Customer Service will have Customer Service Hub and Customer Service workspace available to them. As an agent, when you go to <https://www.office.com/apps>¹, the Customer Service workspace is available from the **Apps** screen.

By default, Customer Service workspace will open and display the Customer Service Agent Dashboard. This dashboard provides an agent with important information that is related to cases that are available for them to work on. It will include your active cases, cases that are available for you to work on based on the queues that you are a member of, and your open activities. You can open existing cases and activities, or you can begin working new cases from the queues that you are assigned to and create activities.

The following image shows the available elements in Customer Service workspace.

¹ <https://www.office.com/apps/?azure-portal=true>



The following table describes key elements that you will see while working with the Customer Service workspace application.

Label	Description
1	The session pane lists all sessions that you are actively working on. Select the tabs to navigate among the sessions.
2	The Home session returns you to the Customer Service Agent Dashboard view.
3	Each session has a tab in the session panel. Select a tab to go to the session that you want to work on.
4	Select a case to open a new session. A single click on a case replaces your view with the case form. Select the arrow in the upper-left corner of the form to return to your previous view.
5	Select the plus (+) icon to expand the menu to view a list of forms, views, and activities. Select the option that you want to open in a new tab.
6	Select the tabs to go to your open activities, cases, forms, and views.
7	Select the dropdown selector to filter cases in queues that you can choose to work on.
8	Select Shift + left mouse click to open a new session for an activity. A single click replaces your view with the activity form. Select the arrow in the upper-left corner of the form to return to your previous view.

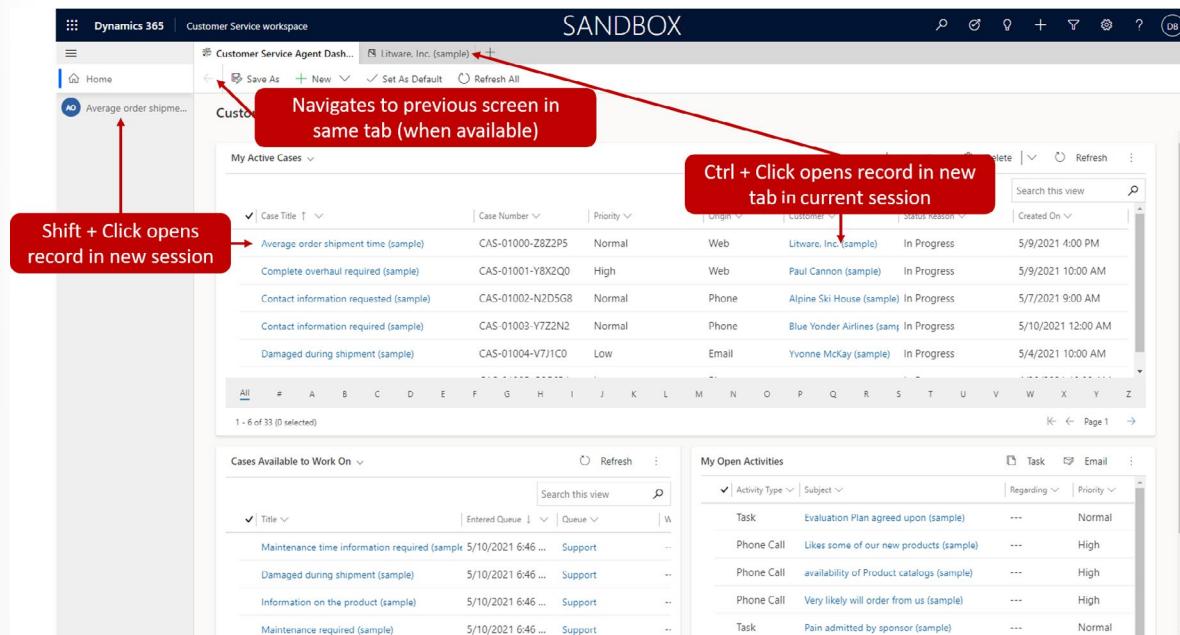
Navigate and view records

One key advantage of Customer Service workspace is the ability to open multiple sessions at once. A session can contain multiple related tabs, which ensures that while the agent is working, additional tabs that contain related data will remain open while the session is open, and the agent can switch between them as needed. How you interact with the information does impact how it will be displayed in the application. For example, if you are working in the home session, and you select a case from the list of active cases, the case record will open in the current tab and replace the contents of the Customer Service Agent Dashboard tab. The workspace won't open the record in a new tab or a new session, which requires a different keyboard/mouse combination when selecting.

The available mouse/keyboard combinations are:

- **Selecting a record** - Replaces the contents of the current tab with the form for the item that you selected.
- **Holding the Shift key while selecting a record** - Opens the selected item in a new session that will display in the session panel on the left of the application.
- **Holding the Ctrl key while selecting a record** - Opens the selected item in a new tab within the existing session.

Selecting the arrow in the upper-left corner of the form will return you to your previous view.



[!NOTE]

Organizations can configure settings that allow for simpler navigation options that don't require agents to use keyboard selections.

Work with application tabs

Frequently, while working in a session, you might need to access other information. Similar to when you opened records in new tabs in the application, you can open other application tabs to provide supporting functionality. For example, while working on a case, you might want to search the knowledge base and determine if existing knowledge articles are available to help resolve the issue.

When you select the plus (+) icon in a session, you will be presented with a predefined item that you can navigate to. When you select an item from the list, the item opens in a new tab in the existing session.

By default, the available items are:

- **Dashboards** - Opens the Customer Service Agent Dashboard.
- **Cases** - Opens the **My Active Cases** view.
- **Queues** - Opens the **Queues** view.
- **Activities** - Opens the **My Open Activities** view.
- **Contacts** - Opens the **Active Contacts** view.
- **Accounts** - Opens the **Active Accounts** view.
- **Knowledge Articles** - Opens the **My Active Articles** view.

View and edit records

When an agent first accesses Customer Service workspace, they are presented with the Customer Service Agent Dashboard. This dashboard contains three subgrids: **My Active Cases**, **Cases Available to Work On**, and **My Open Activities**. These subgrids help make it easier for customer service agents to manage the cases that are currently assigned to them and identify other cases that need assistance. Additionally, agents are able to manage their daily activities from a single place. Different management options will be available based on the list that you are working in and what you have selected.

My Active Cases

The **My Active Cases** subgrid displays a list of all cases in the system that are currently assigned to you. In this subgrid, you can view key details about each case that is listed, including the customer whom the case is for, the current status, priority, and origin for each case. Individual or multiple cases can be selected to provide additional case management options, such as merging multiple cases together, routing cases to queues, deleting cases, and more.

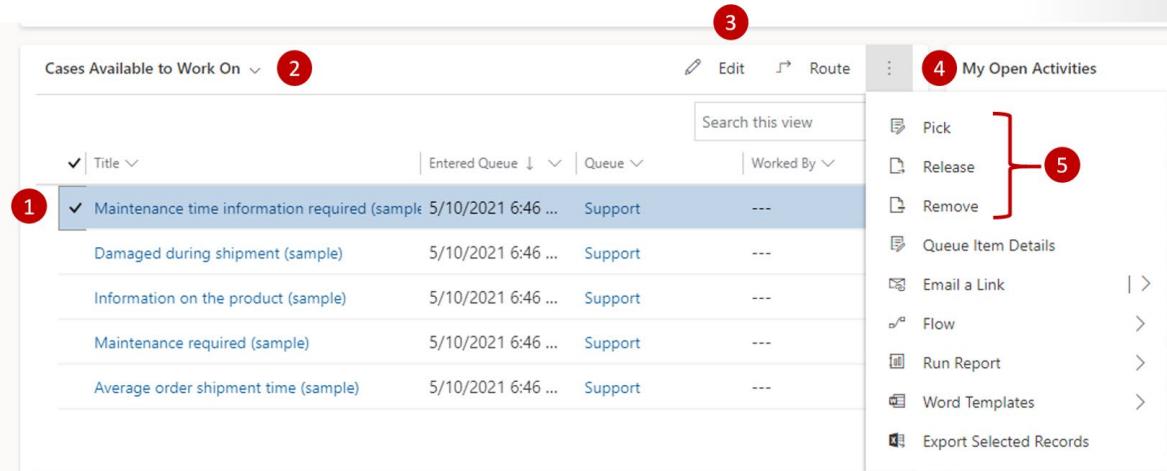
The screenshot shows the Dynamics 365 Customer Service workspace with the 'Customer Service Agent Dashboard' selected. The 'My Active Cases' grid is displayed, showing several case records. A context menu is open over two selected case records, listing actions such as Delete, Apply Routing Rule, Assign, Add to Queue, Run Report, Email a Link, Share, Follow, Unfollow, Flow, and Export Selected Records. Callouts numbered 1 through 5 point to various elements: 1 points to the selection checkboxes in the grid header; 2 points to the 'Associate Child Cases' button; 3 points to the 'Merge Cases' button; 4 points to the 'Edit' button; and 5 points to the open context menu.

Label	Description
1	Select multiple cases to work with. Select the top check mark to select all cases, or select individual check boxes next to each case to select a specific group of cases.
2	Associate child cases with selected cases.
3	Merge the selected cases together into a single record.
4	Edit the selected case record(s).
5	Open the menu for more actions, including Assign, Delete, Add to Queue, Run Report, Email a Link, Share, Follow, or Unfollow cases.

When no cases are selected in the view, you can add new cases by selecting the **New Case** button. Based on the mouse and keyboard combination that you use, selecting the **New Case** button can either open the record in a new session, in a new tab in the current session, or in the existing tab.

Cases Available to Work On

The **Cases Available to Work On** subgrid provides agents with a list of available cases for them to work on. If a case has been routed to a queue that they are a member of, it will appear in this subgrid. Agents can perform common actions such as editing records, selecting a case to work on, or routing the record to another queue.



Label	Description
1	Select multiple queue items. Select the top check mark to select all items, or select individual check boxes next to each case to select a specific group of items.
2	Switch the view that is being displayed.
3	Edit the selected case record(s).
4	Open the menu for more actions.
5	Select one of the common agent actions that can be implemented on records in a queue.

Common actions

Three common actions that agents often perform when working with records in queues are:

- **Pick** - Picking an item from a queue means that you will be the person to work on the item. The **Worked By** value will update to reflect the person who picked the item from the queue.
- **Release** - Releasing an item means that the agent who was working on it wants to make the item available for others to work on. The **Worked By** field will be empty.
- **Remove** - Removes the queue item from the queue.

As agents pick cases to work on, and the **Worked By** field is updated, those cases will no longer be displayed in the **Cases Available to Work On** view. By using the view selector, you can change the information that is being displayed, such as changing it to show the cases that you are working on or to view all items.

Cases Available to Work On

System Views

- Queue Item Associated View
- Queue Item Sub Grid View
- Items I am working on
- All Cases in Selected Queues
- All Items
- Cases Available to Work On**
- Cases I am Working On
- Items available to work on

Entered Queue | Queue | Worked By

Entered Queue	Queue	Worked By
Required (sample)	5/10/2021 6:46 ...	Support
(sample)	5/10/2021 6:46 ...	Support
(sample)	5/10/2021 6:46 ...	Support
(sample)	5/10/2021 6:46 ...	Support
(sample)	5/10/2021 6:46 ...	Support

ABC 1 - 5 of 5 (1 selected)

My Open Activities

The **My Open Activities** subgrid provides agents with a list of their open activities. This subgrid helps make it easier for agents to manage their existing activities and create new activities.

My Open Activities

Activity Type | Subject | Regarding

Task	Subject	Regarding
✓ Phone Call	Likes some of our new products (sample)	---
✓ Phone Call	availability of Product catalogs (sample)	---
Phone Call	Very likely will order from us (sample)	---
Task	Pain admitted by sponsor (sample)	---
Phone Call	guidelines for the warranty process (sample)	---
Task	Evaluation plan underway (sample)	---

1 2 3 4 5

✓ Edit Delete : | >

- ✓ Mark Complete
- ✗ Cancel
- ☐ Set Regarding
- 🔗 Assign
- ✉ Email a Link
- >Add to Queue
- Flow >
- Run Report >
- Export Selected Records

Label	Description
1	Select multiple activities to work with. Select the top check mark to select all activities, or select individual check boxes next to each case to select a specific group of activities.
2	Edit selected case record(s).
3	Delete selected case record(s).
4	Open the menu for more actions.

Label	Description
5	Select one of the common agent actions that can be implemented in activity records, such as marking as complete or canceling an activity.

When no records are selected, you can create activities directly from the subgrid and associate them with individual case records as needed. You can create any activity record type that is available in the application, such as Tasks, Emails, Appointments, Phone Calls, and Service activities.

Work with case records

After an agent creates a new case record or opens an existing one, the case record form will be displayed. This form provides you with important information that is related to the case, such as the case title, customer, related service-level agreement (SLA) details, and other related data.

In Customer Service workspace, the case form contains two tabs:

- **Summary** - Provides key case details, such as the case title, priority, and case status.
- **Details** - Provides more detail-related information about the case, such as related SLA information, child cases, associated knowledge articles, and more.

The screenshot shows the 'Case Details' page for a case titled 'Average order shipment time (sample)'. The top navigation bar includes links for Save & Close, Save & Route, New, Save, Create Child Case, Resolve Case, Cancel Case, Add to Queue, Queue Item Details, Assign, and a more button. The case number is CAS-01000-Z8Z2P5, created on 5/9/2021 at 4:00 PM by Derik Bormann. The 'Summary' tab is selected, showing fields for Case Title (Auto-filled), Customer (Litware, Inc. (sample)), Subject (Information), Priority (Normal), Case Status (In Progress), Product (***), and Description (***). The 'Timeline' section on the right shows two entries: an auto-post on Support and another on the case itself, both dated 5/10/2021 at 6:46 PM.

In addition to the preceding tabs, the case form will also include the following sections:

- **Timeline** - Displays related case activities. Depending on an organization's service model, many organizations track the total time that agents spend on activities that are associated with a case to determine how much time to bill the customer.

For example, if an agent placed three phone calls to a customer, each phone call lasting 15 minutes, they might bill a total of 45 minutes to the customer.

- **Related** - Displays information that might be related to the case.

From the command bar at the top of the record, you will have the ability to implement common case-related actions. The more common actions that you can implement include:

- **Save & Close** - Saves the case record and closes the case form.
- **Save & Route** - Saves and closes the case record and applies configured routing rules to route cases to queues and users.
- **New** - Creates a new case record.
- **Save** - Saves the case record and leaves it open.
- **Create Child Case** - Creates a child case that is associated with this record.
- **Resolve Case** - Resolves the case.
- **Cancel Case** - Closes the case as canceled.
- **Add to Queue** - Add the case to a specific queue.
- **Assign** - Assigns the record to another user.

Use the Productivity pane in Customer Service workspace

Agents are often expected to handle large volumes of customer issues, resolve them faster, and maintain high customer satisfaction. This aspect can become challenging if the agent is uncertain of the procedure or unable to easily access the data that they need.

The Dynamics 365 productivity tools help agents who are working in Customer Service workspace or Omnichannel for Customer service address these challenges. These tools help users perform daily operations faster, more efficiently, and in a process-compliant manner. As an agent, you can access productivity tools in the Productivity pane. When enabled and configured, the Productivity pane provides agents with instructions, suggestions, and tools to assist them in resolving issues more quickly.

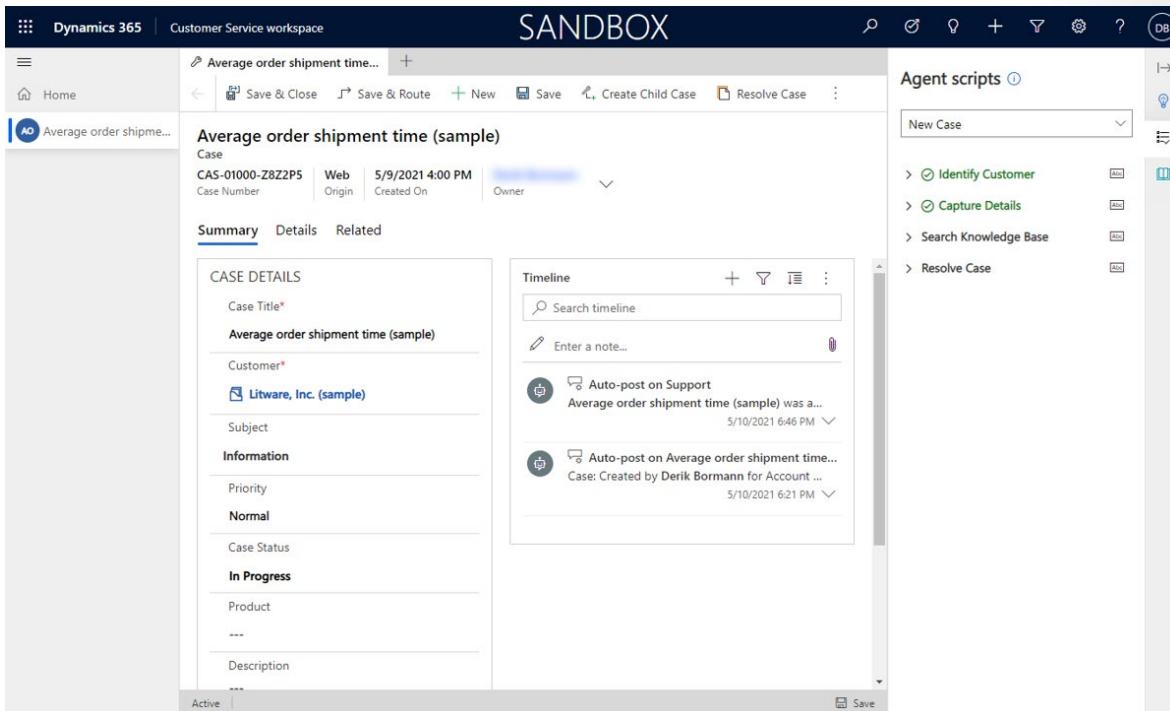
[!IMPORTANT]

The Productivity pane, smart assist, knowledge search, and agent scripts are enabled in Customer Service workspace by default and

can't be turned off. Custom profiles can be created in App profile manager to limit the enabled productivity features. For more information, see App profile manager.

Work with the Productivity pane

When a new case is created or an existing case is opened, the Productivity pane will be displayed on the right side of the screen. By default, it is expanded, but users can collapse and expand it as needed.



In Customer Service workspace, the Productivity pane includes the following items:

- Agent Scripts - Provides guidance to agents that is related to specific issues or scenarios. Scripts help organizations be unified, accurate, and effective, in addition to being faster and more efficient in terms of customer handling.
- Smart Assist - Provides real-time, AI-based recommendations to the agents, such as similar case suggestions, helping them to take actions while interacting with customers. Assistance is delivered through a custom bot that plugs in to your organization's environment.
- **Knowledge search** - Allows agents to search the knowledge base for relevant articles that can help to resolve the customer issues.

[!IMPORTANT]

Though agent scripts are available on the Productivity pane by default, no agent scripts are initially created and deployed.

Your organization needs to create the scripts that you want to use and associate them with session templates for agent scripts to be visible in the Productivity pane. For more information, see Create agent scripts.

As you are interacting with the customer and working on the case, you can switch between the different elements on the Productivity pane. For example, consider a scenario where you are working through an agent script that has the following steps:

1. Identify customer.
2. Capture details.
3. Search knowledge base.
4. Resolve case.

As you get to step three, you will need to switch to the **Knowledge search** feature to identify if an article that will help the resolution process exists.

The screenshot shows the Dynamics 365 Customer Service workspace interface. On the left, a case record for 'Average order shipment time (sample)' is displayed with details like Case Number CAS-01000-Z8Z2P5, Origin Web, Created On 5/9/2021 4:00 PM, and Owner [redacted]. The 'Summary' tab is selected. In the center, there's a 'Timeline' section showing two auto-post entries: one from 'Auto-post on Support' and another from 'Auto-post on Average order shipment time (sample)'. On the right, the 'Knowledge' pane is open, showing a search result for 'Average order shipment time (sample)' with a red box highlighting the first result, 'Order Shipping Time'. The result includes a brief description: 'We value customer service above all else, so we provide multiple options for shipping. Customers can expect fast and ea...' and a timestamp of 5/10/2021.

After you have identified the article, you can link it to the case record and return to the agent script in the Productivity pane.

Summary

With Customer Service workspace, organizations can help their agents be more productive by using the core customer service capabilities, like case and knowledge management, with the ability to work with multiple sessions at once in a single workspace experience.

This module examined how to get started working with Customer Service workspace, including:

- Describing Customer Service workspace, where it can be applied, and what it includes.
- Examining how to work with and implement record actions.

- Reviewing case management capabilities that are available in Customer Service workspace.
- Explaining how the Productivity pane can be used in the application to help increase productivity and resolve cases.

The next step for administrators would be to gain a deeper understanding of how to configure many of the core customer service components and productivity tools that are used in Customer Service workspace, such as knowledge articles, queues, agent scripts, and session templates. It would also be beneficial for administrators to become familiar with how to use App profile manager to create different profile experiences that can be applied to Customer Service workspace. Users or agents who will be managing and resolving cases might want to examine the case management capabilities of Dynamics 365 Customer Service in more detail.

App profile manager

Introduction

In many support organizations, the needs of agents and supervisors are likely not the same. For example, supervisors typically manage agents and might not need items like agent scripts to help guide customer interaction because they don't interact with customers. Moreover, the experiences that agents need could be different across departments or based on the types of customers that they support. Some agents might not need access to specific channels. Additionally, because agents work with a specific type of customer, they might benefit from having items displayed and positioned differently in the application. Previously, one way to handle these differences was to build and maintain multiple custom applications that provided the necessary functionality across the different user bases.

The app profile manager feature provides an alternative to building and maintaining custom applications. It lets organizations create targeted app experiences for agents and supervisors who use the Microsoft Dynamics 365 Customer Service workspace and Omnichannel for Customer Service apps. With the app profile manager, administrators can create custom profiles that define session templates, conversation channels, and the productivity tools that are available to individual profiles. Productivity tools enable simple knowledge base searching, offer suggestions for similar knowledge articles and cases, and provide agent scripts that can include macros to automate tasks in common workflows.

For example, your organization might have a group of agents who primarily focus on servicing customers through live voice interactions, whereas others provide support across multiple channels such as chat, text messages, or Microsoft Teams.

With the app profile manager, you could meet these needs by defining two different profiles:

- **Voice agent** - This profile might be based on the Customer Service workspace app and includes:
 - A voice channel.
 - Agent scripts that focus on providing voice support to a customer.
 - More automation capabilities.
 - AI-led knowledge article searching.
- **Omnichannel agent** - This profile is based on Omnichannel for Customer Service and might include multiple channels, scripts that include omnichannel-specific functionality such as quick replies, and notification templates that provide channel details to agents.

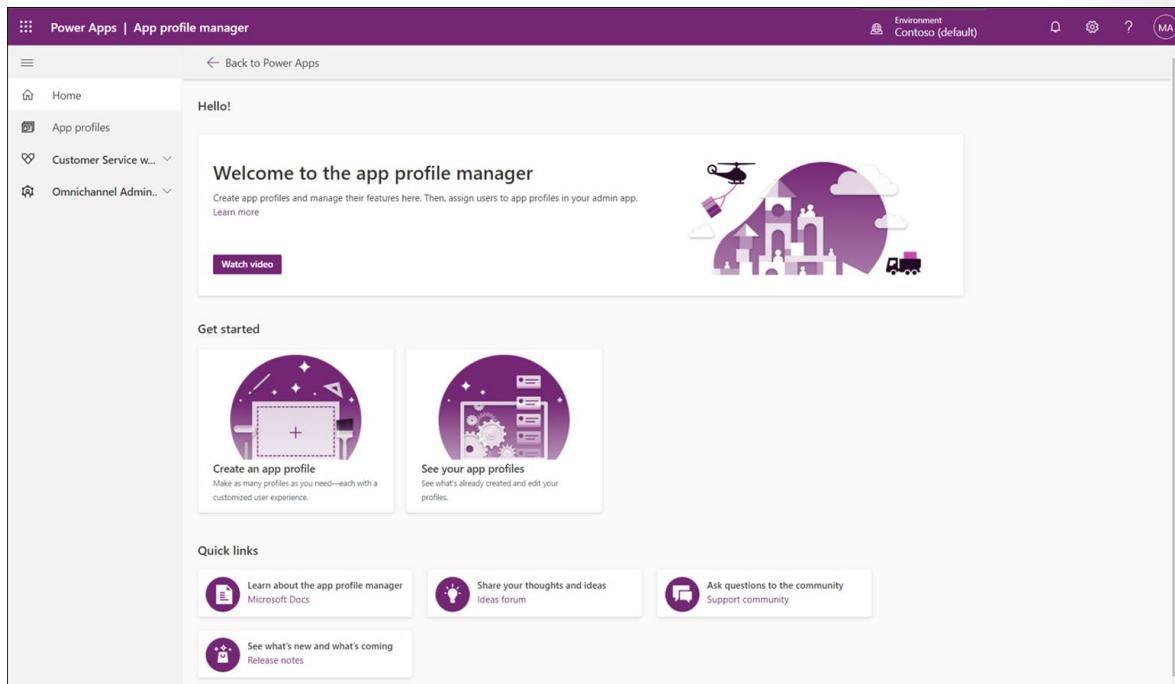
App profile experience

Before you can begin creating app profiles and assigning them to users, an administrator or set of administrators needs to complete the following tasks first.

1. **Create users and assign licensing in the Microsoft 365 admin center** - When the user is created in the system, ensure that they're assigned the appropriate Dynamics 365 licensing to provide them access to applications. For more information, see Add users and assign licenses.
2. **Assign security roles** - Depending on which application they work in, users need to have an appropriate security role for the application, such as Customer Service Representative or Omnichannel agent. For more information, see Configure user security.
3. **Create necessary profile components** - Ensure that you've created the necessary components that can be included in the application and app profile, such as defining business processes, configuring necessary workstreams for channels, defining queues, creating session templates, and building productivity tools like macros and agent scripts.

After you've completed the preceding steps, you can create a tailored experience for agents and supervisors by:

- Creating app profiles to define the items that are included.
- Assigning app profiles to users to specify which users whom the profile applies to.



Users with the required agent or supervisor role can view and use the settings that are made available through the assigned app profile.

[!IMPORTANT]

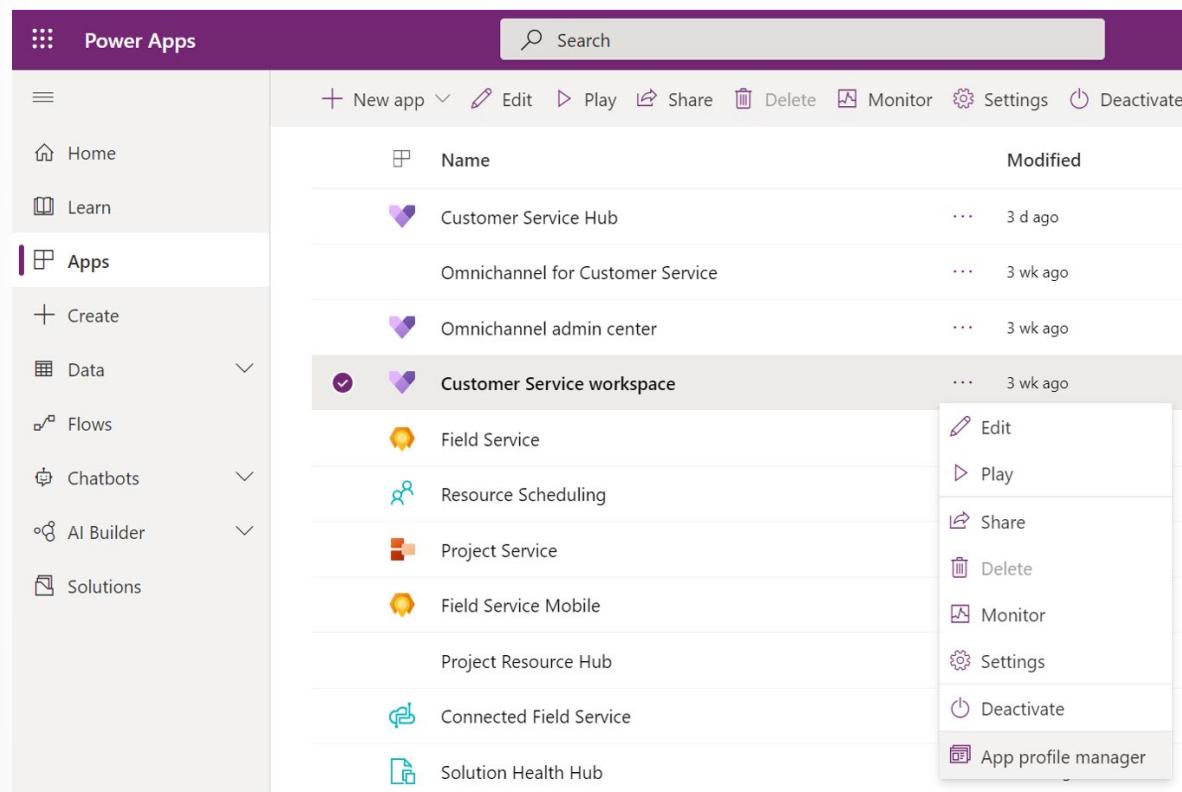
If you don't assign an app profile, by default, the included app profile is assigned.

Now that you have learned about the basics of the app profile manager, how it's used, and how it works, you will explore the process to create profiles and discover what's included in them.

Get started with the app profile manager

When your organization deploys Customer Service workspace or Omnichannel for Customer Service, the app profile manager becomes available for you to use. To access it, open Microsoft Power Apps maker portal by going to <https://make.powerapps.com>²,

and then select **App profile manager** from the **More Commands** list for either Customer Service workspace or Omnichannel for Customer Service.



The screenshot shows the Microsoft Power Apps maker portal interface. The left navigation pane includes Home, Learn, Apps (selected), Create, Data, Flows, Chatbots, AI Builder, and Solutions. The main area displays a list of apps under 'Name' and 'Modified'. The 'Customer Service workspace' app is selected, highlighted with a checkmark icon. A context menu is open next to the selected app, listing options: Edit, Play, Share, Delete, Monitor, Settings, Deactivate, and App profile manager. The 'App profile manager' option is at the bottom of this list.

Name	Modified
Customer Service Hub	3 d ago
Omnichannel for Customer Service	3 wk ago
Omnichannel admin center	3 wk ago
Customer Service workspace	3 wk ago
Field Service	
Resource Scheduling	
Project Service	
Field Service Mobile	
Project Resource Hub	
Connected Field Service	
Solution Health Hub	

[!IMPORTANT]

The Customer Service workspace app is automatically created when Dynamics 365 Customer Service is deployed to an environment. The Omnichannel for Customer Service application will only be available if it has been deployed and configured based on your licensing.

Other than providing access to configured app profiles for the environment, you can use the left navigation pane to access configuration options for different elements based on your deployed applications. For example, to create templates that can be used in Customer Service workspace, expand Customer Service workspace and select **Session templates**. This selection will take you to the sessions area in Customer Service hub, where you can define more sessions. Completing the same

² <https://make.powerapps.com?azure-portal=true>

action in Omnichannel Administration will open a new tab, where you can navigate sessions in the Omnichannel Administration application.

Name	Status	Created on
SampleProfile	Active	5/04/21, 12:31 PM
Customer Service workspace + channels - default profile	Active	5/04/21, 12:09 PM
Omnichannel for Customer Service - default profile	Active	5/04/21, 12:08 PM
Customer Service workspace - default profile	Active	5/01/21, 5:02 AM

For each session, you can navigate to and modify the following options.

- **Settings** Opens a new browser tab where you can access and modify settings based on the application. For Customer Service workspace, it opens the **Queues** page, and for Omnichannel Administration, it opens the **Entity Records** page.
- **Channel provider** - Opens the channels view where you can configure a new channel or update the settings of existing providers.
- **Templates** - Defines the specific templates that will be available in the profile. Three types of templates can be included:
 - **Session templates** - A combination of attributes and application tab information that defines what and how items are placed within a specific session.

- **Application tabs** - Specifies the type of applications that you want to open when a session is started.
- **Notifications** - Defines what details will be displayed when the application sends a notification to an agent.
- **Productivity** - Defines the productivity tools that will be available in the profile. Three options are available:
 - **Smart assist** - Intelligent assistant that provides real-time recommendations to agents, helping them take actions while interacting with customers.
 - **Agent scripts** - Provides guidance to agents about what to do when they are assigned to a customer issue.
 - **Macros** - A set of sequential actions that are performed by a user.

Roles and permissions

As they relate to the app profile manager, roles define what a user who is assigned to the role can do with the profile. Without a role defined, users might not be able to access the application or perform tasks. Before you start building profiles, you should consider which roles and permissions you want.

The following roles are available with the app profile manager:

- **App Profile Manager Administrator** - Provides administrative capabilities to assigned users, including the ability to add channels, create session templates, and other administrative functionality.
- **App Profile User** - Provides end-user capabilities to assigned users, including access to an application module, work with channels, or launch sessions.

For organizations that are using Customer Service workspace, privileges that are related to the App Profile User role have already been added to the Customer Service Representative and CSR Manager roles by default. You will need to manually provide the App Profile Manager Administrator role to the user who will create app profiles, templates, productivity tools, and channel provider configurations. If you're using Omnichannel for Customer Service, the privileges that are related to the App Profile Manager Administrator role have been added to the Omnichannel administrator role. The App Profile User role privileges have already been added for the Omnichannel agent and Omnichannel supervisor roles.

For more information, see Roles and their privileges.

Create and use app profiles to manage apps

After you've determined that you will need a profile, you can create it from the app profile manager. Selecting the **App Profiles** option in the **App profile manager** page will display a list of all currently defined profiles for this environment. By default, three app

profiles are available for Customer Service workspace and Omnichannel for Customer Service:

- **Omnichannel for Customer Service - default profile** - Use this profile when an agent is accessing the Omnichannel for Customer Service application.
- **Customer Service workspace - default profile** - Use this profile when an agent is accessing the Customer Service workspace application and no other channels are configured.
- **Customer Service workspace + channels - default profile** - Use this profile when an agent is accessing the Customer Service workspace application and more channels are configured.

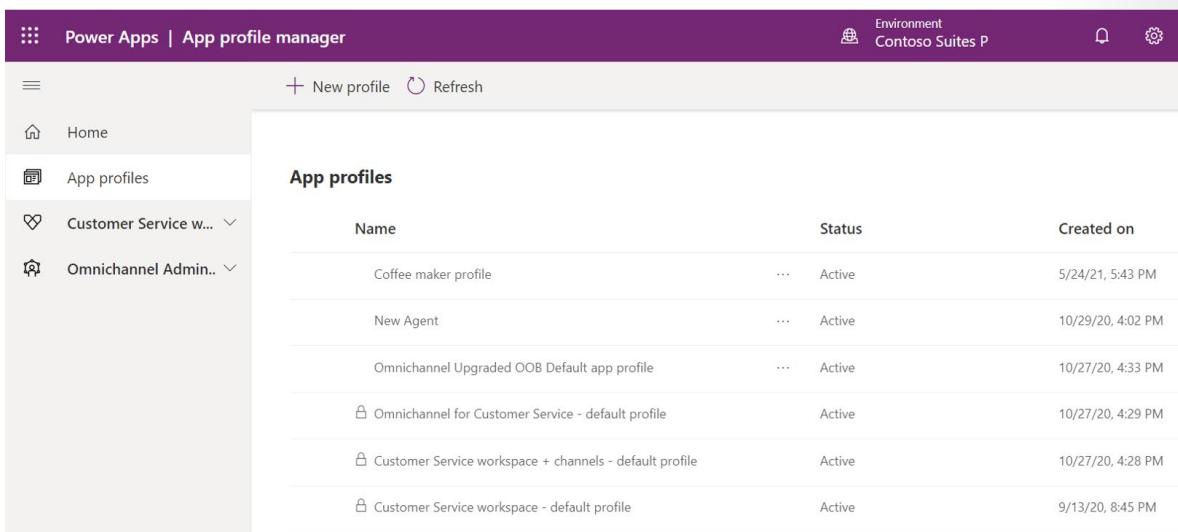
If an app profile isn't assigned to an agent, the default profile will be used.

[!IMPORTANT]

These profiles can't be deleted or modified.

Create an app profile

Before you can create an app profile, you need to have the App profile manager admin role assigned to the account that you plan to use. In the left panel, select **App profiles** and then select the **New profile** button to create a new profile.



The screenshot shows the 'App profiles' section of the Power Apps | App profile manager. The left sidebar has 'App profiles' selected. The main area displays a table of app profiles with columns: Name, Status, and Created on. The profiles listed are: Coffee maker profile (Active, 5/24/21, 5:43 PM), New Agent (Active, 10/29/20, 4:02 PM), Omnichannel Upgraded OOB Default app profile (Active, 10/27/20, 4:33 PM), Omnichannel for Customer Service - default profile (Active, 10/27/20, 4:29 PM), Customer Service workspace + channels - default profile (Active, 10/27/20, 4:28 PM), and Customer Service workspace - default profile (Active, 9/13/20, 8:45 PM).

Name	Status	Created on
Coffee maker profile	... Active	5/24/21, 5:43 PM
New Agent	... Active	10/29/20, 4:02 PM
Omnichannel Upgraded OOB Default app profile	... Active	10/27/20, 4:33 PM
Omnichannel for Customer Service - default profile	Active	10/27/20, 4:29 PM
Customer Service workspace + channels - default profile	Active	10/27/20, 4:28 PM
Customer Service workspace - default profile	Active	9/13/20, 8:45 PM

On the **New profile** screen, specify the following values:

- **Name** - The app profile name.
- **Description** - A description for the profile. *(Optional)*
- **Unique name** - A unique identifier in the <prefix>_<name> format.

When you create the unique name, make sure that:

- The prefix is alphanumeric with a length between three to eight characters.
- An underscore is included between the prefix and name, such as **sample_cswvoice**.

New profile X

Name *

Unique name *

The unique name must include a prefix + name in this format: prefix_name.

The prefix must include:

- Only alphanumeric characters
- 3-8 characters

The name portion can be any length, but can't include spaces.

Description

Assign templates and enable productivity pane and channels

After you've initially created your application profile, you can begin to tailor how the profile will appear and what it will include. A profile will include four tabs that you can use:

- **General** - Modify the profile name and description.
- **Session templates** - Define which session templates will be used to display items to agents.
- **Productivity pane** - Enable or disable the productivity pane and define which features of the productivity pane that you want to use, including:
 - **Agent scripts** - Give step-by-step instructions to help minimize human error and provide consistent service.
 - **Knowledge search** - Users can search for relevant knowledge articles.
 - **Smart assist** - Make intelligent recommendations of knowledge articles, similar cases, and more, based on real-time context.
- **Channels** - Specify which channels that you want to include in this profile.

Contoso app profile

Customize the user experience of this profile. [Learn more](#)

General Session templates Productivity pane Channels

Entity session templates
Choose the session templates that should open when a new session starts. [Learn more](#)

Session template

+ Add entity session template

These items will be discussed in more detail throughout the rest of this module.

Assign profiles to users

After you specify what to include in the profile, assign the profile to users whom it should be applied to. This specification is important because, if a user isn't assigned to a profile, they will automatically use the default profile for the application that they're working with.

Assign users to a profile by selecting the **Assign users** button on the command bar. This action opens the **App profile - Users** screen in a new browser tab. On this screen, you can add existing users to the profile by selecting the **Add Existing User** button.

Users	Add Existing User	Refresh
Renee Lo	---	---

Users who have been defined for the profile will display in the list. After you've assigned all necessary users, you can return to the app profile manager.

[!NOTE]

If you need to add, edit, or delete profile users in the future,

select the **Assign users** button on the command bar to return to the **App profile - Users** screen.

Default profile assignment

When users are assigned roles that correspond to Customer Service workspace or Omnichannel for Customer Service, they will use the default app profiles for those applications unless they're assigned to a different profile.

The default app profiles are assigned as follows:

- **Customer Service workspace** - The included app profile is assigned to users with the following roles:
 - CSR Manager
 - Customer Service Representative
- **Omnichannel for Customer Service** - The included app profile is assigned to users with the following roles:
 - Omnichannel administrator
 - Omnichannel supervisor
 - Omnichannel agent

Now that you know how to create app profiles, you will learn how to configure the different elements.

Application tab templates

Agents need to have access to the appropriate related and contextual information while they're working with a customer. For example, while an agent is looking at a customer's account record, if they select the primary contact link, the contact record should open in a separate tab in the session. The account record should still be accessible by switching to the tab as needed. In session-based applications, such as Customer Service workspace and Omnichannel for Customer Service, tabs that open within a session to display different information are referred to as application tabs.

Application tab templates in Customer Service let you specify the types of applications that you want to open when a session starts. With application tab templates, you can define the applications that are available for a session. Then, you can associate the applications with a session. For example, you can create the **Customer summary** application type and then associate it with chat and text sessions. Now, when an agent accepts the notification from the chat or text channels, a session starts and the **Customer summary** page loads. You might also create an application tab template to load a relevant external website into a session to ensure that an agent can access the site as needed without opening another browser session.

When you select **Application tabs** under Customer Service workspace or Omnichannel Administration, you're taken to the

Active Application Tab Templates page. You can create new templates by selecting the **New** button on the command bar.

When you initially create an application template, specify the following values:

- **Name** - Defines the name of the session.
- **Unique Name** - A unique identifier in the <prefix>_<name> format. The following parameters are required for the unique name:
 - The prefix can only be alphanumeric and must be between three to eight characters in length.
 - An underscore must be between the prefix and name, such as **Contoso_application_tab**.
- **Title** - Defines the title of the session that is displayed to agents in the user interface (UI) at runtime, such as **Knowledge article search**.
- **Page Type** - Defines the type of application that will be loaded.
- **Description** - Use to provide a description for your reference.
- **Can close** - Defines whether the tab can be closed by an agent or not.

New Application Tab Template

General

Name	* Sample Entity Record
Unique Name	* contoso_entity-record
Title	---
Page Type	* Entity Record
Description	Displays a specific record
Can close	Yes

Application types

Seven types of applications are available for you to choose from:

- **Entity list** - Displays a view that defines how a list of records for a specific table is displayed in the Omnichannel application, such as displaying a list of open cases.
- **Entity record** - Displays a single record for a table, such as a case record for the customer that you're working with.
- **Web resource** - Displays web resources that represent files that are used to extend the web application, such as images, HTML files, or JavaScript.

- **Control** - For internal use only.
- **Dashboard** - Displays a dashboard.
- **Search** - Displays search results based on text that is passed to the search control.
- **Third Party Website** - Displays Microsoft and external websites as an application.

After you save an application tab template for the first time, a **Parameters** subgrid will appear that includes predefined parameters. These configurable parameters ensure that when the tab is opened, it will load with the correct information.

Sample Entity Record
Application Tab Template

General Related

The screenshot shows the 'Sample Entity Record' application tab template. On the left, the 'General' subgrid displays fields for Name (Sample Entity Record), Unique Name (contoso_entity-record), Title (---), Page Type (Entity Record), Description (Displays a specific record.), and Can close (Yes). On the right, the 'Parameters' subgrid shows a list of parameters: createFromEntity, data, entityId, and entityName, each with a value of '---'. The 'Group By' dropdown is set to '(no grouping)'. Navigation buttons at the bottom of the subgrid include back, forward, and a 'Page 1' button.

The parameters that are displayed in the subgrid are based on the page type that was selected for the template. For example, if you selected a page type of **Entity record** because the tab should load account records, to be sure that it occurs correctly, you need details. These details could include which table the data is coming from, what form to use, and what record data to populate into the application tab.

To ensure that the correct info is loaded, an entity record application type will include the following parameters.

Parameter	Example value	Description
createFromEntity	account	A record that provides default values based on mapped attribute values. The lookup object has the following string properties: entityType, ID, and name (optional). Type = JSON Object
data	{"firstname": "Rigsby", "lastname": "cho", "jobtitle": "Sales Manager"}	The attributes and values for the new entity record. Type = JSON Object
entityId	d72e3735-5dca-e911-a826-000d3a1f0599	GUID of the entity record. Type = String

Parameter	Example value	Description
entityName	account	Logical name of the entity. Type = String
formId	8448B78F-8F42-454E-8E2A-F8196B0419AF	GUID of the form instance. Type = String
processId		GUID of the business process. Type = String
relationship		Relationship object of the record. Type = JSON Object
selectStageId		GUID of the selected stage in business process instance. Type = String

For more information, see [Manage application tab templates](#).

After you have defined application templates, you can associate them with session templates so that they're available when users need them.

Session templates

As agents work with customers across different channels or in different scenarios, the information that they need and how it should be presented can vary. Sessions control how these items are presented to agents.

When an agent accepts an incoming conversation request from a customer, a session is started. Within a session, different fields and applications are used to present data to agents. By default, the system opens the **Customer Summary** application as an application tab panel. This application provides the agents with important details, such as customer details, conversation details, and access to other relevant information.

Agents can open application tabs as needed within a session to get more details on relevant information. For example, selecting the case that is associated with the conversation will open the case details in another application tab. Then, agents can switch between the tabs within the session.

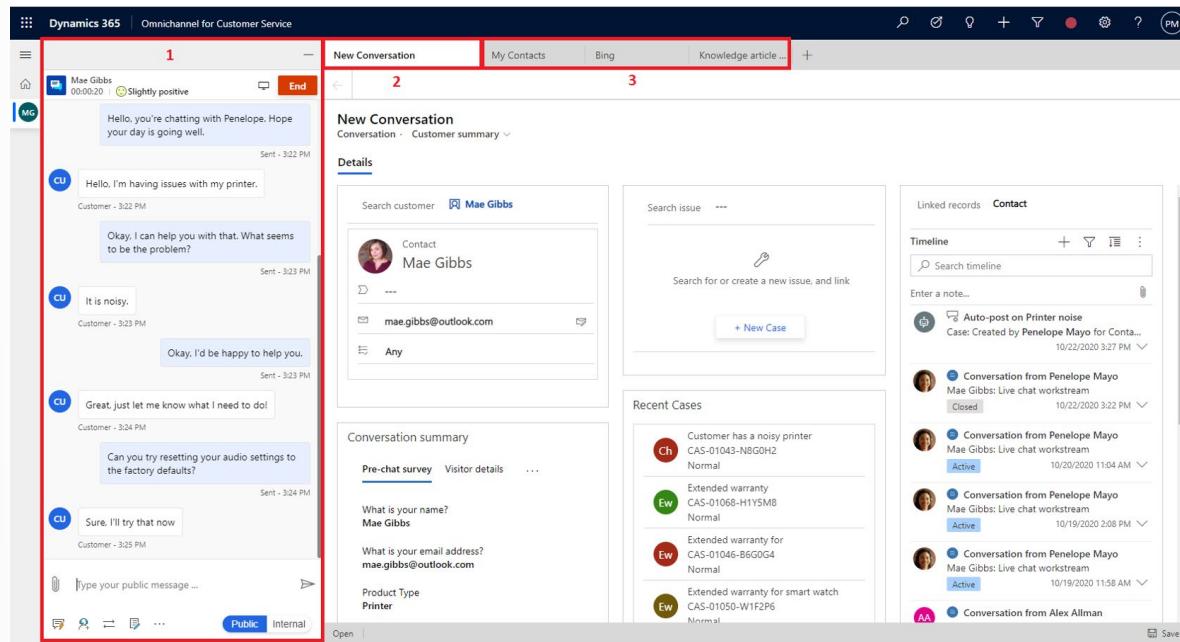
Each session includes an **Anchor tab**. The **Anchor tab** is the tab that will be opened when a new session is launched. It serves as a main tab for the session. For example, in Omnichannel for Customer Service, the **Anchor tab** is the Customer Summary application. The **Anchor tab** can't be closed; it will remain available while the session is open.

To ensure that agents are getting what they need, you can define different session templates that can be added to application profiles. A session template is a combination of attributes and application tab information that can be reused as needed.

Session templates are used to define key items in a session experience, as shown in the following screenshot (numbers correspond to the image):

1. **Communication panel** - Defines the default mode of the communication panel (such as a chat window) when a session is started.

2. **Anchor tab** - Defines the application to open as the main tab for that session and cannot be closed.
3. **Additional application tabs** - Define other tabs to open when a session is started.



Included session templates are available by default. Depending on which Customer Service applications that you've deployed, you'll have different templates available.

The included templates for Omnichannel for Customer Service are:

- Case entity session - default template
- Chat session - default
- Custom messaging session - default
- Entity records session - default
- Social channels:
 - Facebook session - default
 - LINE session - default
 - SMS session - default
 - Teams session - default
 - Twitter session - default
 - WeChat session - default
 - WhatsApp session - default

The included template for Customer Service Workspace is **Case entity session**, which is a default template.

The templates provide a great starting point. However, you can't customize these session templates. If you need different options, you can create your own custom templates.

Create a session template

You can create session templates from the **App profile manager** page, and you would create them based on the application that they apply to.

For example, to create a session template that applies to Customer Service workspace profiles, you would create a session template for the Customer Service workspace app. In the left pane of the **App profile manager** page, expand either **Customer Service workspace** or **Omnichannel Administration** and then select **Session templates**. This action will take you to the **Active Session templates** screen. You can create new templates by selecting the **New** button on the command bar.

[!IMPORTANT]

Regardless of which application you choose, you will be taken to the same screen where all session templates will be displayed. The **Unified Interface** page will open on a new tab.

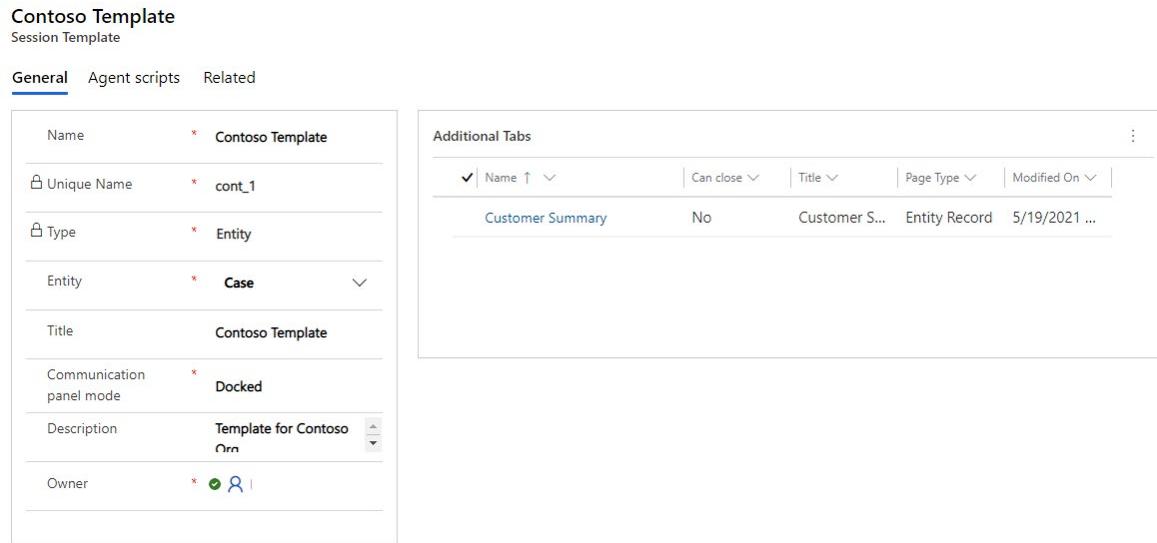
When defining a session template, you will need to specify the following parameters.

Name	Value description	Example
Name	Defines the name of the session.	Chat session
Unique Name	A unique identifier in the <prefix>_<name> format.	msdyn_chat_custom
Type	Defines the session template type. Two options are available. Entity : Specifies that the item is based on a Microsoft Dataverse table. When you select Entity , the Entity field will display, where you can select the table to associate it with. Generic : Use this option when the template will be assigned to any channel, such as chat or text.	Entity
Title	Defines the title of the session that is displayed to agents in the user interface (UI) at runtime.	{customerName}
Communication panel mode	Defines the default mode of the panel when a session is started. You can select one of the following options. Docked : The panel is in expanded mode. Minimized : The panel is in minimized mode. Hidden : The panel is hidden.	Docked

Name	Value description	Example
Description	Provide a description for your reference.	The session template is used for a conversation request from the chat channel.
Anchor tab	Defines the application that is opened by default when the session starts and can't be closed.	Customer summary

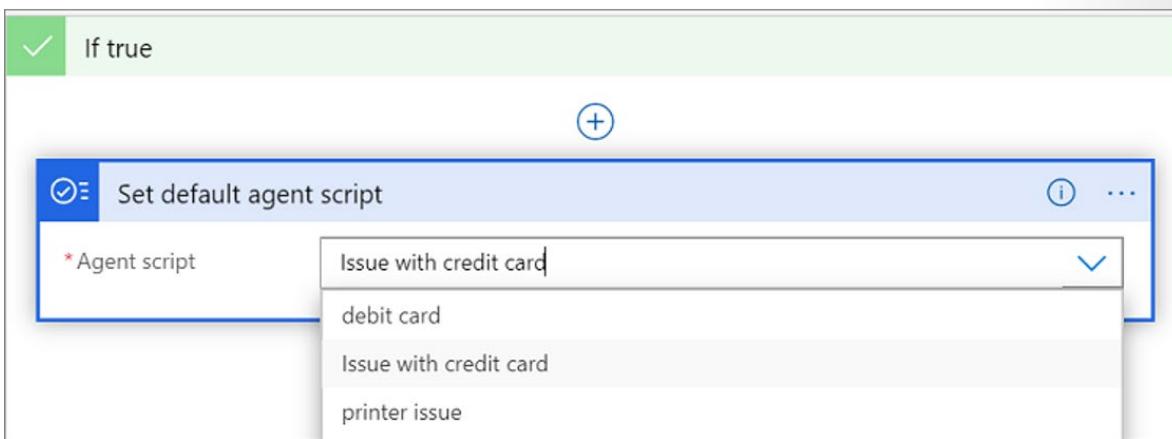
[!IMPORTANT]

The anchor tab option is displayed only when **Type** is set to **Generic**.



An advantage to session templates is that you can specify more tabs to open when the session launches. This feature ensures that the agent can locate the items that they need without excessive searching. After you have saved a session template record, the **Additional tabs** subgrid will display, where you can specify the additional application tabs to open when a session starts.

The **Agent scripts** tab is where you can specify which agent scripts should be available to agents when they're working in a session. The agent scripts tab also includes a toggle option for setting the default script for a particular session type. If you set the **Enable build expression** field to **Yes**, you can use the expression builder to define which agent script to load based on the type of session that is being initiated. For example, for entity session types such as case, you might want to load an agent script that identifies case-related information. Because generic session types will include the conversation panel, you might want to load a script that includes conversation data and steps for creating related records.



For more information, see
Set the default agent script for agents.

Now that your session template is configured, it will need to be associated with a workstream to ensure that it's loaded when needed.

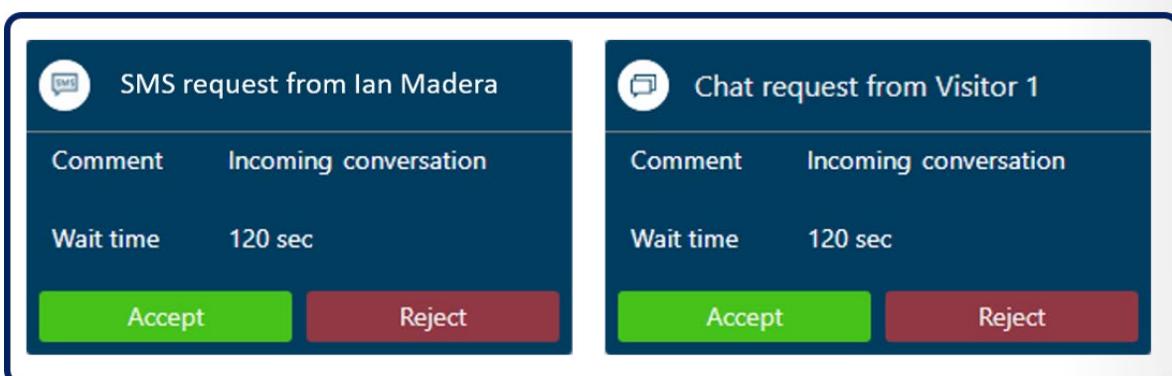
Manage notification settings and templates

As customers attempt to engage with your organization across different channels, conversation requests are created and directed to available agents. After the system has identified an agent, it will send a notification to the agent. A notification is a visual alert that appears each time you get a chat or text conversation request from a customer. The notification includes details about the customer whom you will be interacting with. When you accept the request, a session will be started, and you can view the contextual information of the customer and case on the **Customer Summary** page.

Scenarios where you might receive notifications include:

- Incoming chat, text, or social channel conversation.
- Conversation being transferred to you from another agent.
- Conversation being escalated to you from another agent or a bot.

The following image shows examples of two different notifications from different channels.



The first image is a notification coming from an identified existing customer from text message. The second is coming from an unidentified user over a chat channel. Each organization has varied business requirements and wants the notifications to show relevant information to the agents.

Similar to session and application tab templates, you can use the existing included notification templates or create your own. A notification template is a combination of notification-related, reusable information, and it is used to configure what information needs to be displayed to the agents and supervisors for an incoming conversation, escalation, transfer, or consult.

Included notification templates

When your organization uses Omnichannel for Customer Service, you'll be provided with multiple included notification templates that you can use in your environment. Depending on whether a customer is authenticated or not, different authenticated and unauthenticated templates are available. For example, if a customer is signed in to your company's support portal and then initiates a chat conversation, the notification message will include customer details. If they're not signed in to the portal, no customer information will be included in the message.

The included templates are described in the following table.

Channel or Entity	Consult	Authenticated	Unauthenticated	Transfer
Chat	Chat - consult - default	Chat - incoming authenticated - default	Chat - incoming unauthenticated - default	Chat - transfer - default
Custom messaging	Custom messaging - consult - default	Custom messaging - incoming authenticated - default	Custom messaging - incoming unauthenticated - default	Custom messaging - transfer - default
Facebook	Facebook - consult - default	Facebook - incoming authenticated - default	Facebook - incoming unauthenticated - default	Facebook - transfer - default
LINE	LINE - consult - default	LINE - incoming authenticated - default	LINE - incoming unauthenticated - default	LINE - transfer - default
SMS	SMS - consult - default	SMS - incoming authenticated - default	SMS - incoming unauthenticated - default	SMS - transfer - default
Microsoft Teams	Teams - consult - default	Teams - incoming authenticated - default	Teams - incoming unauthenticated - default	Teams - transfer - default
Twitter	Twitter - consult - default	Twitter - incoming authenticated - default	Twitter - incoming unauthenticated - default	Twitter - transfer - default
WeChat	WeChat - consult - default	WeChat - incoming authenticated - default	WeChat - incoming unauthenticated - default	WeChat - transfer - default

You can't customize the included notification templates. If you want customized notification messages, you need to create your own custom templates.

Create a notification template

You can create new notification templates from the **App profile manager** page by expanding either **Customer Service workspace** or **Omnichannel Administration**, selecting **Notifications** under the **Templates** heading, and then selecting the **New** button on the command bar.

The notification template includes the following items:

- **Name** - Defines the name of the notification.
- **Unique Name** - A unique identifier in the <prefix>_<name> format.
- **Title** - Defines the title of the notification that is displayed to agents in the UI at the runtime, such as **New incoming chat conversation**.
- **Icon** - Specifies the path to the web resource that will be used for the notification icon, such as /webresources/msdyn_chat_icon_zfp.svg.
- **Show Timeout** - Specifies if a countdown timer should be displayed to the user that defines when the notification expires.
- **Timeout (seconds)** - Defines the duration of the timeout counter.
- **Auto-assign work items** - Specifies if items should be auto assigned to technicians.
- **Accept Button** - Defines the text that will be displayed on the text button.
- **Show Reject Button** - Specifies if the **Reject** button should be displayed to agents. If it's set to **Yes**, you can modify the text that is displayed.
- **Show Desktop Notifications**: Defines if you want to display notifications to the agents when the Omnichannel for Customer Service app is out of focus.

New Notification Template

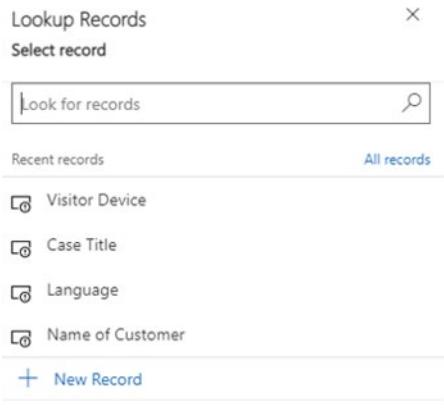
General

Name	* Custom Authenticated Chat Notification
Unique Name	* contoso_Custom-chat-notification
Title	* New incoming chat conversation
Icon	/webresources/msdyn_chat_icon_zfp.svg
Show Timeout	Yes
Timeout (seconds)	120
Auto-assign work items	<input checked="" type="checkbox"/> No
Accept Button	Accept
Show Reject Button	<input checked="" type="checkbox"/> Yes
Reject Button	Reject
Show Desktop Notifications	When app is in background
Owner	[Redacted]

Notification fields

After you initially save the notification template, the **Notification Fields** section will appear on the page.

A notification field is used to display contextual information in a notification. For example, if you want the notification to display the name of the customer who is requesting to chat, you would create a notification field that defines what data to populate. You can define which notification fields that you want to use for this template by selecting the **Add Existing Notification** button. This selection will open a lookup window where you can add existing notification fields or a new field if needed.



When defining a notification field, you will need to specify the following parameters:

- **Name** - Defines the name of the notification field.
- **Unique Name** - A unique identifier in the <prefix>_<name> format.
- **Title** - Defines the title of the notification field.
- **Value** - Specifies the value that will be presented to the agent at runtime, such as **{customerName}**.

New Notification Field

General

Name	* Name of Customer
Unique Name	* contoso_custname
Title	* Name
Value	{customerName}
Owner	[REDACTED]

In the preceding example, **{customerName}** is entered in the **Value** field. This entry is referred to as a slug. A slug is a replacement parameter that is populated at runtime based on context variables. In this instance, **{customerName}** will be replaced with the name of the customer who initiates the chat conversation, such as **Kenny Smith**.

The following table provides a list of slug entries that are available.

Slug	Description
{customerName}	Name of the customer who initiates the conversation.
{caseId}	GUID of a case. The case ID is displayed only if a case is linked to the conversation.

Slug	Description
{caseTitle}	Title of the case. The title of the case is displayed only if a case is linked to the conversation.
{queueId}	GUID of a queue.
{visitorLanguage}	The language in which the customer initiates the conversation.
{visitorDevice}	The device of the customer who initiates the conversation.
{entityRoutingLogicalName}	Name of the entity if the notification is for entity records.
{entityRoutingRecordId}	GUID of the entity record if the notification is for entity records. For more information, see Entity records routing in docs.
{customerEntityName}	Name of the entity (contact or account entity) if the customer is authenticated.
{customerRecordId}	GUID of the entity (contact or account entity) if the customer is authenticated.
{name of the pre-chat survey question}	All pre-chat survey questions that are configured for a workstream can be used as the slug. The format is same as the question.

After you've added all notification fields that you want to include in the template, they will be populated when the notification is presented, if data exists for those values.

Custom Authenticated Chat Notification Notification Template

General Related

The screenshot displays the 'Custom Authenticated Chat Notification' configuration page. On the left, under the 'General' tab, there are several settings:

- Name:** Custom Authenticated Cha...
- Unique Name:** contoso_Custom-chat-notif...
- Title:** New incoming chat conver...
- Icon:** /webresources/msdyn_chat...
- Show Timeout:** Yes
- Timeout (seconds):** 120
- Auto-assign work items:** No (radio button)
- Accept Button:** Accept
- Show Reject Button:** Yes (radio button)
- Reject Button:** Reject
- Show Desktop Notifications:** When app is in background

On the right, under the 'Notification Fields' section, there is a table mapping field names to their corresponding values:

Notification Fields	Add Existing Notification...
Name ↑	Value ↓
Case Title	(caseTitle)
Language	(visitorLanguage)
Name of Customer	(customerName)
Visitor Device	(visitorDevice)

Now that you have learned about the different templates that you want to use, the last step is to ensure that they're being used appropriately by assigning them to the appropriate workstreams.

Use templates in workstreams

A workstream defines how incoming conversations should be routed and distributed to agents. A workstream includes details such as how work is assigned to agents, which queues to route to, and even the quick replies that can be used. Workstreams are created to support different channels such as chat, text message, or social channels.

Make sure that you associate the templates that you create with workstreams that are associated with channels where your templates will be used.

For example, if you created a custom chat notification that you want to ensure is used when chat conversations are requested, you would need to associate the notification template with the chat workstream.

After it has been associated, the custom notification will be used from that point forward for chat channels that use that workstream. After an agent accepts the conversation request, a session will start based on the session template that is associated with the workstream.

Attach templates to a workstream

You can assign templates to a workstream in the Omnichannel admin center, Customer Service hub, and Omnichannel Administration apps. Session and notification templates are defined on the **Templates** tab of the individual workstreams.

The **Templates** tab includes two sections:

- **Sessions** - Defines the session template that should be used with this workstream.
- **Notifications** - Defines which notification templates to use in different scenarios. The available scenarios are:
 - **Incoming unauthenticated** - Use when the conversation request is coming from someone who hasn't previously been authenticated, such as not being signed in to your customer portal.
 - **Incoming Authenticated** - Use when the conversation request is coming from someone who is currently authenticated, such as being signed in to your customer portal.
 - **Consult** - Use when another agent is requesting to consult with you on a conversation that they're working in.
 - **Transfer** - Use when a conversation is being transferred from one agent to another.
 - **Supervisor Assign** - Use when a supervisor is assigning a conversation to a user.

The screenshot shows the 'Live chat workstream' configuration page. At the top, there are tabs for 'Work Distribution', 'Context Variables', 'Skill Attachment Rules', 'Routing Rules', 'Templates' (which is underlined, indicating it's the active tab), 'Smart assist', and 'Quick Replies'. Above the tabs, there are three status indicators: 'Push Work Distribution Mode' (green), 'Live chat Channel' (blue), and 'Owner' (grey). On the left, under 'Sessions', there is a 'Default' session with a link to 'Chat session - default'. On the right, under 'Notifications', there are five entries: 'Incoming unauthenticated' (link to 'Chat - incoming unauthenticated - default'), 'Incoming authenticated' (link to 'Chat - incoming authenticated - default'), 'Consult' (link to 'Chat consult - default'), 'Transfer' (link to 'Chat - transfer - default'), and 'Supervisor Assign' (link to 'Chat- supervisor assign - default').

You can accept the default session and notification templates, or you can use any custom templates that you've created.

[!NOTE]

You might notice that a place to define application template tabs isn't available. Those definitions are attached at a session template level.

Summary

With app profile manager, your organization can create targeted app experiences for agents and supervisors who work with the Customer Service workspace and Omnichannel for Customer Service apps. By creating and assigning users to custom profiles, you can provide users with a tailored experience based on a tailored session, application tabs, and notification templates. Additionally, you can control which channels and productivity features are available for each profile.

This module explained how you can get started creating customer application experiences with app profile manager, including:

- Defining app profile manager, when it's available, and how to access it.
- Exploring the user interface and the process for using it to create custom profiles.
- Reviewing the components that are included in a profile and the process of defining which channels and productivity features are available within a profile.
- Describing session templates and the process for configuring them.
- Reviewing the process for creating application tab templates.
- Examining notification templates, including how to create them and how notification fields are used.
- Reviewing associate session and notification templates with workstreams.

Your next step is to gain a deeper understanding of how to define channels and configure productivity tools. This learning includes creating macros, agent scripts, and smart assist.

Module 7 Omnichannel for Dynamics 365 Customer Service

Getting started

Introduction to Omnichannel for Customer Service

In today's world of empowered customers, service-focused organizations understand the need to adjust their support strategy to provide customers with the best support options that are based on their needs. Customers want to engage with service organizations on their terms. They want to be able to reach out when and how they feel most comfortable. Customers also want to know that when they do reach out, the agents will have the required information to solve their issue.

One way that organizations can help their customers is by offering a variety of support channels such as phone support, email, live chat, virtual agents, social media, forums, self-service knowledge bases, and so on. This type of support is typically referred to as multi-channel support. While providing customers with multiple support options often makes it easier for them to initiate support requests, it introduces new challenges for the support organization. One key challenge for organizations is providing customers with a seamless and equally satisfying experience across any channel that they are using to engage support.

Whether an organization is helping a customer through live chat, virtual agents (bots), or phone support, it is critical that the same information that is available through one channel is available through the others. An agent who is working with a customer through a chat should be able to use the same knowledge repositories as an agent who is engaging over the phone. At the same time, as customers are being transitioned across different channels or departments, agents should know the context

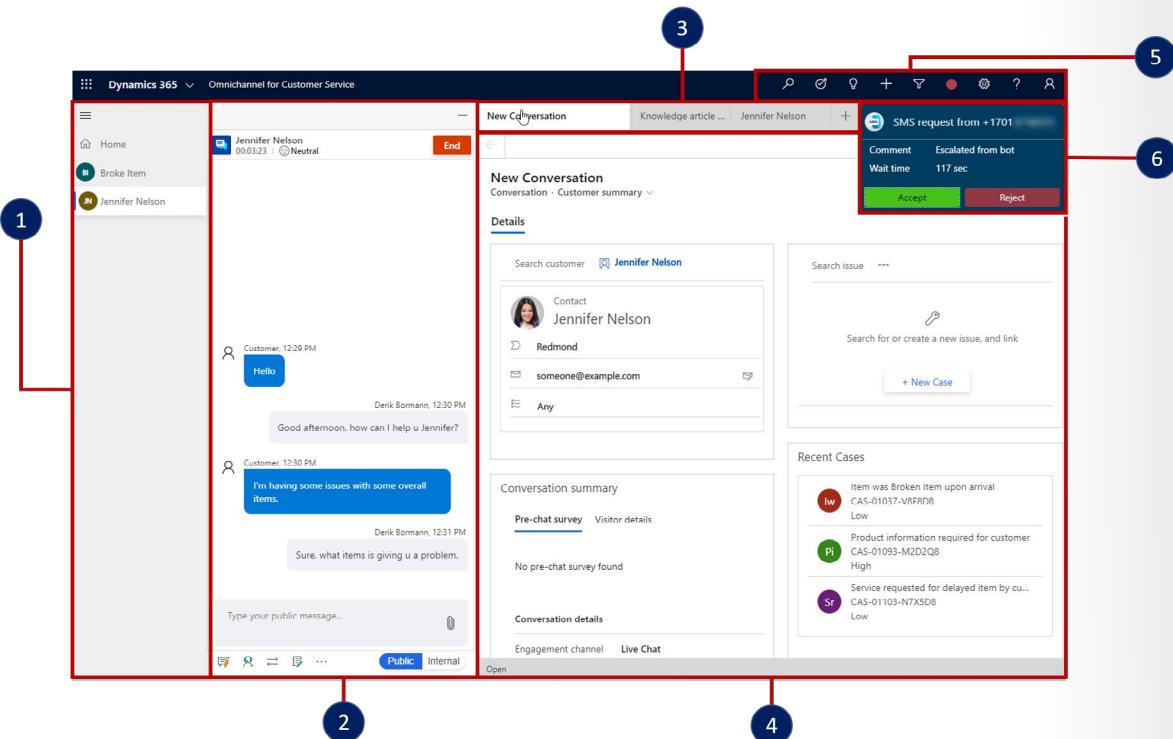
of what has happened to that point. This approach ensures that the customer does not have to re-explain or repeat any previously tried resolution steps.

For this reason, organizations strive to provide an omnichannel experience to their customers that ensures the same experience, regardless of how the customer is reaching out.

Several ways that an omnichannel solution can benefit organizations include:

- **Reduced customer effort** - By offering multiple support channels and by preserving the context across each channel, organizations can help customers expend less effort in solving their issues. This method saves the organization time, and it also saves the customer time and work hours, thus helping them contribute to their own success.
- **Better customer rapport** - By having deeper insight into a customer's history, regardless of the support channel that is used, agents have a better understanding of who the customer is, the challenges that they face, and where they want to go. This approach can help customers feel valued and that their needs are understood; therefore, helping to empower them to better support themselves in the future.
- **Increased customer loyalty** - Because customers know that they are valued and understood, they will naturally become more loyal to your organization. As a result, your organization can present customers with targeted and relevant upsell or cross-sell opportunities that are based on their needs.

With Dynamics 365 Omnichannel for Customer Service, organizations can offer omnichannel support to their customers. The solution extends the power of Dynamics 365 Customer Service. It provides a modern, customizable, high-productivity application that allows agents to engage with customers across different channels.



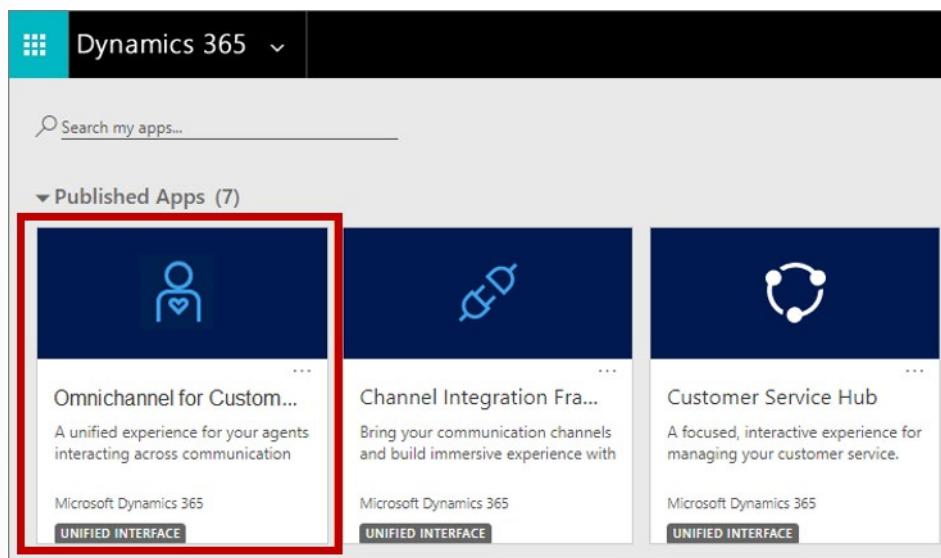
Omnichannel for Customer Service provides agents with the following features:

- **Session management** - The session panel allows agents to work with multiple customer sessions simultaneously. Agents can switch between sessions without losing the context of the conversation or any customer details.
- **Customer interaction** - The conversation panel allows agents to interact directly with customers from the communication panel. Agents can use the knowledge base, collaborate with colleagues, and more.
- **Multiple applications** - The **Applications** tab bar allows agents access to relevant supporting applications in the context of the session. These applications remain open if the agent goes to another session.
- **Customer summary** - The Unified Interface panel provides a single contextual view of the customer based on the current conversation. Agents can access customer details and related case information, and they can view activities from related records from one screen.
- **Quick access to familiar Dynamics 365 tools** - By using existing Dynamics 365 functionality, agents can access record searching, quick record creation, and agent presence information.
- **Real-time notification** - Agents receive real-time notification messages of incoming communication from customers.

Accessing the Omnichannel for Customer Service app

Agents can access the Omnichannel for Customer Service app by accessing the apps screen of their environment. The address would look similar to this example: <https://mytrainingenviornment.crm.dynamics.com/apps>.

After successfully authenticating to the application, users will be brought to their application page. Select **Omnichannel for Customer Service** to launch the application.



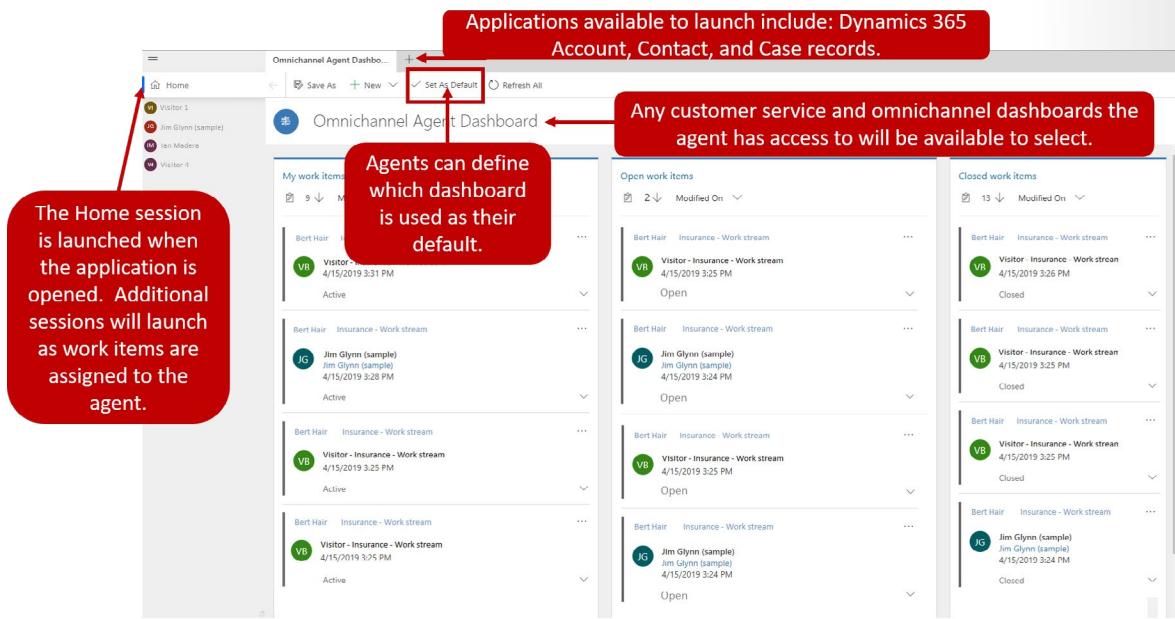
Working with the Omnichannel for Customer Service user interface

Every time agents sign in to Omnichannel for Customer Service, they are taken to their Home session. The Home session is always open and cannot be closed at any time. The Home session is almost like an agent's base camp. At any point, agents can return to the Home session and work on items that might not be associated with a customer or conversation that is happening.

By default, the Home session will open the Omnichannel Agent Dashboard on the **Applications** tab. The purpose of this dashboard is to provide agents with information about the work items that are available to them.

[!NOTE]

Work item is another way of referring to a conversation. A conversation might be a live chat with a customer, an SMS conversation, or something similar.



The dashboard contains multiple data streams. A data stream is a way of presenting information in Dynamics 365, where data in the stream is included in the view by means of background data. One advantage to data streams is that you can run different record actions directly from the stream.

The Omnichannel Agent Dashboard contains the following streams:

- **My work items** - Displays a list of conversations that the agent is actively working on. Agents are provided with an Open action, which allows them to open the work item to continue working on it.
- **Open work items** - Displays a list of conversations that are currently open and are from queues that the agent is a member of. An agent might be assigned as a member of multiple queues in the application based on their role, skills, or other factors. Agents are provided a Pick action to help them select items from the queue. When an agent picks an item, it is moved to that agent's **My work items** stream.
- **Closed work items** - Displays a list of conversations that the agent has closed in the past 24 hours. This stream enables agents to potentially reopen the item if they have additional tasks to complete.

The Open option is available from the My work items & Closed work items streams.

The Pick option is available from the Open stream.

Working with agent presence

Whenever agents are signed in to the application, they will have a presence indicator that communicates their current status. Agent presence is an important part of the omnichannel solution because the agent's current presence is used to determine if a work item can be routed to them. For example, your organization's policy might be that if an agent's presence is shown as **Available**, work items can be sent to them; however, if their presence is set to **Do Not Disturb**, then nothing should be sent to the agent. Organizations can configure which presence statuses that you can or cannot route different types of communication to. Agents can view their presence from the Applications pane. The presence icon is represented by a color-coded circle. Each presence will have a corresponding color associated with it.

Agents can change presence manually. It can also be automatically changed as Items are assigned to agents

Out of the box Presences. Additional Presences could be added by administrators.

Presence Status
Offline
Appear Away
Do not Disturb
Busy
Available

Manually updating presence

If necessary, agents can manually change their presence status based on what they are doing. Agents can manually switch

their status to one of the five standard presence statuses that are available. For example, if an agent is pulled into an important call that they cannot leave, the agent might set their status to Do not Disturb. After the agent has completed the call, they can change their status back to Available.

Automatically updating presence

When work items are assigned to agents, their presence status is set automatically. The assigned status will vary depending on different factors.

One factor is the amount of available capacity that an agent has at the time. Capacity defines the maximum number of units that an agent is capable of handling at once. An agent's available capacity is reduced as work items are assigned to them and then increased as work items are resolved.

Key points on capacity

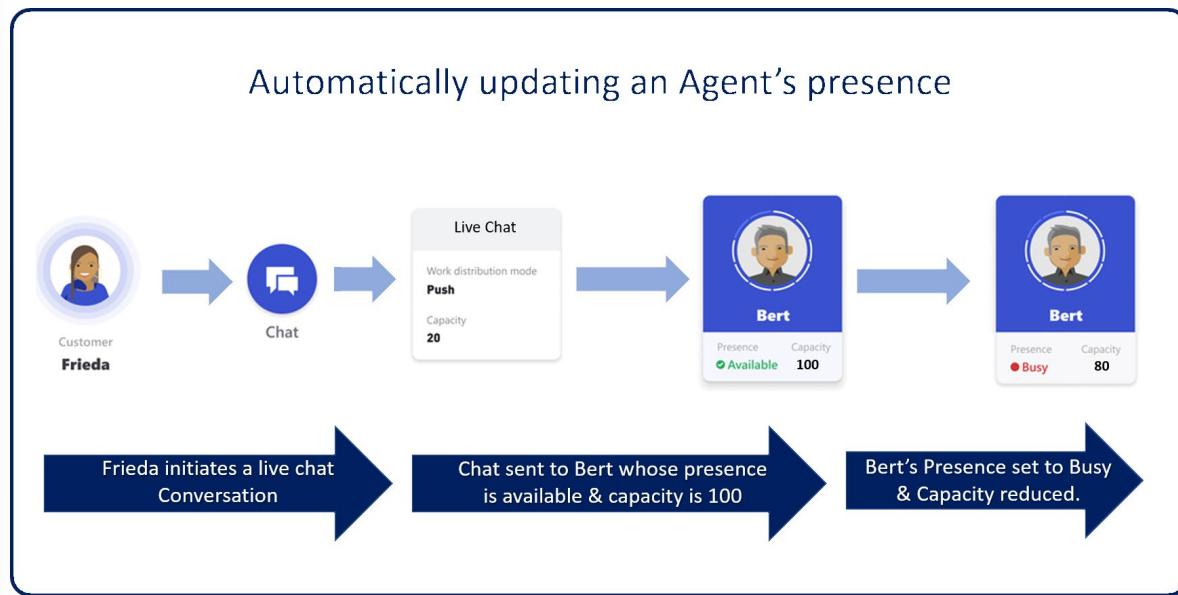
The key points about agent capacity are:

- Each agent is assigned a capacity of 100 by default.
- Each communication channel has capacity assigned to it. This represents the amount of capacity that is consumed when an agent is assigned a work item from that channel.

For example, an agent named Bert, has a capacity of 100 and is currently not working on anything. Bert's organization has a chat channel that is configured to have a capacity of 20, meaning that when agents are assigned to a work item from that channel, their capacity will be reduced by 20. When Bert is assigned to a work item from the chat channel, his capacity reduces to 80. When Bert resolves the conversation, the 20 units will be added back to his capacity, thus increasing the capacity back to 100.

The agent's presence status setting depends on how much of their capacity is used after an item is assigned to them.

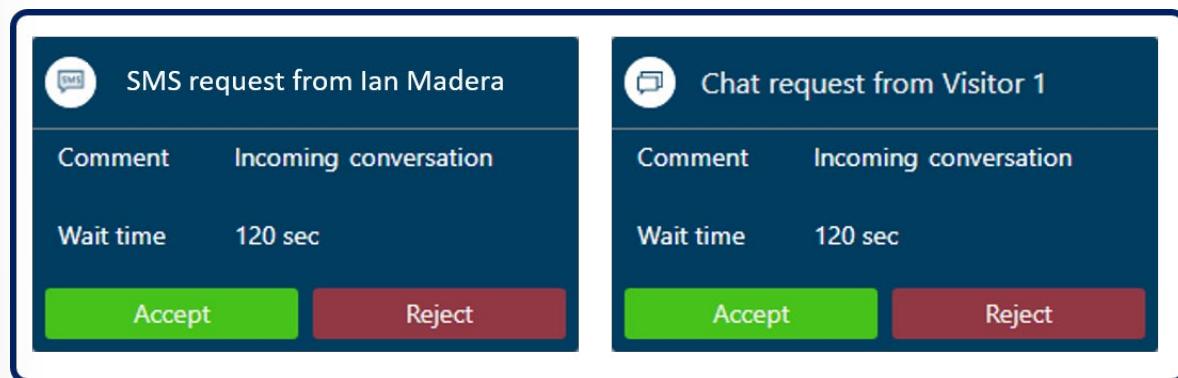
- When an agent's capacity is used, the presence is set to Do not Disturb.
- When an agent's capacity is partially used, the presence is set to Busy.
- When an agent's capacity is not used, the presence is set to Available.



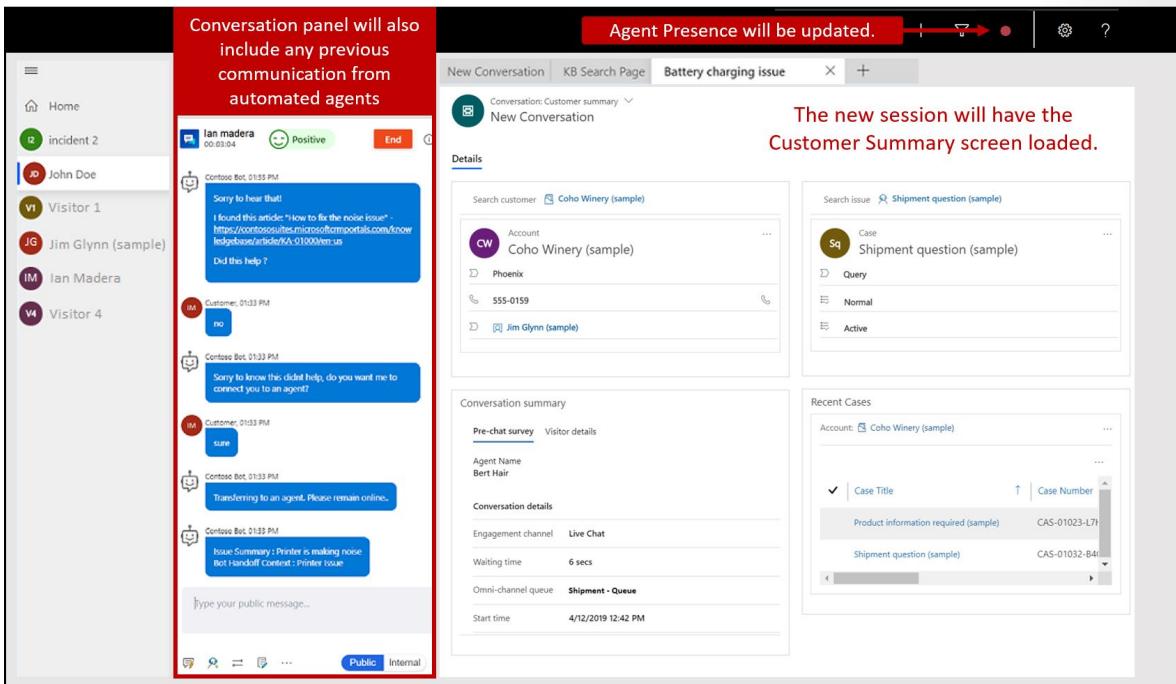
Working with notifications

As work items are distributed to agents, one way for them to know that they are being assigned an item is through notifications. Notification alert dialog boxes are displayed when agents are assigned to a chat or SMS

conversation request from a customer. The notification will provide details about the customer whom they will be interacting with.



After an agent accepts the notification, Omnichannel for Customer Service will load a new session in the application.

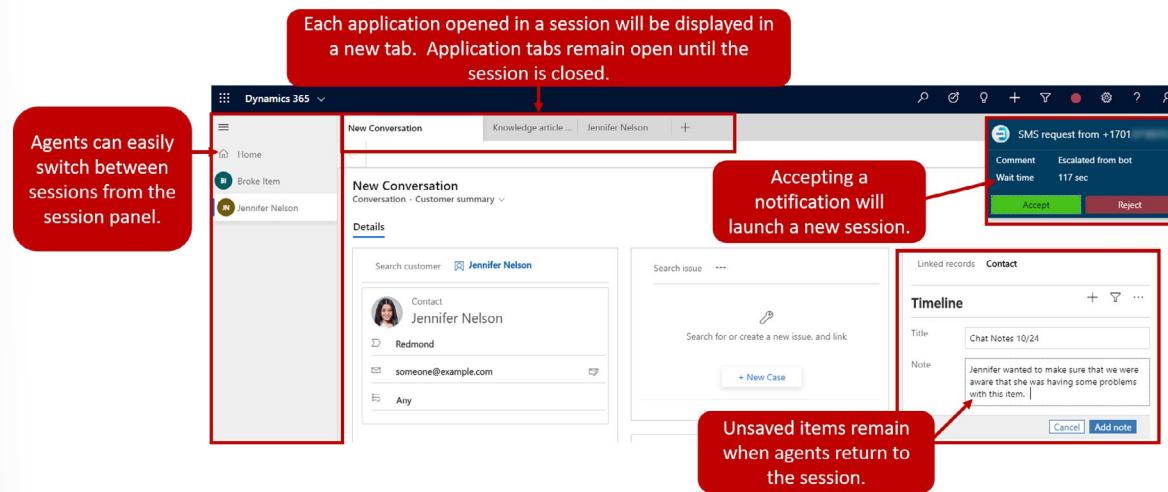


Omnichannel sessions

Working with multiple sessions is one of the main features of the Omnichannel for Customer Service solution. Sessions keep related data and applications together in one area. As agents switch between sessions, they don't have to worry about unsaved changes being lost; all information will still be in the session when they return to it.

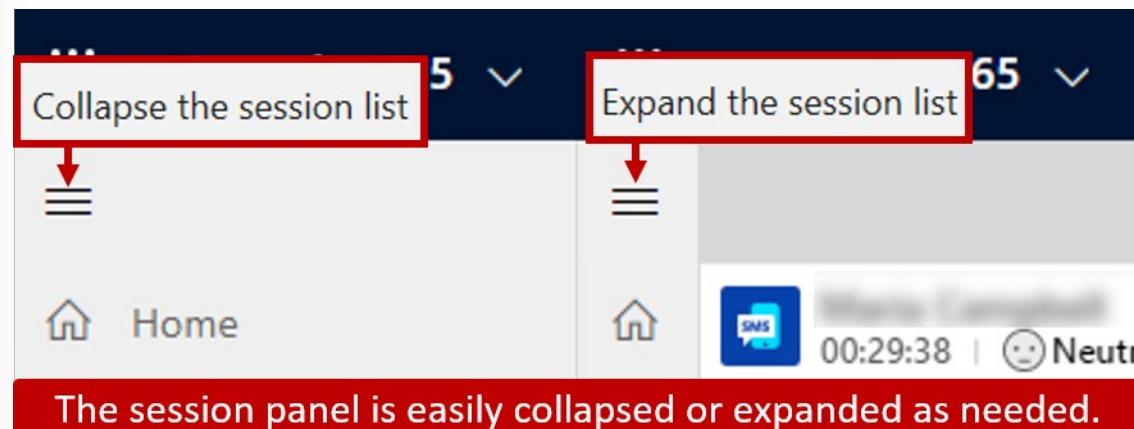
For example, while an agent is engaging with a customer from an SMS channel, they decide to enter a note relating to the contact. As the agent adds the note directly to the **Conversation** tab in that session, they receive a notification about another incoming conversation.

When the agent accepts the request, a new session is created. The agent has access to the same features and tools as in the other session, but all items will be in the context of the new conversation. The agent can then easily switch between both sessions, if necessary. All captured information will still be in the first session, even if the record was not initially saved while the agent was working on it.



Working with sessions

The session panel displays all sessions that an agent is currently working on. By default, the panel will be in expanded mode, but agents can switch between expanded or collapsed mode. This option provides agents flexibility to use as much of the screen as they want while working with customers to resolve their issues. The list of sessions in the session panel will change as agents work with customers. The only session that will not change is the Home session, which will always be anchored and cannot be closed by agents.



Session titles and icons

Each session that is listed in the session panel contains a title and an icon. Session title information will vary depending on whether the user was an authenticated user or an anonymous user. Sessions that are associated with authenticated users have the session name populated from Dynamics 365 record information. By default, the session displays either the name of the customer, account, or title of the case. Sessions from unauthenticated conversations display either visitor or incident (depending on the

item) along with a number. For example, a session for a generic visitor might display Visitor 1 or Visitor 2.

Session icons display the first two letters of the session title. For sessions with multiple words, the first letter from the first two words is used. For example, a session that is related to a contact named John Doe would show **JD** in the session icon. A session for Visitor 2 would show **V2** as the session icon.



Starting sessions

Agents can start sessions in two ways: manually or automatically, based on an incoming notification.

Manually start a session

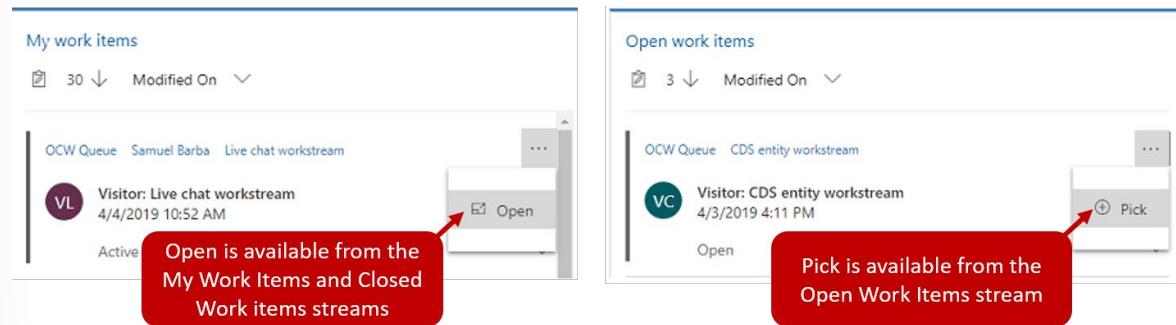
Many scenarios occur where agents might need to initiate a session manually. For example, after completing a previous conversation, the agent notices several cases that they could work on. In that situation, the agent could create a new case session related to the case that they want to work on. In another scenario, the agent might need to open a session related to a contact that they are working with. To support these scenarios, agents can manually initiate what are referred to as contact or case sessions. These sessions are related to a contact or case record in the application.

Agents can use application shortcut keys to accomplish this task. While holding the **Shift** key on the keyboard, the agent can select the work item that they want to open a case or contact session for. This task can also be done by selecting the **Open** option from the Omnichannel Agent Dashboard to start a case or contact session.

In some instances, conversations might not be automatically assigned to agents. This situation might occur when organizations support both authenticated and non-authenticated support requests. Authenticated requests might be automatically routed to agents because they are likely existing customers and the organization wants to ensure that those customers are serviced immediately. Additionally, non-au-

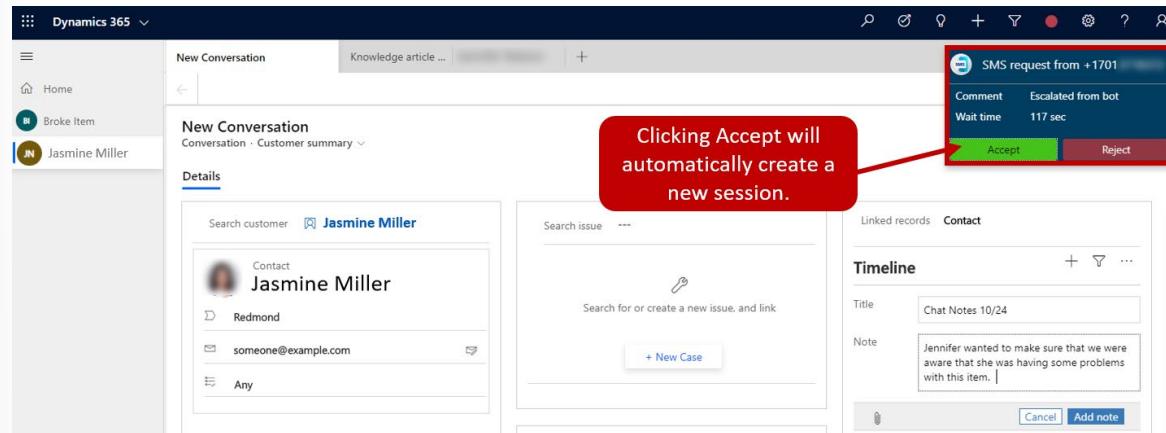
Authenticated conversations need to be worked on simultaneously, but the organization might send those items to a queue where agents can pick to work on them when they have time.

Agents can start SMS or chat sessions manually from the Omnichannel Agent Dashboard.



Automatically start a session by using the incoming notification

When an incoming conversation request is received, the agent can elect to either accept or reject it from the request dialog. If the conversation request is accepted, a session will be started, and the customer summary page is loaded in the Unified Interface application area.



Closing sessions

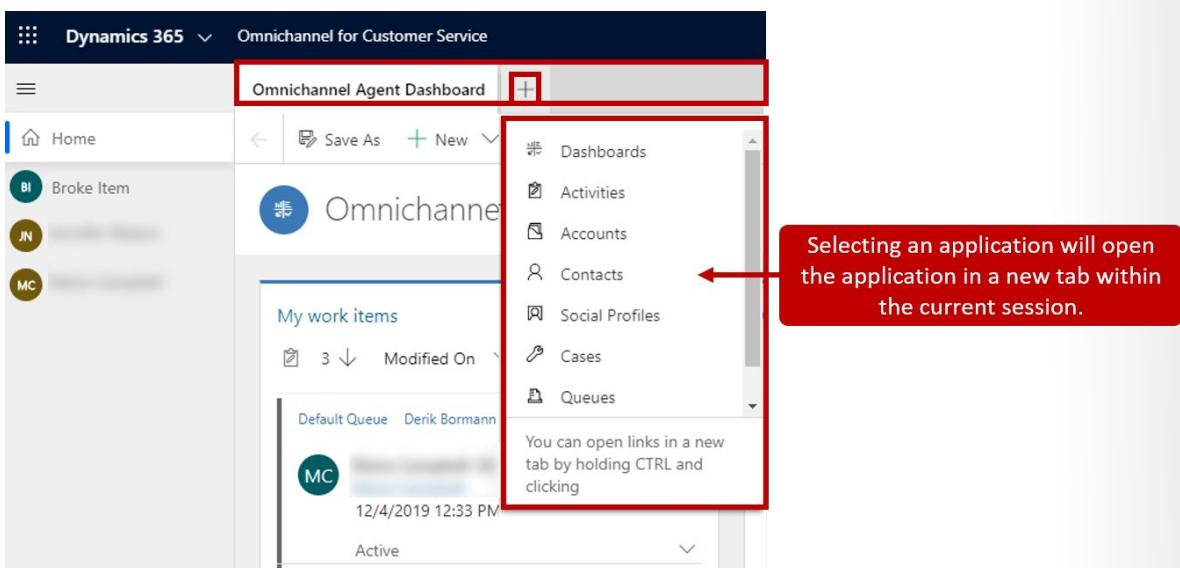
Agents can close sessions manually by selecting the **X** button that is located next to the session title. The button is not displayed initially, but it becomes available if the agent hovers their cursor over the session. When the agent closes a session, they will be presented with a confirmation dialog box, asking them to confirm that they want to close. Prior to closing a session, the agent should perform any necessary tasks to finish work on the item.

Omnichannel applications

Typically, an agent will need information in other applications to deliver the appropriate resolution to a customer issue. This information could be as simple as needing to view data that is stored in the customer's account or contact record. It might also require that the agent have access to data that is stored in a different line-of-business application.

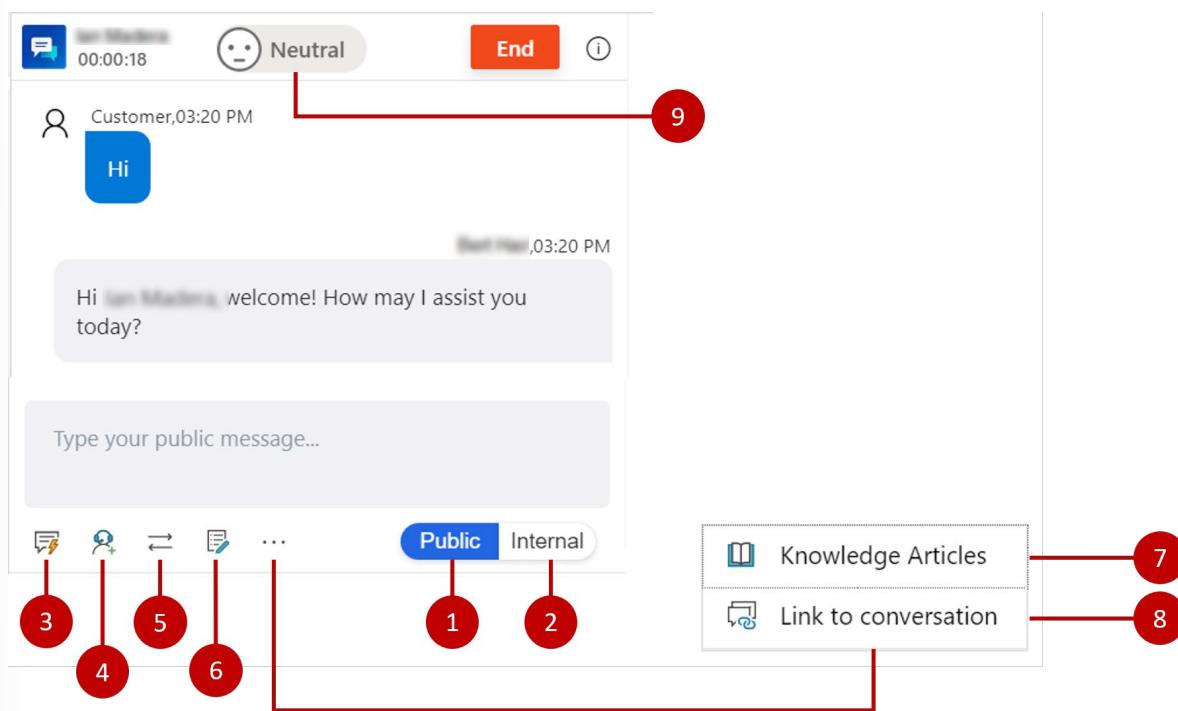
The Applications pane lets agents launch listed applications from any session. Opened applications will be displayed as separate tabs within that session window. If the application is no longer needed for that session, it can be closed. All other application tabs will remain open. When the session is closed, all application tabs will be closed, too. To ensure that sessions are not closed unintentionally, every customer session has one application that is not closable, which is referred to as an anchor tab.

By default, the available applications include Dynamics 365 dashboards and entities. It can be extended to include additional third-party line-of-business applications. Agents can open applications by either selecting it from the list of applications on the **Applications** menu, or by holding the **Ctrl** key while selecting a link to open the new application tab. Both options will open the item in the current active session.



Work with conversations

While in a session, agents interact with customers through the Conversation panel. By default, the panel is hidden when an agent is in the application and is only visible when the agent is engaging in a conversation with a customer. For example, when Jennifer signs in to the application, she will only see the Home session in the session panel; the Conversation panel is not displayed at all. When Jennifer accepts an incoming conversation request, the panel appears as part of the new session that was opened.



Agents can perform the following tasks from the Conversation panel:

- **Public** - Agents can engage with both internal agents or supervisors and the end customer.
- **Internal** - Only sends messages to Dynamics 365 users, such as other agents or supervisors.
- **Quick replies** - Templated messages built to speed up communication with customer.
- **Consult** - Agents can find and engage with other agents or supervisors.
- **Transfer** - Allows agents to transfer a conversation to another agent or supervisor.
- **Notes** - Provides a control that agents can use to take notes that are specific to the conversation.
- **Knowledge articles** - Agents can search for knowledge articles and share them with customers.
- **Link to conversation** - Quickly associates a knowledge article to the conversation.
- **Customer sentiment** - Displays real-time customer satisfaction levels.

Agents can access all the listed tasks with a mouse while they are in the conversation panel; however, many agents find it quicker to use their keyboard to speed up customer interaction. Many of the features that are available from the communication panel, such as see quick replies, consult, transfer, and note controls, can also be started by using keyboard shortcuts.

For a breakdown of the available keyboard shortcuts, see [Enhance agent productivity using keyboard commands¹](#).

Working with internal and external participants

When a conversation is initiated, it is automatically in public mode.

While the conversation is in public mode, other participants like

¹ <https://docs.microsoft.com/dynamics365/omnichannel/agent/agent-oc/oc-conversation-control#enhance-agent-productivity-using-keyboard-commands>

internal agents and/or supervisors can be added to it. Any messages that are sent while a conversation is in public mode will go to all added participants. Occasionally, an agent might want to send a message to internal participants only. They can complete this task by selecting the **Internal** option. In this situation, the agent will still use the same conversation window, but only the internal participants will see the messages. When the conversation is switched back to public mode, both internal and external participants will see the messages.

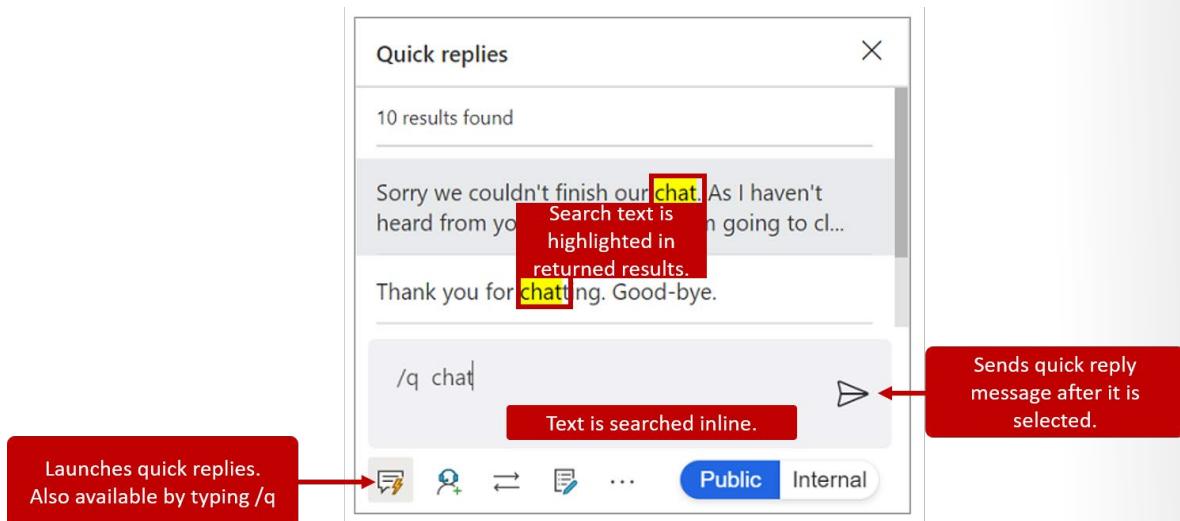
Agents can also use keyboard commands to send internal and public messages:

- **/i** - Toggles to Internal
- **/p** - Toggles to Public

Send templated messages

Because agents communicate with multiple customers and through multiple channels at once, it can be challenging for agents to keep track of their conversations. It is often easiest to provide agents with some predefined, templated communication that they can quickly access from the Communication panel. In Omnichannel for Customer Service, this task can be completed with **Quick replies**.

Quick replies can be sent to both external and internal participants. Organizations can create quick replies based on the needs of their agents. For agents that prefer shortcuts, they can also be opened by entering **/q**, which will display the **Quick replies** flyout menu. From the flyout menu, agents can continue to type key words that they are looking for. As possible matches are found, the results will be displayed in the menu. Agents can use the arrow keys on their keyboard to cycle through the all the replies that were returned.



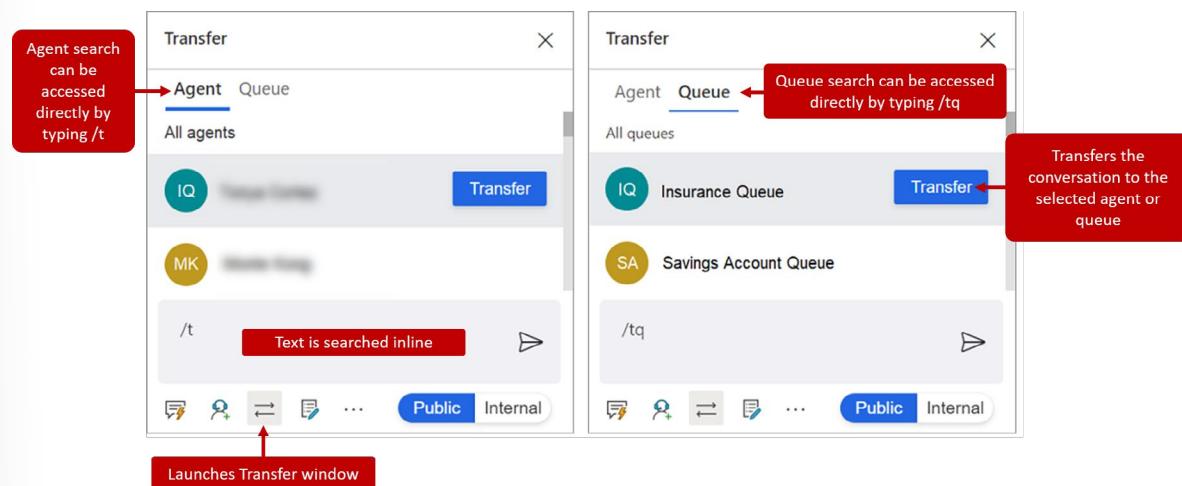
Collaborating with other agents and supervisors

While working with a customer, an agent might need additional help or guidance. The needed guidance might be as simple as reaching out to someone else and

finding the answer, or it might be a scenario where the agent is not the best person to resolve the issue.

When an agent needs to talk with another team member, they can use the **Consult** button to invite other agents or supervisors. The **Consult** option can also be accessed by typing **/c**. With this option, the agent can search for the person they want, and the results will be displayed in the panel. While there is no limit to the number of consulting agents that can be invited to a conversation, we highly recommend that the invitation is limited to five.

If someone is more qualified to work on an item, the conversation can be transferred to another agent or queue. Transferring can also be done by entering **/t** (Transfer to Agent) or **/tq** (Transfer to Queue). When transferring an item to someone else, agents can only transfer to agents that are in the same work stream and queue. For example, if an agent is working in a conversation that came from a billing queue, it cannot be transferred to an agent from the service queue. The conversation can only be transferred to agents in the billing queue. If the transferred request is coming from another queue, routing rules will assign the conversation to the appropriate agent in the queue.



Working with knowledge articles

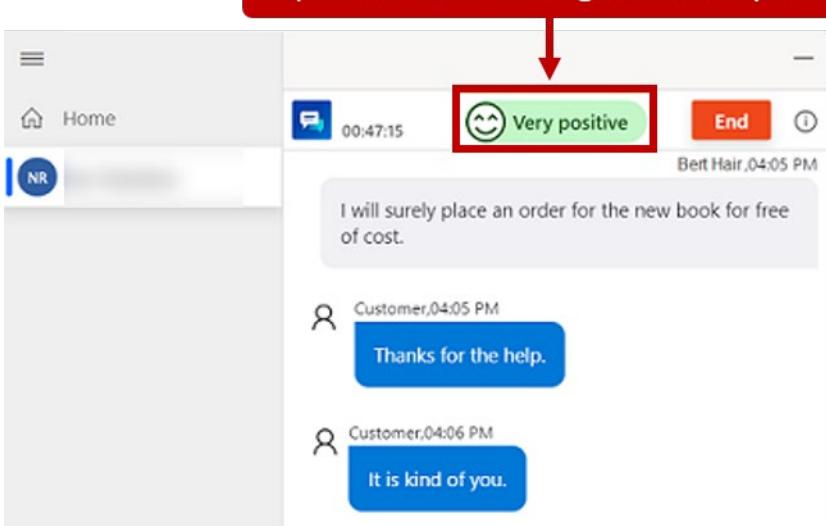
Agents need be able to quickly locate the information that they need to resolve customer issues, including having quick access to the same knowledge content that is used to resolve cases. From the Conversation panel, agents can search for relevant knowledge articles as they are working in a session. Agents can also launch the knowledge base by entering **/kb**, which will display knowledge articles in a new application tab in the session. When the agent finds an article that solves the problem, they can share it with the customer from the Conversation panel by selecting the **Send link** button.

Monitor real-time customer satisfaction

Unfortunately, not every customer is going to be happy while they are talking to you. Some customers might start out unhappy, while others might become unhappy as the conversation proceeds. Factors such as how long it takes an agent to respond, providing incorrect information, or even how the agent types messages impact customer satisfaction on the call. Frequently, the customer's satisfaction will begin to change only slightly. However, if customer sentiment is not recognized and acted on, it can escalate quickly.

To help assist agents in better understanding how a customer is feeling, real-time sentiment is displayed at the top of the Conversation panel. When an agent first opens a conversation, the sentiment icon will be neutral. In scenarios where the conversation was escalated from a bot, the sentiment is based on previous messages that were exchanged between the customer and the bot. The sentiment will change as the agent interacts with the customer and it looks at the six most recent messages that were sent. By looking at most recent communication, the sentiment display helps to ensure that an agent is made aware of the change before it potentially becomes an issue.

Sentiment is displayed based on the previous six messages sent to you



The screenshot shows a conversation interface with a red callout box at the top stating: "Sentiment is displayed based on the previous six messages sent to you". An arrow points from this box down to the sentiment icon in the conversation panel. The conversation panel shows three messages from a customer:

- I will surely place an order for the new book for free of cost. (Customer, 04:05 PM)
- Thanks for the help. (Customer, 04:05 PM)
- It is kind of you. (Customer, 04:06 PM)

The sentiment icon above the third message is a green smiley face with the text "Very positive" next to it. To the right of the conversation panel is a vertical list of sentiment categories with corresponding icons:

- Very positive (green smiley face)
- Positive (light green smiley face)
- Slightly positive... (yellow smiley face)
- Neutral (grey neutral face)
- Slightly negative... (yellow frowny face)
- Negative (orange frowny face)
- Very negative (red frowny face)

Work with customer information

One of the most common complaints that customers have about support is constantly having to repeat the same information multiple times during the process. Commonly, whenever customers are transferred during a call, they're having to repeat their name, issues summary, or other related data to the next agent. This recurrence can become more challenging for customers when they are reaching out about the issue from another channel.

When agents are working with a customer, they should have access to basic customer information and details related to the product/service, in addition to information about the current issue, case history, related cases, location, and so on. If this information is easily

accessible to the agent, it can dramatically reduce the amount of time that a customer spends waiting and can nearly remove any need for the customer to repeat information as their issue moves through channels. As a result, agents can become more productive because of reduced handle times. Customer satisfaction also increases as a result of faster resolutions.

Work with the customer summary record

When an agent accepts an incoming conversation request and a session is loaded, the session will default to the **Customer Summary** page.

The screenshot shows the Customer Summary page with the following sections:

- Customer (Contact or Account)**: Displays details for an account named "Coho Winery (sample)" with a phone number "555-0159" and a contact "Jim Glynn (sample)".
- Case Details**: Displays a case titled "Shipment question (sample)" with a case number "CAS-01032-84".
- Conversation Summary**: Shows engagement channel "Live Chat", waiting time "6 secs", and start time "4/12/2019 12:42 PM".
- Recent Cases**: Lists recent cases, including "Product information required (sample)" and "Shipment question (sample)".

On the right side, there is a **Record Timeline** section showing activity from Jose, Monte Kong, and Bert Hair.

The customer summary view provides the following sections:

- **Customer** - Provides details about the customer that is being engaged with. A customer can be an account or contact. For conversations where the customer is not known initially, the conversation can be associated with a customer record directly from the customer section.
- **Conversation summary** - Displays a series of tabs that provide additional details that are related to the conversation.
- **Case** - Provides the ability to link the conversation to a new or existing case in the application.
- **Recent cases** - Provides agents with historical data that is related to the most recent cases that are associated with the customer to help make accessing those records easy.
- **Timeline** - Provides direct access to the activity Timeline for the linked case and/or customer record to help make reviewing past activities easier.

Conversation summary

The **Conversation summary** section displays multiple tabs that will provide agents with details to help them better understand the information about the conversation with the customer. The available information and the completeness of the data provided might vary depending on which features have been enabled at an organization level.

The conversation history will show the following tabs:

- **Pre-chat survey** - Appears when a pre-chat survey was available on the channel that the customer was engaging from. It will show the answers that were provided to the questions.
- **Portal navigation** - Displays information about what the customer did on a portal before they initiated the conversation. Items are categorized into the following types:
 - Page visited - Any portal page(s) visited with timestamp
 - Phrase searched - Any keywords or phrases that were searched for
 - Knowledge article viewed - Knowledge article that was viewed

[!IMPORTANT]

As of publication of this course, portal functionality was in preview.

- **Visitor details** - Provides information such as whether the customer is authenticated, browser information, operating system, location, and so on.
- **Additional details** - Provides any additional context variables that were configured for the channel.

This section will only appear if additional context variables have been made available.

Below these tabs, agents will see the **Conversation details** section, which displays relevant information about the current interaction, such as:

- **Engagement channel** - Channel that the customer has engaged on.
- **Waiting time** - How long the customer has been waiting since the last interaction.
- **Skills** - The skills that are associated with this item. (Used for Skills-Based Routing, which is currently in preview.)
- **Queue** - The Queue that the item came from.
- **Start time** - When the conversation was started.

Conversation summary		
Pre-chat survey	Portal navigation	Visitor details
No pre-chat survey found		
Provides data captured from pre-chat survey.		
Conversation details		
Engagement channel	Live Chat	
Waiting time		
Omnichannel queue	Chat	
Start time	2/26/2019 3:37 PM	
Displays details including channel, queue, wait times, etc.		
Conversation summary		
Pre-chat survey	Portal navigation	Visitor details
Page visited Knowledge Base - Home	11:58 AM	
Page visited Knowledge Base - Home	11:56 AM	
Page visited Knowledge Base - Home	11:54 AM	
Page visited Support	11:54 AM	
Phrase searched Printer making noise	10:38 AM	
Knowledge article viewed Printer Troubleshooting	9/23/2019	
Customer rating assigned	9/23/2019	
Includes details from the portal visit the customer initiated conversation from.		
Conversation summary		
Pre-chat survey	Portal navigation	Visitor details
Authenticated	Yes	
Location	Bellevue	
Browser	Firefox	
Operating system	Windows	
Visitor language	English (UnitedStates)	
Includes details related to the customer such as location, browser, and operating system information.		

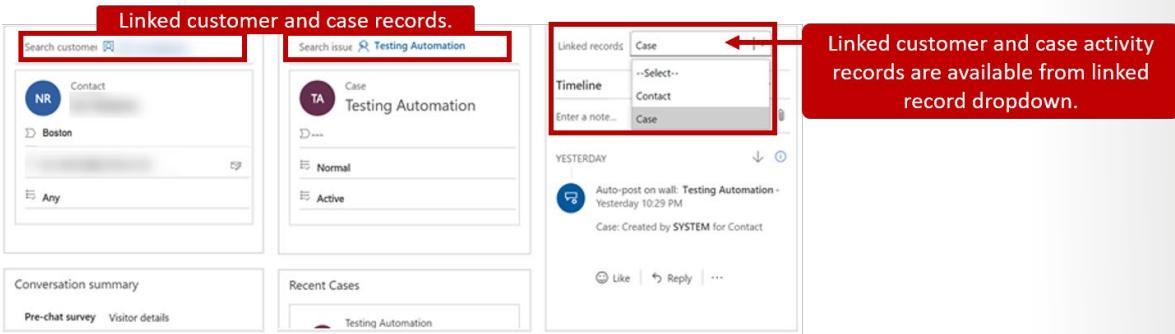
Working with Cases

In addition to having relevant customer information available, another key feature of the **Customer Summary** screen is the ability to access case information that is related to the conversation. When the **Customer Summary** screen first opens, it will not be associated with a specific case. The reason is because, often, customers open conversations to engage with a past issue or item. If the customer is reaching out about a past issue, agents can use the case form to search for an existing case in Omnichannel for Customer Service and then link the case to the current conversation.

If the conversation is related to a new incident, agents can use the **+ Add Case** button to add a new case, which can then be linked to the conversation.

Working with the timeline

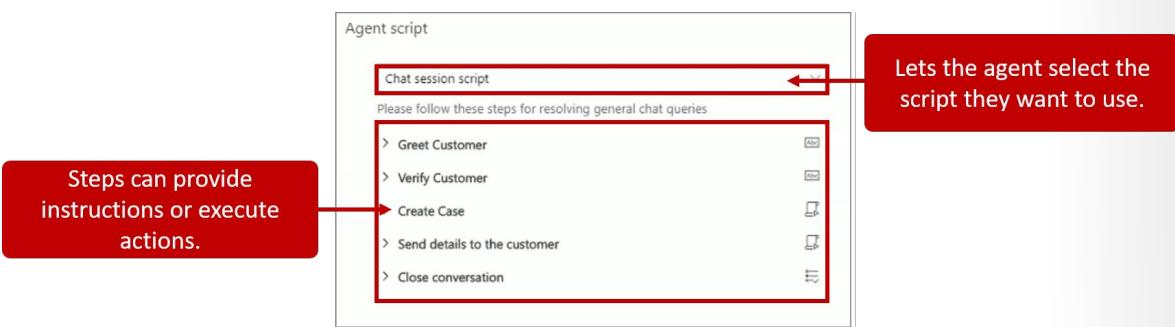
Being able to access activities that might be beneficial to the conversation can often help agents gain a better understanding of what has been done with the customer in the past across different record types. On the Customer Summary record, the Timeline displays case and customer-related activities in the form of a timeline. Agents can create quick notes based on the discussion with the customer. The Timeline control provides the ability to switch what activities are displayed on the timeline based on the Case, Contact, or Account record that is linked to the conversation. For example, if the conversation you are working on is linked with both a contact and case, the **Linked records** field drop-down menu provides the ability to switch between both the Contact and Case, respectively.



Agent scripts

As agents work with customers, it can be helpful to provide them with guidance to ensure that they are using the best process for resolving customers' issues. Agents might benefit from guidance for many reasons such as unfamiliarity with procedures that are related to specific products, or they might just be new employees who do not completely understand the process to follow.

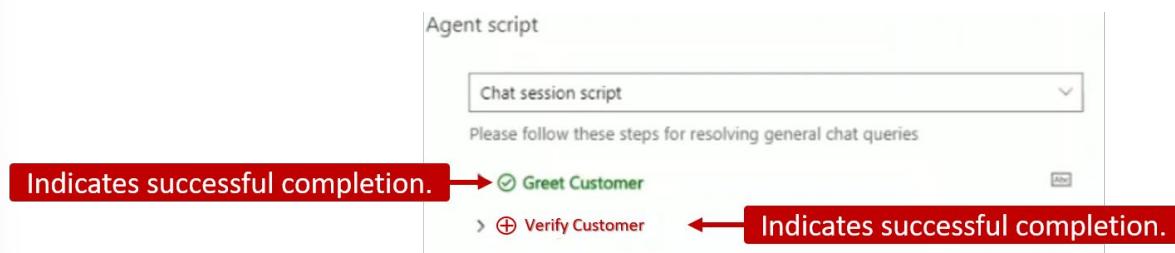
With Omnichannel for Customer Service, organizations can provide agents with guidance on what to do when a conversation is set to them. This approach helps to ensure that your agents are accurate and effective while also helping them be more efficient in terms of customer handling.



[!IMPORTANT]

Any agent or supervisor that will be consuming agent scripts will need to have the Productivity tools user security role assigned to them.

Agent scripts consist of a series of steps. Each step is identified with an actionable icon that helps initiate that step. As agents expand a step, they are provided with a short description that defines what the step does and provides an icon that is used to perform the step's action. As agents initiate steps, the script tracks the implementation status of the step and then notes it. Steps that are implemented successfully are indicated with a green check mark icon. Steps that have errors are indicated with a red cross icon. Steps can be implemented again as needed. Whether you see a green check mark or red cross is based on the last time that the step was run.



The three types of steps that are available inside an agent script are:

- **Text instructions** - Provide guidance on actions to perform. For example, a text instruction might instruct the agent on how to greet the customer.

After the agent performs the step based on the instructions, they can note that it has been completed.

- **Macro** - Instructions that inform the system how to complete a task. For example, a macro might be configured to generate a case record.

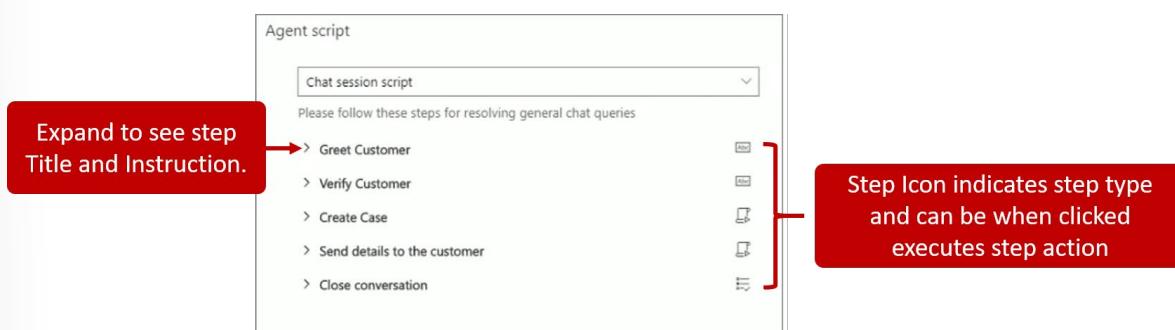
In the script, the macro will have a run icon next to it. When an agent selects the Run icon, the system will perform the macro.

- **Agent script** - Loads another agent script from the current agent script. The newly loaded script will replace the current script on the **Agent script** menu.

Working with scripts

After an agent accepts an incoming conversation notification, such as a chat, and a new session starts, the agent script will display. When an administrator configures the application, they can define where the agent script displays in the application. For example, if an administrator has configured in the **Customer Summary** page, then you can see the agent script in the **Customer Summary** page.

The following image shows a chat session script that contains five steps. It ends with the agent being taken to a new closing script.



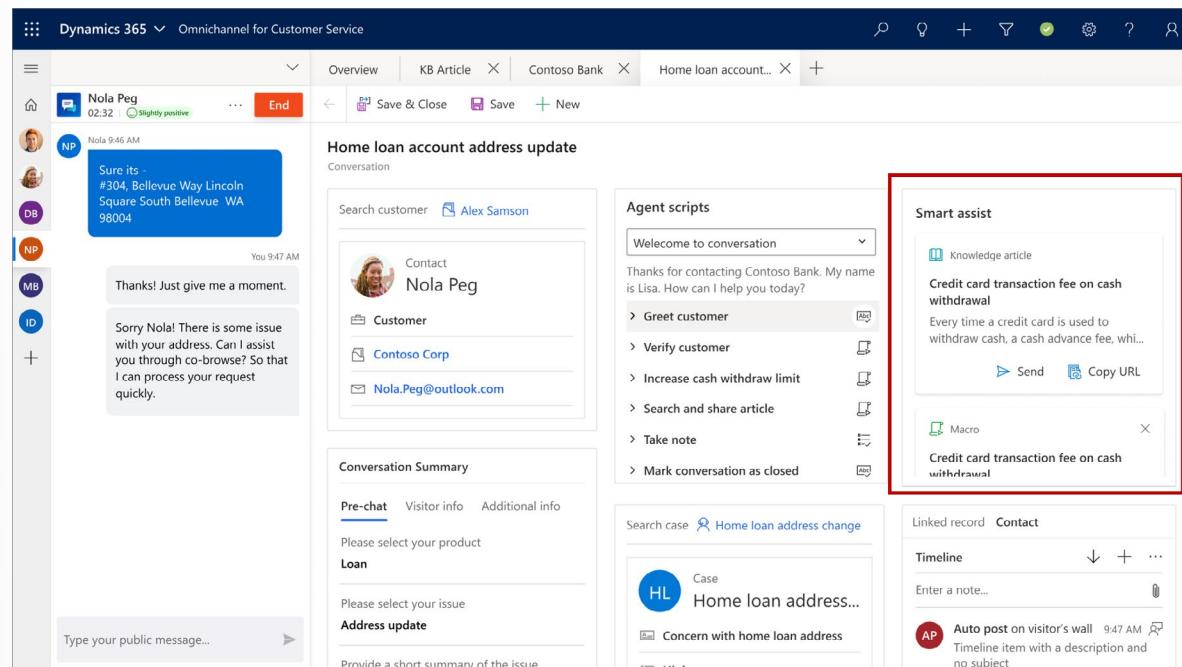
The following table explains each of the steps in more detail.

Step	Title	Instruction	Icon	Action
Text Instruction	Greet Customer	Greet the customer with a welcome message from the quick reply repository	Mark as Done	After the agent has greeted the customer, they should select the icon to mark the step as done.
Text Instruction	Verify Customer uses any two of the following: customer Kenny Smith, Date of Birth, Email ID, Zip code, Mobile	Mark as Done	After the agent has verified the appropriate data, they should select the icon to mark the step as done.	
Macro	Create Case	Triggers create case form with customer context	Run	When you select the run macro icon, the system opens a case form in a new application tab panel.
Macro Send Details	Opens email to send details to the customer	Run	When you select the run macro icon, the system opens a draft email so you can send an email to the linked customer.	
Agent Script	Close Conversation	Follow these steps to close a conversation	View	When you select the view icon, the system loads another agent script from the current agent script. In this sample, another agent script is Close conversation script.

Working with Smart assist

Smart assist is an intelligent assistant that provides real-time recommendations to agents to help them take actions while interacting with customers. It shows relevant recommendations such as knowledge articles, similar cases, and next-best steps. The smart assist bot interprets the conversation in the communication panel and provides real-time recommendations.

The recommendations appear in the user interface as cards. The most recent card (recommendation) appears at the top on the control. If you feel that a recommendation doesn't meet the context of the conversation, you can choose to dismiss the card.



To use the smart assist control, it needs to be configured by a system administrator. During the configuration process, your administrator can determine which table forms that the control will appear on.

Summary

Dynamics 365 Omnichannel for Customer Service provides organizations with the ability to deliver a complete omnichannel service experience to their customers. Support agents can work with multiple customers across different channels at the same time while taking advantage of the familiar features and functionality that they are accustomed to in Dynamics 365 Customer Service. Agents have complete insight into what is happening during a session and, as they switch between sessions, the information from other sessions is maintained so it is readily available when the agent comes back to the session.

This module examined what the agent experience looks like and discussed how the different elements work together to resolve customer issues, including:

- Examining the different components that are available in Omnichannel for Customer Service such as the Session Panel, Conversation Panel, Application Bar, and Customer Unified Interface work screen.
- Looking at how an agent's presence is used to help identify if they have capacity to handle work items and how agents are notified of those items when they are handed to them.
- Explaining how sessions are used to keep all relevant information about a conversation in one place. This module demonstrated how applications can be loaded as tabs inside a session, providing agents with the ability to access other line-of-business applications in the context of the current item.

- Describing how agents will interact with customers through conversations. Within a conversation, agents can easily access related customer information, have access to a wide variety of tools such as the knowledge base, and even engage with other agents.
- Examining how the Customer Summary screen is used to present agents with a complete contextual look into the customer whom they are engaging with.
- Showing how agent productivity features such as Agent Scripts and Smart Assist provide easy-to-use tools that help agents increase their overall productivity.

The next steps are to gain a deeper understanding of how to define and configure key items in the application that will be used by agents in the application. These steps would include gaining a deeper understanding of which channels can be deployed and how to configure them, as well as how to design the elements that will assist in routing information to agents.

Routing and work distribution

Introduction to routing and work distribution components

Omnichannel for Customer Service contains several components to ensure that items are routed and distributed appropriately. Each component provides a piece of the routing and distribution functionality that is used in the solution. The components can be configured as needed, based on the unique needs of the organization that is deploying the solution.

The primary components in Omnichannel for Customer Service are:

- **Queues** - Are used to store conversation that is related to specific areas.
- **Users** - Represent agents that can be working with customers to resolve their issues. Each agent record contains the following information as it relates to Omnichannel:
 - **Capacity** - Defines the number of units that are available to agents so they can work on items.
 - Each agent is assigned a capacity of 100 by default.
 - Agent capacity is reduced as conversations are assigned to them. Agent capacity is added back as conversations are resolved.
 - **Default Presence** - Defines the default presence that is assigned to agents when they sign in to the omnichannel solution. Agent presence changes as items such as conversations are assigned to them.
 - **Omnichannel Queues** - Specifies which omnichannel queues that the agent is a member of.
- **Channels** - Define how the customer is electing to communicate with the organization. Communication from a channel is typically defined as a conversation. The Omnichannel for Customer Service solution provides multiple channel options that can be configured.
- **Work streams** - Define the details regarding how channels that use a certain stream should be handled.

Work streams typically include the following details:

- **Capacity** - Defines the number of units that conversations from the work stream will consume.
- **Work Distribution Mode** - Defines how conversations are distributed to agents. Work streams can be configured to allow one of the following options:
 - **Push** - The conversation is pushed to an available agent automatically.

- **Pick** - Agents can pick the conversation from a queue.
- **Allowed Presences** - Defines which presences that are currently assigned to agents can have conversations assigned to them.
- **Context variables** - Used to store details that help define the context of the conversation. Context variables are used by routing rules to send conversations to queues.
- **Routing rules** - Routing rules include conditions and criteria that are evaluated when a conversation is created. They determine which queue in the application that a specific conversation should be sent to.

The preceding items represent the primary components that need to be configured to ensure that agents can communicate with customers accordingly based on the organization's requirements. Depending on the scenario, additional settings can be defined based on the needs of the organization.

Consider the following configuration scenario where an organization will be adding a Live Chat support channel to their customer portal.

The procedure to deploy a chat solution would resemble the following example:

1. **Define queues** - Any queues that will be used to hold conversations will need to be created.

For example, you can create a preferred queue for routing conversations from premier customers. You can also create additional queues that are based on different departments, issue types, and so on.

2. **Assign agents** - After items are routed to the appropriate queues, they are distributed to agents. Items are distributed to agents who are members of the queue that the item was routed to.

For example, Bert is a senior agent who works primarily with preferred customers, so he would need to be added to the preferred queue.

3. **Define the work stream(s)** - Work streams define how conversations are routed to queues and distributed to agents. Routing rules in the work stream send the item to the right queue. When the item is in a queue, the work stream distributes the item to the appropriate agent.

For example, a work stream routing rule would send conversations from preferred customers to the Preferred customer queue. When the conversation is in the queue, it will be assigned to someone from that queue who has availability.

4. **Create a chat channel** - A chat channel is where the chat widget that customers will be using to interface with agents is configured. A chat channel can be branded to the customer needs and can include items like surveys that can help gain additional insight about the person who initiated the conversation.

5. **Deploy the channel to a portal** - Chat widgets can be deployed to sites where customers will use them to engage with agents.

Unified routing and work distribution

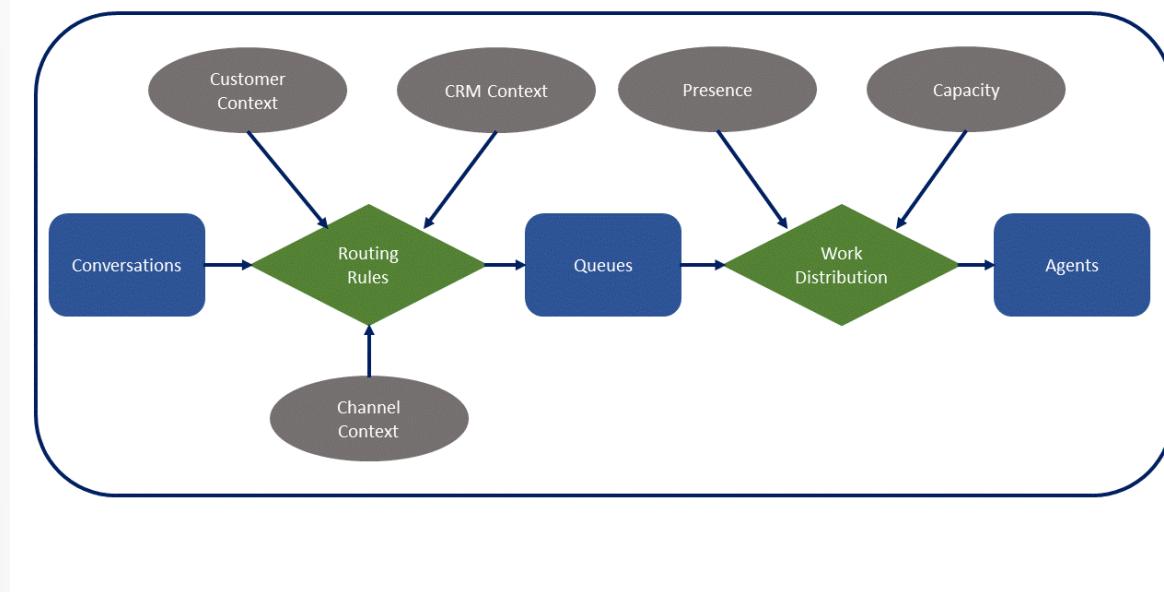
Before designing routing solutions around Omnichannel for Customer Service, you should understand how the solution routes conversations and distributes work to agents. To help ensure that conversations are routed to the appropriate areas and distributed to the most appropriate agent, the Omnichannel for Customer Service solution includes a unified routing and work distribution system.

Advantages to a unified routing and work distribution system:

- Organizations can automate work assignments across different channels.
- Work can be distributed to best available agents based on their capacity and presence.
- Agent productivity can be analyzed and managed across channels.

The unified routing and work distribution system that is included in Omnichannel for Customer Service consists of two steps:

1. The routing engine dispatches conversations into the most appropriate Omnichannel queue based on routing rules that are configured for the organization.
2. Work distribution gives the conversations in a queue to agents in real time, based on an agent's available capacity and their current presence.

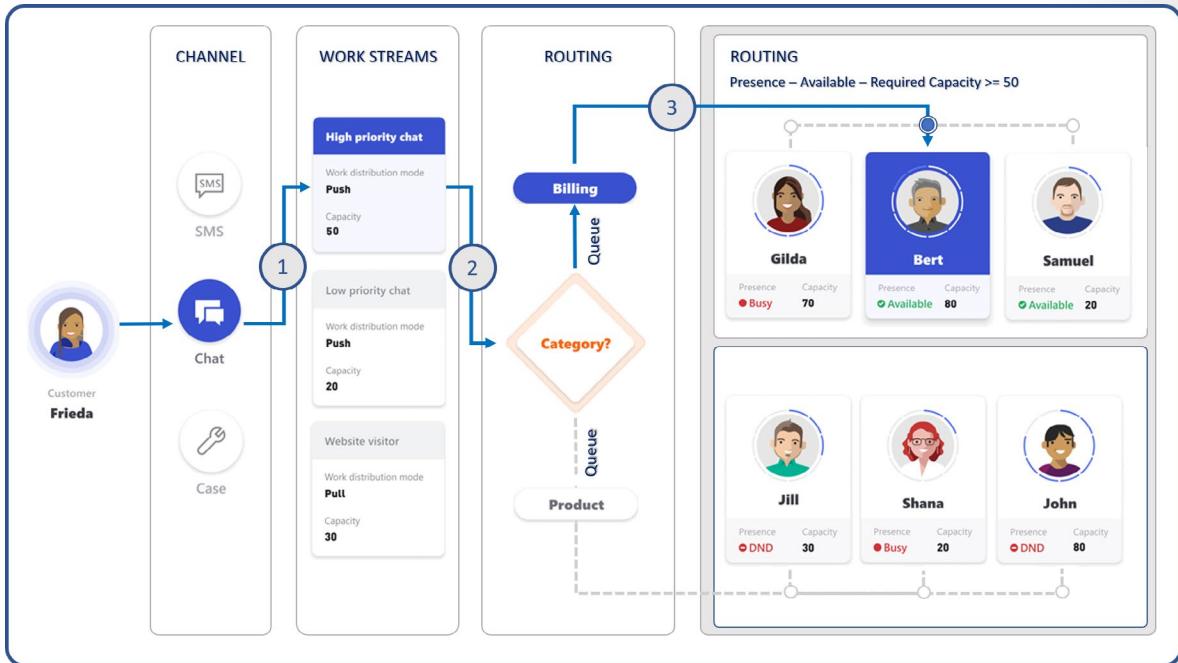


Unified routing and work distribution scenario

To better understand how unified routing and work distribution works and how conversations are assigned to agents, consider the following scenario where a customer wants assistance with a billing question.

In this instance, a customer starts a conversation from a live chat channel that is related to billing. Unified routing and work distribution will help route the conversation to the Billing queue and will assign the conversation to an agent who is a member of the Billing queue and has the correct presence and necessary capacity available.

The following image demonstrates what this scenario looks like at a high level.



- When Frieda starts a chat conversation, the system first identifies the channel that she's communicating through. Routing and work distribution configuration details are applied to the conversation. These configuration details are defined in the work streams.

In this instance, the system identifies the work stream as a Product and Billing live chat. The system applies the configuration details of the work stream to the incoming conversation. For this work stream, the conversation requires a capacity of 50 units. By default, each agent is assigned a capacity of 100; this number decreases when items are assigned to the agent. The system will only consider agents with an available capacity of 50 or more. When this conversation is assigned to an agent, the system will block (remove) 50 units of the agent's capacity.

- Next, the routing and work distribution logic starts. With the help of context variables (which help store contextual information that can be used by the routing engine), the work stream's routing rules can identify that this conversation is related to billing and then send the conversation to the Billing queue.
- When the conversation reaches the billing queue, the system allocates the conversation to one of the agents who are members of the Billing queue and who satisfy the following criteria:
 - They have a capacity of 50 units or more.
 - Their current presence status is Available.

Of the three members who are assigned to the billing queue, only Bert has both the required capacity and presence. Therefore, the system will assign the conversation to Bert. After Bert has started working on the conversation, the

system changes his presence status to Busy, and his remaining capacity is reduced by 50 units and will be updated to 30 units.

Adjust agent capacity

Agent capacity is adjusted as conversations are allocated to them and when allocated conversations are closed by the agent. The following sections provide additional details on how items are adjusted for each option.

When a conversation is assigned:

- The conversation is added to the agent's **My Items** list.
- The agent's Presence status changes to **Busy** or **Busy DND**.
- The agent's used capacity increases by the number of units that are assigned to the conversation.
- The agent's available capacity decreases by the number of units that are assigned to the conversation.

On closure of allocated conversation:

- The conversation is removed from the agent's **My Items** list.
- The agent's Presence status changes to **Available**.
- The agent's used capacity decreases by the number of units that are assigned to the conversation.
- The agent's available capacity increases to the extent of free capacity.

If conversations are in the system and are waiting to be assigned, they are allocated to the agent as soon as the agent becomes available, if they have the necessary available capacity.

Work streams

When a conversation comes in from a channel, it needs to be evaluated so that it can be handed off to the most appropriate agent. The first item that needs to be identified is which queue the conversation should be routed to. How a conversation is routed to a specific queue can depend on what the conversation is related to. For example, if it is determined that the conversation is related to a billing dispute, it would likely be sent to a queue that is related to billing issues. If the conversation is related to a question about an item that the customer is looking to purchase, it would likely be sent to a sales queue where a qualified sales support agent would be able to assist the customer.

After the item has been routed to the most appropriate queue, it will be distributed to a member of that queue to work on it. Each queue can have a priority assigned to it. Agents might be assigned as members of both queues. If the Billing queue is assigned a higher priority than the Sales queue, items in the Billing queue will be handed to an available agent before items in the Sales queue.

Depending on the needs and procedures of the support organization, another consideration is deciding if conversations should automatically distribute to agents through a push notification, or if the items will remain in the queue until an agent selects the item to work on.

Work streams control what this process looks like and how it is implemented. A work stream is essentially a set of guidelines that define how to route and distribute conversations from different channels.

Work streams can be associated with the following types of channels:

- Chat
- SMS
- Facebook
- Table

Note: Work streams can only be created for channels that are enabled when Omnichannel for Customer Service was deployed to the organization. For example, if Facebook was not deployed as a channel, you will not be able to create a work stream for it.

Create work streams

Work Streams are created from the **Work Distribution Management** area of the Omnichannel Administration application. Depending on the channel type, some work streams will contain additional settings that are specific to that channel. For example, an SMS work stream also contains more configurable items that are related to specific SMS settings and phone number configurations.

Regardless of the channel type, each work stream will need to contain the following information:

- **Distribution settings** - Define how the work item should be distributed to agents.
- **Context variables** - Contain context data such as pre-chat data or channel information that can be used to help route conversations to the appropriate place.
- **Routing rules** - Conditions that are evaluated that control where items are routed to.
- **Skill attachment rules** - Based on skills that are attached to a conversation, it will be routed to the agent who best matches those skills.
- **Templates** - Specifies which pre-defined session and notification templates should be used when you are creating sessions and delivering notifications to agents for conversations that are related to that work stream.

Every channel type that is being used will need to have at least one work stream associated with it. In some instances, a channel type might have multiple work streams configured because the organization might want to handle different types of communication from that channel differently. For example, an organization might have a chat work stream for sales scenarios versus a work stream for true support scenarios.

When a work stream is initially created, it will need to have the following parameters defined:

- **Name** - Simple name that will be used to identify the work stream.
- **Channel** - The communication channel type that this work stream will be handling data for.
- **Capacity** - Defines how much of an agent's overall capacity is required and will be consumed when a conversation from the stream is routed to them. (Capacity cannot be changed after the work stream has been saved.)
- **Autoclose after inactivity** - Defines how much time to wait before a conversation is moved from the Waiting state to the Closed state because of inactivity.

Live chat workstream
Work Stream

Work Distribution Context Variables Skill Attachment Rules Routing rule items Templates

General information		Work distribution	
Name	* Live chat workstream	Work distribution mode	* Push
Channel	* Live chat	Allowed Presences	* Available, Busy
Capacity	* 30		
Auto-close after inactivity	* 5 minutes		

Work distribution

Each work stream can be configured to distribute work in one of two ways:

- **Push** - Conversations will be sent to agents automatically by means of an on screen pop-up.
- **Pick** - Conversations will be sent to agents when they select a conversation from the open work items in the agent dashboard.

When you are determining which option to use, consider what the stream is supporting. In most cases, the work stream will likely be set to push items automatically, but in other instances where the work stream is based on an table, it might make more sense to set it to **Pick** so agents can pick the case that they want to work on and then call the customer back. This method might be used in scenarios where the organization is allowing customers to create case requests from a portal. After the case has been created by the customer, it will be sent to a queue where any agent who is a member of that queue can select it and then call the customer back to work on the item.

Work distribution

Work distribution mode * Push

Allowed Presences * Available, Busy

Once a work stream is saved, the work distribution mode cannot be changed

The **Work distribution mode** can only be assigned when the work stream is initially created. After the distribution mode has been saved, it cannot be changed. If it needs to be changed, a new work stream would need to be created with the specific distribution mode defined.

Allowed Presences

Conversations should not always be sent to every agent automatically. Certain factors might prohibit an agent from having a conversation assigned to them, such as their Presence being set to **Do not Disturb**. However, if an agent's Presence is set to **Busy**, they might still have enough available capacity to work on an item.

Within the work stream, the **Allowed Presences** field specifies which presences that a conversation from a work stream could be sent to. Multiple presences can be defined. For example, in most cases, a work

stream might be set to send items if the agent's Presence is set to either **Available** or **Busy**. When the work stream attempts to send the item to someone who is busy, it will verify that the agent has enough available capacity before it assigns the item to them.

Organizations can create custom presences based on the unique needs of their organization.

Context variables

Context variables are used to enrich conversations with pre-chat data, channel data, and custom context data. This information can be used to provide additional context about the conversation to help the work stream decide how to route the conversation to different queues in the application.

For example, an organization might create a context variable that includes the number of items in the user's shopping cart. It might also create some context variables to better determine what type of conversation it is. Each work stream can have multiple context variables defined for it.

A context variable will contain the following information:

- **Display Name** - The name of the variable that will be displayed.
- **Name** - The name that is used by the application when it is consumed.
- **Type** - Defines the type of data that the context variable includes.

A context variable can be sent to either a text string or a numeric value.

Work stream capacity

Each work stream needs to have a defined capacity that identifies how much of an agent's overall capacity is required and will be consumed by conversations from a certain work stream. This setting is important because it dictates how busy agents might be.

If your organization is planning on supporting multiple channels, consider the other work streams that will be used for other channels. Think about what a typical agent scenario might look like.

For example, the following table contains a sample of some work stream capacities for different channels.

Work Stream Name	Channel	Capacity
Live Chat Stream	Live Chat	25
SMS Stream	SMS	25
Facebook Stream	Facebook	25
Case Table Stream	Table	25

In the preceding table, every channel is assigned a capacity, which means that an agent could theoretically have any combination of open work items across any of these channels at the same time. In this example, the agent will never go over four total sessions.

If you examine the scenario more closely, you might see some potential issues. Table streams are attached to entities such as a case table. When an agent is specifically working on a case record, they are likely engaging with the customer on the phone. Agents cannot handle four phone conversations simultaneously.

Concurrently handling a chat or SMS conversation with a phone call is possible; however, agents cannot engage in multiple phone conversations at the same time. Consequently, a more realistic work stream configuration might look more like the following table.

Work Stream Name	Channel	Capacity
Live Chat Stream	Live Chat	30
SMS Stream	SMS	15
Facebook Stream	Facebook	25
Case Table Stream	Table	55

Because the Case Table Stream is set to 55, agents would only have 45 units of capacity remaining. Therefore, the agent will have enough capacity to have a live chat and/or an SMS conversation assigned to them. If the agent is handling two live chats, they would not have enough remaining capacity to be assigned a phone case.

This example represents only one possible scenario. If your organization only offers live chat support, agents might be able to handle five conversations at one time, so setting a work stream capacity to 20 could be reasonable. Each organization needs to think about which support channels they offer compared to the number of sessions that their agents can potentially handle at one time. This approach will help simplify an organization's ability to define capacity accordingly.

Work stream routing rules

Routing rules can be considered as the road maps that the work stream uses to define how conversations are routed to different queues.

Each rule item contains two parts: **Conditions** and **Destination Queue**.

- **Conditions** - Define specific condition(s) that are used to determine if the rule item applies.

Conditions can evaluate field table records that are related to the conversation, such as the account or contact who submitted the request.

Multiple **And/Or** conditions can be used in a single rule item. By default, all new rule items are **And** conditions.

- **Destination Queue** - Specifies which queue to route the item to.

When the routing rule is applied, it will evaluate the condition that is defined in the rule. If the rule condition is evaluated as True, then the conversation is routed to the destination queue that is specified in the rule.

Routing rule conditions could be based on channel context, pre-chat context, and contact, account, or case context. For example, you can define a routing rule so that chats from high priority customers who have specific queries about investments can be routed to a specific queue.

[!IMPORTANT]

If all the rule conditions are evaluated as False for a conversation, it goes to the default queue for the organization.

When defining a routing rule item, you must also define the queue that the rule will be routing items to. Each rule item will have a condition that specifies what prerequisites need to be met for the rule to be applied. Based on the defined conditions, the conversations are routed to the correct queues. For a table, you can choose from a set of attributes, operators, and values that are related to the table.

Condition

AND OR Ungroup Delete Reset

<input type="checkbox"/> Account (Conversation)	Category	Equals	Preferred Customer
<input type="checkbox"/> Contact (Conversation)	Address 1: Address Type	Equals	Primary
+ Condition			

For example, if a routing rule will be routing chats from preferred customers to a preferred or premier queue, the routing rule would have a condition that references the account record from the customer that the conversation is coming from. If the account is classified as a Preferred Customer, then the rule would send the conversation to the Preferred Queue.

Multiple routing rules

A single work stream can have multiple routing rules. Rule items are applied in the order that they are specified in the rule set. For example, if a work stream called Chat contains five routing rules, an incoming chat conversation will be evaluated against all five routing rules in the defined order. The rules are evaluated from top to bottom.

If a rule condition is evaluated as True, the chat will be routed to the destination queue and will skip further evaluation. If a rule condition is evaluated as False, further rules are evaluated. After a matching rule item has been found, it is applied. We recommend that you place more specific rule items higher in the rule set so they are checked first.

Live chat workstream
Work Stream

Push Work Distribution Mode | Live chat Channel | Owner

Work Distribution Context Variables Skill Attachment Rules Routing rule items Templates

Rule Items	Description	Modified On
Preferred Customer Route	---	11/18/2019 1:44 PM
Billing Route	---	11/18/2019 1:45 PM
Cred Card Route	---	11/18/2019 1:45 PM

Up Down

Summary

To ensure that customers and support agents are provided with the best experience possible, it is important to plan how work will be routed and distributed. Ensuring that items are being sent to the correct place helps increase customer satisfaction because they are spending less time trying to get connected to the right individual for their issue. Additionally, agents can be more productive

because they are receiving items that are best suited for their skill set. Omnichannel for Customer Service provides organizations with a powerful tool to help them tailor how customer communication is routed and distributed to agents.

With Omnichannel for Customer Service, organizations can build routing guidelines based on how they conduct business and on the logic that they use to distribute work processes. Work streams not only provide directions and details, but also help to capture the context around that process prior to routing.

This module examined the routing and work distribution process, including:

- Examining the components that are involved in routing and distributing work to agents and how they work together to accomplish this task.
- Providing an overview of the distribution process, including examining how an agent's presence, for example, can impact how these items are handed off.
- Explaining how work streams are used and the process to create them.
- Examining capacity to understand how work streams use it to distribute work to agents.
- Discussing how routing rules are used to route conversations from work streams to different queues in the application.

Your next step would be to gain a deeper understanding of how to define and configure the specific communication channels that are used to support customers. These steps would include looking at how to create and configure chat channels and learning the process for deploying SMS, Facebook, and Entity channels.

Deploy an SMS channel

Introduction to configuring an SMS channel

Considering the current, common text-based communication, it makes sense that customers would use SMS messages to initiate support requests with organizations. Additionally, providing an SMS communication option also ensures that customers can connect with your organization even in scenarios where no internet connection is available to connect through a chat channel. Unlike chat channels where communication between customers and agents is real-time, SMS support conversations can last longer, depending on multiple factors such as customer availability, response time, and so on. It is important that your organization considers the potential length of conversations when deploying SMS channel support.

Omnichannel for Dynamics 365 Customer Service lets you configure SMS communication channels to let your service agents correspond with customers through text messages. Like live chat conversations, when customers send text messages, the conversation can be routed to the appropriate queue and distributed to available agents. The customer who initiates the request is identified based on the **Mobile Phone** field on their contact table. When the phone number is matched to the appropriate contact record, the conversation will be automatically linked to them.

Configure an SMS Channel

Incoming SMS messages are available to agents through the Omnichannel Agent Dashboard, where agents can view the incoming SMS requests and respond accordingly. Because SMS messaging is an asynchronous form of conversation, agents can close conversations and return to work in them later. Any conversations will be shown in the **My work items** stream on their dashboard.

[!IMPORTANT]

The maximum number of characters that are supported for sent and received messages is 1600.

Prerequisites for adding SMS support

Before configuring SMS messaging in your organization, you must meet two prerequisites. First, SMS functionality must be enabled in the Omnichannel organization where agents will be working. Second, your organization must have an account and SMS phone number registered with TeleSign.

Enable SMS

Dynamics 365 for Customer Service Digital Messaging is an add-on subscription that provides agents with the ability to communicate with customers through digital messaging providers. It is a required service

to enable SMS support channels in Dynamics 365 organizations. SMS capabilities are enabled through the **Manage Omnichannel Instances** page.

More information on enabling SMS capabilities can be found at:
Omnichannel provision².

Obtain a TeleSign account

Omnichannel for Customer Service uses TeleSign (a leader in customer identity and engagement solutions) as the communication provider for SMS messages. Organizations that want to provide SMS support will need to register with TeleSign prior to adding SMS support to Omnichannel for Customer Service.

More information on obtaining a TeleSign account can be found at: **Configure SMS channel³**.

Configure SMS support

Like all communication channels in Omnichannel for Customer Service, you will need dedicated SMS work streams that are attached to the SMS channels that agents and customers will be communicating through. SMS-related work streams are created from the **Work Distribution Management** area in the Omnichannel Administration application. Depending on the channel type, some work streams will contain additional settings that are specific to that channel.

Like other work streams, you will need to define the following information for SMS-related streams:

- **Name** - A simple name that is used to identify the work stream.
- **Channel** - The communication channel type for the work stream.
This option will be set to SMS.
- **Capacity** - Specifies how much overall agent capacity that SMS conversations from this stream will consume. (This field cannot be changed after the work stream has been saved.)
- **Auto-close after inactivity** - Defines how much time can elapse before a conversation is moved from the waiting state to the closed state because of inactivity. (For SMS work streams, this field must be set to at least eight hours).

Because SMS conversations are asynchronous, unlike chat conversations that typically occur in real time, more significant delays between communication is likely. Setting this field to at least eight hours helps to ensure that conversations will not be closed before a resolution has been found. The default value for this field is set to two days.

- **Allow automated messages** - Specifies if you want to be able to allow automated messages or not. Currently, we recommend that you keep this option's value set to **No**.

² <https://docs.microsoft.com/dynamics365/omnichannel/administrator/omnichannel-provision-license>

³ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/configure-sms-channel>

In the **Work distribution** section, you will need to specify how agents will be assigned work items from this channel.

The two available options that you can define are:

- **Work distribution mode** - Specifies whether SMS work items from this stream will be pushed to agents automatically, or if agents can select to continue working from queues that they are a member of.
- **Allowed Presences** - Defines which agent presences that SMS messages from this stream can be routed to. By default, this option is set to route conversations to agents whose presence is set to either **Available** or **Busy**.

SMS work streams have the same configuration tabs as other work streams:

- **Context variables** - Contain context data, such as pre-chat data or channel information, that can be used to help route conversations to the appropriate place.
- **Routing rule items** - Conditions that are evaluated that control where items are routed to.
- **Skill attachment rules** - Based on skills that are attached to a conversation, it will be routed to the agent who best matches those skills.
- **Templates** - Specifies which pre-defined session and notification templates should be used when you are creating sessions and delivering notifications to agents for conversations that are related to that work stream.

Two additional tabs are available that you can use to control SMS functionality:

- **SMS Settings** - Defines the account settings that will be used to communicate with the SMS provider.
- **SMS Numbers** - Specifies the SMS-enabled phone numbers that will be used to communicate with customers through this work stream.

Define SMS settings and numbers

Before you can define the phone numbers that Omnichannel for Customer Service will use to communicate with customers, you need to let the solution know who is providing functionality. The **SMS Settings** tab lets the work stream know which SMS provider is being used to send and receive messages.

[!IMPORTANT]

At the time that this course was published (December 2019), TeleSign was the only supported service provider. You will be able to select additional or custom providers as they become available.

After selecting the SMS provider to use, you will be prompted to provide additional information such as account and API details.

If using TeleSign, you will need to provide the following information:

- **Customer ID** - Customer ID that is generated from the TeleSign account.
- **API key** - API key that is generated from the TeleSign account.

TeleSign customers can retrieve both items from the main screen of your TeleSign Account.

Connection parameters

As customers send messages to your organization's support phone number, your SMS provider needs to know where to send those messages. This notification is handled by the TeleSign inbound URL. When an SMS work stream is defined, a TeleSign inbound callback URL is created. This callback URL must be sent to TeleSign so they can add the URL to your account. This process must be done before an SMS phone number can be added to the channel.

Copy the TeleSign inbound URL field and send it to TeleSign at support@telesign.com. The support team at TeleSign will add the URL to your account. After the URL has been added, you can purchase SMS-capable phone numbers. When purchasing a phone number, make sure that you purchase one that has two-way SMS functionality.

The screenshot shows the 'SMS Support Pick' Work Stream settings page. The 'SMS Settings' tab is selected. The 'SMS Provider' section shows 'TeleSign' selected. The 'Connection parameters' section contains a 'TeleSign inbound URL' field with the value 'https://c...'.

A red callout box points to the 'Customer ID' and 'API key' fields in the 'TeleSign account information' section, stating: 'This data is available from your account page on your SMS providers site'.

A red callout box points to the 'TeleSign inbound URL' field, stating: 'When using TeleSign, this must be sent to them so it can be added to your account'.

SMS numbers

Depending on your organization's needs and other factors such as message volumes, you can purchase the best type of number based on your needs. SMS numbers use code classes.

The three types of available SMS phone numbers are:

- **Long code** - A unique 10-digit phone number that is tied to a specific area code (+1-XXX-XXX-XXXX).
- **Short code** - A short number, often between four to six digits, that is used in high volume scenarios (XXXXXX).
- **Toll-Free** - Short code message service that sends text messages from toll-free numbers.

Organizations have different reasons why they might choose one type of number over another, but the choice typically comes down to the volume of messages that need to be sent. For example, an organization that is sending many SMS marketing communication or one-way notifications to users would use short codes.

When you have a number from TeleSign, it can be added to the **SMS Numbers** tab on the SMS work stream. Adding an SMS phone number to a work stream also creates an SMS channel record for the phone number. The SMS channel will be accessible from the **SMS Numbers** tab on the work stream and the SMS channel under **Channels** in the Omnichannel Administration application.

When creating the SMS channel, you will need to provide the following information:

- **Number** - This number should be the phone number that was purchased from TeleSign. Phone numbers should include the country code and the complete phone number with area code.
Sample US phone number: 19875551234
- **Type** - Only long codes were supported as of December 2019.
- **Description** - Optional description for the number.
- **Operating Hours** - Allows you to specify the business hours when the customer support team is active and available to serve customers. It works only when you have set the **Allow automated messages** fields value to **Yes**.

New SMS Number

General Related

Number	*	[REDACTED]
Owner	*	<input checked="" type="checkbox"/>
Type	Long code	
Work Stream	*	SMS Support
Description	---	
Operating Hours	24 / 7	

To use Operating Hours with SMS channels, the associated Work Stream must be set to allow automated messages

After adding the phone number, you will need to validate the API key before it can be used. When the API key has been validated, the channel is available to start sending and receiving communication.

New Deactivate Delete Refresh Validate API Key

New SMS Number

General Related

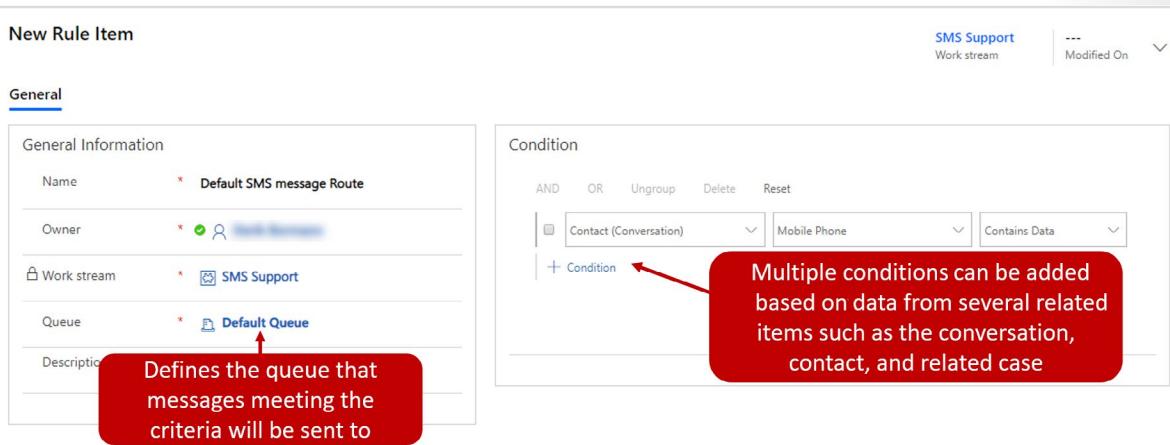
Number	*	[REDACTED]
Owner	*	<input checked="" type="checkbox"/>
Type	Long code	
Work Stream	*	SMS Support
Description	---	
Operating Hours	24 / 7	

Routing SMS conversations

SMS routing rules are defined on the **Routing rule items** tab of the SMS work stream record. SMS routing rules work on the **Mobile Phone** field of the Contact table. The contact is identified by matching the phone number that the message came from to a mobile phone number on the Contact table. When the appropriate contact record has been identified, the conversation record is linked to the Contact record and the **Customer summary** screen is loaded into the session.

The **Routing rule items** feature can evaluate conditions for the following contextual items that are related to the conversation record that you have created:

- **Account** - Lets you evaluate data from the Account record that is associated with the conversation.
- **Contact** - Lets you evaluate data from the Contact record that is associated with the conversation.
- **Case** - Lets you evaluate data from the Case record that is associated with the conversation.
- **Context variables** - Lets you evaluate the stored in context variable that is associated with conversation.
- **SMS engagement context** - Lets you evaluate contextual data that is related to the SMS message such as SMS provider, country code, or other data.



For example, as a message is received, the rule could use the country code that is captured in the SMS engagement context to route items to queues for each of the different countries or regions that you provide service in.

Configure a Facebook channel

Many customers use social messaging channels like Facebook Messenger for their personal communication needs. Accordingly, those customers find it more convenient to use these same messaging channels to engage with businesses. Like SMS messages, the asynchronous nature of these channels gives customers the convenience of having their issues resolved when they find time, unlike real-time channels like Chat for Dynamics 365 where the session ends when the chat window is closed.

Omnichannel for Dynamics 365 Customer Service lets you configure Facebook communication channels to take advantage of the social media trends and engage with your customers in a personalized experience.

Prerequisites for adding Facebook support

Facebook capabilities are enabled through the **Manage Omnichannel Instances** page.

More information on enabling Facebook capabilities can be found at: **Omnichannel provision license⁴**.

To use Facebook Messenger, organizations need to have the following parameters set up in Facebook:

- A Facebook page with Messenger enabled
- A Facebook application that contains Messenger and Webhooks

You can find more information about this topic at: **Configure Facebook channel⁵**.

Configure Facebook support

After you have completed all the prerequisites, you can configure Facebook support for your organization. Configuring Facebook support is similar to how you would configure a chat channel. Before you can create the Facebook channel, you must first create a Facebook work stream.

You can find more information on creating work streams by going to: **Introduction to work streams⁶**.

Create a Facebook channel (application)

After you have created a Facebook work stream, you can create a Facebook channel. When you create a Facebook channel, you are connecting the Facebook application, which will provide you with the ability to interact with Facebook pages. Facebook applications are available by selecting **Facebook** under **Channels**.

On the **New Facebook Application** page, you will need to provide the following information:

- **Name** - Name of the Facebook application.
- **Application Id** - Provide the ID of the Facebook application.
- **Application Secret** - Application secret of the Facebook application.

You can obtain the Application secret and ID by going to **Settings > Basic** from your Facebook application. The information will be in the **Application Id** and **Application secret** fields.

⁴ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/omnichannel-provision-license#provision-omnichannel-for-customer-service-application>

⁵ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/configure-facebook-channel/?azure-portal=true>

⁶ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/work-streams-introduction>

The screenshot shows the 'General' tab of a Facebook application record. The application is named 'Contoso FB app'. It has an owner (redacted), an application ID (redacted), and an application secret (redacted). A red callout box points to the application ID and secret fields with the text: 'This data can be found under the basic settings of your Facebook application.' Below the application details is a table titled 'Facebook Pages' showing one page named 'Contoso' with a page ID of '1069476147467', linked to the 'Facebook' work stream, and modified on '8/8/2019 10:47 PM'.

After you have saved the application record, the Facebook Pages section becomes available, where you can add the Facebook pages through which a customer can connect to an agent. As of this course's publication date (December 2019), you can create only one Facebook application for each organization. Within a Facebook application, you can add multiple pages to interact with.

When adding a new page, you can provide the following details:

- **Page Id** - Add the ID of the Facebook page that this record is linked to. The page ID is available by selecting **About** and copying the value in the **Page Id** field.
- **Page Name** - The page name helps make it easier to identify the page. The name can, but does not need to, match the actual name of the Facebook page that it is referencing.
- **Page Access Token** - The page access token from the Facebook Application that is attached to the page. You can get the token from your Facebook application by going to **Messenger > Settings**. Copy the value of the **Page Access Token** field.
- **Facebook Application** - Specifies the Dynamics 365 Facebook application record that is associated with this page. This field is auto populated when you add a Facebook page.
- **Work Stream** - Browse and select the work stream that you created for the Facebook channel.

The screenshot shows the 'New Facebook Page' configuration screen in the Microsoft Azure portal. The 'General' tab is selected. The form contains the following fields:

Owner	*	[Redacted]
Page Id	*	[Redacted]
Page Name	*	Contoso
Page Access Token	*	[Redacted]
Facebook Application	*	Contoso FB app
Work Stream	*	Facebook

After you have successfully added a Facebook page, the values for **Callback URI** and **Verify Token** are generated automatically. These values are used to configure webhooks in the Facebook application.

Customer and agent experiences

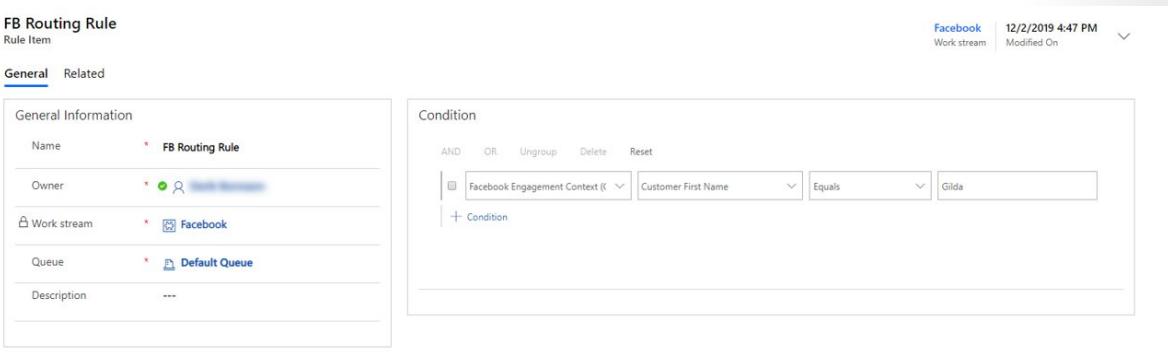
After a Facebook channel has been deployed, customers can initiate a conversation in any of the following ways:

- Messenger on the Facebook page
- [www.messenger.com⁷](https://www.messenger.com/?azure-portal=true)
- Messenger app on a mobile device
- Messenger widget on a custom website

If a customer initiates a conversation from the Facebook page and then later switches to the mobile device, the previous conversation is persisted, and the customer can continue the conversation.

The agent receives the notification of the incoming chat request along with the customer details.

⁷ <https://www.messenger.com/?azure-portal=true>



Route Facebook conversations

When a Facebook conversation is initiated, the customer is identified based on their name. The application will search the Contact table to find a matching contact record. When a match is found, the conversation is automatically linked to the contact record and the Customer summary is populated. If the customer is not identified based on a name, a new contact record can be created.

Like other routing rules, Facebook routing rules can be created from the **Routing Rule** tab of the work stream record.

The **Routing Rule items** feature can evaluate conditions for the following contextual items that are related to the conversation record that you have created:

- **Account** - Lets you evaluate data from the Account record that is associated with the conversation.
- **Contact** - Lets you evaluate data from the Contact record that is associated with the conversation.
- **Case** - Lets you evaluate data from the Case record that is associated with the conversation.
- **Context variables** - Lets you evaluate stored in context variable that is associated with conversation.
- **Facebook engagement context** - Lets you evaluate contextual data that is related to the Facebook message such as SMS provider, country code or region code, or other data.

For example, as a message is received, the rules help route all messages that are received from a particular type of contact, such as a preferred customer, to a dedicated preferred queue that is prioritized over other queues.

Summary

In addition to requesting support through live chat channels, Omnichannel for Dynamics 365 Customer Service enables your organization to extend its service offerings to other common engagement channels such as SMS and Facebook messaging. Customers can take advantage of the asynchronous nature of these channels to have more flexibility in receiving support and engaging with support agents on their own timelines.

This module examined how to use and incorporate messaging services into an Omnichannel for Customer Service deployment, including:

- Discussing how adding the flexibility of messaging channels is important.

- Describing the procedure for deploying an SMS channel and how to configure an SMS Provider.
- Explaining how to configure the SMS phone numbers that will be used to communicate with customers and how SMS routing in SMS Channels is configured.
- Examining how to configure a Facebook channel and the different routing options that are available.

The next steps for you would be to gain a deeper understanding on how to define and configure other communication channels in Omnichannel for Customer Service and learn how to extend application functionality to support more advanced scenarios such as working with virtual agents (bots). These next steps would also include learning about how other work items are routed and distributed to agents. It is also important to understand how to create, configure, and deploy additional channels such as Live Chat, SMS, or Facebook.

Deploy chat widgets

Introduction to chat channels

One of the most popular ways for service organizations to communicate with their customers is through chat. Chat is efficient because it allows customers to quickly engage with agents while providing multiple advantages to agents, such as being able to work on multiple chat conversations at the same time. Additionally, chats can often be configured to allow initial communication through a virtual agent (chatbot) to provide a simple way to resolve basic issues or provide customers with basic information. Omnichannel for Customer Service allows organizations to use live chat channels by creating and deploying chat widgets. A chat widget lets customers connect with service agents and assists in resolving their queries quickly.

The chat functionality in Omnichannel for Customer Service provides:

- **Custom theming and branding** - Widgets provide multiple theming colors. Custom logos can be added to reflect branding.
- **Pre-chat survey** - Additional details can be captured before customers are connected to agents.
- **User details** - Information from authenticated and non-authenticated users can be used.
- **File transfer** - Agents and customers can upload file attachments to share with one another.
- **Chat transcripts** - Transcripts of the conversation can be downloaded or sent to customers by email.
- **Proactive chat** - Widgets can be configured to proactively engage with customers while they are browsing sites.

Before an organization can create and deploy chat widgets, the following parameters must be met:

- A subscription to the Chat Add-in for Microsoft Dynamics 365 Customer Service
Each agent who will be using chat will require a license.
- Chat enabled and deployed in the organization that the widget will be used in
- A chat work stream that the chat widget can use

More information is available on how to [create work streams⁸](#).

Create a chat channel

When an organization is ready to start communicating with customers through a live chat solution, they will need to create a chat channel. Based on the needs of the organization, they can create one or multiple chat channels to support different scenarios. For example, an organization might create multiple chat widgets that target different areas of focus so they can deploy them across different websites.

Channels are created in the Omnichannel Administration app, and they can be added by selecting **Chat** under the **Channels** heading. Chat channels need to be based on work streams. Before a chat channel can be added, at least one chat work stream must exist in the application.

⁸ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/work-streams-introduction/?azure-portal=true>

More information on **creating work streams⁹** is available.

A chat channel has five tabs that you can use to define overall behavior of the widget:

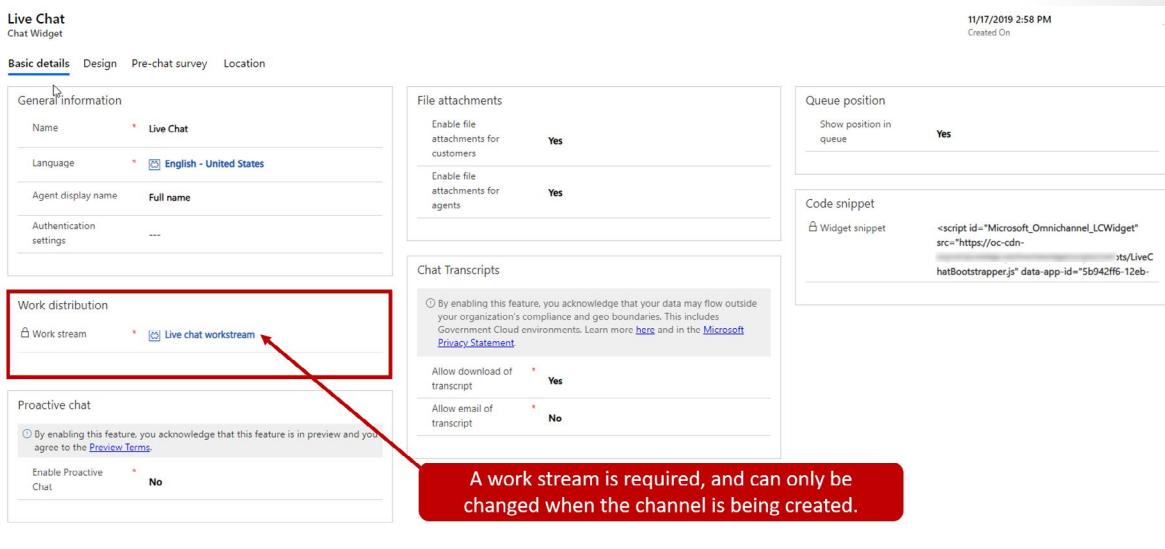
- **Basic details** - Defines most behavior capabilities of the channel such as how work items are distributed and the file attachments, chat transcripts, and queue options.
- **Design** - Defines how the widget will appear, such as the widget color, branding options, and overall position on the screen.
- **Pre-chat survey** - Used in scenarios where organizations want to provide a place to capture data from users prior to launching the survey.
- **Location** - Defines location information on where the widget is deployed and provides the ability to enable visitor tracing on the widget.
- **Conversation Options** - Provides the ability to use third-party applications to provide co-browsing and screen sharing capabilities.

Define chat channel details

Most settings that are related to how a chat channel will behave are defined on the **Basic details** tab. The tab includes multiple sections that you can use to configure different behaviors:

- **General information** - Includes basic details such as the channel name, language, agent display name, and authentication settings.
- **Work distribution** - Defines the work stream that is used to handle the distribution of items from the channel.
- **Proactive chat** - Enables the chat widget to engage customers proactively instead of waiting for them to engage the widget.
- **File attachments** - Enables the ability for agents and/or customers to attach files to a chat window.
- **Chat Transcripts** - Provides customers with the ability to download chat transcripts.
- **Queue position** - Displays the customer's current position in a queue.
- **Code snippet** - Used to deploy the widget to portals.

⁹ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/work-streams-introduction#create-a-work-stream/?azure-portal=true>



Work with agent display names

Some organizations might not want their agents' full names to display in chat sessions. Rather, they might prefer to display only an agent's first or last name to provide more anonymity. The organization could choose to use simplified versions of agent's names or even different names to keep them anonymous. For example, an agent named Nicholas might prefer to be called Nick.

Organizations can define how the agent's name is displayed in the widget from the **Agent display name** field. Agent display names can be set to one of the following options:

- **Full name** - Displays the full name of the agent.
- **First name** - Displays only the first name of the agent (this option is selected by default).
- **Last name** - Displays only the last name of the agent.
- **Nick name** - Displays the nickname of the agent.

If no nickname is available, the agent's full name is displayed

Authentication settings

When chat widgets are deployed to a portal, any users who have already authenticated to that portal can have their authenticated credentials passed to the chat widget. This process lets the system match the user with record information in Dynamics 365. When a conversation is loaded, customer information for that customer can already be populated.

If authentication settings for a specific portal have been configured in the application, those settings can be defined in the **Authentication settings** field of the chat.

Additional information on **creating chat authentication settings**¹⁰ is available.

¹⁰ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/create-chat-auth-settings/?azure-portal=true>

General information

Name	*	Live Chat
Language	*	English - United States
Agent display name	Full name	
Authentication settings	Omnichannel Authentication	X

Channel work distribution

Work streams define how work items from a channel should be routed and distributed to agents. When Omnichannel for Customer Service is deployed, a default live chat work stream is automatically created for the organization. When a channel is created, it must be associated to an existing work stream. Every new chat channel will be set to use the default chat work. This setting can be changed when a channel is being created. However, after the record has been saved, the work stream cannot be changed. To make changes, you will need to delete the chat widget and then create a new one.

Work distribution

Work stream * Live chat workstream

Proactive chat

By enabling this feature, you acknowledge that this feature is in preview and you agree to the [Preview Terms](#).

Enable Proactive Chat * No

Chat Transcripts

By enabling this feature, you acknowledge that your data may flow outside your organization's compliance and geo boundaries. This includes Government Cloud environments. Learn more [here](#) and in the [Microsoft Privacy Statement](#).

Allow download of transcript * Yes

Allow email of transcript * No

A work stream is required, and can only be changed when the channel is being created.

Personalize a chat widget's appearance

Most organizations brand their items to look a specific way. Branding helps customers recognize whom they are working with and helps to provide a consistent journey. When creating a chat widget, organizations can tailor visual elements of the widget to better align with their branding.

The **Design** tab provides several options for organizations to personalize the chat widget to best fit their organization:

- **Theme color** - Twelve predefined theme colors are available.
- **Logo** - Defines the URL to the logo that will be used in the chat widget.
- **Title** - Title of the widget that is displayed on the chat widget when it is minimized and maximized.
- **Subtitle** - Text that is presented under the title on the widget.

- **Position** - Defines where the widget will be located on the screen.
- **Operating hours** - Defines when the widget will be available.

Live Chat
Chat Widget

Basic details **Design** Pre-chat survey Location

Online

Theme color	* Blue
Logo	* https://[REDACTED]/livechatwidget/images/chat.svg
Title	* Let's Chat!
Subtitle	We're Online
Position	* Bottom right
Operating hours	Standard

Operating hours ensure that the widget will be displayed only when staff is available to support it.

Work with location information

The **Location** tab allows organizations to define which websites and domains that the widget should be shown on. In the **Widget location** section, organizations can specify the website domain where the chat widget must be shown. The domain format should not include the protocol (for example, **http** or **https**).

Organizations do not have to specify a domain. If no domains are specified, the chat widget can be embedded on any website without restrictions. If a domain is specified, the chat widget can only be hosted on the specified domain.

The screenshot shows the 'CHAT WIDGET' configuration page for 'Contoso Chat'. The 'Location' tab is selected. Under 'Widget location', there is a table with one row: 'Title' (Contoso Portal) and 'Value' (contosocommunity.microsoft.com). Below this is a section titled 'Visitor location' with a note about enabling location sharing. It includes fields for 'Request visitor location' (set to 'Yes') and 'Geo Location Provider' (set to 'GeoLocation').

When an organization wants to capture geographic data about the customer who initiated the chat, they can enable it in the **Visitor location** section. In this section, organizations can enable the ability to request the visitor's location. A geo location provider record is required and will need to be created prior to enabling it on a chat widget.

More information on [visitor location detection¹¹](#) is available.

Enable a chat channel for transcripts

Some customers might want to have a record of what occurred during a support session. They might retain the session for their records or refer to it in the future. For example, an agent might include a link to a helpful site or might have provided information that the customer found helpful. By having a transcript of the conversation handy, the customer could effortlessly locate the necessary information.

Chat for Dynamics 365 Customer Service allows customers to download or receive an email copy of their chat transcripts. After download and email options are enabled, customers can request a copy of their chat transcript at any time during a chat session. If they do not request a copy during the conversation, they will be reminded at the end of the conversation to request a transcript.

The **Basic details** tab of a chat widget includes a **Chat Transcripts** section, where two options are available (both of which will be set to **No** by default):

- **Allow download of transcript** - Allows your customers to download the chat transcript.
- **Allow email of transcript** - Allows your customers to send the chat transcript as an email.

¹¹ <https://docs.microsoft.com/dynamics365/omnichannel/administrator/geo-location-provider/?azure-portal=true>

If **Allow email of transcript** is set to **Yes**, you must also provide the following information:

- **Email Template** - Defines which email template to use when you are sending the transcript.
 - Use an email template that is provided by Chat for Dynamics 365 Customer Service.
 - Modify the template that is provided by Chat for Dynamics 365 Customer Service.
 - Create your own email template.
- **From mailbox** - Defines the mailbox record that will be used to send the transcript.

A mailbox for the user from whom the email will be received must be configured before it can be used.

Chat Transcripts

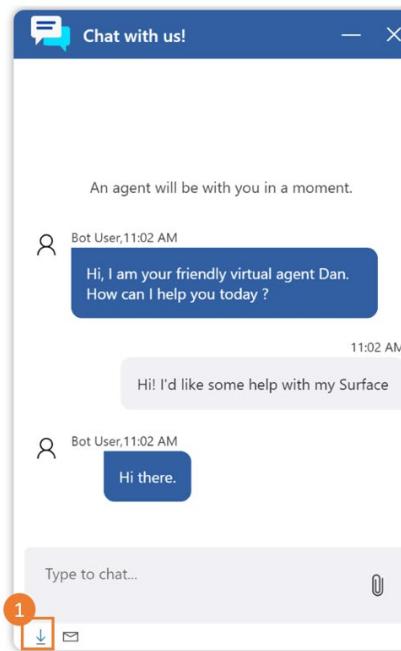
① By enabling this feature, you acknowledge that your data may flow outside your organization's compliance and geo boundaries. This includes Government Cloud environments. Learn more [here](#) and in the [Microsoft Privacy Statement](#).

Allow download of transcript	*	Yes
Allow email of transcript	*	Yes
Email Template	*	Conversation transcript
"From" mailbox	*	[Placeholder]

The mailbox used to email the transcript will need to be configured and enabled.

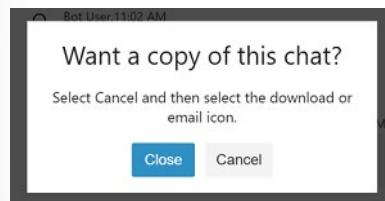
Request transcripts during a conversation

After transcripts have been configured, customers will see icons at the bottom of the chat widget. These icons are used to initiate an email or download a copy of their chat transcript. The transcript will be sent to the customer when the chat ends.



- **Download the chat transcript** - Select the download icon at the bottom of the chat screen.
- **Send the chat transcript by email** - Select the email icon at the bottom of the chat screen.

At the end of the chat conversation, the following window appears, reminding the customer that they can either download a copy of their chat transcript or send a copy by email to themselves.



Configure file attachment capability

Occasionally, during a conversation, agents and customers might need to send supporting files to each other to assist in finding a resolution. For example, if a customer receives an error while trying to complete a process, they can send the screenshots of the steps and error message to the agent. An agent might send the customer a white paper or a step-by-step troubleshooting guide.

To support these scenarios, organizations can enable file attachments in a conversation. After the attachments have been enabled, customers and agents can send files to share more information about their issues. All transferred files are associated with the conversation. If the agent who is working on the issue

transfers the chat to another agent, that new agent can also access the attached files in the conversation.

Two options are available for file attachment:

- **Enable file attachments for customers** - Allows customers to send files to agents.
- **Enable file attachments for agents** - Allows agents to send files to customers.

Basic details Design Pre-chat survey Location

General information

Name: * Live Chat
Language: * English - United States
Agent display name: Full name
Authentication settings: ***

File attachments

Enable file attachments for customers	Yes
Enable file attachments for agents	Yes

Work distribution

Work stream: * Live chat workstream

Proactive chat

By enabling this feature, you acknowledge that this feature is in preview and you agree to the [Preview Terms](#).
Enable Proactive Chat: * No

Chat Transcripts

By enabling this feature, you acknowledge that your data may flow outside your organization's compliance and geo boundaries. This includes Government Cloud environments. Learn more [here](#) and in the [Microsoft Privacy Statement](#).

Allow download of transcript: * Yes
Allow email of transcript: * No

Queue position

Show position in queue: Yes

Code snippet

```
<script id="Microsoft_Omnichannel_LCWidget" src="https://oc-cdn-. /LiveC hatBootrapper.js" data-app-id="5b942ff6-12eb-
```

Attach files during a conversation

After file attachments have been enabled, an attachment icon will be displayed in the chat widget. When customers or agents select the icon, they will be provided the ability to select the file that they want to attach.



[!IMPORTANT]

The files that are being attached in the conversation follow the same restrictions that are used to attach files in **Notes** records. If a customer tries to attach a file type that is unsupported, exceeds the maximum file size, or contains malicious content, the file is not uploaded. The customer will receive a message in the chat window that explains the problem.



The file size limit for attachments and unsupported file types is defined in the web client.

More information on [how to configure file size limits and unsupported file types¹²](#) is available.

Work with pre-chat surveys

When customers start conversation requests, make sure that you get as much information from them as possible. Then, you will be able to provide thorough details when the conversation is passed to the agent. This information might include customer or case details so the agent can more effectively understand the context around the conversation. Multiple factors can impact how much data is available to the agent when the request is handed off to them.

Two common scenarios of conversation initiation include:

- **Authenticated chat** - The user is signed in to the website or portal where the chat was initiated from.
- **Unauthenticated chat** - The user is not signed in to the website or portal where the chat request was being initiated from.

Authenticated chat

In instances when an authenticated user initiates a chat conversation request, the user's details are passed through and used to locate and load details that are related to that customer on the **Customer summary** page. This approach ensures that the agent who is working on an item is equipped with the details that are related to the customer. In some cases, the agent might need to request that the customer verify if this conversation is related to an existing case; if so, the case will need to be manually linked to the conversation.

Unauthenticated chat

When an unauthenticated chat is started, no customer information is available to be passed through and loaded into the **Customer summary** page. Depending on how the chat widget was configured, details about the conversation such as when it was started, location details, and so on, will be available. However, because no user data was available to load, the conversation will likely need to be linked to both an existing customer and case record. As a result, the agent will have to spend additional time locating information or engaging with the customer to get this information.

To assist in this process, you can configure a pre-chat survey to capture key information from the customer before the conversation is initiated. When used for unauthenticated chats, the survey might capture information such as the customer's name, phone number, email address, and case number. For authenticated chats, the survey might focus on the case number, type of device, and so on.

Design surveys

You can enable pre-chat surveys from the **Pre-chat survey** tab by setting the **Pre-chat survey** field to **Yes**.

The main intention of a pre-chat survey is to capture simple information about the customer that should be made available to the agent when they begin working on the conversation. For this reason, pre-chat surveys are limited to a maximum of five questions.

¹² <https://docs.microsoft.com/dynamics365/omnichannel/administrator/configure-file-attachment/?azure-portal=true>

Survey question name	Question text (Survey question name)	Answer type (Survey question name)	Required
Name	Enter your name	Single line	Yes
Phone	Enter your phone number	Single line	Yes
Device	Select the device that is having problem	Option set	No

Each question will contain the following data:

- **Question name** - Name of the question.
- **Question text** - Text that will be displayed to the person who is taking the survey.
- **Question type** - The type of answer that the users will supply. Questions can be set to one of the following options:
 - **Single line** - User can enter a single line of text.
 - **Multiple lines** - User can enter multiple lines of text.
 - **Option set** - User selects an option in a drop-down menu.
 Options must be separated by a semicolon.
- **Mandatory** - Defines whether the question is required or not.

If you need to change the order in which the questions are presented, select the question and then use the **Move up** or **Move down** buttons to position the question where you want.

Survey question name	Question text (Survey question name)	Answer type (Survey question name)	Required
Name	Enter your name	Single line	Yes
Phone	Enter your phone number	Single line	Yes
Device	Select the device that is having problem	Option set	No

Use survey responses to identify customers

When a conversation is initiated, the system searches for accounts, contacts, and cases. If a match is found, the record will be loaded into the **Customer summary** page.

Depending on the table that it is searching, the system will search the following fields:

- **Accounts and contacts** - **Name**, **Email**, or **Phone Number** fields.
- **Cases** - **Case Number** field.

As previously mentioned, an advantage to pre-chat surveys is that they can capture information that will help populate as much data as possible on the **Customer summary** page. This process does not happen automatically. The application needs to know which fields contain the data that will be searched to find the right record. To assist in ensuring that each question response is being searched appropriately, pre-chat survey questions should be entered in the following format.

Pre-chat questions for an unauthenticated chat.

Question name	Answer type
CaseNumber	Single line
Name	Single line
Email	Single line
Phone	Single line

Because the signed-in user details will be used to search and load contact information for authenticated chats, only one pre-chat question asking for the Case Number is needed.

Question name	Answer type
CaseNumber	Single line

Embed a chat widget in a portal

After a chat channel has been created, it will need to be deployed so customers can start engaging with your organization. Omnichannel chat widgets can be deployed to any customer-facing portal. Many organizations use Microsoft Dynamics 365 Portals to engage with and provide self-service capabilities to their customers. In these instances, Omnichannel chat widgets can be added to the customers' portal.

[!NOTE]

Dynamics 365 Portals are now referred to as Power Apps portals, which are basically the same solution, except that they can be deployed and managed from **Power Apps**¹³. Power Apps portals are still supported with a model-driven app. As of this course's publication (November 2019), the app is still referred to as Dynamics 365 Portals.

¹³ <https://make.powerapps.com/?azure-portal=true>

When a chat widget is created, a code snippet is generated for the widget. This code snippet contains address information that is used to launch the chat widget. This code can be embedded in a customer-facing portal.

To deploy a chat widget to a Power Apps portal, a user that has access to the Omnichannel Administration application and administrator rights to Power Apps portals will need to open the chat widget that they want to embed in Power Apps portals. From the **Basic details** tab, the user can copy the widget snippet code from the **Code snippet** section.

File attachments

- Enable file attachments for customers **Yes**
- Enable file attachments for agents **Yes**

Queue position

- Show position in queue **Yes**

Chat Transcripts

① By enabling this feature, you acknowledge that your data may flow outside your organization's compliance and geo boundaries. This includes Government Cloud environments. Learn more [here](#) and in the [Microsoft Privacy Statement](#).

- Allow download of transcript **Yes**
- Allow email of transcript **No**

Code snippet

Widget snippet

```
<script id="Microsoft_Omnichannel_LCWidget"
src="https://oc-cdn-
hatBootstrapper.js" data-app-id="5b942ff6-12eb-
```

Code will be generated automatically after the widget is saved.

After the code snippet has been copied, it will need to be added to the Power Apps portal. This task can be done through a Dynamics 365 Portals model-driven app. The app can be accessed from the apps screen of your environment, such as <https://mytrainingenviornment.crm.dynamics.com/apps>

You can also access the app by going to **Powerapps**¹⁴, selecting the environment that you want to work with, and opening the Dynamics 365 Portal app from the **Apps** menu.

To ensure that the widget is deployed appropriately, the portal application includes a special content snippet called **Chat Widget Code**. This content snippet is used for deployment of chat widgets to a portal site. The content snippet is not just for Omnichannel chat widgets; it can be used with any widget that is deployed through code snippets. Go to **Content Snippets** under the **Content** heading and open the **Chat Widget Code** snippet.

¹⁴ <https://make.powerapps.com/?azure-portal=true>

Content	Categories - Child Categories Heading	Community Portal	Text	Child Categories
Content Snippets	Category - Print Button Label	Community Portal	Text	Print
Entity Forms	Category - Related Articles Heading	Community Portal	Text	Related Articles
Entity Lists	Chat Widget Code	Community Portal	HTML	<script id="Microsoft_Omnichannel_LCWidget" src="https...
Shortcuts	CustomerService/Support/HelpQuestion	Community Portal	Text	What can we help you with?
Web Files	EntityList/ViewNotAvailableMessage	Community Portal	HTML	<div class="alert alert-block alert-warning"><p><span cla...
Web Forms	Footer	Community Portal	HTML	<div class="pull-right">&nbsp</div><p>Copyright © {f...
Web Link Sets	Forum Last Post Heading	Community Portal	Text	Last Post
Portal Languages	Forum Name Heading	Community Portal	Text	Forum

The **General** tab includes an HTML field that can be used to embed the widget. By default, the field will be set to use the designer because the snippet for the widget is HTML based. You need to make sure that you are selecting the **HTML** tab. When you are on the **HTML** tab, you can paste the chat widget snippet into the field.

[!NOTE]

Make sure that you have pasted the entire code line into the field correctly. Otherwise, the widget will not function, and you will likely not be provided with a visible error that indicates that the code has been incorrectly pasted. A simple way to verify that everything is correct before navigating away from the page is to switch back to the **Designer** tab. If the widget appears blank, your code is entered correctly. If your code is visible, then it was not pasted correctly, and it is not being read as a script. You will need to copy the code and paste it into the **HTML** tab again.

CONTENT SNIPPET
Chat Widget Code

General Administration Related

Value (HTML)

Designer | **HTML**

```
1 <script id="Microsoft_Omnichannel_LCWidget" src="https://... .net/livechatwidget/scripts/LiveC
```

After the content snippet record is saved, the chat widget will be embedded into the portal.

[!IMPORTANT]

In most instances, the chat widget should be visible soon after it is saved; however, changes that are made to a portal from the Dynamics 365 Portal app can take up to 15 minutes before they are reflected. You can refresh the portal page periodically to see if the widget has been deployed.

Control which chat widget is presented to users

Often, scenarios might occur where your organization will want to use different chat widgets depending on whether the customer who initiated the chat is authenticated or not authenticated.

When a chat channel is configured, it can have only one pre-chat survey configured. When a channel is configured with a survey, every question in that survey will be presented to anyone who initiates a chat conversation through that widget. If a user initiates a chat through the channel, they will be presented with the entire survey and asked to supply answers to all questions, even if the user previously authenticated prior to initiating the survey.

For this reason, organizations might find it helpful to configure two separate chat widgets. One chat widget would contain questions regarding CaseNumber, Name, Email, and Phone Number, where it is targeted toward unauthenticated users. Another channel would be targeted toward authenticated users and would include items such as CaseNumber. In this scenario, scripts can be used to determine which chat widget to use based on whether the user who initiated the chat is authenticated or not.

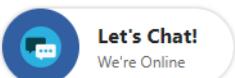
To configure two separate chat widgets, follow these steps:

1. Create two chat widgets, one for Auth and one for Unauth visitors.
2. For Unauth visitors, start them with the pre-chat survey to find out who they are.
3. For Auth visitors, start them with PVA or a live agent.
4. To enable this configuration, add the following Jscript condition code on the page where you deploy your chat widgets:

```
{%if user%}  
<!--Embed script for auth chat widget-->  
{%else%}  
<!--Embed script for unauth chat widget-->  
{%endif%}
```

Customer experience of chat widget

After the chat widget has been configured, it will be shown on the portal in minimized mode. If agents are signed in to Omnichannel for Customer Service and have access to this support channel, the widget will display an online message. If no agents are available, an offline message will be displayed.



When the user selects the widget, it will be maximized so they can start a conversation with an agent. The widget can be minimized again if needed. While the widget is minimized, a count of the number of messages received will be shown. Agents can see the messages by selecting the widget again.

The widget displays messages that were sent from the conversation participants and system-generated messages for events, such as when an agent joins a chat or when a chat is transferred to another agent.



An agent will be with you in a moment

Gilda Moss has joined the conversation



Gilda Moss, 11:19 AM

Hello, you're chatting with Gilda. How may I help you?

11:19 AM

I need help with my surface laptop

Type to chat...

A screenshot of a web-based form titled "Let's Chat!". The form contains several input fields and instructions:

Please answer below questions

Enter Your Name

Enter your Country Name

Enter your email id

Please enter your phone no

Enter your CaseNumber

Fields marked with * are mandatory

Submit

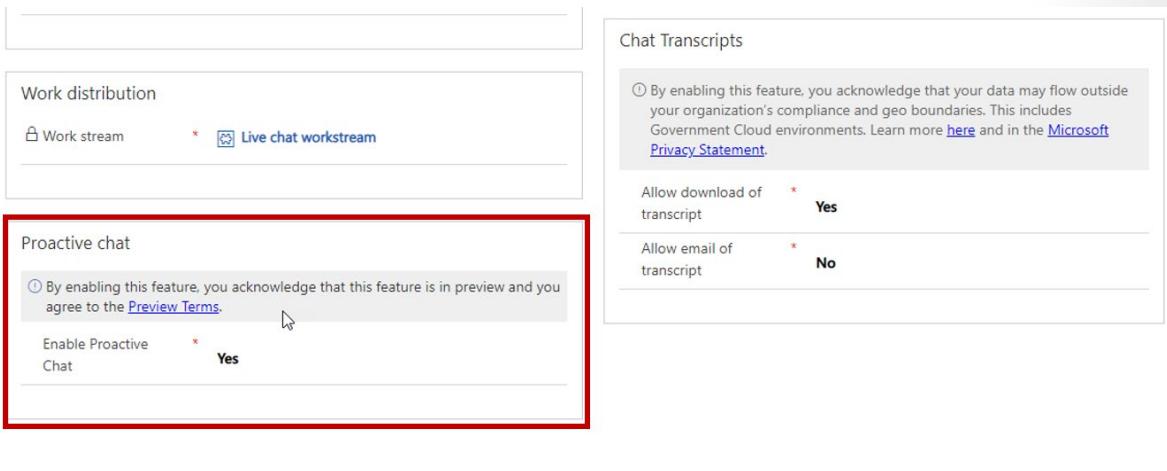
When a chat has been configured for a survey, it will be shown to the user before the conversation is started. Data that is collected from the survey is often used to help the solution route and connect the user with the most appropriate agent. Customers can end the chat by selecting the **Close Chat** button. A confirmation message is displayed before the chat will be ended.

Configure a chat channel for proactive chat

A proactive chat allows customer service agents to engage with customers by automatically inviting them to a chat conversation based on configured rules. This feature helps organizations proactively engage with customers at a time when it is needed. Proactive chat helps improve customer experience and satisfaction.

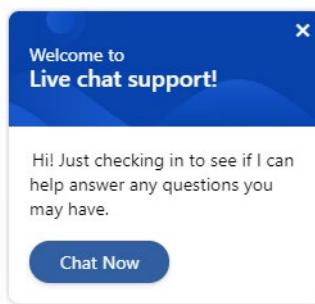
Information about the user journey, time spent on a webpage, and more can be used to decide when to engage with a customer. You can control the proactive chat experience by using personalized trigger messages and configurable rules to define the target audience, time frame, and target location.

Proactive chat can be enabled on the **Basic details** tab of the chat channel.



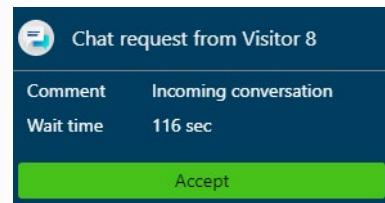
The conditions to trigger the proactive chat are defined in the webpage code in which the chat widget is embedded. If the conditions are fulfilled, the proactive chat invitation is displayed with the help of an API.

When proactive chat is enabled, the chat invitation is displayed to customers based on the configured triggers.



A customer can choose to accept the chat invitation or close it. The chat invitation closes automatically after one minute if the customer does not accept it.

When a customer accepts the proactive chat invitation, an agent receives the notification.



The agent then accepts the chat request and starts conversing with the customer to provide the required help. The **customer summary**¹⁵ is loaded and displayed if the customer's details match the stored data.

If your administrator or developer configures the **Additional details** tab, and if additional context variables exist such as time spent on a page and the page URL from where the chat is initiated, they are displayed on the **Additional details** tab.

A screenshot of the "Additional details" tab in the customer summary. The tab is active, indicated by a blue underline. The section displays the following data:

Time On Page	15sec
Page URL	knowledgebase
Conversation details	
Engagement channel	Live Chat
Waiting time	23 secs
Queue	Default Queue
Start time	9/18/2019 3:05 PM

¹⁵ <https://docs.microsoft.com/dynamics365/omnichannel/agent/agent-oc/oc-customer-summary/?azure-portal=true>

Use proactive chat

Deploying a proactive chat widget allows customer service agents to engage with customers by automatically inviting them to a chat conversation based on preconfigured rules such as time spent on a page or number of page visits. This feature helps organizations engage more proactively with customers to provide contextual help based on what they are doing now. This experience can dramatically improve the customer experience and overall satisfaction.

Relevant information about the user's journey, time spent on a webpage, and more can be used to decide when to engage with a customer and to help personalize trigger messages and configurable rules to define the target audience, time frame, and target location.

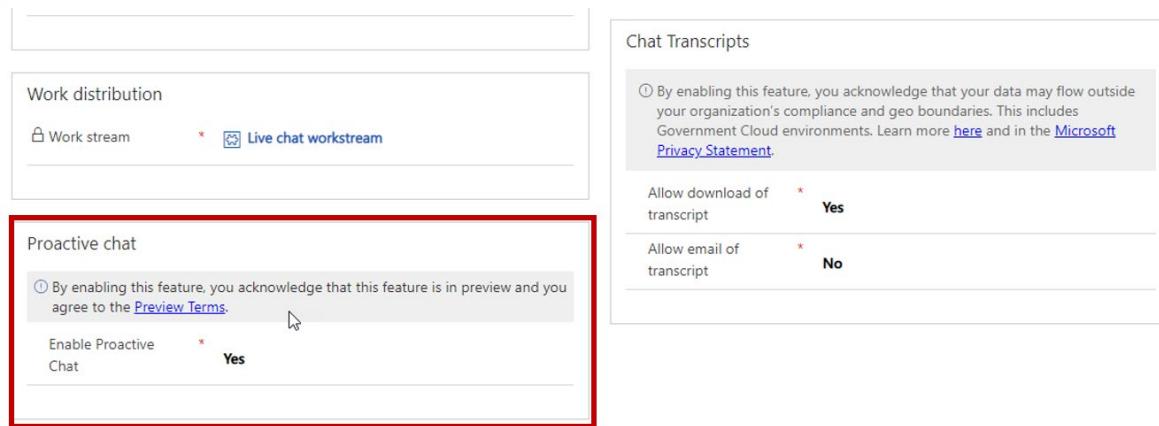
Multiple scenarios exist where proactively using a chat can be beneficial to customers:

- **Wait times** - A timer is attached to a specific page such as a knowledge article. After someone is on the page for a predefined amount of time, they are presented with a proactive chat such as "Hi! Just checking to see if I can help answer any questions you might have."
- **Multiple visits to the same page** - Multiple visits to a single page during a single session often indicate that customers are not finding what they are looking for and that they might require additional help. Details that are related to the page can be loaded into the proactive message that is presented to the customer, such as "Hi! Do you have a question on your Surface device? I am here to help."
- **Customer checking status for case** - This method combines the timer functionality with presenting details from the record that is being viewed, such as "Hi! How are you doing today? The status of the case: <caseid> is in progress. Would you like to get more details?"

In addition to the previous example conditions, proactive chat can be used in many other ways from proactively offering support before someone leaves a page, providing help for the customer who is coming from a specific page or region, or providing options during specific time frames.

Configure a chat channel for proactive chat

Configuring and deploying a proactive chat solution is a two-part process. First, proactive chat must be enabled on any widget that it will be used with. You can complete this task on the **Basic details** tab of the chat channel.



Before a proactive message can be displayed, you will need to define the conditions that will be used to trigger the proactive message. These conditions are defined as code on the page where the condition needs to trigger the message. For example, if you wanted to show a proactive message on a knowledge article page after a specific amount of time, you would add the following code to the article page:

```
<!-- Code to show proactive chat invite after visitor has spent given time on the webpage -->
<script id="Proactivechattrigger">
    // Wait for Chat widget to load completely
    window.addEventListener("lcw:ready", function handleLivechatReadyEvent(){
        var timeToWaitBeforeOfferingProactiveChatInMilliseconds = 20000; //time to wait before Offering proactive chat to web page visitor
        // Setting context variables
        Microsoft.Omnichannel.LiveChatWidget.SDK.setContextProvider(function contextProvider(){
            return {
                'Proactive Chat': {'value': 'True', 'isDisplayable': true},
                'Time On Page': {'value': timeToWaitBeforeOfferingProactiveChatInMilliseconds, 'isDisplayable': true},
                'Page URL': {'value': window.location.href, 'isDisplayable': true},
            };
        });

        //Display proactive chat invite after 'timeToWaitBeforeOfferingProactiveChatInMilliseconds' milliseconds
        setTimeout(function(){
            Microsoft.Omnichannel.LiveChatWidget.SDK.startProactiveChat({message: "Hi! Do you have any questions?"}, false)
        }, timeToWaitBeforeOfferingProactiveChatInMilliseconds);
    });
</script>
```

The preceding example will automatically display the message "Hi! Do you have any questions?" after someone spends 20 seconds on a knowledge article page. Similar versions of this code could be used to support any number of different scenarios.

While your primary focus is not on the development and coding of the components to make items work, it is important to have a basic understanding of how it works and what could be done. The following links provide a great starting point for when you are getting ready to custom develop items for proactive chat solutions.

Proactively starting chat sessions¹⁶

Proactive Chat Start APIs¹⁷

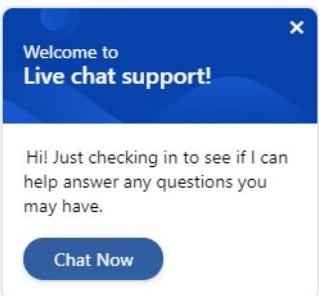
¹⁶ <https://docs.microsoft.com/dynamics365/omnichannel/developer/how-to/start-proactive-chat/?azure-portal=true>

¹⁷ <https://docs.microsoft.com/dynamics365/omnichannel/developer/reference/methods/startproactivechat/?azure-portal=true>

Work with proactive chat

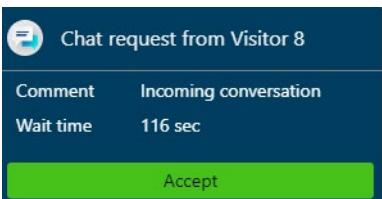
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If your administrator or developer configures the **Additional details** tab, and if additional context variables exist such as time spent on a page and the page URL from where the chat is initiated, they are displayed on the **Additional details** tab.

¹⁸ <https://docs.microsoft.com/dynamics365/omnichannel/agent/agent-oc/oc-customer-summary/?azure-portal=true>

Conversation summary		
Pre-chat survey	Visitor details	Additional details
Time On Page	15sec	
Page URL	knowledgebase	
Conversation details		
Engagement channel	Live Chat	
Waiting time	23 secs	
Queue	Default Queue	
Start time	9/18/2019 3:05 PM	

Summary

Providing customers with multiple options for engaging support gives greater flexibility for organizations. Defining which channels to make available and how those channels populate session data ensures that customers and agents can engage with each other in the best way possible. Offering a chat communication option to customers is becoming a requirement for any support organization today. Omnichannel for Customer Service lets organizations provide their customers with flexible chat options that can be surfaced in different areas to offer targeted support based on what the customer is doing. Organizations can capture key information about their customers and use it to put their customers in touch with the right support people.

In this module, you learned how to deploy a chat widget in Omnichannel for Customer Service, including:

- Examining how chat channels are used and the role that they play in Omnichannel for Customer Service.
- Looking at how chat channels are created and which components need to be configured.
- Discovering how file attachments and chat transcripts are used and the process for enabling them.
- Learning how to create pre-chat surveys that help provide additional information about the person who initiates a conversation and how to use that data to control what is loaded in the application.
- Examining the process that is used to embed a chat widget in a portal.

The next steps would be to gain a deeper understanding of how to define and configure other channel communications in Omnichannel

for Customer Service. This additional learning would include how to deploy SMS, Facebook, and Table channels.

Create smart assist solutions

Introduction

Customer Service organizations are moving from reactively responding to customer requests toward creating automated, intelligent, predictive solutions to help customers faster. Organizations are using AI to provide agents with contextual details of what is occurring at the moment. This ability to pivot based on intelligence helps agents increase key performance metrics and deliver a better customer experience to increase customer satisfaction. As agents become more efficient and productive, the organization's cost of operating the support center is optimized, and businesses can earn customer loyalty by delivering better customer service.

Microsoft Dynamics 365 Omnichannel for Customer Service provides agents with the ability to connect intelligence to help them find similar, suggested resources to help customers. Smart assist includes a connector in Omnichannel and sample code to help build a smart assist bot. The bot is displayed to agents in the Productivity pane of the UI by using adaptive cards. A smart assist bot acts as an intelligent assistant that provides real-time recommendations for similar cases, knowledge articles, or other entities that the bot can be programmed to search for to help agents effectively act on issues while interacting with customers.

By using smart assist, you can build custom bots and plug them into environments to interpret conversations in real time and provide relevant recommendations to agents in the context of the current conversation. Organizations can use this information to plug in recommendations that are specific to their organization. For example, as an agent works with a customer, smart assist can suggest relevant knowledge articles or identify similar cases that could potentially help find a solution. Additionally, smart assist provides action-oriented recommendations to help implement automated actions, such as sending a knowledge article to a customer.

Smart assist can be enabled for conversation channels such as chat, SMS, Facebook, and more, to provide a consistent experience for agents.

Prerequisites for deployment

To use smart assist, you must deploy the Dynamics 365 Productivity Tools solution in your environment. You can download it free from [Microsoft AppSource¹⁹](#).

¹⁹ https://appsource.microsoft.com/product/dynamics-365/mscrm.d365_productivity_tools?tab=Overview



In addition to smart assist, which is covered in more detail throughout this module, the Dynamics 365 Productivity Tools package includes:

- **Macros** - Help agents perform repetitive or monotonous tasks such as opening model-driven app forms, pre-populating fields with details, sending emails, or taking notes.
- **Agent scripts** - Provide guidance to agents on specific issues or scenarios. Scripts help organizations to be unified, accurate, and effective in addition to being faster and more efficient in terms of customer handling.

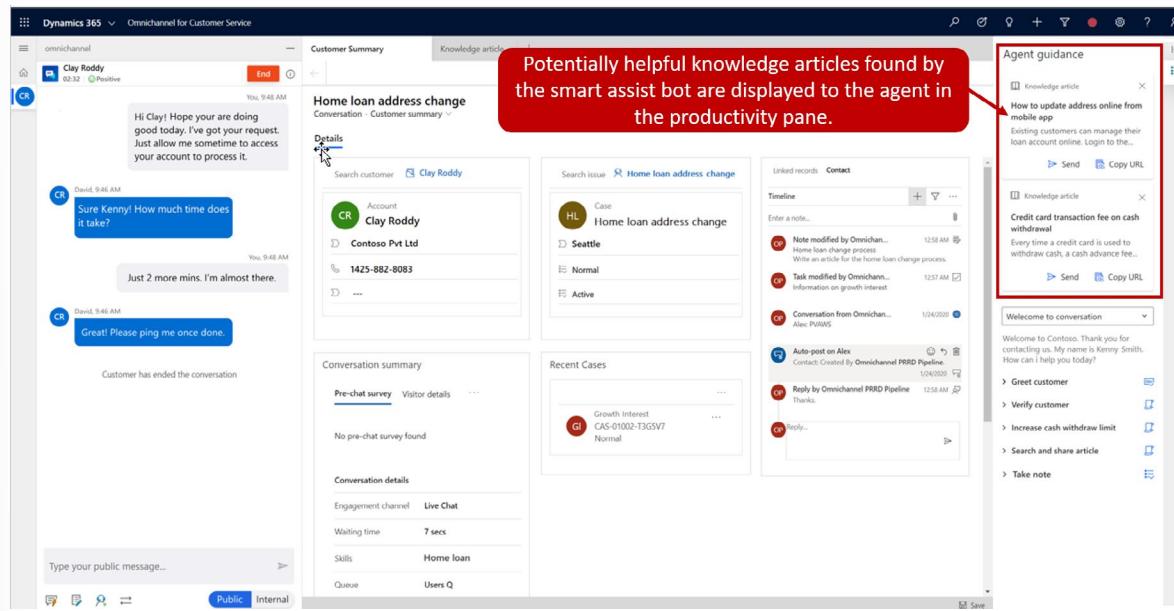
You must build your own smart assist bot and then connect it to Omnichannel for Customer Service. You can start with the documentation and sample smart assist bot code that is provided and then expand it to include any other entities that you want the bot to suggest content from. After it has been integrated, the smart assist bot will interpret the conversation context in real time and provide suggestions to agents.

High-level steps to deploy a smart assist bot

The five steps to enable smart assist and deliver intelligent suggestions to users in Omnichannel for Customer Service are:

1. **Create adaptive cards that will render content.** These cards act as a smart assist bot content delivery system for agents when administrators turn on the Productivity pane.
2. **Build a smart assist bot.** This automation locates and presents relevant data to assist agents in live conversations with customers.
3. **Create a bot user.** This bot user acts as a smart assistant to the agent and uses the smart assist bot that was created. For example, to search for knowledge articles, you must create a bot user that points to the smart assist bot and has been assigned the necessary permissions to access knowledge articles.

4. **Add a smart assist bot to a workstream.** Ensure that the bot user is included in the workstream so that any agents who are part of that workstream can see suggestions that the bot has provided. For example, a live chat workstream that is used with chat would have the knowledge article smart assist bot added to that workstream to help locate potential knowledge articles and show them to agents who are taking chats.
5. **Enable the Productivity pane.** The Productivity pane displays smart assist adaptive cards that include the suggested content to agents in Omnichannel for Customer Service. For example, after a potential article has been found and suggested by the bot, the details of the article are presented to the agent in the productivity pane.



Now that you have examined what smart assist is and how it works at a high level, you can explore the process and technology that are used to deploy a smart assist bot.

Work with Microsoft Adaptive Cards

Before exploring bot creation, you should have a deeper understanding of the technology that is used to display content to agents in the Productivity pane. You can present agents with information, such as suggested knowledge articles, in the Productivity pane by using Microsoft Adaptive Cards.

Microsoft Adaptive Cards is a portable, open-source solution that helps you deliver content to applications. Adaptive cards use a single format for delivering content that minimizes the number of schemas that developers need to learn. This approach helps lower the cost of developing content and helps the content work across a broader set of applications. Another advantage of Adaptive cards is that the content will natively render inside a host application such as the Productivity pane in Omnichannel for Customer Service. The content is automatically styled to match the host application UX and brand guidelines so that it has the appearance and behavior of the host application. As a result, users will have a consistent experience, regardless of how they're accessing the content.

For example, an organization creates an Adaptive card by using the Microsoft Bot Framework, which will be used to deliver knowledge articles to users. When a user consumes this information while using Skype, it will appear and behave similar to a typical Skype card. If someone in an application such as Microsoft Teams consumes this same payload, it will appear and behave similar to Microsoft Teams. No matter

where the information is consumed, the same payload will activate inside applications that support Adaptive cards and will still feel entirely native to the app.



This concept is important when you are working with smart assist inside Omnichannel for Customer Service. Smart assist bots search and use data payloads from different systems or components such as cases from Dynamics, Calendars, or Office, or from native or other management systems. Regardless of where the data comes from, it's presented to the user in Omnichannel for Customer Service by using the same user interface as other omnichannel components.

Core design principles of Adaptive cards

Adaptive cards are significant parts of any Omnichannel for Customer Service implementation where smart assist will be used. As you consider using Adaptive cards, keep in mind some **guiding principles**²⁰ that have been useful in helping to keep the design process on track:

- **Focus on using semantic values.** By using semantic values and concepts as opposed to pure pixel-perfect layouts such as colors, item sizes, and images, the host application is able to make better decisions about the actual appearance and behavior of content that is related to the application that it is being rendered in.
- **Card authors own the content; the host app owns the appearance and behavior.** When creating cards, authors own what data should be presented in the card. This data might consist of information from a knowledge article that should be included or actions such as the ability to email the article. After that content has been delivered, the hosting application takes over and controls the appearance and behavior of the card to most accurately render it in the context of their application.
- **Keep the card simple but expressive.** Adaptive cards should be expressive and general purpose. The goal is not to build a UI framework but to be an intermediate layer that is similar to Markdown, where a simple and consistent description of document content is created. Adaptive cards can create a simple, expressive means of describing card content.

²⁰ <https://docs.microsoft.com/adaptive-cards/resources/principles/?azure-portal=true>

- **When in doubt, keep it out.** It's easier to add something later rather than endure a mistake. When you are defining what to include on the card, if you aren't certain whether the information should be included or not, it might be best to leave it out. Adding a property later is better than persisting with a legacy that you wish you didn't have to support.

Typically, the people who deploy smart assist into a Dynamics 365 Omnichannel for Customer Service environment aren't the same people who will be writing the Adaptive card content. Adaptive card content is typically created by developers. Likely, the developers might not be familiar with Dynamics 365 products. After they have finished creating the card content, the developer will hand off the Adaptive card to a Dynamics 365 administrator to deploy into the Omnichannel for Customer Service environment by using smart assist. For this reason, this module will not provide an in-depth explanation of the process of writing and rendering content. Rather, it will focus on providing a high-level overview of key concepts.

Write cards

The basic structure of a card is as follows:

- **AdaptiveCard** - Root object that describes the Adaptive card, including items such as what elements comprise the card, what actions it includes, how it is spoken if it's read back, and the schema version that is required to render it.
 - **Body** - The body consists of building blocks that are known as elements. Elements might include images to render, text to include, media files, input parameters, and more. Elements can be composed in nearly infinite arrangements to create many types of cards.
 - **Actions** - Many cards could have a set of actions that a user might take on it. This property describes those actions that are typically rendered in an action bar at the bottom of the card.

The following example shows a simple card that includes a single line of text followed by an image.

```
{  
    "type": "AdaptiveCard",  
    "version": "1.0",  
    "body": [  
        {  
            "type": "TextBlock",  
            "text": "Here is a ninja cat"  
        },  
        {  
            "type": "Image",  
            "url": "http://adaptivecards.io/content/cats/1.png"  
        }  
    ]  
}
```

Work with elements

Elements are the key components that make up the body of the card. Multiple elements will be defined to help determine the overall layout of the card. Every element has a type property that identifies what kind of object it is. Each type has different properties that define additional details about the element. Notice that the preceding card has two elements: TextBlock and Image.

The three primary types of elements that are used in cards are:

- **Adaptive elements** - The most fundamental elements that are used in cards. These elements include **TextBlock** and **Image**, which are used for adding and controlling the appearance of text and images in cards.

- **Container elements** - Help to arrange a collection of child elements for easier consumption and/or delivery. Containers are typically used for groups of items such as columns or images.
- **Input elements** - Allow you to ask for native UI information, such as text, dates and times, numbers, and so on, to build simple forms.

Work with actions

Many cards will benefit from adding actions that can help provide better usability to the person who is consuming the card. For example, you might use an action to open an external URL or to open a subcard that provides additional information.

Render cards inside your application

After a card has been created, it can be rendered inside applications. SDKs have been provided for all common platforms and provide a **detailed specification**²¹ for creating your own Adaptive card renderer. The following table defines the different Adaptive card SDKs that are available.

Platform	Install
JavaScript	npm v1.2.6
.NET WPF	NuGet v1.2.4
.NET HTML	NuGet v1.2.4
Windows UWP	NuGet v1.2.9
Android	maven-central v1.2.9
iOS	pod v1.2.9

After you have deployed the correct SDK, you need to:

- Create an instance of the renderer (`AdaptiveCardRenderer`). This action acquires the card payload and connects the action events.
- Render a card. After you acquire a card payload, call the renderer and pass in the card. You'll receive a native UI object that consists of the card contents. Now, you can place this UI somewhere in your app.

Build a smart assist bot

Increasingly, more organizations are taking advantage of bots because they help provide customers with automated responses in a conversational manner. Bots can be used to help deflect cases away from agents, collect information, or assist with providing answers to customer questions. Smart assist applies this concept to the agents who are working with customers to provide them with real-time recommendation guidance and enable them to take actions while interacting with the customers.

Consider a common scenario where an organization that is using Omnichannel for Customer Service might want to use a smart assist bot to provide agent assistance. While an agent is working with a customer, it might be convenient for them to be presented with a list of similar cases as a recommendation. The agent can open and view the resolution for the case that they feel is most similar and relevant. Then, the agent can suggest that resolution to the customer over the communication channel that is being used, such as chat.

To implement this approach, follow these steps:

1. Generate intent to interpret conversation context.

²¹ <https://docs.microsoft.com/adaptive-cards/rendering-cards/implement-a-renderer/?azure-portal=true>

2. Write necessary Adaptive cards to display case info.
3. Create custom actions for displaying cards.

Generate intent and interpret the conversation context

When deploying any smart assist scenario, your first task is to analyze the conversation to understand its context before you suggest actions to the agent. Analyzing the ongoing conversation will need **Language Understanding**²² Intelligent Service (LUIS). LUIS is a machine learning-based service that you can use to build natural language into apps, bots, and IoT devices. It interprets intent and collects valuable information from sentences. You can use the extracted intent to suggest a knowledge base article, schedule an appointment, or suggest similar cases.

Intents can be created for each topic that you want to address or the most common topics that are being discussed. For example, if you wanted to create similar case recommendations for printer noise, you would create an intent in LUIS with the same name and then add at least 10-15 examples, such as loud noise from printer, printer making grinding noise, loud clicking noise, loud sound, and so on. You would then train the LUIS app to recognize this intent.

For more information on using Language Understanding Intelligent Service (LUIS), see [**https://www.luis.ai**](https://www.luis.ai)²³.

Write adaptive cards

Information that will be presented to the agents in the user interface is done through Adaptive cards. Cards need to be written to define what case information will be available on the card and any actions that can be run. For example, a card might be created to include the similar case title, description, and an action that opens the case record.

Use custom actions for implementing custom functionalities

As you are building the smart assist solution, you need to consider what information is going to be used as part of the bot and then determine what additional configuration might be needed. For example, if your smart assist bot will recommend knowledge articles, it will need to have necessary access to the articles. If the bot will make similar case recommendations, that functionality will need to be configured in the environment to ensure that similar cases can be suggested.

In a similar case scenario, you need to configure the following parameters in the environment:

- **Set up similarity rules** - These rules will need to be configured for the table that you want to display results for. [**Create a new similarity rule to view similar cases**](#)²⁴.
- **Turn on relevance search** - Relevance search is a key factor in determining what information is returned. The search mechanism filters the cases by using key phrases and suggests similar cases. [**Enable a field for exact matching of similar cases**](#)²⁵.
- **Similar cases API** - After similarity rules and relevance search have been configured, similar cases can be fetched by using the GetSimilarRecords function.

²² <https://luis.ai/?azure-portal=true>

²³ <https://www.luis.ai/?azure-portal=true>

²⁴ <https://docs.microsoft.com/dynamics365/customer-service/suggest-similar-cases-for-a-case#create-a-new-similarity-rule-to-view-similar-cases/?azure-portal=true>

²⁵ <https://docs.microsoft.com/dynamics365/customer-service/suggest-similar-cases-for-a-case#enable-a-field-for-exact-matching-of-similar-cases/?azure-portal=true>

Call custom actions by using Adaptive cards

If you want to embed a custom action within a suggestion, you will need to create a web resource. See the Power Apps topic on [Create your own actions²⁶](#) for information on how to build a custom action. See the [Web resources in model-driven apps²⁷](#) topic for information on how to create web resources. These web resources need to be uploaded under the **Customer Summary** form.

Sample: Bot that displays knowledge article recommendations

Many scenarios occur where an organization might create smart assist bots to use information. Microsoft has created a sample that is available on GitHub that can be used to create a knowledge article recommendation solution.

Integrate a smart assist bot

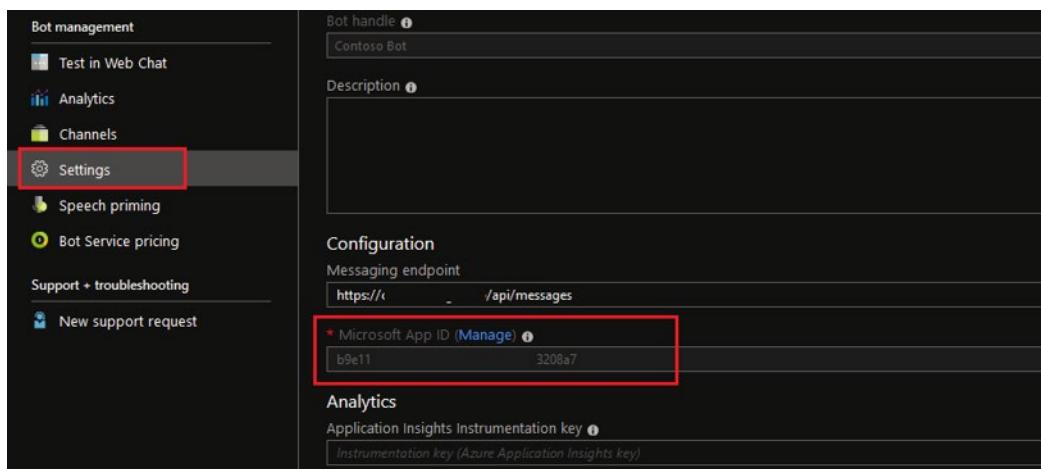
After you have built a bot by using Microsoft Bot Framework and have registered with Azure Bot Service, your bot can be used in Omnichannel for Customer Service as a smart assist bot. To use the smart assist bot, create a bot user in Omnichannel for Customer Service that is defined and assigned as an application user. Then, ensure that this bot user has the necessary Omnichannel for Customer Service security role associated with it.

The process for defining a bot user in Omnichannel for Customer Service consists of two steps:

1. Get the Microsoft App ID of the bot.
2. Create an application user and add bot-specific information to the application user.

Get the Microsoft App ID of the bot

Your first task is to get the Microsoft App ID of the bot that you will be using in Omnichannel for Customer Service. To get the Microsoft App ID, sign in to your [Azure portal²⁸](#). Go to Bot Services, locate the smart assist bot registration, and then select **Settings**, where you will copy the value in the **Microsoft App ID** field. This ID represents the bot's application ID and is what you will use to create a bot user.



²⁶ <https://docs.microsoft.com/powerapps/developer/common-data-service/custom-actions/?azure-portal=true>

²⁷ <https://docs.microsoft.com/powerapps/maker/model-driven-apps/create-edit-web-resources/?azure-portal=true>

²⁸ <https://portal.azure.com/?azure-portal=trueee>

Create a bot application user

When you have the Microsoft Application ID, you can create a bot user in Omnichannel for Customer Service. As of the time that this module was published, bot users could only be defined in the web client. You can access the web client by opening the advanced settings that are available from the **Settings** button, which looks like a gear in the upper-right corner of the Omnichannel Administration application.

After you have opened advanced settings, go to **Settings > Security > Users** and then change the **View** drop-down menu to **Application users**. Define a new user record that is associated with the bot application registration that you worked with previously.

As you define the bot user, provide the details that are highlighted in the following table.

Field	Description
User Name	The record name of the bot; this information is only for identification purposes in the application and is not displayed in the chat widget.
Application ID	An application ID for any valid (non-expired) application that is created in Azure Active Directory (Azure AD) for the same tenant. It is not used by the bot in Omnichannel for Customer Service.
Full Name	Represents the name of the bot user that will be displayed in the chat widget.
Agent Type	This field specifies the type of user record. This field should be set to Bot application user .
Bot application ID	This field should be set to the bot's application ID from Azure AD that you copied in the previous step.

Like any other user, the bot user needs to have a security role assigned to it that ensures access to the necessary information. For example, a bot user who will be searching knowledge articles will need to have the necessary permissions to the articles. Additionally, after you have initially created and saved the user, assign it to the Omnichannel for Customer Service agent security role by selecting **Manage Roles** on the command bar.

Add a smart assist bot to a workstream

After you have created the bot user, add it to the appropriate workstreams to ensure that agents who are using that workstream can see the suggestions. To enable this feature at a workstream level, go to **Work Distribution Management**, select **Work Streams**, and then open the workstream that you want to add the bot to. Select the workstream for which you want to add the smart assist bot. On the **Work Stream** page, select the **Smart Assist** tab. Select **Add Existing User** to see the list of available smart assist bots, select a bot from the list, and then select **Add**. You can add multiple bots to a workstream based on your business requirements. Select **Save** when you have added all necessary bots.

Live chat workstream
Work Stream

Push Work Distribution Mode | Live chat Channel Owner

Work Distribution Context Variables Skill Attachment Rules Routing rule items Smart assist Templates

Bot application users

Add Existing User Refresh

Full Name ↑ Bot application ID ↓

Virtual Agent (Customer Service Bot)

Add the bot user you created for the smart assist bot being used.

Enable the Productivity pane

After you have configured smart assist cards, the final step is to enable the Productivity pane, which displays the **Agent guidance** control where agent scripts and smart assist cards are presented to agents. The Productivity pane is enabled in the Omnichannel Administration app under **Agent Experience**.

Skills

Bots

Work Distribution Management

Work Streams

Agent Experience

Productivity pane

Macros

Agent scripts

Quick Responses

Custom Presence

Refresh

Productivity pane configuration

Productivity pane configuration

Settings

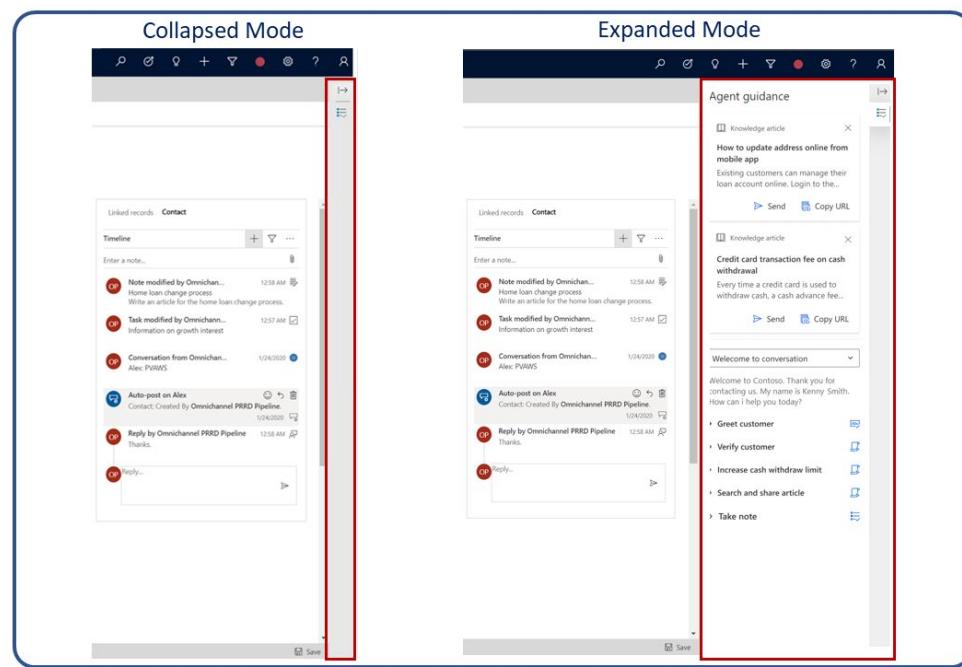
Productivity pane provides agents quick access to productivity apps and tools. [Learn more.](#)

Productivity pane Enabled

Mode Expanded

Can be either collapsed or expanded by default

When the Productivity pane is enabled, the default setting can be set to collapsed or expanded mode.



Now that the Productivity pane has been enabled, smart assist cards will appear to agents in the **Agent guidance** section of the pane in Omnichannel for Customer Service.

Summary

Every day, AI plays a bigger role in business. AI helps organizations operate more efficiently, and it provides tools such as sentiment analysis and language detection to help companies better understand customer intent and make more informed decisions based on customer satisfaction with your organization. Smart assist, which is part of the Dynamics 365 Productivity Tools package, helps organizations use AI to help agents perform better, become more efficient, and deliver better customer experiences. Through contextual recommendations that are based on real-time conversations, agents are provided with content suggestions that offer them a greater chance of resolving customer issues. Organization-specific recommendations can be displayed to agents in real time. Action-oriented recommendations are provided to agents that help send responses or run automated actions. By incorporating this information directly into the Dynamics 365 Omnichannel for Customer Service experience, organizations can help agents achieve improved average handling time and first call resolution.

This module explained smart assist and described the process to deploy and configure it in an Omnichannel for Customer Service environment, including:

- Reviewing what is included in the Dynamics 365 Productivity Tools package and providing an overview of smart assist.
- Explaining what Microsoft Adaptive Cards are, how they can be used in different scenarios, and where they fit in with smart assist, and providing a high-level look at the card writing process.
- Examining the process and technologies that are needed to create a smart assist bot and providing links to resources to assist in the bot creation process.
- Reviewing the steps to configure smart assist to be used as part of the agent experience, including how to create bot users, enable the bot in different workstreams, and enable the Productivity pane to display smart assist recommendations.

Your next steps are to gain a deeper understanding of the other tools that are included with the Dynamics 365 Productivity Tools package. These additional tools could be used in conjunction with smart assist to provide agents with a more dynamic experience such as using agent scripts and enhancing automation with macros.

Module 8 Manage analytics and insights

Get started

Introduction

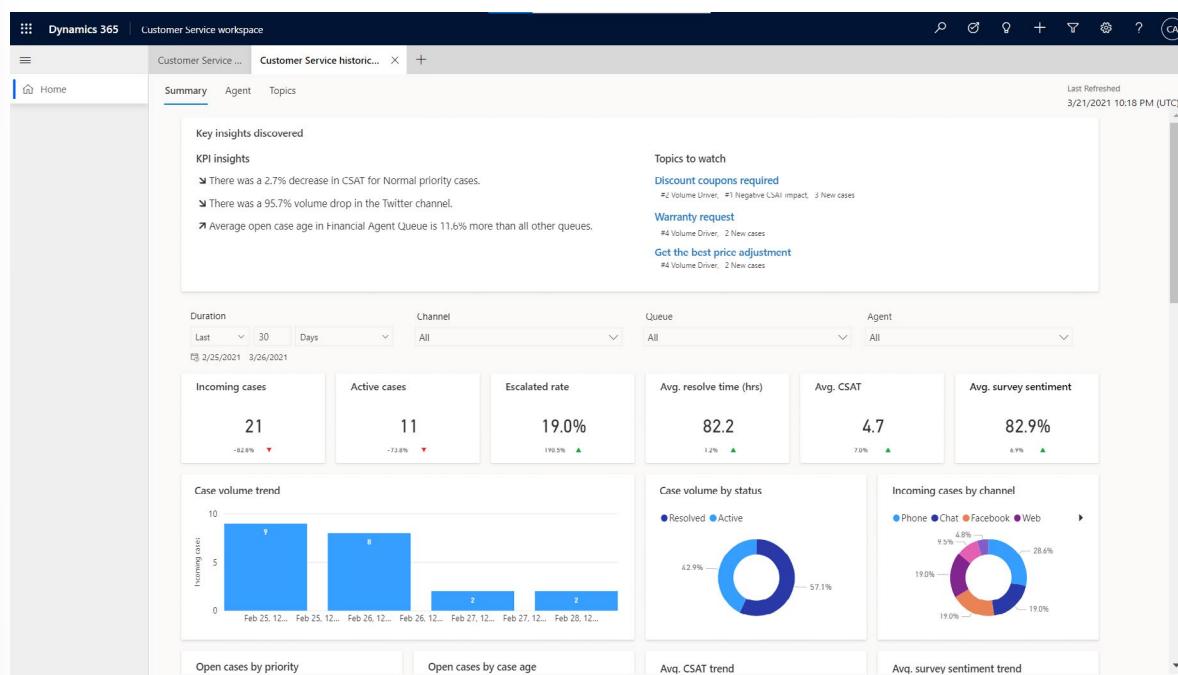
Dynamics 365 Customer Service Insights helps both agents and customer service managers make better decisions and improve customer satisfaction. Agents and customers can use AI and analytics capabilities for Customer Service Insights and Omnichannel for Customer Service. You can empower your teams with insights into customer satisfaction-boosting analytics and AI-powered features to spend less time searching and more time engaging with customers.

[!Important]

The Customer Service Insights standalone web application will no longer be available after December 8, 2021. You can no longer use the standalone service after this date. The embedded Customer Service Insights features in the core applications will continue to be available and supported.

The premium AI capabilities in Customer Service Insights use advanced AI technology in natural language understanding and natural language generation to help your service team focus on what matters and guide them to success. As an agent, you can use real-time similar cases and knowledge article suggestions that are customized for the current context. The AI-driven technology allows agents to help solve customer issues more quickly, improving resolution rates, and customer satisfaction.

These capabilities are deeply embedded into the core agent and manager experiences in Customer Service and Omnichannel for Customer Service.



Customer Service Insights connects with your Dynamics 365 Customer Service and Omnichannel for Customer Service data to provide your support organization with out-of-the-box AI and BI capabilities, such as customer service analytics, similar case suggestions and more. Different applications will surface slightly different feature sets, as detailed below.

Introduction to Customer Service Insights

Customer Service Insights is embedded in Dynamics 365 Customer Service hub and Customer Service workspace apps.

After Customer Service Insights is enabled, this experience allows you to start seeing historical analytics directly within the Customer Service environment. Several reports and dashboards can be viewed by your management team.

Users can view Customer Service Insights reports with a combination of BI analytics and AI insights for their organization. The reports use natural language understanding to automatically detect the language used in your support cases and group related support cases into topics.

The capabilities for embedded Customer Service Insights in Customer Service include:

- Historical analytics
- Topic clustering for cases
- Knowledge search analytics
- AI Suggestions for similar cases and knowledge articles
- Customer Service analytics in Power BI

Insights in Omnichannel for Customer Service app

Customer Service Insights for Omnichannel for Customer Service brings many of the same key operational metrics and features right into your daily contact center operations. Real-time customer sentiment

analysis, combined with contextual AI suggestions of relevant cases and knowledge articles, helps agents reduce customer frustration and case resolution times. With the sentiment analysis dashboard, you can use the real-time sentiment data to gain a better understanding of how customer interactions drive KPIs and satisfaction scores.

The capabilities for embedded Customer Service Insights in Omnichannel for Customer Service include:

- Monitor conversations and trends
- Analyze real-time customer sentiment

Enabling Customer Service Insights

Customer Service Insights are disabled by default. You can enable and configure the Customer Service Insights features and services for Dynamics 365 Customer Service and share them with service managers, who can then view and analyze the different activities performed. Setup is done in Customer Service Hub, but applies to both Customer Service Hub and Customer Service workspace.

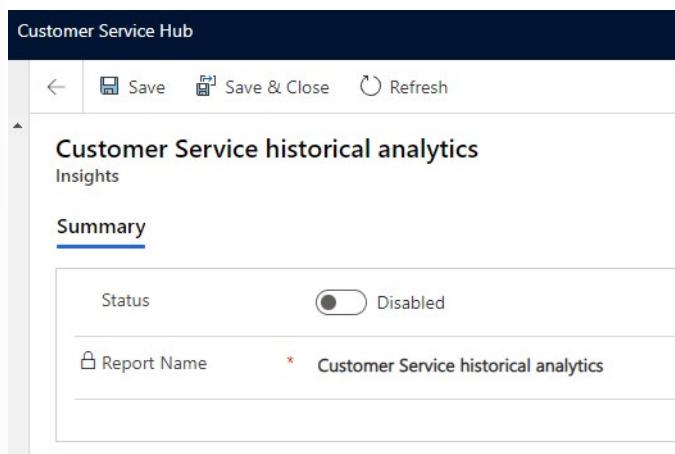
Each of the Customer Service Insights reports are configured separately.

Configure Customer Service Insights

Customer Service Insights consists of different reports and AI capabilities. Each of these components requires separate enabling and configuring.

Configure Customer Service historical analytics

To enable the Customer Service historical analytics report, navigate to **Service Management -> Insights > Settings**. Click on **Manage** to the right of Customer Service historical analytics.



On the Customer Service historical analytics page, toggle **Status** to **Enabled** and select **Save & Close**.

[!NOTE]

Enabling Customer Service historical analytics also enables the Topic clustering for case feature.

The report can take up to 24 hours to be provisioned. After this time, you can view the report by navigating to **Service > Insights > Customer Service historical analytics**.

Security for historical analytics

Users with the System Administrator security role will be able to view the reports. To allow other users to be able to access the insight reports and dashboards, you need to edit their security role and add privileges to the Customer Service historical analytics table as shown in the following screenshot.

Customer Asset	○	○	○	○	○	○	○
Customer Asset Attachment	○	○	○	○	○	○	○
Customer Asset Category	○	○	○	○	○	○	○
Customer Service historical analytics	●	●	●	●	●	●	●
Customer Voice alert rule	○	○	○	○	○	○	○
Customer Voice file response	○	○	○	○	○	○	○

Configure Topic clustering

Topic clustering for case is dependent upon the Customer Service historical analytics report and that feature must be enabled first.

The Summary and Model run summary on the Topic Clustering page provides key information about how the topic model and its results.

- Data attributes used.
- Total number of topics generated.
- Percentage of cases that were classified to a topic.

- Frequency and last run of the model.

The screenshot shows the Dynamics 365 Customer Service Hub interface. On the left, there's a navigation sidebar with categories like Templates, Knowledge Base Management, Similar Records Suggestion, Analytics and Insights, IoT, and Service Management. The main area is titled 'Topic clustering for case' and contains a configuration section with tabs for 'Summary' and 'Model run summary'. Under 'Summary', it shows the status is 'Enabled', data attributes used are 'Case Title', and topics generated and cases associated are both listed as '--'. Under 'Model run summary', it shows the last successful run and run frequency. Below these, there's a 'Data mapping' section where 'Case entity attribute' is set to 'Case Title'. At the top of the main area, there are save and refresh buttons.

Data mapping

By default, the Case Title is used for topic clustering. Under Data mapping, you can change to another text column on the Case table that provides the best description for customer issues.

Data cleaning

The topics generated by the topic clustering model can be misleading if the Case Title includes extraneous information such as product name, case status, or reference tags.

You can improve the quality of the results displayed in AI Insights charts by specifying Data Cleaning settings to disregard tags in titles and to ignore specific phrases.

Data cleaning

You'll get better topic clustering by ignoring sections of text or specific phrases in your case data. Sections will be ignored first and then phrases.
[Learn more](#)

Sections of text to ignore

Select the relative position of the section of text to ignore and enter the symbol(s) used to separate it from your case data.

Section location

Select option

Enter symbols, such as () < > |

[Hide example](#)

Case title: Tier 1 / Customer did not get their package delivered next day | archived

Choosing **The section before** and entering / will ignore Tier 1.

Choosing **The section after** and entering | will ignore archived.

Choosing **The sections before and after** and entering / | will ignore Tier 1 and archived.

Phrases to ignore

Enter words or phrases to be excluded from topic generation. This could include items like acronyms that are unique to your organization and entered by agents.

[Hide example](#)

Entering **Contoso app** will ignore "Contoso app" or "contoso app" in the following text examples:

- Can't login to the **Contoso app** website
- **Contoso app** access issue
- Cannot install **Contoso app**

Topic automation

The topics identified by Customer Service historical analytics are often prime candidates as topics in Power Virtual Agents chatbots.

You can make these topics available for adding your Power Virtual Agents chatbots by setting the toggle to **Enabled** and selecting **Save**.

Topic automation

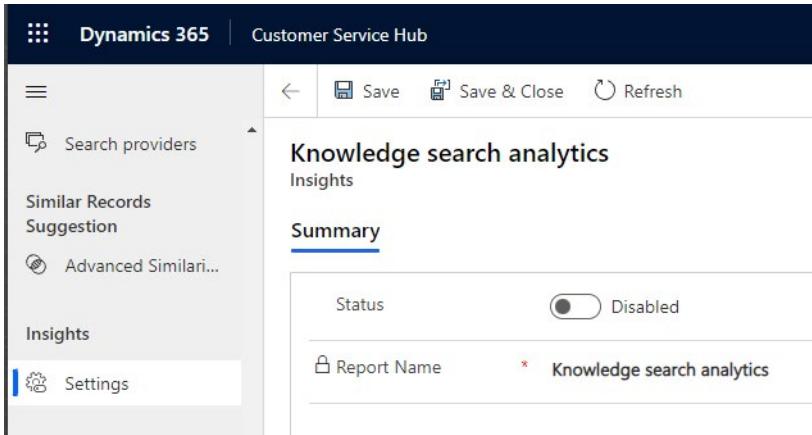
Power Virtual Agents

Enable users to send AI discovered topics to Power Virtual Agents for automation to bot. [Learn more](#)

Disabled

Configure Knowledge search analytics

To enable the Customer Service Knowledge search analytics, navigate to **Service Management** -> **Insights** > **Settings**. Click on **Manage** to the right of Knowledge search analytics.



On the Knowledge search analytics page, toggle **Status** to **Enabled** and select **Save & Close**.

The report can take up to 24 hours to be provisioned. After this time, you can view the report by navigating to **Service > Insights > Knowledge search analytics**.

Security for Knowledge search analytics

Users with the System Administrator security role will be able to view the reports. To allow other users to be able to access the Knowledge search analytics reports and dashboards, you need to edit their security role and add privileges to the Knowledge search analytics table.

Configure AI suggestions

To enable the Customer Service Knowledge search analytics, navigate to **Service Management -> Insights > Settings**. Click on **Manage** to the right of Suggestions.

The screenshot shows the 'Suggestions' settings page in Dynamics 365. On the left, there's a navigation bar with 'Dynamics 365 | Customer Service Hub'. The main area has a header with 'Save', 'Save & Close', and 'Refresh' buttons. Below the header, there's a 'Suggestions' section with a sub-section 'Settings'. Under 'Settings', there's a 'Summary' section with two toggle switches: 'Enable similar case suggestions' (set to Yes) and 'Enable knowledge article suggestions' (set to Yes). To the right of this is a 'Model pre-processing status' section showing metrics like 'Last successful run' (--), 'Case records' (--), 'Knowledge articles' (--), and 'Run frequency' (Daily). Below the summary is a 'Data mapping' section. It contains two sections: 'Case entity data fields' (with 'Case summary' and 'Case details' dropdowns set to 'Case Title' and 'Description') and 'Knowledge article data fields' (with 'Article title' and 'Article content' dropdowns set to 'Title' and 'Content').

On the Suggestions page, toggle **Status** to **Enabled** for similar cases and knowledge article suggestions and select **Save**.

Data mapping for suggestions

By default, the Case Title and Case Description are used for similar cases. Under Data mapping, you can select other text columns on the Case table that provides the best options for identifying similar cases.

You can also change the columns used for knowledge article suggestions.

Discover Customer Service Analytics dashboards in Power BI

Microsoft provides a Power BI app that you can install and configure to gain further insights into your customer service data.

This Power BI app provides insights about your customer service performance through a set of supervisor dashboards that help track key operational metrics to ensure that agents are providing quality support to customers.

These metrics help supervisors understand the overall support experience along with how each agent and each queue is performing over time.

Supervisors can use these dashboards to perform the following tasks:

- Monitor Customer service operational metrics across Queues and Agents.
- Drill into each case/activity on customer service hub application from list view.

You must perform the following steps to configure the Power BI app and add the dashboards to the Customer Service Hub app.

Prerequisites

You require administrative privileges for both Dynamics 365 and Microsoft Power BI.

All users who wish to access the dashboard require a Power BI Pro or Power BI premium license.

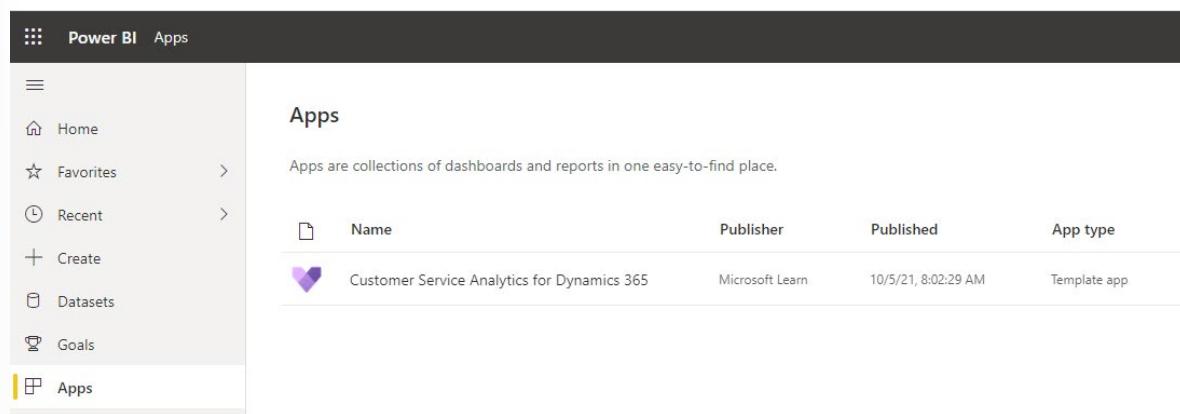
Install Dynamics 365 Customer Service Analytics app

The Dynamics 365 Customer Service Analytics app is available from [AppSource¹](#).

The screenshot shows the Microsoft AppSource page for the "Customer Service Analytics for Dynamics 365" app. At the top, there's a navigation bar with "Apps" and the specific app name. Below the header, there's a large image of a heart divided into four quadrants in shades of purple and pink. To the right of the image, the app's name is displayed in bold. Underneath the name, it says "Microsoft" and "Power BI apps". It also shows a rating of "★ 1.0 (2 AppSource ratings)". Below this information are two buttons: "Pricing Free" and "Get it now". A horizontal line separates this section from the "Overview" tab, which is currently selected and underlined. Other tabs include "Ratings + reviews" and "Details + support". The "Overview" section contains a brief description: "Get insights about your customer service performance, activities and cases". It explains how supervisors can connect to their Dynamics CRM account to monitor operational metrics and track agent performance over time. Below this text is a bulleted list of tasks: "Monitor Customer service operational metrics across Queues and Agents." and "Drill into each case/activity on customer service hub application from list view."

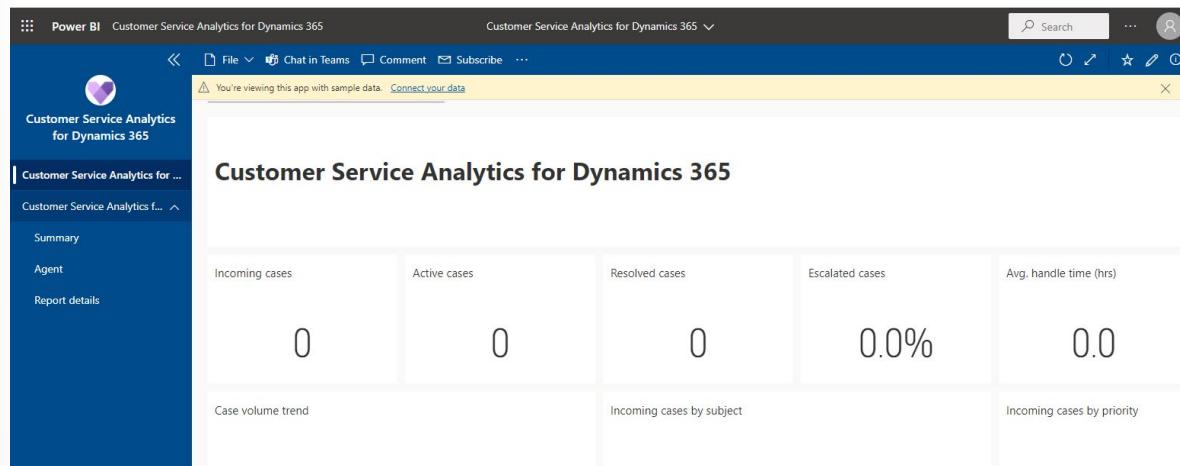
Click on **Get it now** and **Install**

¹ <https://aka.ms/cs-analytics>



The screenshot shows the Power BI Apps interface. On the left, there's a sidebar with navigation links: Home, Favorites, Recent, Create, Datasets, Goals, and Apps. The Apps link is highlighted with a yellow bar at the bottom. The main area is titled "Apps" and contains a brief description: "Apps are collections of dashboards and reports in one easy-to-find place." Below this, a table lists the installed app: "Customer Service Analytics for Dynamics 365" by Microsoft Learn, published on 10/5/21, 8:02:29 AM, categorized as a "Template app".

Once the app has been installed, click on the app to open it. You will see the dashboard with no data.



The screenshot shows the "Customer Service Analytics for Dynamics 365" dashboard. The left sidebar has sections for "Summary", "Agent", and "Report details". The main content area is titled "Customer Service Analytics for Dynamics 365". It displays five key metrics: Incoming cases (0), Active cases (0), Resolved cases (0), Escalated cases (0.0%), and Avg. handle time (hrs) (0.0). Below these metrics are three charts: "Case volume trend", "Incoming cases by subject", and "Incoming cases by priority". A yellow banner at the top right says "You're viewing this app with sample data. Connect your data".

Connect Dynamics 365 environment to Customer Service Analytics app

In the app in Power BI, click on **Connect your data**.

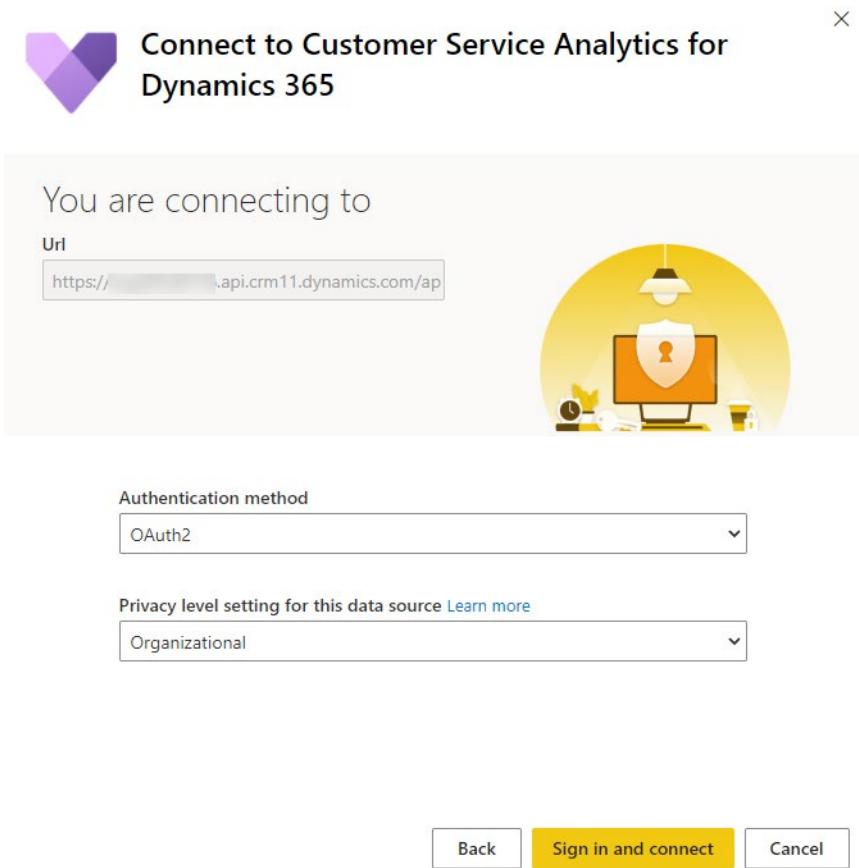
Enter your Dynamics 365 environment's Service Root URL. This URL must include the path to the Web API for your environment and looks like

`https://{{your environment}}.api.crm11.dynamics.com/api/data/v9.2/`.

[!NOTE]

To find the Microsoft Dynamics 365 Service Root Data URL navigate to **Advanced Settings, Customizations, Developer Resources** in Dynamics 365 Customer Service hub.

Select **Next**, select **OAuth2** for the authentication method and **Organizational** for Privacy setting.



Click on **Sign in and connect**. Sign in with your Dynamics 365 credentials.

The Power BI reports and dashboards will be refreshed with your data.

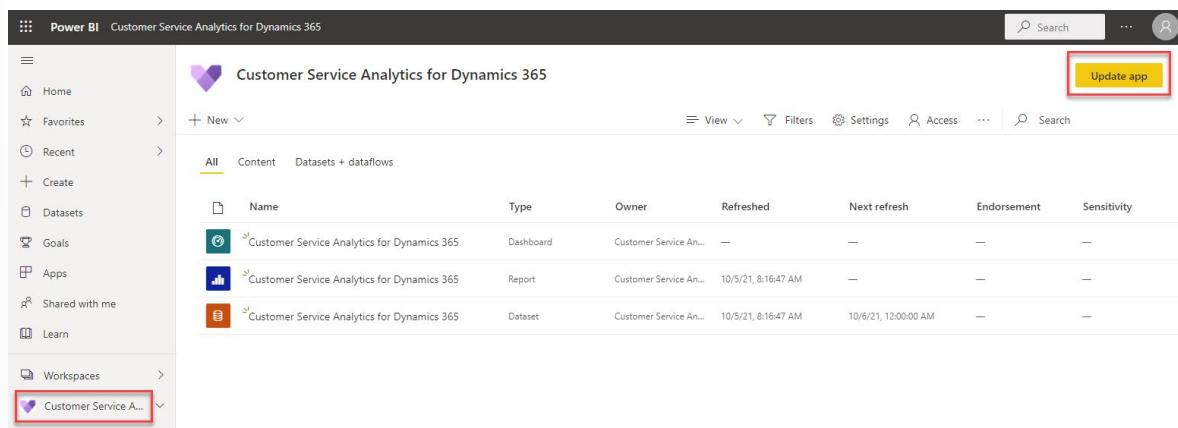
Configure refresh frequency on Power BI dataset

The dataset in Power BI is scheduled to refresh every 24 hours by default. You can amend the schedule in the settings for the dataset depending on your Power BI license.

Publish application within your organization

You must share the configured Power BI app with your entire organization for supervisors to view the Customer Service Analytics dashboards and reports with their own Power BI Pro accounts.

Open the workspace for the app and click on **Update App**.



The screenshot shows the Power BI interface with the following details:

- Header:** Power BI Customer Service Analytics for Dynamics 365
- Left Sidebar:** Home, Favorites, Recent, Create, Datasets, Goals, Apps, Shared with me, Learn, Workspaces (highlighted with a red box), Customer Service A... (highlighted with a red box).
- Content Area:** Customer Service Analytics for Dynamics 365
- Top Right Actions:** View, Filters, Settings, Access, ... (highlighted with a red box), Search, Update app (highlighted with a red box).
- Table:** Shows three items: Customer Service Analytics for Dynamics 365 (Dashboard, Owner: Customer Service An..., Refreshed: —, Next refresh: —, Endorsement: —, Sensitivity: —); Customer Service Analytics for Dynamics 365 (Report, Owner: Customer Service An..., Refreshed: 10/5/21, 8:16:47 AM, Next refresh: —, Endorsement: —, Sensitivity: —); and Customer Service Analytics for Dynamics 365 (Dataset, Owner: Customer Service An..., Refreshed: 10/5/21, 8:16:47 AM, Next refresh: 10/6/21, 12:00:00 AM, Endorsement: —, Sensitivity: —).

Open the permissions tab and select **Entire organization** and click on **Update App**.

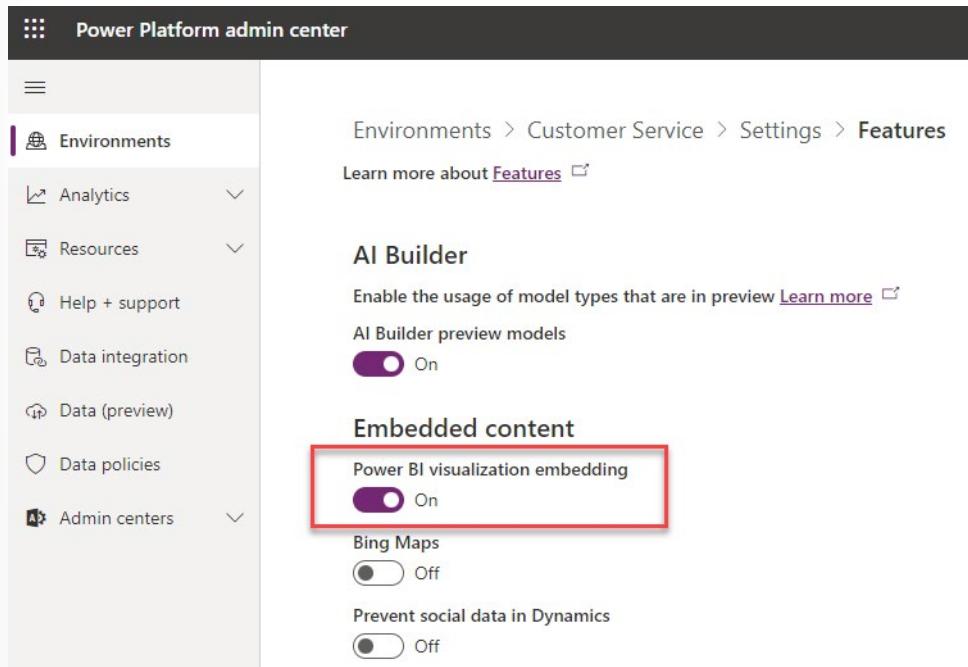
The app is now available to install for all individuals in your organization.

Enable Power BI reporting

You need to enable Power BI reporting in the Dynamics 365 for supervisors to view the Power BI dashboards.

In the **Power Platform Admin Center**² select **Settings** for your Dynamics 365 environment.

Navigate to **Product, Features** and toggle **Power BI visualization embedding** to **On** and click **Save**.



The screenshot shows the Power Platform Admin Center interface with the following details:

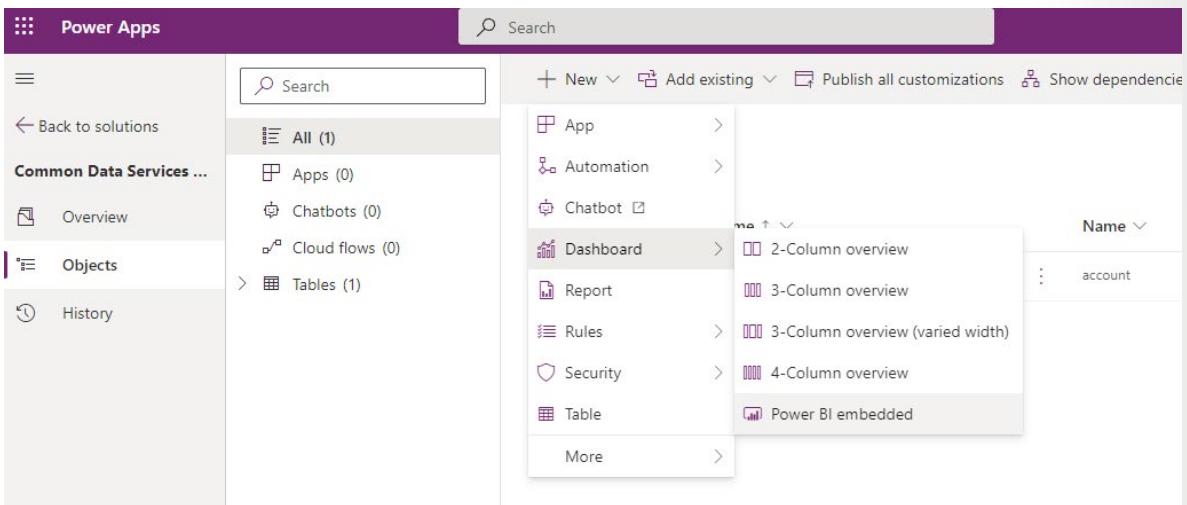
- Header:** Power Platform admin center
- Left Sidebar:** Environments (highlighted with a red box), Analytics, Resources, Help + support, Data integration, Data (preview), Data policies, Admin centers.
- Current Path:** Environments > Customer Service > Settings > Features
- Learn more about Features**
- AI Builder:** Enable the usage of model types that are in preview [Learn more](#). AI Builder preview models: On (switch is purple).
- Embedded content:** Power BI visualization embedding: On (switch is purple) (highlighted with a red box). Other options: Bing Maps (Off), Prevent social data in Dynamics (Off).

² <https://admin.powerplatform.microsoft.com/>

Add embedded Power BI dashboard to the Customer Service Hub

You can embed the Power BI dashboard into the Customer Service hub for your users.

Navigate to the **Power Apps Maker portal³** and select **Solutions**. Search for and edit the **Common Data Services Default Solution**.



Click on ** New** and select **Dashboard** and then select **Power BI Embedded**.

New Power BI embedded da... ×

Display name *

Type * ⓘ

Power BI report

Power BI dashboard

Use environment variable ⓘ

Power BI workspace * ⓘ

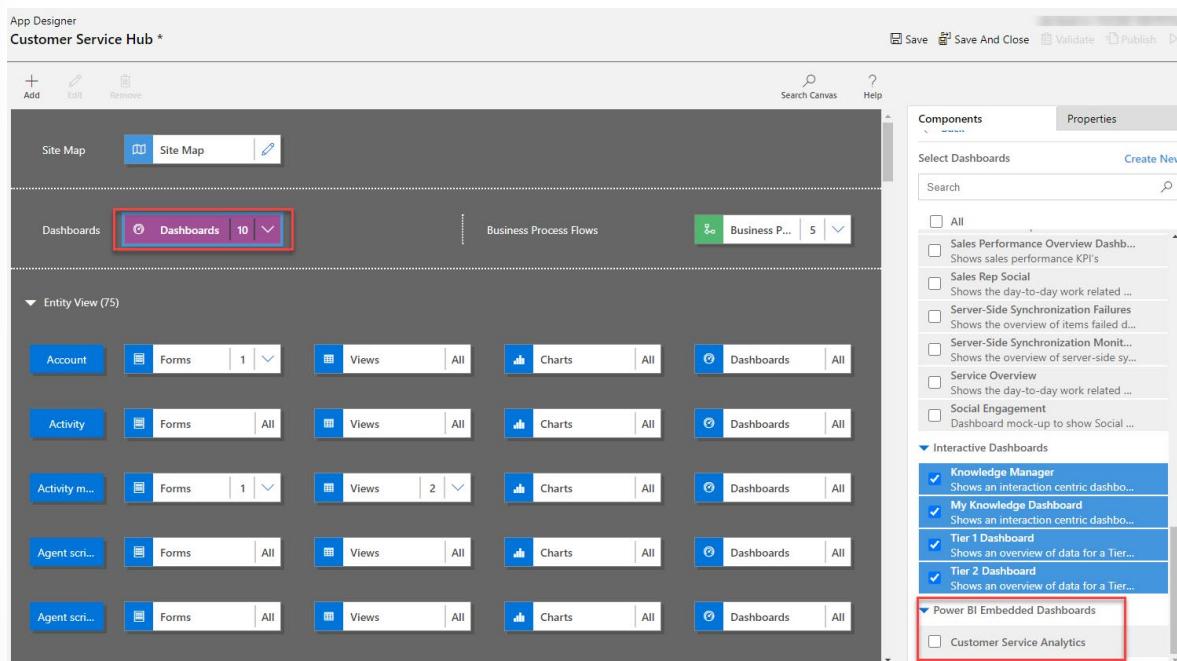
Power BI dashboard *

Enter a name for the Dashboard and select the **Power BI dashboard** toggle. For Workspace, select **Customer Service Analytics for Dynamics 365**. For Dashboard, select **Customer Service Analytics for Dynamics 365** and click **Save**. Click **Publish all customizations**.

In the **Power Apps Maker portal⁴** navigate to Apps and edit the Customer Service hub app.

³ <https://make.powerapps.com>

⁴ <https://make.powerapps.com>

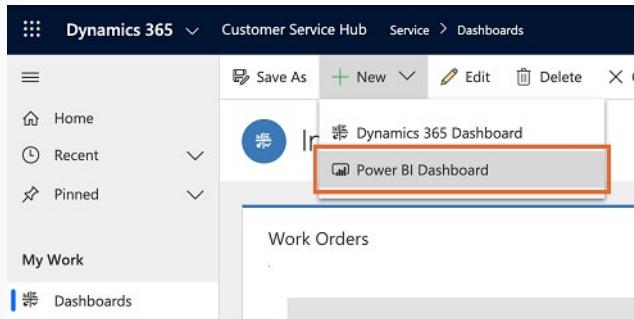


In the App Designer select **Dashboards** and check the Customer Service Analytics Power BI dashboard you created and click **Save** and click **Publish**.

The Customer Service Analytics for Dynamics 365 Power BI dashboard will now be available in the Customer Service hub.

Add Power BI personal dashboard to Customer Service Hub

Users can also add the Power BI dashboards to Dynamics 365 Customer Service hub as personal dashboards by navigating to **My Work, Dashboards** and then selecting **+ New > Power BI Dashboard**.



For Workspace, select **Customer Service Analytics for Dynamics 365**. For Dashboard, select **Customer Service Analytics for Dynamics 365** and click **Save**.

Power BI Dashboard Properties

Choose the Power BI Dashboard you want to add

The Customer Service Analytics for Dynamics 365 Power BI dashboard will now be available in the Customer Service hub.

Dashboards and reports and in the Customer Service Analytics Power BI app

The Customer Service Analytics Power BI app contains the following:

- **Customer Service Analytics dashboard:** Provides summary information about the historical operational metrics and key performance indicators (KPIs) to effectively manage contact centers.
- **Summary report:** Provides KPIs and metrics across cases and gives supervisors the ability to filter the view.

- **Agent report:** Provides KPIs and metrics across queues and agents and gives supervisors the ability to filter the view.
- **Report details:** Provides a detailed view of cases and activities that you can use to drill down to each case or activity to help resolve customer issues. The link in this report directs you to the Customer Service Hub app or Customer Service app.

Discover Customer Service Insights dashboards

Customer Service Insights dashboards contain a variety of charts that show you KPIs for your customer service system. These charts provide graphical views of the trends and breakdowns of support cases and use AI technology to highlight support cases that are having the greatest impact on the system. Dashboards are the primary components that can help you gain a variety of insights to help improve system performance.

Insights dashboards cover Customer Service, Omnichannel for Customer Service, and Knowledge Management. The Customer Service dashboards give you a performance summary in addition to detailed reports on agents and topics. Similarly, the Omnichannel for Customer Service dashboards provide a view into the support operation across channels. For Knowledge managers, Knowledge Search analytics provide insight into search terms being used by agents to uncover content needed to resolve customer issues.

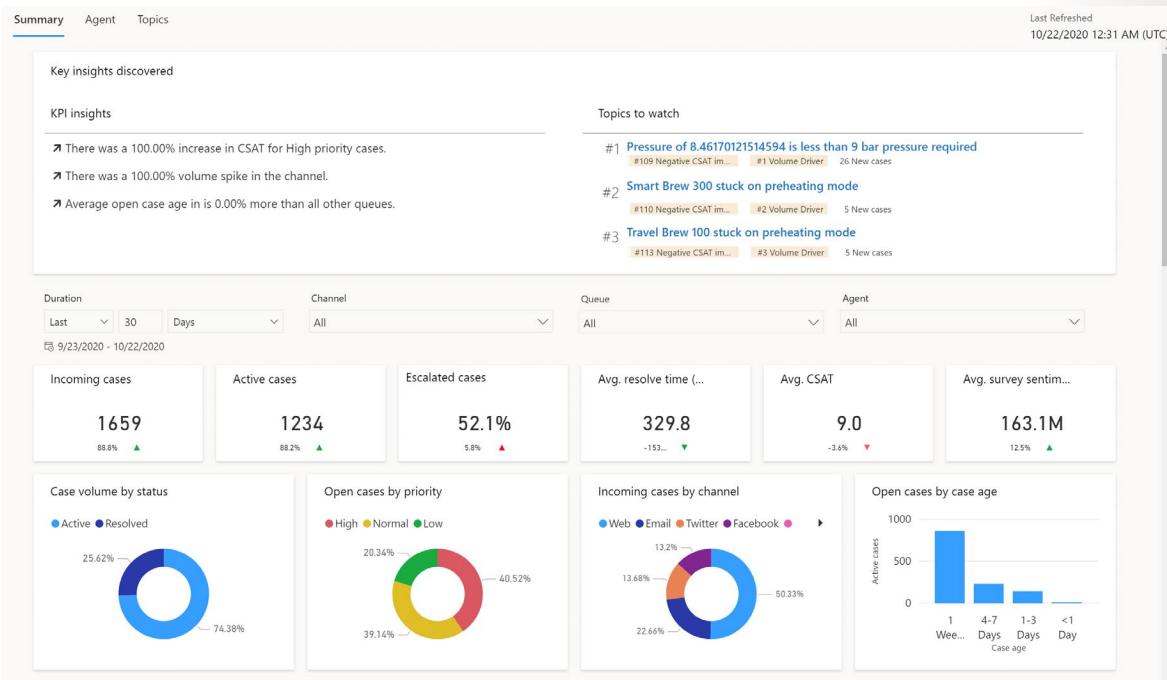
Customer Service historical analytics dashboard

The following dashboard reports are available for Customer Service historical analytics:

- **Summary:** Shows an overview of customer service KPIs for queues, channels, and agents.
- **Agent:** Shows charts and KPIs for individual agents and overall agent performance.
- **Topics:** Shows a detailed breakdown of cases and their assigned topics.

Summary report

The Summary dashboard gives you a broad overview of the customer service experience in your organization. It uses AI to provide insights into which topics are generating the highest volume and which topics are emerging with the highest rate of change in volume.



The KPI summary dashboard includes a variety of charts with graphical views of your system's key performance indicators.

The case volume drivers and emerging case volume by topic charts use natural language understanding to group support cases as topics that are a collection of related cases. These charts show you the customer support topics that are generating the most volume and emerging topics with the highest rate of change in volume, helping you identify areas for improvement that can have the greatest impact on system performance.

Summary report Key insights card

Key insights uses AI to highlight items that may require attention. The Key insights card has two areas.

- **KPI insights:** Important subjects that impact performance, such as CSAT pertaining to priority, volume pertaining to channel, and open cases pertaining to queues.
- **Topics to watch:** Topics that rank high across the three key areas to make it easier for customer service managers to discover top issues.

Summary report KPIs

The KPI summary charts summarize the key performance indicators for the specified time period and the percent change over the period.

By default, the dashboard shows you KPIs for the past 30 days and for all channels, queues, and agents in your system. The data filtering options allow you to select data for specific time periods, channels, queues, and agents. To filter data by duration, channel, queue, or agent, select a value from the respective drop-down list.

[!NOTE]

If you switch to a different dashboard, the filters you specify persist and are applied to the data on all dashboards.

This table shows the key performance indicators that are displayed in the report.

KPI	Description
Incoming cases	The number of cases created to support customers.
Active cases	The number of cases that are currently open.
Escalated cases	The percentage of cases that have been escalated.
Average resolve time	The average length of time taken in hours by an agent to resolve the case.
Average CSAT	The average customer satisfaction score, based on Customer Voice survey submitted by the customer.
Average survey sentiment	The average sentiment score, based on Customer Voice survey written feedback submitted by the customer.

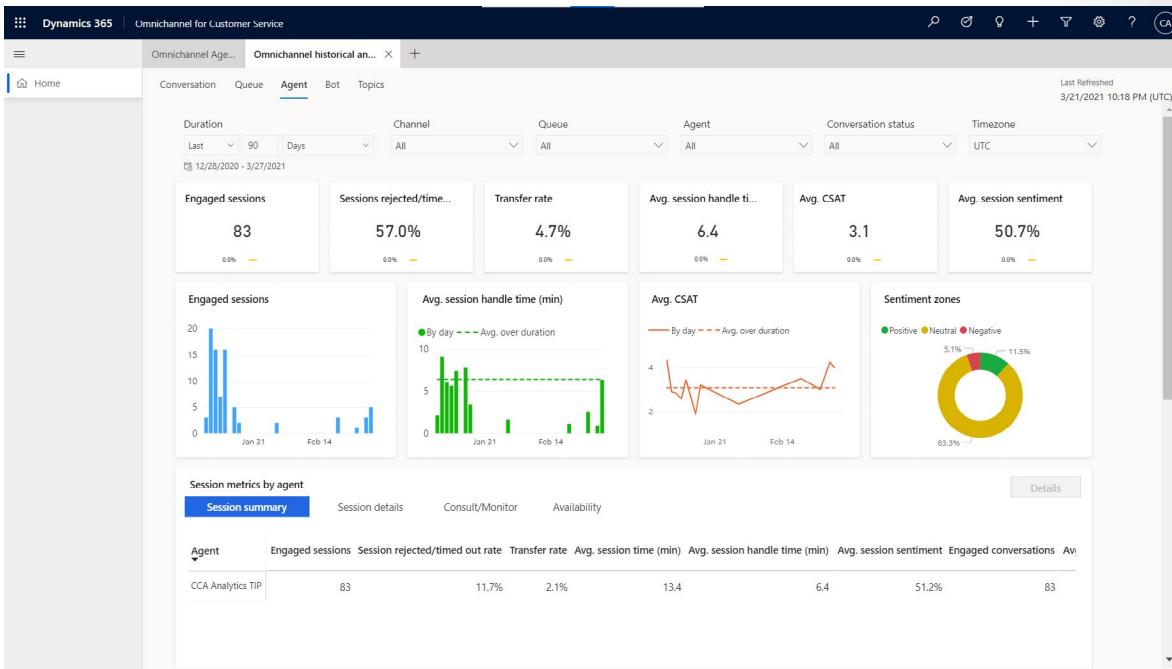
The following metrics are displayed as charts.

Chart	Description
Case volume trend	Day-over-day trend of case volume.
Case volume by status	A breakdown of case volume by status.
Incoming cases by channel	A case breakdown by channel.
Open cases by priority	A case breakdown by priority level.
Open cases by age	A breakdown of cases by the amount of time in an open state.
Average CSAT trend	The year-over-year trend of case volume.
Average survey sentiment trend	The year-over-year trend of CSAT from Customer Voice survey responses.
Top 10 volume topics	The top 10 AI-discovered topics by case volume.
Emerging case volume by topic	The top emerging AI discovered topics based on increase in case volume.
Case metrics by channel	An overview of the core case metrics by channel.
Case metrics	Overview of core case metrics in relation to other metrics and date.

A blue up-and-down indicator next to the value indicates the percent change in a positive direction. A red indicator indicates the percent change in a negative direction.

Agent report

The Agent dashboard shows charts and KPIs that you can use to guide agents and understand overall agent performance.



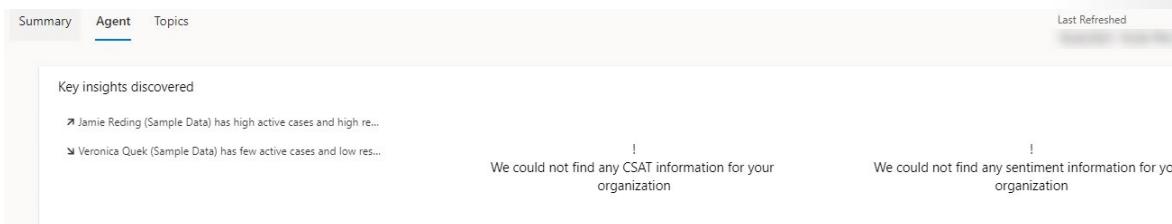
To view the Agent dashboard, navigate to **Services, Insights, Customer Service historical analytics** and select the **Agent** tab.

The dashboard shows charts and KPIs for individual agents and overall agent performance.

Agent report Key insights card

Key insights uses AI to highlight items that may require attention. The Key insights card for the Agent report shows the following.

- **Agents:** Agents who may have issues around case volumes or resolution times
- **CSAT:** Important insights from CSAT feedback scores.
- **Sentiment:** Important insights from written CSAT feedback.



Agent report KPIs

The report summarizes the key performance indicators for the specified time period and the percent change over the period.

By default, the dashboard shows you KPIs for the past 30 days and for all channels, queues, and agents in your system. The data filtering options allow you to select data for specific time periods, channels, queues, and agents.

The following table displays the key performance indicators in the agent report.

KPI	Description
Active cases	The number of cases that are currently open.
Resolved cases	The number of cases that have been closed by an agent.
Escalated cases	The percentage of cases that have been escalated.
Average resolve time	The average time taken by an agent to resolve the case.
Average CSAT	The average customer satisfaction score, based on written feedback submitted by the customer in the Customer Voice survey.
Average survey sentiment	The average sentiment score, based on written feedback submitted by the customer in the Customer Voice survey.

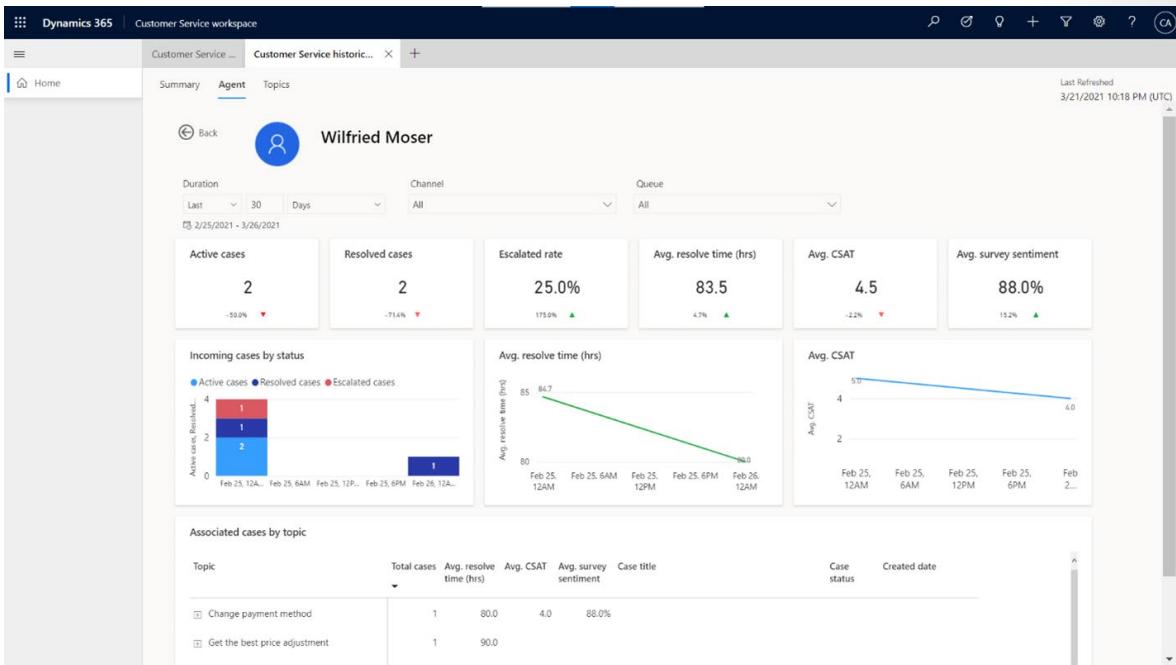
The agent dashboard has charts that have the following metrics.

KPI	Description
Incoming cases by status	A breakdown of case volume by status.
Average resolve time	Month-over-month trend of case resolution time in hours.
Average CSAT trend	The average customer satisfaction score, based on written feedback submitted by the customer in the Customer Voice survey.
Agent metrics	Overview of core agent metrics in relation to other metrics and date.

Agent drill down view

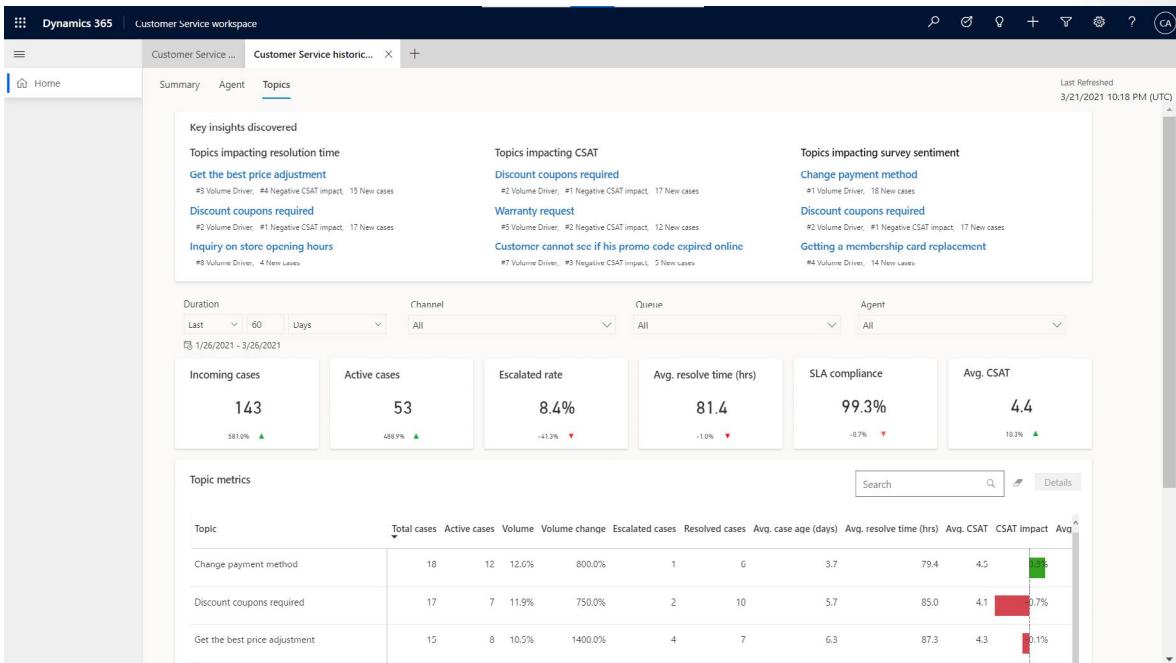
The Agent drill down view provides supervisors with a holistic look into individual agent performance on metrics and can be valuable in training scenarios for agents.

To access the agent drill down report, select any metric value in the Agent metrics chart for the required agent, and select **Details**.



Topics report

The Topics dashboard shows a detailed breakdown of cases and their assigned topics. Customer Service Insights uses AI-generated topics and natural language understanding to automatically group your cases to help you better understand how different case types and topic areas are impacting your organization's support performance.



To view the Agent dashboard, navigate to **Services, Insights, Customer Service historical analytics** and select the **Topics** tab.

Topics report Key insights card

Key insights uses AI to highlight items that may require attention. The Key insights discovered card has three areas:

- Topics to watch
- Topics impacting CSAT
- Topics impacting resolution time

Topic report KPIs

The KPI summary charts summarize the key performance indicators for the specified time period and the percent change over the period. You can filter these areas by duration, channel, queue, and agent.

The topics dashboard report has the following KPIs.

KPI	Description
Total cases	The number of cases created to support customers.
Active cases	The number of cases that are currently opened.
Escalated cases	The percentage of cases that have been escalated.
Average handle time	The average time taken by an agent to resolve the case.
Average CSAT	The average customer satisfaction score, based on written feedback submitted by the customer in the Customer Voice survey.
Average sentiment	The average sentiment score, based on written feedback submitted by the customer in the Customer Voice survey.

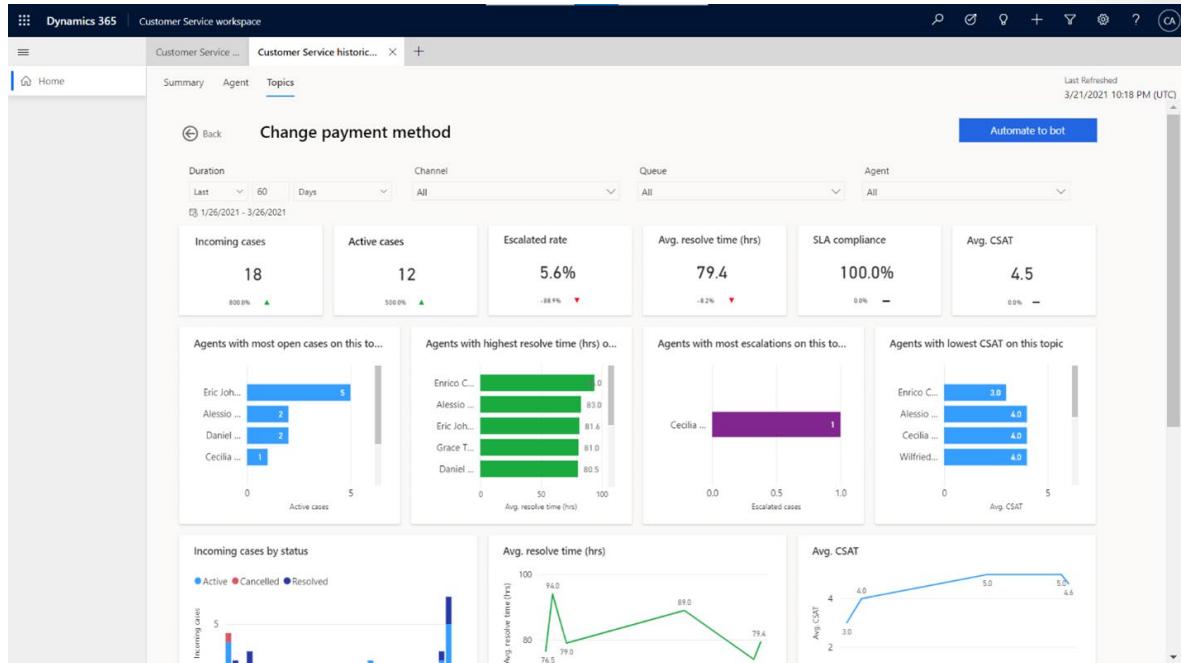
The topic metrics chart has the following metrics displayed:

Chart	Description
Total cases	The number of cases created to support customers.
Occurrence by topic	Percentage of cases classified to each given topic.
Average resolution time	Month over month trend of case resolution time in minutes.
Average CSAT	The average customer satisfaction score, based on Customer Voice survey submitted by the customer.
CSAT impact	The amount that the given topic is driving the overall CSAT trend for the organization.
Average sentiment	The average sentiment score, based on Customer Voice survey written feedback submitted by the customer.
Sentiment impact	The amount that the given topic is driving the overall sentiment trend for the organization.

Topics drill down view

The topics drill down view provides supervisors with a holistic look into individual topics in reference to key business metrics and can be valuable in understanding why end customers are contacting support.

To access the topics drill down report, select any metric value for the required topic and select **Details**.

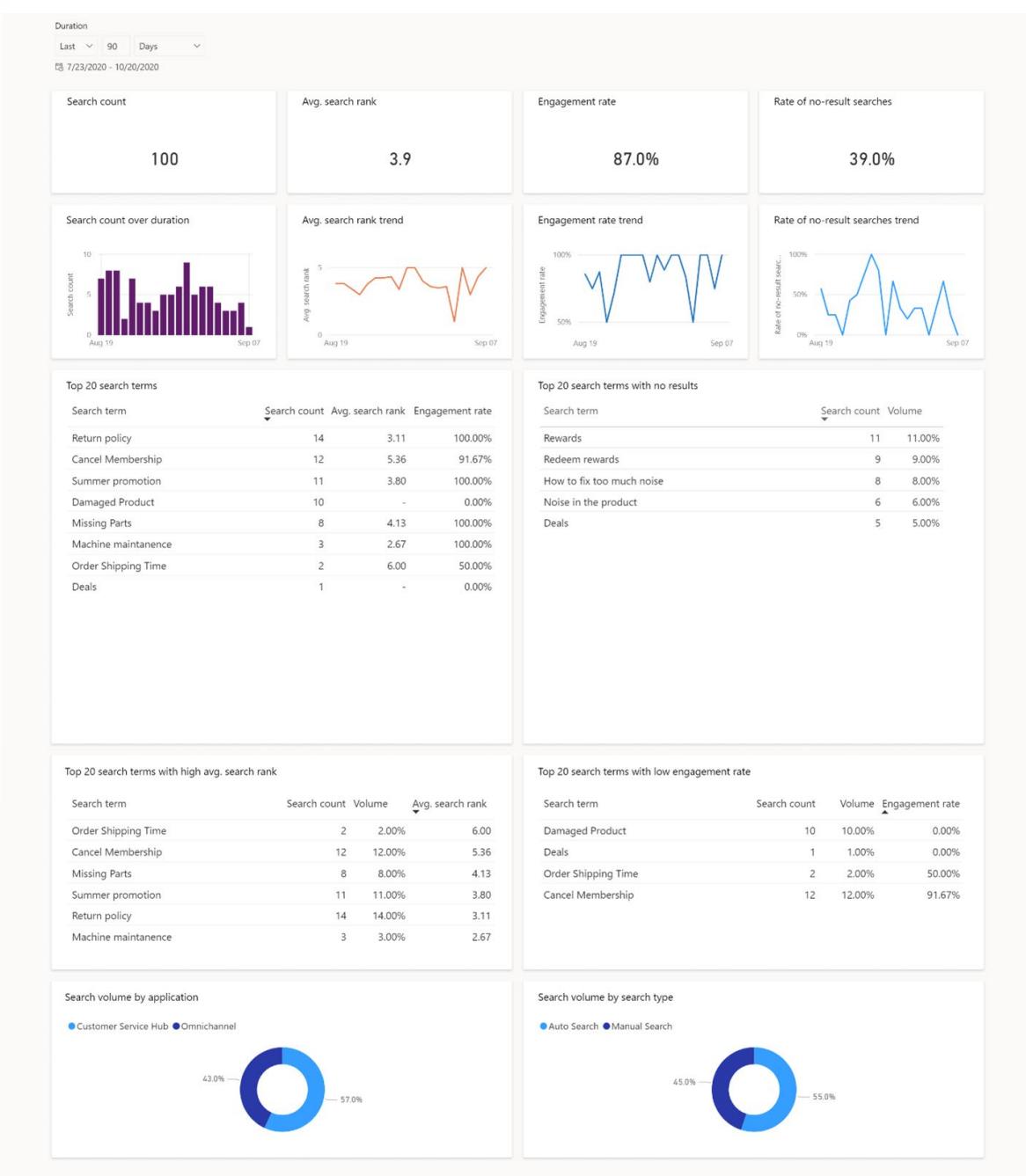


Discover Knowledge search analytics

The knowledge search analytics dashboard is designed to provide your organization's customer service supervisors and knowledge workers with valuable insights into how your support agents are finding and using knowledge articles.

[!IMPORTANT]

Knowledge search analytics does not provide information about customer search behavior. Data is only from internal knowledge searches.



As a knowledge manager, it's your responsibility to maintain and improve your organization's overall knowledge base article offerings. By identifying searches that have low success or return no results, the Knowledge search analytics dashboard can help you identify knowledge gaps, improve search results, and surface the most relevant articles.

To access this dashboard, your organization's administrator must first enable it. For more information, see Configure Knowledge search insights.

Knowledge search analytics dashboard metrics

The following are specific metrics represented in this dashboard:

KPIs or chart	Definition
Search count	The total number of searches completed within a given period.
Avg. search rank	The average position of the link selected by a user when presented within search results.
Engagement rate	The percentage of events where a user interacted with the search results compared to the search events presented with results.
Rate of no-result searches	Percentage of instances where there are no results for the term searched for.
Search count over duration	The number of searches completed within a certain amount of time.
Avg. search rate trend	The day-by-day trend of the average list position of the link selected by a user when presented with search results.
Engagement rate trend	The day-by-day trend of the percentage of events where a user interacted with the search results compared to the search events presented with results.
Rate of no-result searches trend	The day-by-day trend of the percentage of instances where there were no results for the search term used by the agent.
Top 20 search terms	The top 20 terms being searched, showing the number of times searched, the average search rate, and engagement rate.
Top 20 search terms with no results	The top 20 search terms that returned no results when searched.
Top 20 search terms with high avg. search rank	The top 20 search topics by volume with an average click position of greater than five.
Top 20 search terms with low engagement rate	The top 20 search topics by volume with engagement rate of less than 40 percent.
Search volume by application	The percentage of searches across multiple applications.
Search volume by search type	The percentage of searches based on whether they were manual or automatic searches.

Summary

With the volume of support cases that a typical support center handles each day, making sense of all the data that is consumed and then determining how it can be used in the best way possible is challenging. Many of the cases that are submitted by customers might be similar; however, finding ways to group them into the same category can be difficult. Through natural language understanding, AI can evaluate thousands of individual cases and identify similarities between them that previously would have been missed. AI can then group those items together and allow organizations to access deeper analytics through a larger subset of data that they can use to implement business actions. This component can help organizations drive self-service support automation, identify training opportunities, and build procedures to streamline their overall support structure.

Dynamics 365 Customer Service Insights uses AI to provide your organization with actionable insights into critical performance metrics, operational data, and emerging trends from your customer service system. Through its built-in dashboards, interactive charts, and visual filters, you are provided with insight into your support operations data across different channels.

This module examined how to get started with Customer Service Insights and how to configure the Customer Service Insights, including:

- Defining Customer Service Insights and what it can provide for an organization.
- Examining the process for configure Customer Service Insights
- Learning how to use Customer Service Analytics in Power BI.
- Examining the different dashboards that are available.

Your next step would be to gain a deeper understanding of how to further enhance what Customer Service Insights can provide to your organization.

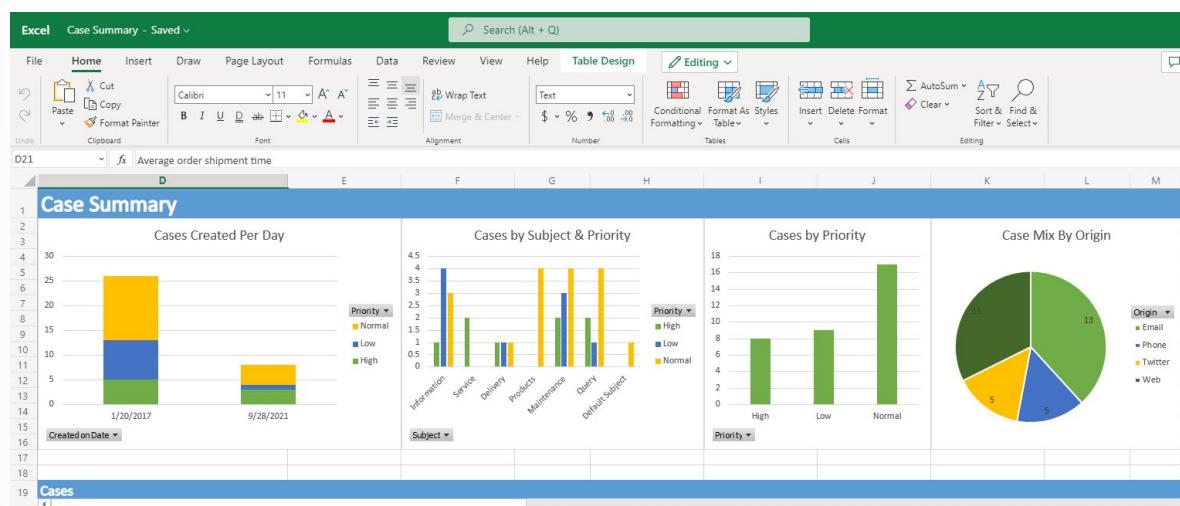
Create visualizations

Overview of the reporting and visualization options in Dynamics 365 Customer Service

Microsoft Dynamics 365 has multiple analytical options to help organizations drive business decisions that are based on past case volumes and trends. For example, organizations can define custom views that show specific types of data, use charts to drill into more details about different service-related records, or even analyze data by using external tools like Microsoft Excel and Microsoft Power BI.

Out of the box, Microsoft Dynamics 365 Customer Service provides several tools that can help answer many of these questions. Here are some of the most common tools that are available:

- **Views:** Views provide one of the easiest ways to do basic analysis of data. They include multiple options for filtering and sorting data. Each record type has several predefined views. More views can be added, based on individual needs.
- **Charts:** Charts provide a visual representation of information in real time, based on the views that are associated with specific row record types, like leads and opportunities. Dynamics 365 includes several interactive charts.
- **Dashboards:** Dashboards are used to consolidate data from multiple record types into a single interactive area. Dashboards can include charts, views, and data from custom HTML pages, external websites, and other resources. Dynamics 365 includes multiple dashboards.
- **Advanced Find feature:** Advanced Find lets users run complex and comprehensive searches for all types of information. For example, users can search for information from different types of records and view the combined data. Searches and results can be saved as personal views for later use.
- **Reports:** Reports provide an organized way to show specific information. Out of the box, Dynamics 365 includes several pre-configured service reports that can be used to track important aspects of case management. Custom reports can be created by using the Dynamics 365 report wizard.
- **Microsoft Excel:** Users can export data from Dynamics 365 to Excel to take advantage of the analysis tools that Excel offers, like more detailed charting capabilities and PivotTables. Dynamics 365 data can be exported to Excel as a static worksheet, a dynamic worksheet, or a dynamic PivotTable, or in Microsoft Excel Online.
- **Microsoft Excel Templates:** Excel templates are used to present data from a view of records using the charting features of Excel. There are two templates included with Dynamics 365 Customer Service, Case SLA Status and Case Summary, which is shown in the following screenshot. You can create Excel templates for your own reporting needs.



- Microsoft Word Templates: Word templates are used to create formatted output for a single record. A template that summarizes a case record is included with Dynamics 365 Customer Service and is shown in the following screenshot. You can create your own Word templates to create highly formatted documents.

Delivery never arrived

CASE

CASE ID: CAS-01219-H6B9P4
 CREATED ON: 1/20/2017 10:50 PM
 STATUS: IN PROGRESS
 PRIORITY: LOW
 OWNER: VERONICA QUEK (SAMPLE DATA)

CASE DETAILS

Subject:
Delivery

Origin:
Veronica Quek (Sample Data)

Product:
ABS Filament 3D Printer 4"

CUSTOMER DETAILS

Company: **Contact:**

DESCRIPTION

SLA DETAILS

ENTITLEMENT

First Response By:

Entitlement:

Resolve By:

- Customer Service Insights: Provides analytics and AI power insights on cases, topics, agents, and knowledge articles.

Many organizations use Power BI to do more complex BI analytics and reporting. Power BI can pull data from multiple data sources to support more advanced analytical needs. Dynamics 365 Customer Service can be one of those data sources. By using Power BI Desktop to write reports, and by using Power BI to share dashboards and data from Dynamics 365 Customer Service, users in your organization have a powerful new way to work with Dynamics 365 data.

Creating and using charts

Tools like the out-of-box reports and Microsoft Excel do a great job of aggregating and providing a perspective on data. But most users don't need that level of data analysis. They're just looking for a way to quickly navigate and see the high-level data that's important to them. For example, they might want to see their recent open case, the current day's activities, or their customer feedback. Charts provide visual insights into an organization's or user's most important data and information.

Besides being easy to use, charts show data in real time. As cases are opened and closed, tasks are updated, and so on, the charts immediately reflect the changes. Additionally, charts only contain the records that the user has permission to view.

Charts are graphical representations of data from the currently selected view of a table. When a view is changed, so is the chart. In Dynamics 365 there are several different types of charts available. You can use the out of the box charts or you can build your own. Once the chart is created, it can be used from within views or added to Dashboards.

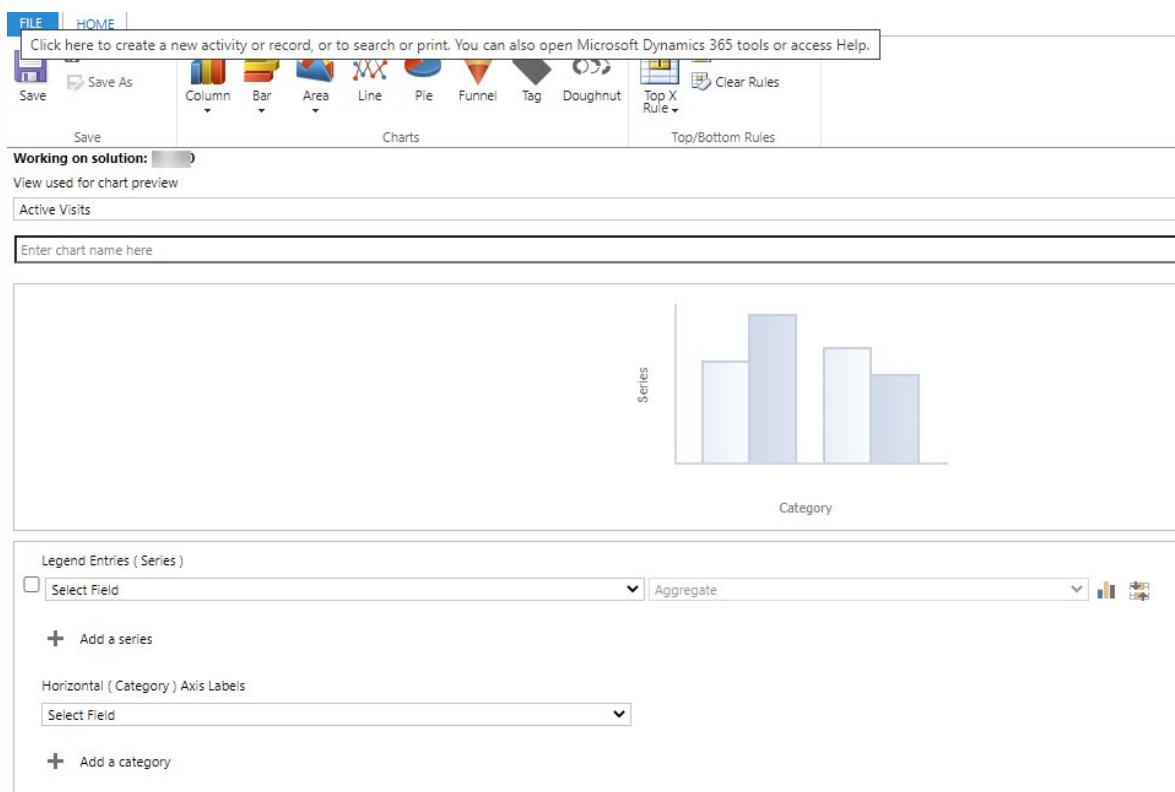
Case charts

The case table has many predefined charts that can be used to quickly consume big picture data, including

- Active Cases by Agent: A column chart showing the number of open cases for each agent.
- Case Creation Trend: A column chart showing the number of cases created day-by-day.
- Case Customer Effort: A stacked column chart showing the number of cases created each month and the number of channels used in the cases.
- Case Mix: A set of charts showing the number of cases by different groupings: business unit, origin, priority, and case type.
- Case Resolution Trend: A column chart showing the number of cases resolved day-by-day.
- Case Trend by Topics: A line chart showing the trend of cases created over time.
- Cases by account: A tag chart showing the number of cases for each account.
- Cases by Origin (Per Day): A stacked column chart showing the number of cases per day grouped by origin.
- Cases by Priority: A doughnut chart showing the number of cases grouped by priority. This chart is used on the Interactive dashboards.
- Cases by Owner: A stacked column chart showing the number of cases per agent grouped by priority.
- Cases by Product: A tag chart showing the number of cases associated with each product.
- Cases by Status: A column chart showing the number of cases grouped by status.
- Service Leaderboard: A bar chart showing the number of cases by agent.

Building charts

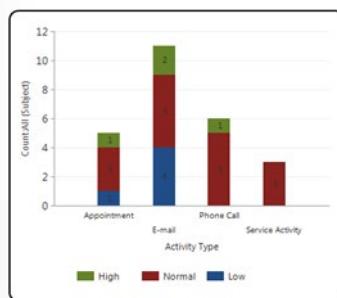
You can create custom charts and then make those charts available to users in views and dashboards.



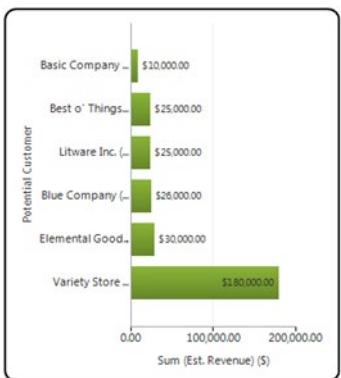
Type of charts

When creating charts there are several types of charts that you can create:

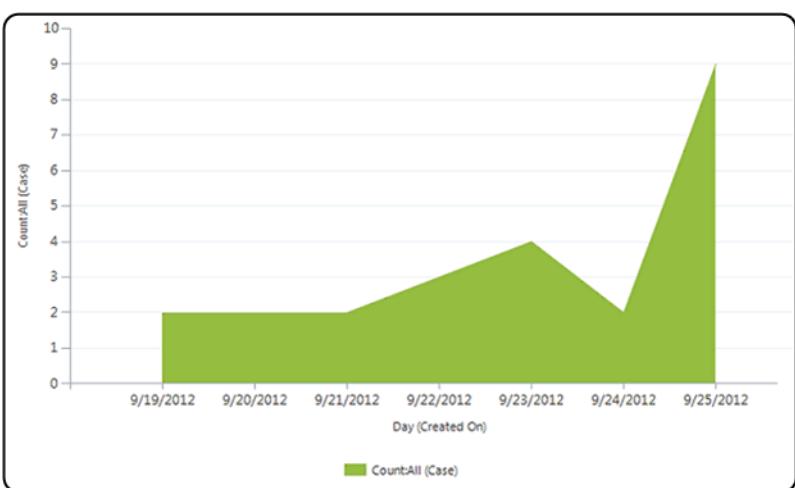
- **Column:** Column, Stacked Column, or 100% Stacked Column.



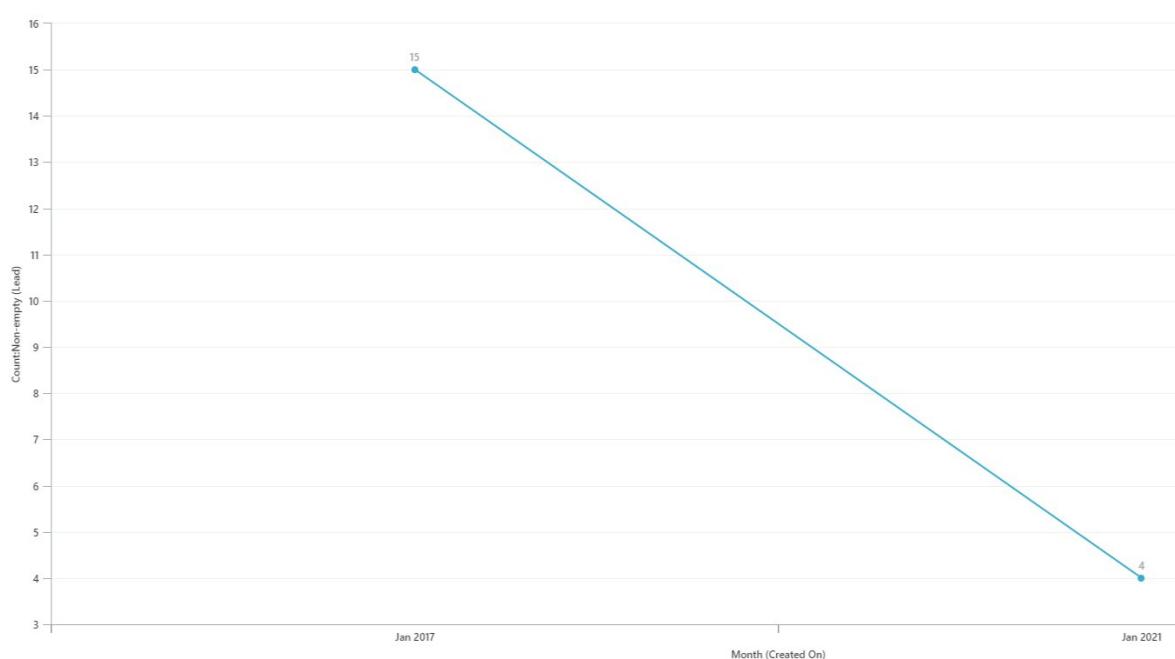
- **Bar:** Bar, Stacked Bar, or 100% Stacked Bar.



Area: Area, Stacked Area, or 100% Stacked Area.

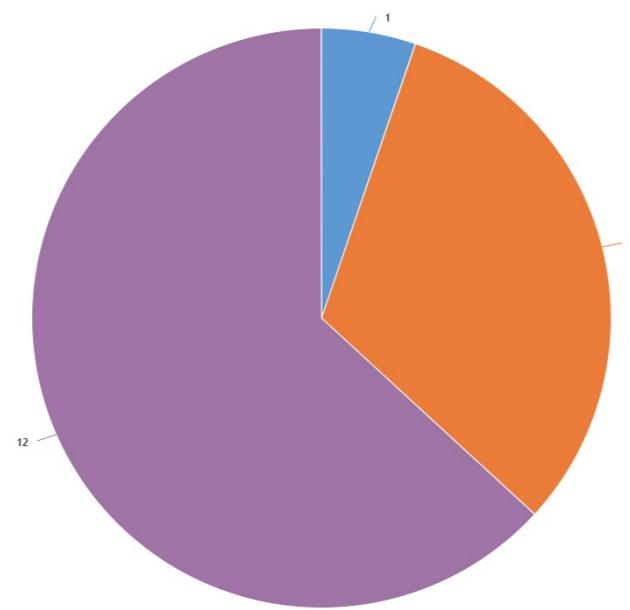


Line:



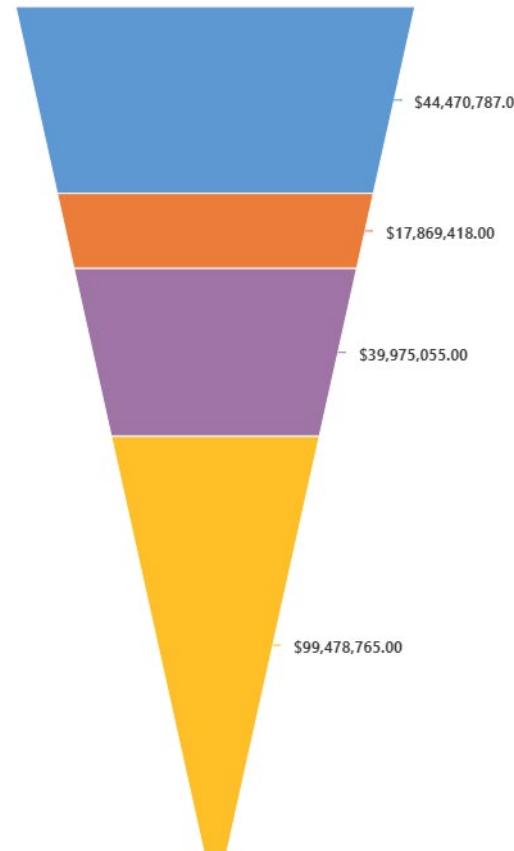
Pie:

● Cold ● Hot ● Warm



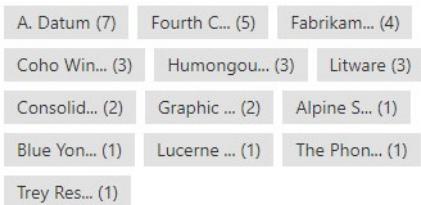
Funnel:

● 1-Qualify ● 2-Develop ● 3-Propose ● 4-Close



Tag:

Cases By Account ▾

**Doughnut:****Chart rules**

Rules can be created to only show the top or bottom few rows in the chart. You can select this from both the menus and while building the chart itself.

Viewing charts

When displaying the chart next to your view, they are collapsed by default, but when you select **Show Charts**, the chart will appear on the left side of the view.

Chart data displayed changes as view is changed or filters are applied.

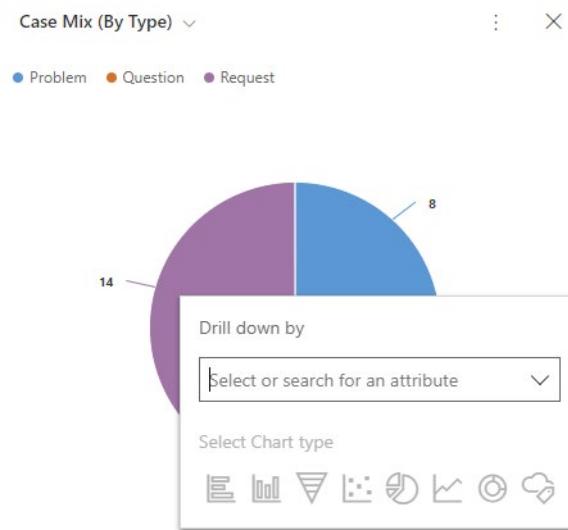
All available charts for the entity will be displayed

Topic	Potential...	Close D.T.	Est. Revenue	Account	Probability	Rating	Email (Poter)
Looking to Purchase new Equipment for Office.	Maria Campbell	11/25/2019	US\$27,500	A. Datum Corp	---	Warm	dbormann
Looking for new MRI machines	Adventure Wor	11/29/2019	---	Adventure Wor	---	Warm	---
Looking to relocate	Northwind Trac	12/1/2019	US\$65,000	Northwind Trac	80	Hot	---
Wanting to buy some new bikes	Adventure Wor	12/4/2019	US\$60,000	Adventure Wor	80	Hot	---
Very likely will order 18 Product SKU JJ202 this	Alpine Ski Hou	12/5/2019	US\$25,000	Alpine Ski Hou	95	Hot	---
Looking for multiple devices for family member	Fabrikam, Inc...	12/10/2019	US\$30,000	Fabrikam, Inc...	55	Warm	---
Looking for multiple devices for family member	Contoso Pharm	12/12/2019	US\$40,000	Contoso Pharm	80	Hot	---
Stores will be getting remodel	Alpine Ski Hou	12/14/2019	US\$45,000	Alpine Ski Hou	85	Hot	---
Stores will be getting remodel	Contoso Pharm	12/15/2019	US\$15,000	Contoso Pharm	25	Cold	---
Looking for multiple devices for family member	Litware, Inc.	12/15/2019	US\$35,000	Litware, Inc.	80	Hot	---
Stores will be getting remodel	Blue Yonder All	12/15/2019	US\$45,000	Blue Yonder All	85	Hot	---

Drilling Down

Drilling down means going into the chart to see only specific data. If you are drilling down through the chart, you will be asked for certain questions regarding which area you will want to drill into. To drill down

into the data further, simply click on the chart itself and you will be given the ability to make your data selections.



System Charts

System charts are created in the **Power Apps Maker portal**⁵. System charts are visible to all users in the organization. If you customize a solution, you have the chart option under each table.

The screenshot shows the Power Apps Maker portal interface. At the top, there is a navigation bar with links for "Add chart", "Add subcomponents", "Edit data in Excel", "Get data", "Export data", and "Export to". Below the navigation bar, the path "Solutions > [redacted] > [redacted]" is shown. In the main area, there is a navigation bar with tabs: "Columns", "Relationships", "Business rules", "Views", "Forms", "Dashboards", "Charts" (which is highlighted with a red box), "Keys", and "Data". Under the "Charts" tab, a table is displayed with two rows:

Name ↑	Type ↴
Visit by Date	... Custom
Visits by Building and Purpose	... Custom

You need to specify the fields that you want to display on the Horizontal (Category) Axis Labels and the Legend Entries (Series). The Legend Entries (Series) axis displays data that is only a numeric value. You can choose "Avg", "CountAll", "Count Non-empty", "Max", "Min", or "Sum". If you choose a non-numeric field for the series axis, you can only choose "CountAll" or "Count Non-empty". Row

The Horizontal (Category) Axis Labels displays either numeric or non-numeric values. You can have up to two categories listed.

Charts can be exported and imported into other solutions. You can also customize charts by exporting the chart to an XML file and making the appropriate modification needed in XML.

⁵ <https://make.powerapps.com>

Personal Charts

Personal charts are available the Customer Service hub and are created from the view of the table. Personal charts are associated with the user who created them but can be shared out with other users and teams.

[!Note]

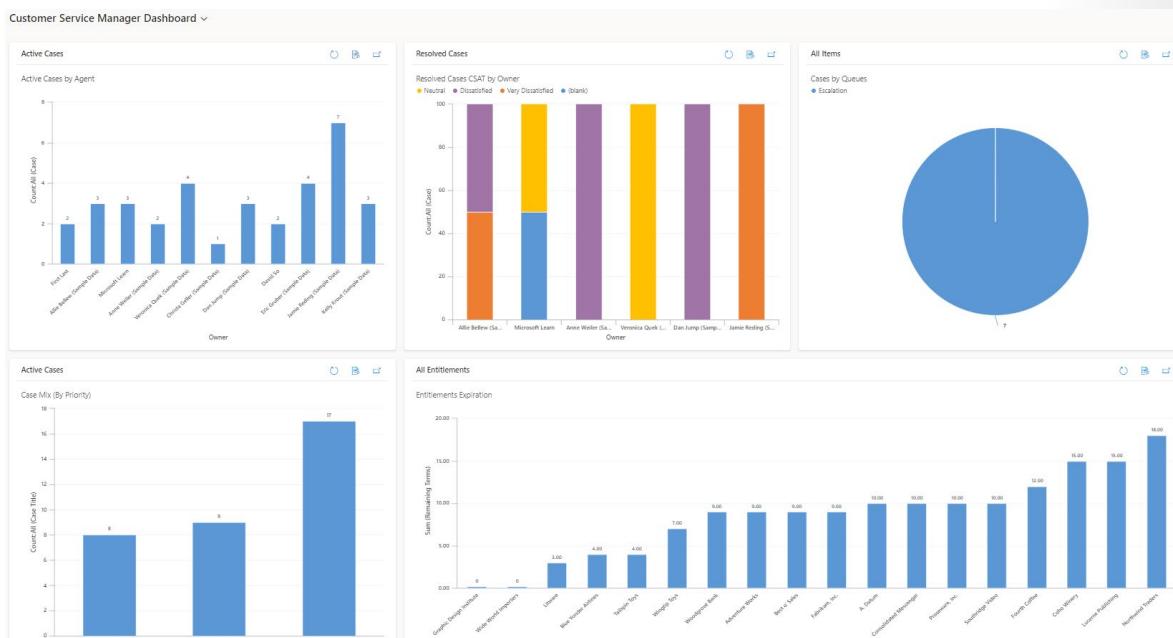
Tag and Doughnut charts are not available in personal charts.

A user can export a personal chart definition and share it with an administrator who can then import it and configure it as a system chart and make it available to all users.

Dashboards

Dashboards: Dashboards let users see, at a glance, the most important information that they need to make business decisions. Dashboards can consist of charts, lists, and other resources, like external webpages. Dynamics 365 Customer Service includes several pre-configured dashboards that help shed light on the most important information. These pre-configured dashboards can be changed, and custom dashboards can be created.

Dashboards are a collection of views, charts, IFrames, web resources, and other graphical reports that provide a high-level overview of data all in one screen. As an example, you can show case satisfaction scores alongside entitlement expirations and the mix of cases by priority. See example in the following screenshot.



Each item that's presented on a dashboard is called a component. Each dashboard can include a maximum of six components. This allows you to analyze different customer service data at the same time. Essentially, a dashboard is a snapshot of the data in different formats from different tables on one page.

[!NOTE]

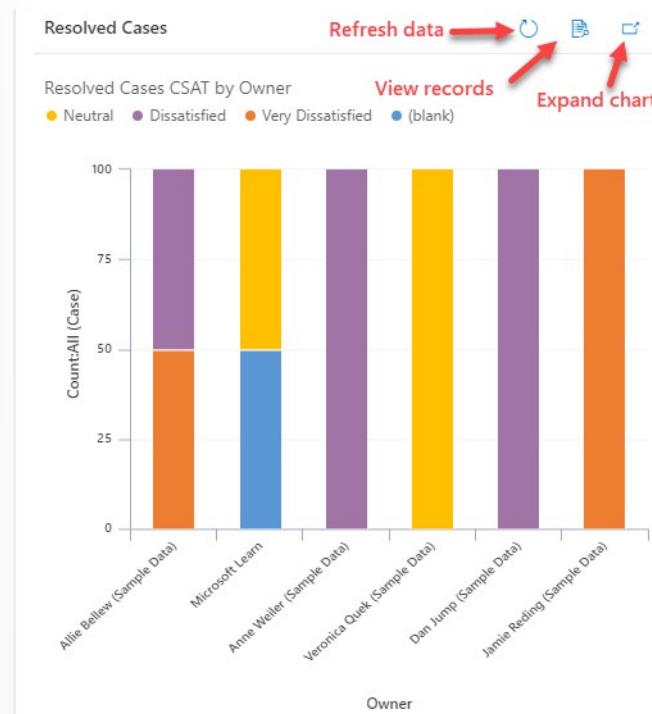
The dashboard page does not auto-refresh, but it will offer the most current data every time the user loads the page.

Case dashboards

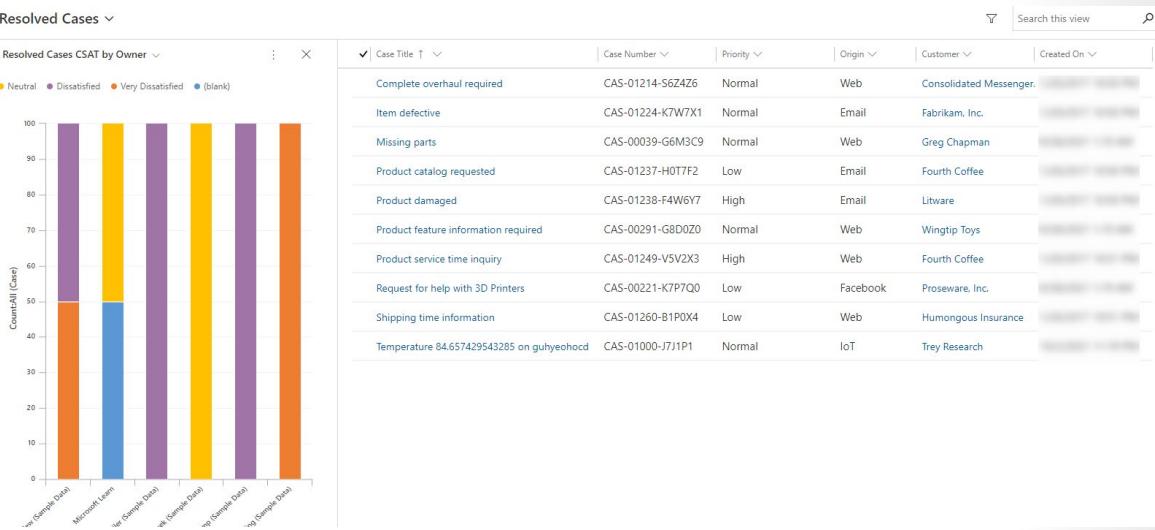
In Dynamics 365 Customer Service, there are several out of the box dashboards that allow users to measure their productivity and compare how they measure up to the other users in their organization. These out of the box dashboards are called system dashboards and are available for all users of the organization to see. In Dynamics 365 Customer Service, the out of the box dashboards are:

- Connected Customer Service Dashboard
- Customer Service Manager Dashboard
- Customer Service Performance Dashboard
- Customer Service Representative Social Dashboard
- Knowledge Manager
- My Knowledge Dashboard
- Tier 1 Dashboard
- Tier 2 Dashboard

Each dashboard shows different visualizations or views on records from a table. You can expand components or drill down into the records that are used to generate the charts by selecting the appropriate button.



If you select the **View records**, a window is opened that shows the chart and a list of the records that was used to generate the chart.



Custom dashboards

If the out of the box dashboards does not meet your needs, you can easily customize these dashboards and make additional dashboards. Dashboards that are created by individual users are referred to as personal dashboards. By default, personal dashboards are visible only to the users who created them, but they can be shared with other users as needed. To create a personal dashboard, select the Dynamics 365 Dashboard button on the command bar. System dashboards can be added from within Solutions in the **Power Apps Maker portal**⁶.

There are three types of dashboards that you can create:

- **Dynamics 365 Dashboard:** Contains components such as lists and charts.
- **Power BI Dashboard:** Embed a Power BI report or dashboard.
- **Interactive Dashboard:** Dynamics 365 dashboards that allow interaction, filtering, and action to be taken on Dynamics 365 records.

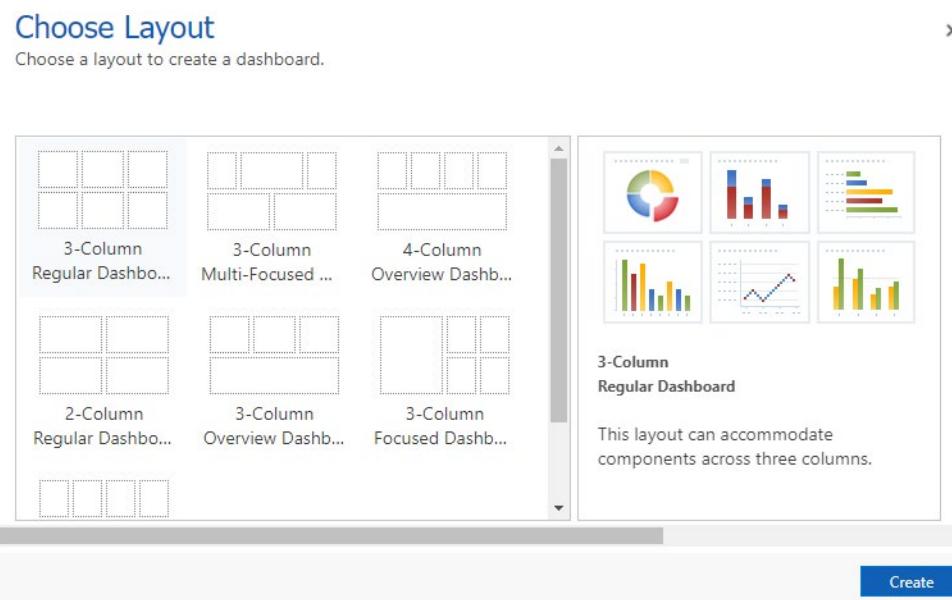
Dynamics 365 Dashboards

[!NOTE]

The steps to add a dashboard are slightly different for personal and system dashboards.

In the Customer Service hub, navigate to **Service > Dashboards**, click on **+ New** and select **Dynamics 365 Dashboard**. The next step is to select a layout for the dashboard.

⁶ <https://make.powerapps.com>



In a solution the Power Apps Maker Portal, click on **+ New** and select **Dashboard** and then select the layout.

In the dashboard designer, you can add components based on your specific needs. Each component placeholder includes a set of buttons that correspond to the different types of components that can be set up. As you add components to the dashboard, you can size, move, or delete them as needed.

Here are some of the types of components that can be added to a dashboard:

- Chart: This component shows a Dynamics 365 chart. If you add a chart to a dashboard, you must define the following properties:
 - The table to use
 - The view that defines the data that's shown in the chart
 - The specific chart to show
- List: This component shows a specific Dynamics 365 view. If you add a list to a dashboard, you must define the following properties:
 - The table to use
 - The specific view to show
- Assistant: This component shows the Assistant.
- Iframe: This component shows information for a webpage.
- Web resource: This component shows information for a web resource.
- Power BI tile: This component allows a tile from a Power BI dashboard to be added to the dashboard.

In each component you can click on the icon for the type of component as shown in the following screenshot.



[!IMPORTANT]

Power BI visualization embedding has to be enabled in the system settings to be able to add Power BI tiles. This is set to Off by default. You also cannot add a Power BI tile to a Dynamics 365 system dashboard.

After the dashboard looks the way you want, you can save and close it. The next time you select the Dashboards option in the site map, the dashboard that you created will be available in the list of dashboards. Personal dashboards always appear at the top of the list, under My dashboards.

Power BI Dashboards

[!IMPORTANT]

Power BI visualization embedding has to be enabled in the system settings to be able to add Power BI Dashboards. This is set to Off by default.

Enable Power BI reporting

You need to enable Power BI reporting in the Dynamics 365 to embed Power BI dashboards and tiles in Model-driven apps.

In the **Power Platform Admin Center**⁷ select **Settings** for your Dynamics 365 environment.

Navigate to **Product > Features** and toggle **Power BI visualization embedding** to **On** and click **Save**.

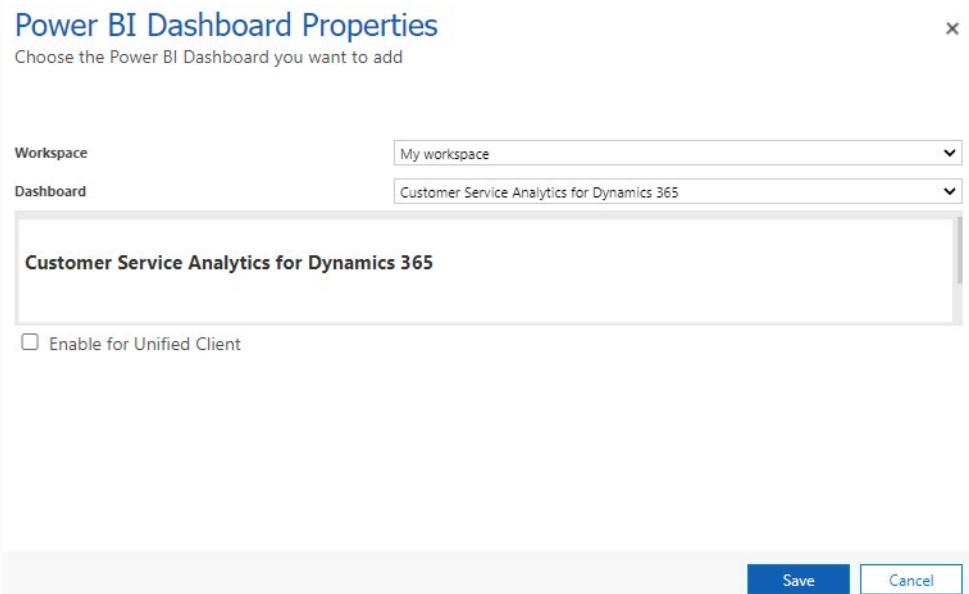
The screenshot shows the Power Platform Admin Center interface. The left sidebar has a navigation menu with options like Environments, Analytics, Resources, Help + support, Data integration, Data (preview), Data policies, and Admin centers. The main content area is titled 'Environments > Customer Service > Settings > Features'. It includes a link to 'Learn more about Features'. Below this, there's a section for 'AI Builder' with a note about preview model usage and a toggle switch set to 'On'. The 'Embedded content' section contains three items: 'Power BI visualization embedding' (which is highlighted with a red box and has its toggle switch set to 'On'), 'Bing Maps' (with its toggle switch set to 'Off'), and 'Prevent social data in Dynamics' (with its toggle switch set to 'Off').

⁷ <https://admin.powerplatform.microsoft.com/>

Embed a personal Power BI dashboard in Dynamics 365 Customer Service

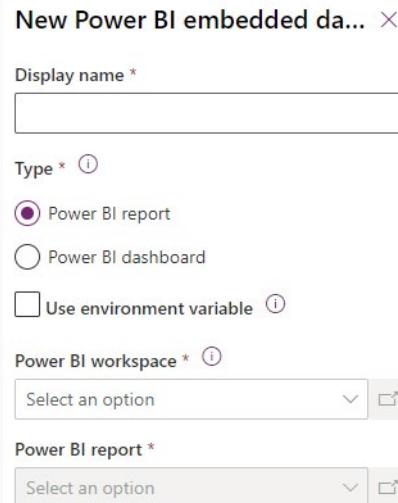
You can embed the Power BI dashboard into the Customer Service apps. In the Customer Service hub, navigate to **Service > Dashboards**, click on **+ New** and select **Power BI Dashboard**.

In the popup window select the Workspace and Dashboard that you want to use and click **Save**.



Embed a system Power BI dashboard in Dynamics 365 Customer Service

To add a system Power BI dashboard in a solution the Power Apps Maker Portal, click on **+ New** and select **Dashboard** and then select **Power BI Embedded**.



When adding embedded Power BI dashboard to a solution, you can either add a Power BI report or a Power BI dashboard.

In the popup window select the Workspace, Type, and Report or Dashboard that you want to use and click **Save**.

Interactive dashboards

Interactive Dashboards are different from other dashboards as they will give a visual representation of data associated with one table. There are two types of interactive experiences.

- **Multi-stream:** Displays data for multiple-streams of data. The streams can be for the same table or for different tables.
- **Single-stream:** Displays data for a single stream of data from a single table.

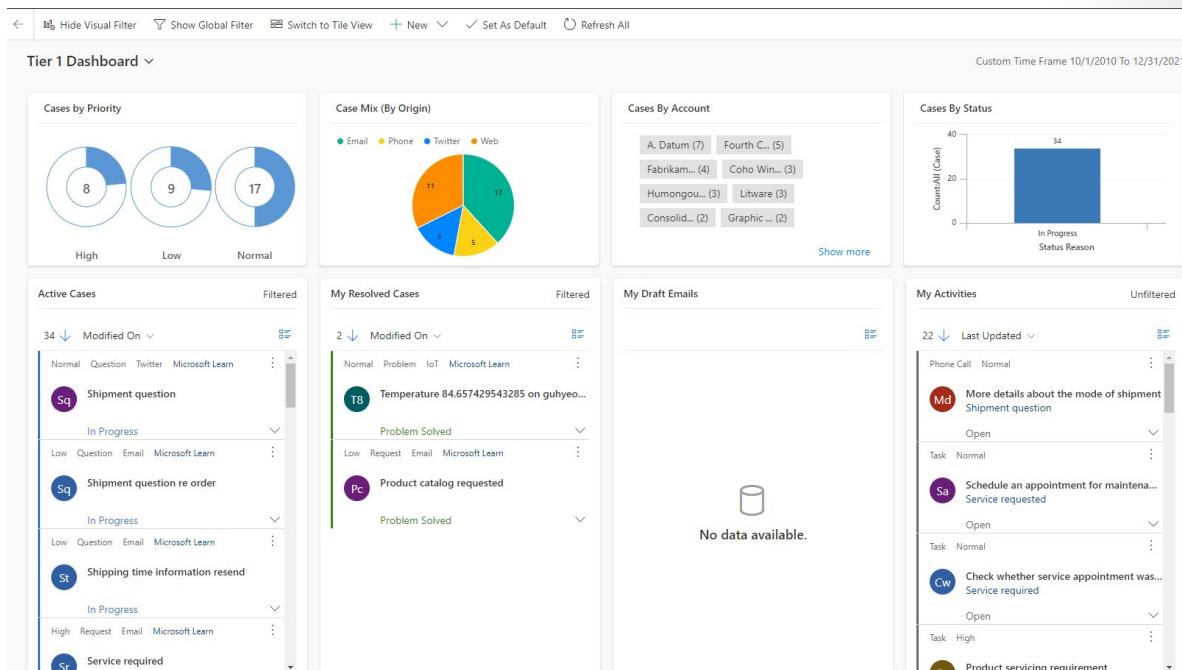
Multi-stream and single-stream dashboards contain interactive charts that provide a count of relevant rows, such as cases by priority or by status. These charts also act as visual filters. The visual filters (interactive charts) are based on multiple tables and in the single-stream dashboards, the table in the data stream defines the visual filter table.

Users can apply additional filtering with global filter and timeframe filter. The global filter works at a column level on all charts, and also on streams and tiles that are based on the filter table (you specify the filter table when you configure the visual filters).

Multi-stream dashboard

The multi-stream dashboard displays your data in real time with single or multiple data streams. The data in a stream can only be from one table but there can be multiple streams with each stream using a different table.

In the multi-stream dashboard, you see a row of visual filters at the top with the data streams below them.



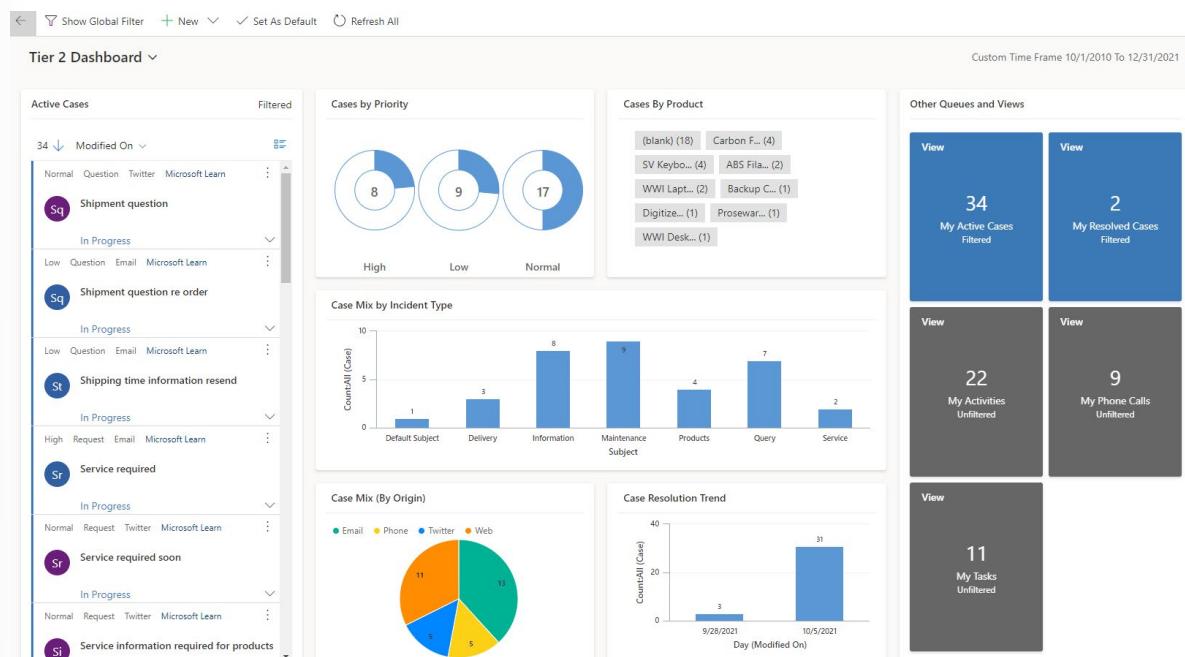
[!NOTE]

The Tier 1 dashboard Multi-stream dashboard.

Single-stream dashboard

While single-stream dashboards display data from one stream from one table view. You can add many more components to a single stream dashboard than a multi-stream dashboard.

The single-stream dashboard contains the data stream on the left and visual filters and tiles on the right.



[!NOTE]

The Tier 2 dashboard Single-stream dashboard.

Creating Interactive dashboards

You cannot create personal Interactive dashboards, they must be created in a solution and must be created in the Classic solution explorer.

When creating an interactive dashboard, you select either single-stream or multi-stream and then select the tables and views to be used for the streams.

Reports in Dynamics 365 Customer Service

When it comes to reporting in Dynamics 365 Customer Service you have many options. Dynamics 365 Customer Service includes several system reports that you can use to gain insights into how your business is doing. You can use these reports as is, or customize them for your needs. You can also use the report wizard to create new custom reports.

System reports

There are several reports provided for Dynamics 365 Customer Service. Explained here are the three key reports.

Neglected Cases report

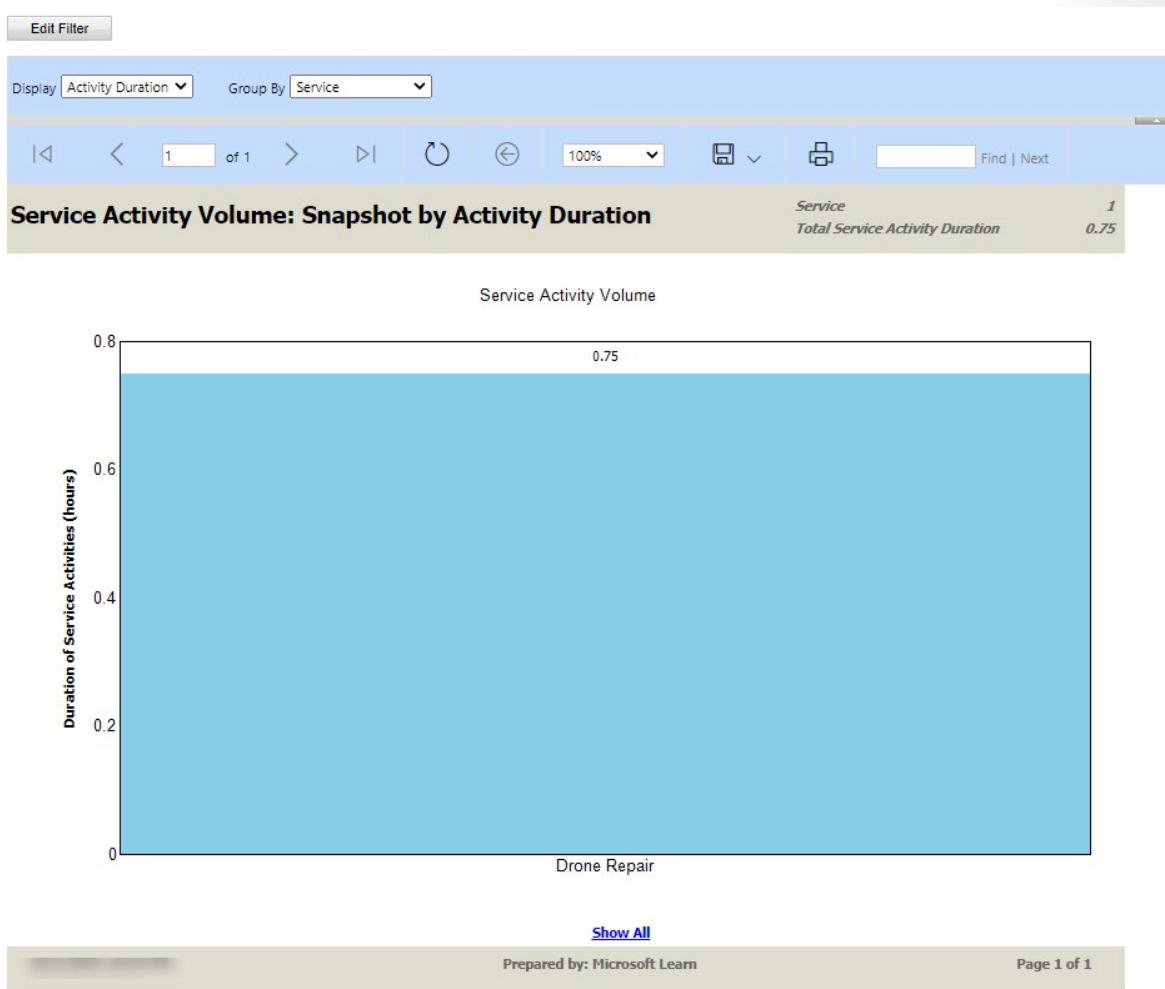
Improve your service team's KPIs and get your cases closed. Quickly identify and take action on cases that haven't been updated recently. The report also shows the name of the service agent assigned to the case - use this information to follow-up with your team and to start resolving these cases.

Activities report

To provide better service to your customers, get a quick view of all the activities associated with support cases such as phone calls, tasks, emails, appointments, and case resolution. Use the information in this report to look at the details of each activity and identify patterns to make improvements in how you communicate with your customers.

Service Activity Volume report

Use this report to review the patterns in service activity volume. The report displays either the duration of or the number of service activities grouped by services, resources, time periods, and additional criteria.



[!NOTE]

These reports are functional rather than attractive. You can change the filters and change how the data is grouped. You can also drill-down into the records and navigate directly to the record in the Customer

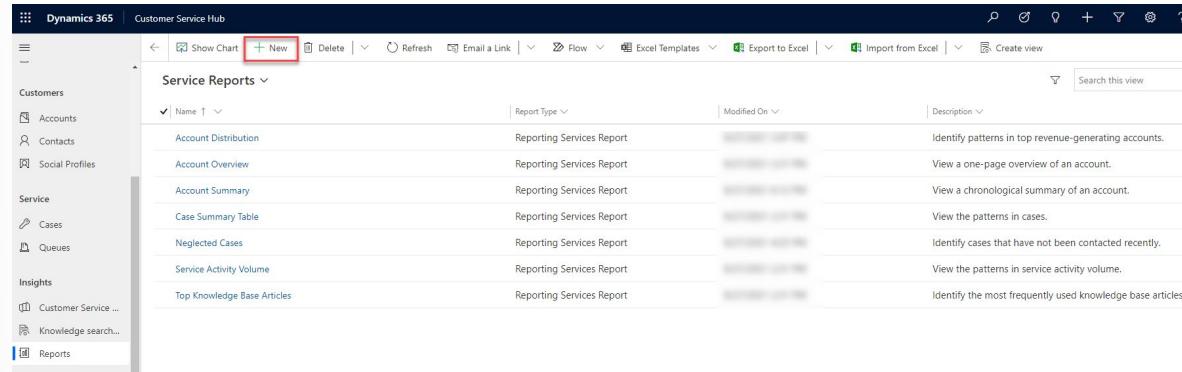
Service hub. These reports can also be printed and downloaded as PDFs or as Microsoft Word or Excel files.

Report Wizard

If you want to create your own reports in Dynamics 365 Customer Service, you can do this from the Reports view.

[!IMPORTANT]

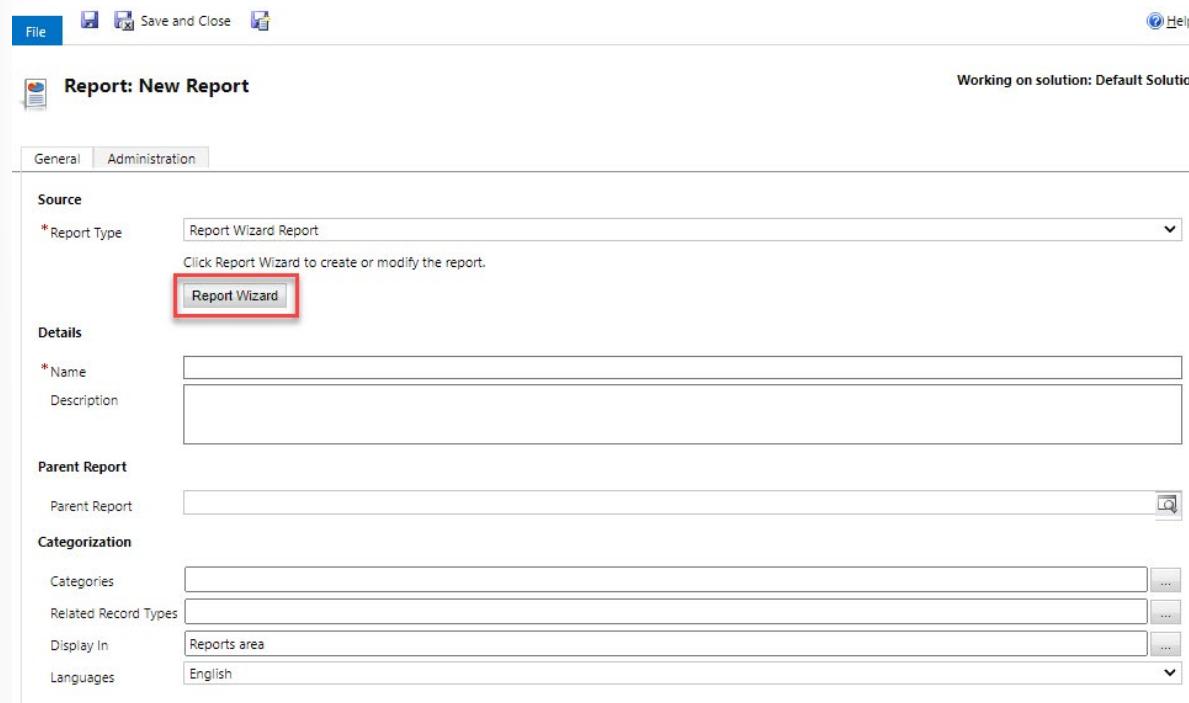
If Reports are not available in the app navigation, you need to add the Reports table to the app's SiteMap.



The screenshot shows the Dynamics 365 Customer Service Hub interface. On the left, there is a navigation bar with sections like Customers, Service, and Insights. Under the Reports section, there is a list of pre-defined reports. At the top of the page, there is a toolbar with various icons and a search bar. A red box highlights the '+ New' button in the toolbar.

Name	Report Type	Modified On	Description
Account Distribution	Reporting Services Report		Identify patterns in top revenue-generating accounts.
Account Overview	Reporting Services Report		View a one-page overview of an account.
Account Summary	Reporting Services Report		View a chronological summary of an account.
Case Summary Table	Reporting Services Report		View the patterns in cases.
Neglected Cases	Reporting Services Report		Identify cases that have not been contacted recently.
Service Activity Volume	Reporting Services Report		View the patterns in service activity volume.
Top Knowledge Base Articles	Reporting Services Report		Identify the most frequently used knowledge base articles.

Click on + New to create a new report.



The screenshot shows the 'Report: New Report' creation page. At the top, there is a toolbar with 'File' and 'Save and Close' buttons. Below the toolbar, the title 'Report: New Report' is displayed, along with a status message 'Working on solution: Default Solution'. The main area contains several input fields and dropdown menus. One of the dropdown menus, labeled 'Report Type', has a red box around its 'Report Wizard' option. Other sections include 'Source', 'Details', 'Parent Report', 'Categorization', and 'Languages'.

Source	Report Type
Report Wizard Report	Report Wizard

Details:

- * Name: [Input Field]
- Description: [Input Field]

Parent Report:

- Parent Report: [Input Field]

Categorization:

- Categories: [Input Field]
- Related Record Types: [Input Field]
- Display In: Reports area
- Languages: English

Click on **Report Wizard** to start creating your report.

Get Started

Select how to start your report.

Select the starting point for your report

- Start a new report
 Start from an existing report
 Overwrite existing report

[Back](#) [Next](#) [Cancel](#)

You can either start with one of the existing reports or create a new one as required and click **Next**.

Report Properties

Enter the name and description of the report, and specify which record types the report will use.

Specify the name and description of the report

Report name: *

Case report

Report description:

Specify the record types to include in this report

Your choice for primary record type will determine which related record types can be included.

Primary record type: *

Cases

Related record type:

[Back](#) [Next](#) [Cancel](#)

Specify the Report Properties by giving it a name, description and specify the table you want to report on and click **Next**.

Select Records to Include in the Report [Help](#)

Select a view, or define criteria. This will become the default filter for the report.

Report Filtering Criteria

Cases

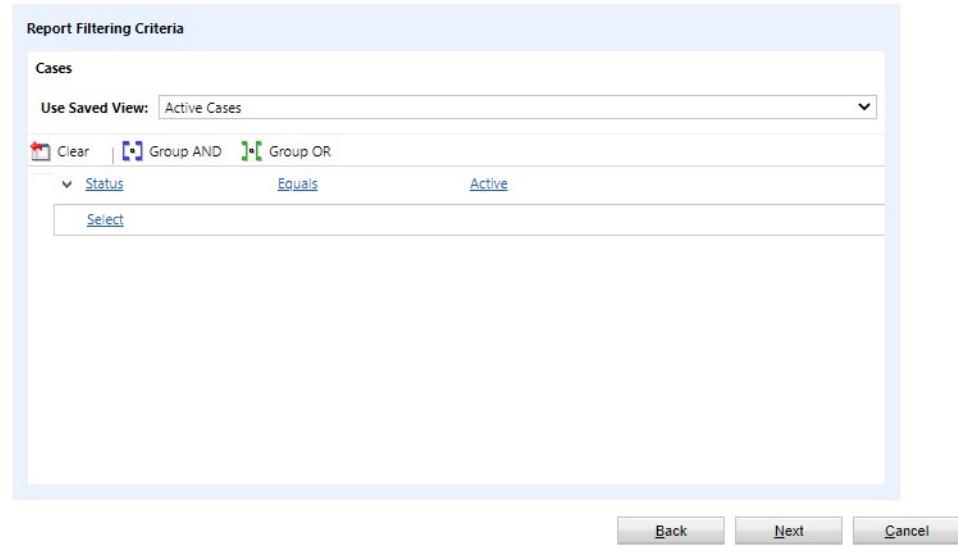
Use Saved View: Active Cases

Clear | Group AND | Group OR

Status Equals Active

Select

Back Next Cancel



Configure the filter to select the records to be included in your report and click **Next**.

Lay Out Fields [Help](#)

Select the columns, groupings, and totals to display in the report.

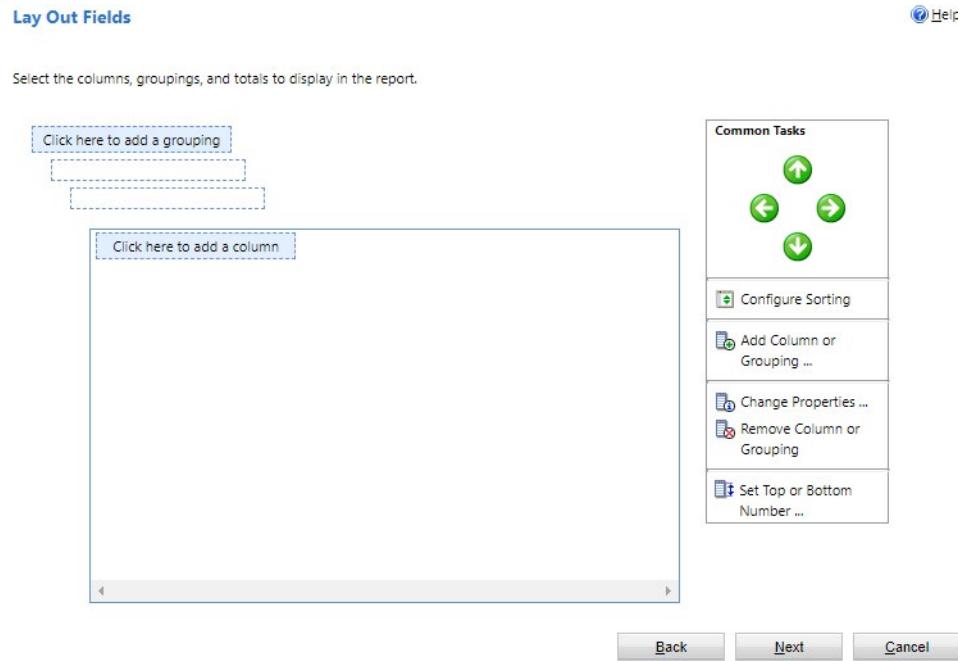
Click here to add a grouping

Click here to add a column

Common Tasks

- Configure Sorting
- Add Column or Grouping ...
- Change Properties ...
- Remove Column or Grouping
- Set Top or Bottom Number ...

Back Next Cancel



Configure the layout by selecting the columns from the table as either grouping or details and click **Next**.

Format Report

Select the basic format of the report.

Info: If you want to use a chart in this report, click Back, and then either add a summary type to an existing numeric column, or add a new numeric column with a summary type.

Table only



Chart and table:

Show table below chart on the same page.



Show chart. To view data for a chart region, click the chart region.



Back **Next** **Cancel**

Select the format for the report to include or exclude a chart and click on **Next**.

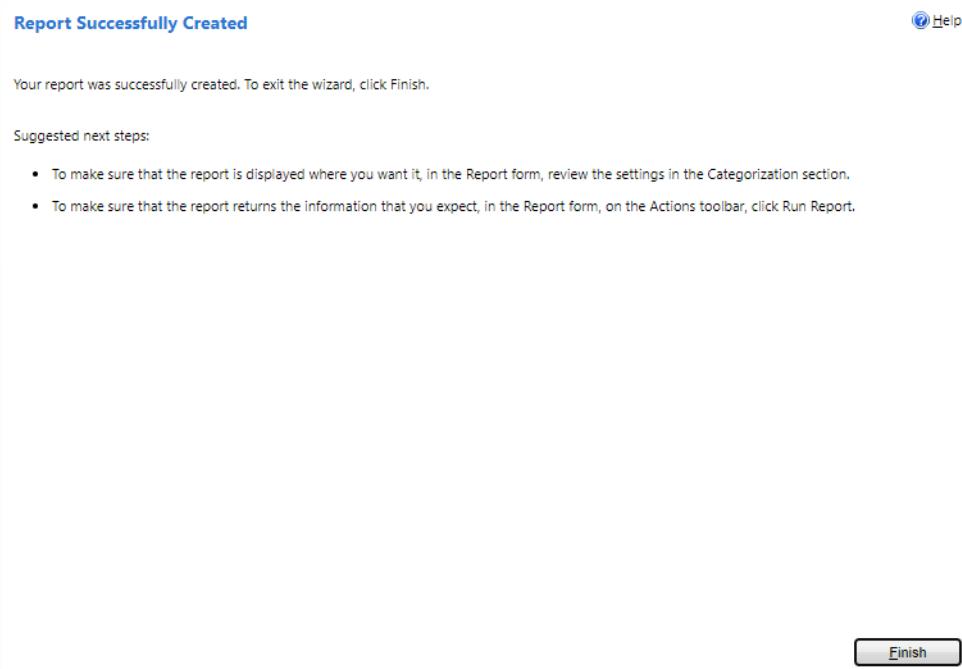
Report Summary

Review the summary of the report. To save the report, click Next.

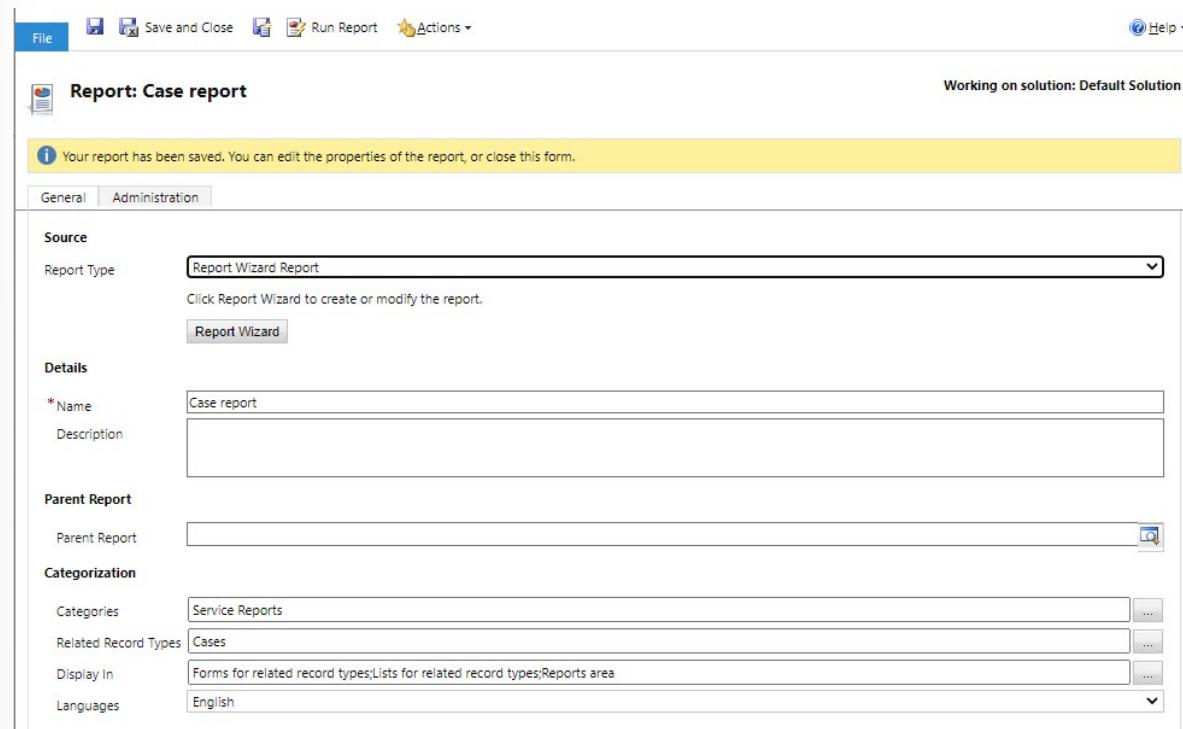
Report name: Case report
Primary record type: Cases

Back **Next** **Cancel**

Click on **Next** to create the report.



You have successfully created your report. Click on **Finish**.



Click on **Run Report** to run the report.

The screenshot shows a Dynamics 365 Customer Service report titled 'Case report'. At the top, there's a toolbar with standard navigation icons (back, forward, search, etc.) and a zoom level of 100%. Below the toolbar, the title 'Case report' is displayed, followed by a 'Filter Summary' section. The main content area has two sections: 'Problem (Count: 8)' and 'Question (Count: 12)'. Each section contains a table with columns for Case Type, Case Number, and Subject.

Case Type	Case Number	Subject
CAS-01213-P8B3X0	Delivery	
CAS-01219-H6B9P4	Delivery	
CAS-01220-S1K8F4	Products	
CAS-01222-S6G5J0	Information	
CAS-01239-F9N7V2	Default Subject	
CAS-00055-V8L7L7	Products	
CAS-00286-N1H4B3	Delivery	
CAS-00290-X2X1T1	Service	

Case Type	Case Number	Subject
CAS-01226-D5F0K2	Information	
CAS-01228-R4R6L0	Maintenance	
CAS-01230-P5Y4B7	Query	
CAS-01232-S7L0X4	Query	
CAS-01244-S6B1P5	Query	
CAS-01245-K3H4H7	Query	
CAS-01248-B4G9S0	Query	

Discover how to utilize Power BI to view Dynamics 365 Customer Service data

As we saw earlier in the module, you can embed Power BI reports, dashboards, and tiles in Dynamics 365 Customer Service. In this section we will look at how to Power BI can consume the data from Dynamics 365 to create Power BI reports and dashboards.

[!NOTE]

This module does not explain how to create Power BI reports in detail but is more concerned with how to connect Power BI to Dynamics 365 Customer Service data.

What is Power BI

Microsoft Power BI is a suite of business analytics tools that deliver insights throughout your organization. Power BI helps connect to hundreds of data sources, simplifies data preparation, and drives ad-hoc analysis. By using the tools that Power BI provides, you can produce beautiful reports and then publish them so that your organization can consume them on the web and across mobile devices.

Everyone can create personalized dashboards that give them a unique, 360-degree view of their business, that scale across the enterprise, and that have governance and security built-in. These features and tools are all available through PowerBI.com. Not only can custom dashboards be created, but there are pre-configured Power BI dashboards that have been created specifically for Microsoft Dynamics 365 Customer Service.

There are several benefits to using Power BI to help analyze of Microsoft Dynamics 365 data. Because it's a complete enterprise analytics application, it has its own ecosystem. Apps that are available for Power BI

connect to hundreds of different data sources, including Dynamics 365. Therefore, it's very easy to get connected and get meaningful data right away.

You can connect your Dynamics 365 either by using a pre-configured Power BI app, or by creating your own Power BI reports.

Power BI app

The Customer Service Analytics for Dynamics 365 Power BI app contains several reports and dashboards for cases, queues, and agents. You can easily use this app to analyze your customer service data.

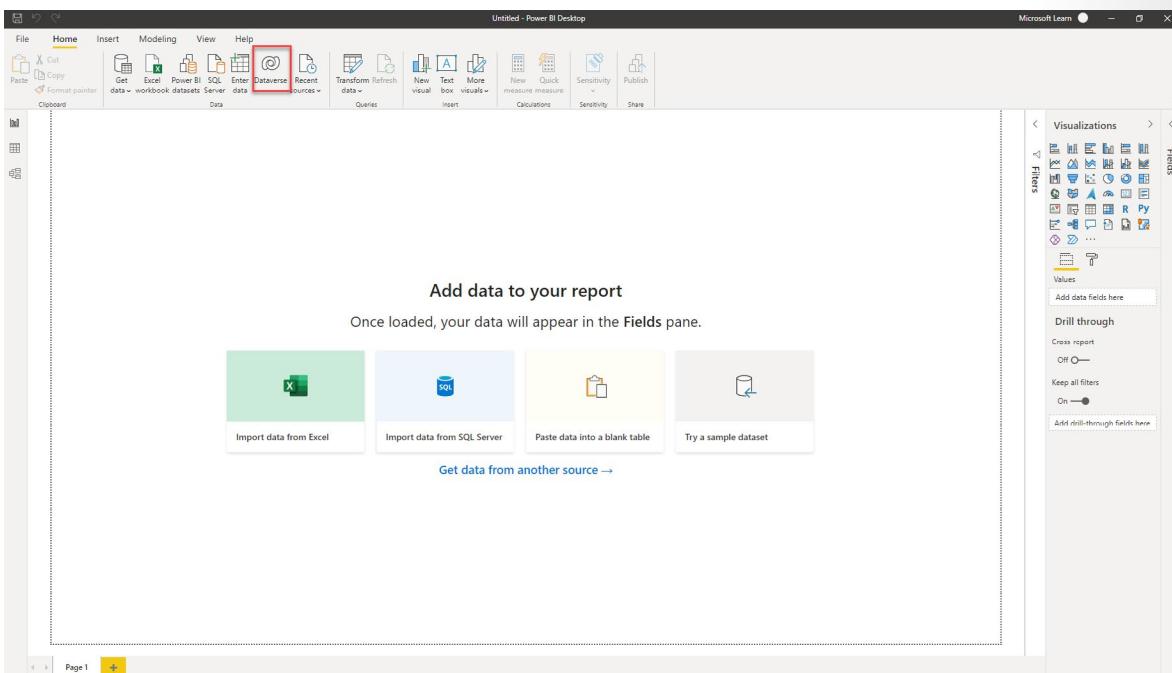
The screenshot shows the Microsoft AppSource page for the "Customer Service Analytics for Dynamics 365" app. At the top, there are navigation links for "AppSource" and "Apps for Power BI". Below that is a search bar with the placeholder "Apps". The main content area features a large purple heart-shaped icon. To the right of the icon, the app name is displayed along with a "Save to my list" button. Below the name, the developer "Microsoft" is listed, followed by a 1.0 (2) rating. There are two tabs: "Overview" (which is selected) and "Ratings + reviews". The "Overview" tab contains a brief description: "Get insights about your customer service performance, activities and cases". It also includes a section for "Customer service need" with a bar chart showing data for "Active cases", "Resolved cases", "Escalated cases", "Avg handle time (hrs)", and "Avg CSAT". The "Pricing" section indicates the app is "Free". The "Products" section lists "Power BI apps". The "Publisher" section shows "Microsoft". The "Acquire Using" section indicates "Work or school account". The "Version" section shows "18". A list of tasks is provided under "What you can do":

- Monitor Customer service operational metrics across Queues and Agents.
- Drill into each case/activity on customer service hub application from list view.

This app is explained further in the Get started with Customer Service Insights module.

Connecting Power BI to Dynamics 365 Customer Service

Power BI Desktop is a Microsoft Windows application that enables you to connect to data and build reports, before publishing to the Power BI service, PowerBi.com.



Clicking on the **Dataverse** icon in the toolbar will prompt for the organization domain of your Dynamics 365 Customer Service environment.

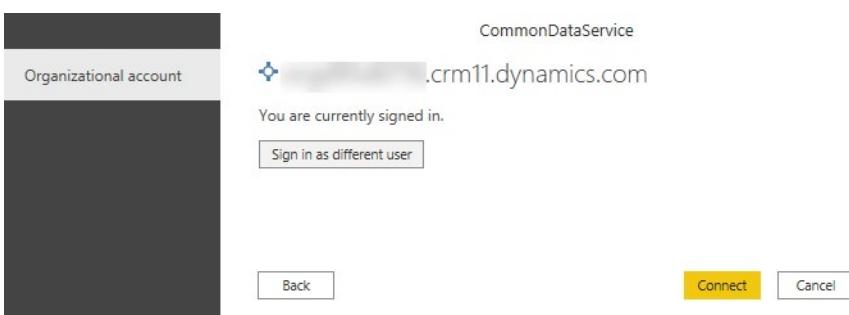
Dataverse



[!NOTE]

You can use either the Import where data is copied into Power BI and refreshed on a scheduled basis, or you can use DirectQuery where the data is queried in real-time from Dataverse when a user accesses a Power BI report.

You should copy the URL of your environment and click **OK**. If prompted, sign in with your Dynamics 365 credentials.



Click on **Connect**.

Navigator

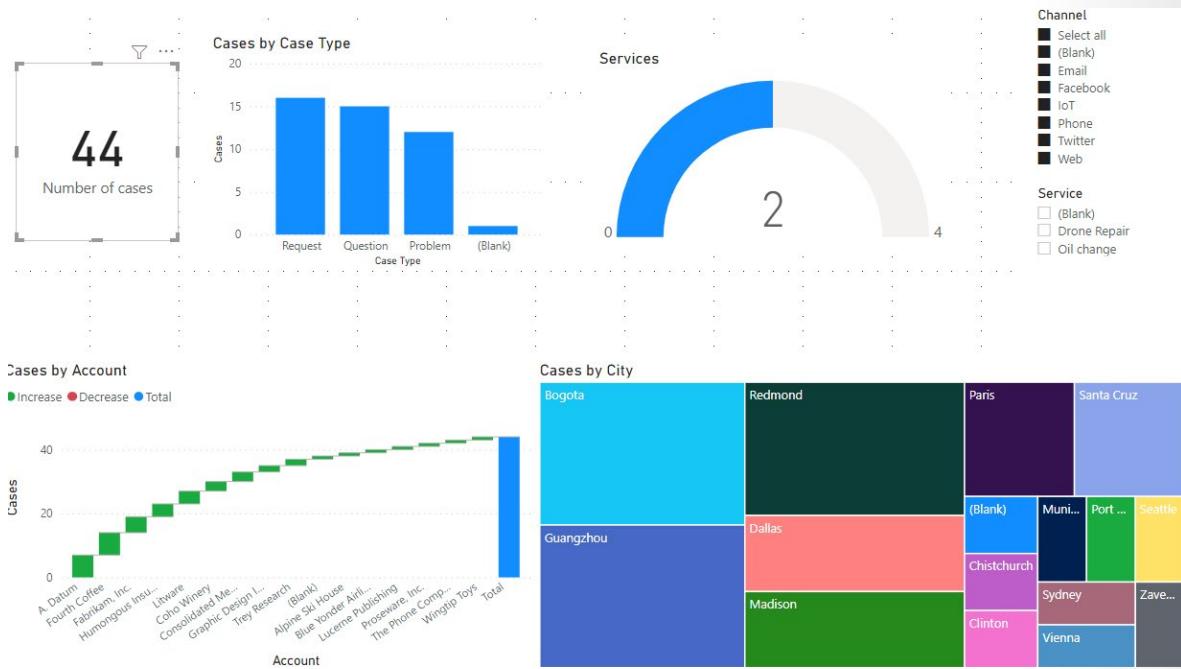
The screenshot shows the Power BI Navigator interface. On the left, there is a tree view of tables from the URL <https://i.crm11.dynamics.com:911>. The tables listed include: account, accountleads, actioncard, activitymimeattachment, activityparty, activitypointer, adx_accesscontrolrule_publishingstate, adx_accountcontentaccesslevel, adx_accountproduct, adx_ad, adx_adplacement, adx_adplacement_ad, adx_alertsubscription, adx_bingmaplookup, adx_botconsumer, adx_bpfc_c2857b638fa7473d8e2f112c2..., adx_casedeflection, adx_communityforum, and adx_communityforumaccesspermission. A message "No items selected for preview" is displayed in the center. At the bottom right are three buttons: Load, Transform Data, and Cancel.

Select the tables in Dataverse that you want to use in your reports. This does require an understanding of the data model for the Dynamics 365 Customer Service app. You can either click **Load** to import all tables, columns, and data or click **Transform Data** to launch **PowerQuery** where you can cleanse and transform your data.

Load

The screenshot shows a progress dialog titled "Load". It lists several tables and their current status: incident (Evaluating...), incidentresolution (Evaluating...), account (Evaluating...), systemuser (Evaluating...), and service (Evaluating...). A "Cancel" button is located at the bottom right.

Once the data has been loaded you can use the functionality of Power BI to create visualizations as shown in the following screenshot.



Considerations

Because Power BI connects to Dynamics 365, there are some limitations that you should consider when you're deciding whether to use Power BI:

- Power BI doesn't run in the context of records or users: Unlike charts and dashboards, Power BI doesn't run in the context of a record or user. With the Dataverse connector however, the security context of the user is carried through to Power BI so that users will only be able to see the data they are entitled to.
- Data updates occur hourly or daily if you use the Import option: Power BI doesn't show a real-time view of Dynamics 365 data. The data is refreshed at specific intervals that depend on your pricing tier.
- The Dynamics 365 application and Power BI service are separate: Power BI is a separate application that connects to Dynamics 365 data. It might require licenses in addition to your Dynamics 365 licenses.

Summary

Dynamics 365 Customer Service has many different ways to report and visualize data to assist users in managing and making better decisions about the service operation.

This module examined the options available to you, including:

- Understanding the data reporting and visualization options in Dynamics 365 Customer Service.
- How to create charts and dashboards.
- How to deploy use Power BI to analyze your data.

Your next step would be to gain a deeper understanding of how to use Power BI to gain insights into your data.

Module 9 Connected Customer Service

Getting started

Introduction to Connected Customer Service

Overview of Connected Customer Service

With all the technology that is available to consumers today, being a customer is a much different experience than at any time previously. One area that has impacted us are customers greatly is the Internet of Things. The Internet of Things (IoT), refers to physical devices around the world that are connected to the internet. Each of these devices is collecting and sharing data. Due to cheaper computer chips and the global availability of wireless networks, you can communicate with anything from something as small as a pill to something as big as a large aircraft. Connecting these objects and adding sensors adds a level of digital intelligence to devices that would otherwise be unaware of the world around them. Now these devices can communicate in real-time without involving a human being.

All of these IoT devices generate data. Some of this data may be triggered based on event that occurs, such as sensors detecting something, or someone initiating the event. For example, a temperature sensor in a smart refrigerator may trigger, when the temperature goes above a specific temp. Depending on the devices they amount of data coming from devices can be substantial. Other data may be presented through constant broadcasting of status details. Regardless of how the data is being captured and broadcast, with all that data coming in from IoT enabled devices, it is easy for organizations to focus on the low-level details of ingesting telemetry and forget about how to handle a problem that was detected and get a technician on site to resolve it.

Connected Customer Service is an add-on solution to Dynamics 365 Customer Service that connects IoT telemetry data to business actions in the the Dynamics 365 Customer Service hub and Customer Service workspace apps. It can take the data that is being ingested and help execute actual business actions on the data. In many cases, this allows businesses to become proactive instead of reactive, and transform their business model of how they work with their customers.

How does this work? The simplest way to think about an IoT as part of a complete IoT solution would be to cover the following three key areas:

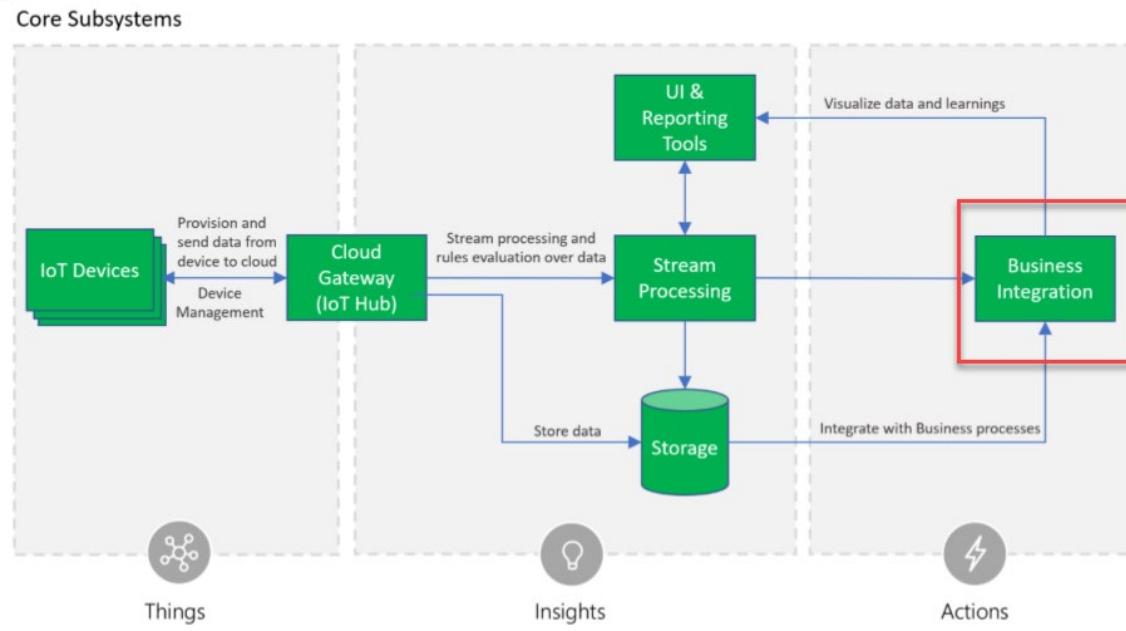


With all of the hype about Internet of Things, it is easy to focus on the low-level details of ingesting telemetry and forget about how to handle the problem that was detected and resolve it.

Proactively detect and diagnose

Connected Customer Service is an important part of the Actions Based on Insights. As data from IoT devices is collected, it can be surfaced in the Dynamics 365 Customer Service hub and Customer Service workspace. Once the data is captured, organizations can trigger business actions based on the data received. This not only creates the ability to potentially detect and diagnose problems before customers might be aware of it, but it also lets IoT devices provide initial communication with an organization.

The following diagram is from the Microsoft Azure IoT Reference Architecture with a highlight around Business Integration which is where Connected Field Service fits in with the reference architecture.



For example, when the sensor on that smart refrigerator triggers an alert that a filter needs replacement, specific parts needed can be ordered and delivered. If a technician is required, you can use this information to proactively schedule an on-site visit, or simply an automated command to reset the device.

Another example would be the smart car. More and more automobiles can do self-diagnostics. When a problem is detected, owners are notified, and asked if they want to schedule a service appointment. With Dynamics 365 Connected Customer Service, organizations can trigger their actual business processes based on that data.

Choose a deployment type

Azure IoT services

Microsoft Azure contains many services that support the creation of IoT based solutions including Azure IoT Hub, Device Twins, Device Provisioning Service, Stream Analytics, Times Series Insights, IoT Edge, and many others.

Connected Customer Service works in conjunction with Azure IoT services to establish secure bidirectional communication with the connected IoT devices, manage telemetry data, and issue commands to the connected IoT devices.

An important decision when deploying the Connected Customer Service solution is choosing the type of deployment. There are two ways you can connect IoT-enabled devices to Dynamics 365 Customer Service:

- Connected Customer Service for **Azure IoT Central**¹
- Connected Customer Service for **Azure IoT Hub**²

Connected Customer Service for Azure IoT Hub

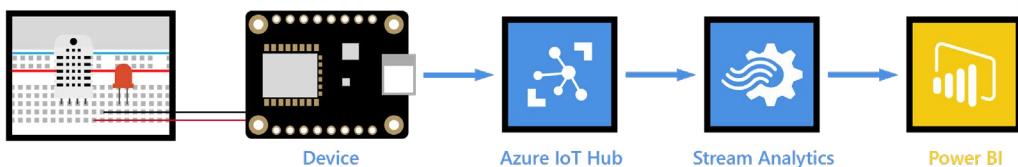
Azure IoT Hub is a managed service that's hosted in the cloud and that acts as a central message hub for bi-directional communication between your IoT application and the devices it manages. You can use Azure IoT Hub to build IoT solutions with reliable and secure communications between millions of IoT devices and a cloud-hosted solution back end. You can connect virtually any device to your IoT hub.

The IoT Hub service supports communications both from the device to the cloud and from the cloud to the device. It also supports multiple messaging patterns, such as device-to-cloud telemetry, file upload from devices, and request-reply methods to control your devices from the cloud. After an IoT hub receives messages from a device, it can route that message to other Azure services.

From a cloud-to-device perspective, IoT Hub allows for command and control. That is, you can have either manual or automated remote control of connected devices, so you can instruct the device to open valves, set target temperatures, restart stuck devices, and so on.

IoT Hub monitoring helps you maintain the health of your solution by tracking events such as device creation, device failures, and device connections.

IoT Hub is often combined with other Azure services to create IoT solutions. In the following diagram you can see telemetry data sent from IoT devices to the IoT Hub before being analyzed with Stream Analytics and then ingested into Power BI to visualize the telemetry data.



¹ <https://azure.microsoft.com/services/iot-central/>

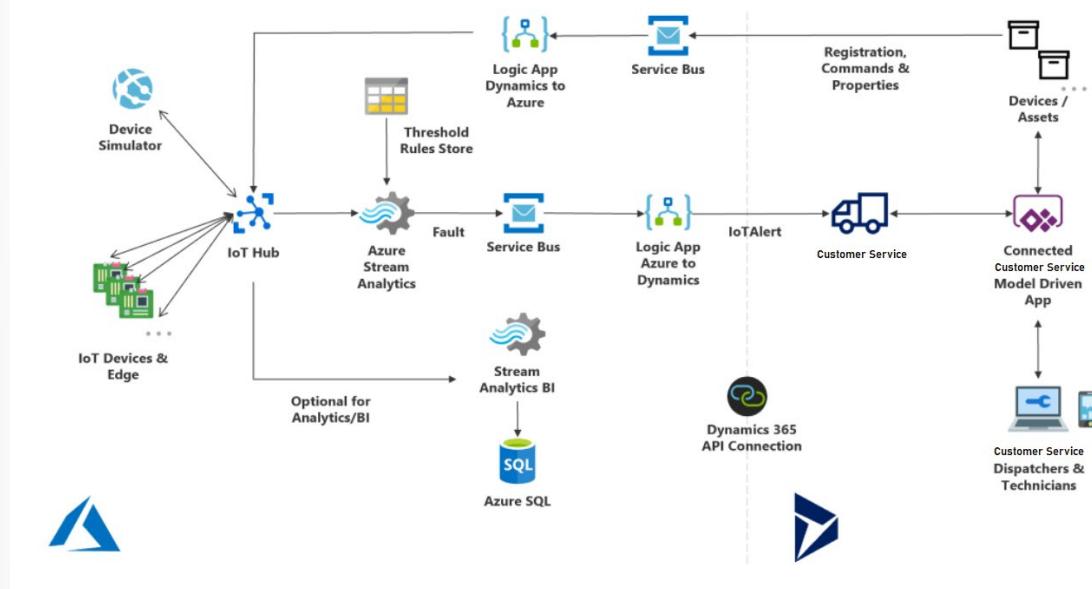
² <https://azure.microsoft.com/services/iot-hub/>

Connected Customer Service for Azure IoT Hub is an add-on solution that brings Azure IoT platform-as-a-service (PaaS) offering into Dynamics 365 Customer Service. With this offering, you can run a deployment app to put all of the Azure IoT services and Dynamics 365 puzzles together.

Microsoft provides an enterprise-ready template that you can customize for your deployment. The template deploys the following Azure Services:

- Azure IoT Hub
- Azure Stream Analytics
- Azure Service Bus
- Azure Storage
- Azure Logic Apps
- Azure SQL Server
- Azure Time Series Insights

as shown in the following diagram.



[!NOTE]

The template includes a temperature device simulator as a web app.

For more information on the architecture and the components, see [Architecture of Connected Customer Service with IoT Hub³](#).

[!IMPORTANT]

You will need to provide an Azure cloud subscription to deploy and run these Azure IoT services.

Leveraging an Azure IoT Hub is typically done by enterprise organizations or in scenarios where organizations need to define highly specific or customized data around devices.

Connected Customer Service for Azure IoT Central

Azure IoT Central is a fully managed IoT software-as-a-service (SaaS) solution.

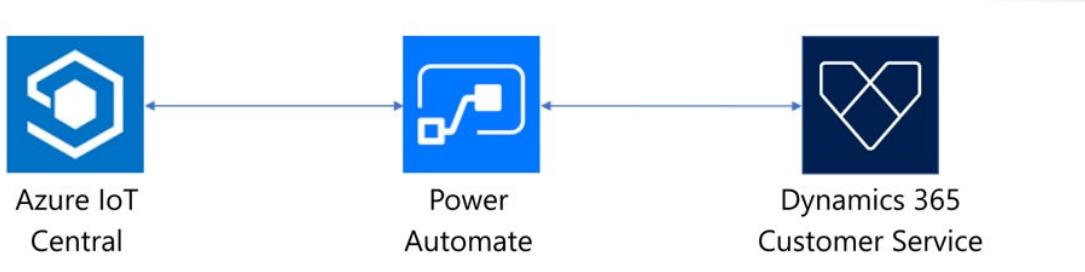
³ <https://docs.microsoft.com/dynamics365/customer-service/cs-iot-connected-customer-service-architecture>

Azure IoT Central builds on top of IoT Hub by adding a dashboard that allows you to connect, monitor, and manage your IoT devices. The visual user interface (UI) makes it easy to quickly connect new devices and watch as they begin sending telemetry or error messages. You can watch the overall performance across all devices in aggregate, and you can set up alerts that send notifications when a specific device needs maintenance. Finally, you can push firmware updates to the device.

To help you get up and running quickly, IoT Central provides starter templates for common scenarios across various industries, such as retail, energy, healthcare, and government. You then customize the design starter templates directly in the UI by choosing from existing themes or creating your own custom theme, setting the logo, and so on. With IoT Central, you can tailor the starter templates for the specific data that's sent from your devices, the reports you want to see, and the alerts you want to send.

Connected Customer Service for IoT Central provides a direct integration of Dynamics 365 Customer Service with Azure IoT Central.

Microsoft Azure IoT Central enables builders to configure rules and actions. Based on those actions, IoT alerts will be created in Connected Customer Service. Additionally, based on service activities in Connected Customer Service, information can be sent back to IoT Central. The interaction back and forth between IoT Central and Connected Customer Service is accomplished by using Power Automate.



The end-to-end integration processes can be easily implemented based on a pure configuration experience:

- Azure IoT Central can send information about device anomalies to Connected Customer Service (as an IoT Alert) for diagnosis.
- Connected Customer Service can create cases or work orders triggered from device anomalies.

The primary advantage to leveraging Azure IoT Central is that it requires no extensive cloud knowledge or coding skills to get an IoT solution up and running. By leveraging **Power Automate templates**⁴, users can connect their accounts, take advantage of our pre-built templates, and customize their own cloud flows in an easy visual designer without the need for coding experience.

[!NOTE]

Although you can use Azure IoT Central without an Azure subscription, to use Power Automate cloud flows with IoT Central you need an Azure subscription.

Comparison of deployment types

To better understand the tradeoffs the following table offers a comparison between the two deployment types.

Characteristic	IoT Hub	IoT Central
Primary usage	To accelerate development of a custom IoT solution that needs maximum flexibility.	To accelerate time to market for straightforward IoT solutions such as the remote monitoring of systems.
Access to underlying Azure services	Can manage all Azure services.	Access only via the IoT Central portal with no access to the underlying Azure services.
Flexibility	Can modify the components, include additional Azure services, and change the code to meet specific requirements. Azure functions can be included to perform calculations and machine learning models can be applied to detect anomalies and other problems with device telemetry.	The IoT Central app has limited customization capabilities. The ability to generate alerts from telemetry is centred around the simple breach of threshold values.
Skill level	Requires Azure knowledge and developer skills to customize the components that generate the insights.	No developer skills required, the level of skill is equivalent to customizing Dynamics 365.
Pricing	Costs are generated by each individual Azure component and can be tuned using Azure cost management techniques	Simple, predictable pricing based on the number of IoT Central apps and connected devices.

⁴ <https://flow.microsoft.com/templates/>

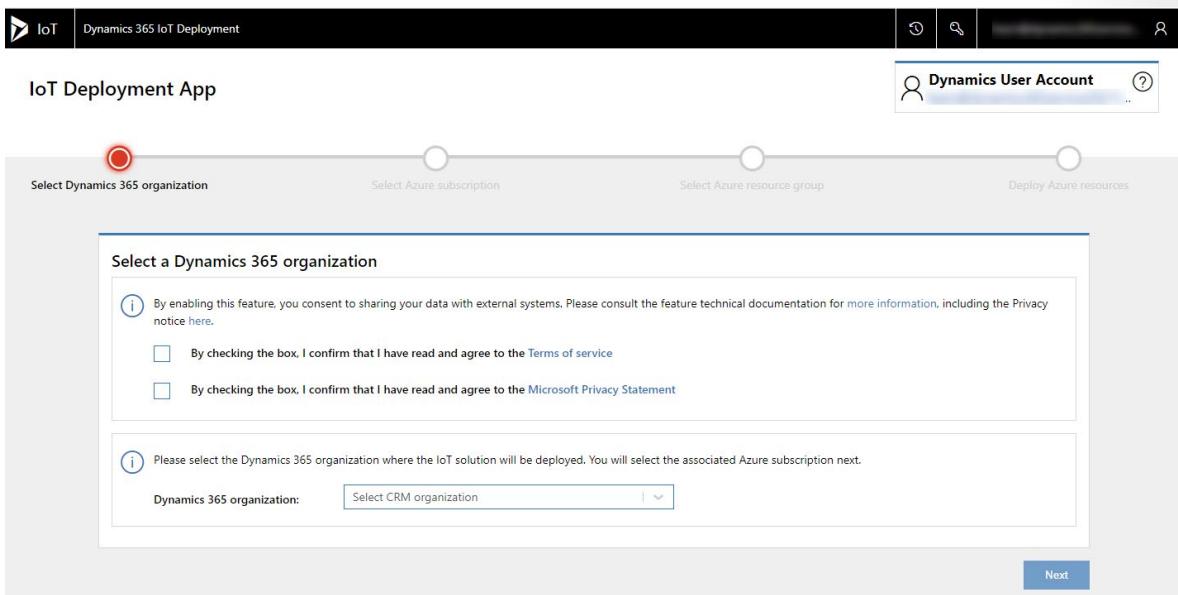
Install Connected Customer Service

To install Connected Customer Service you require:

- Dynamics 365 Customer Service with system administrator credentials
- Access to an Azure subscription

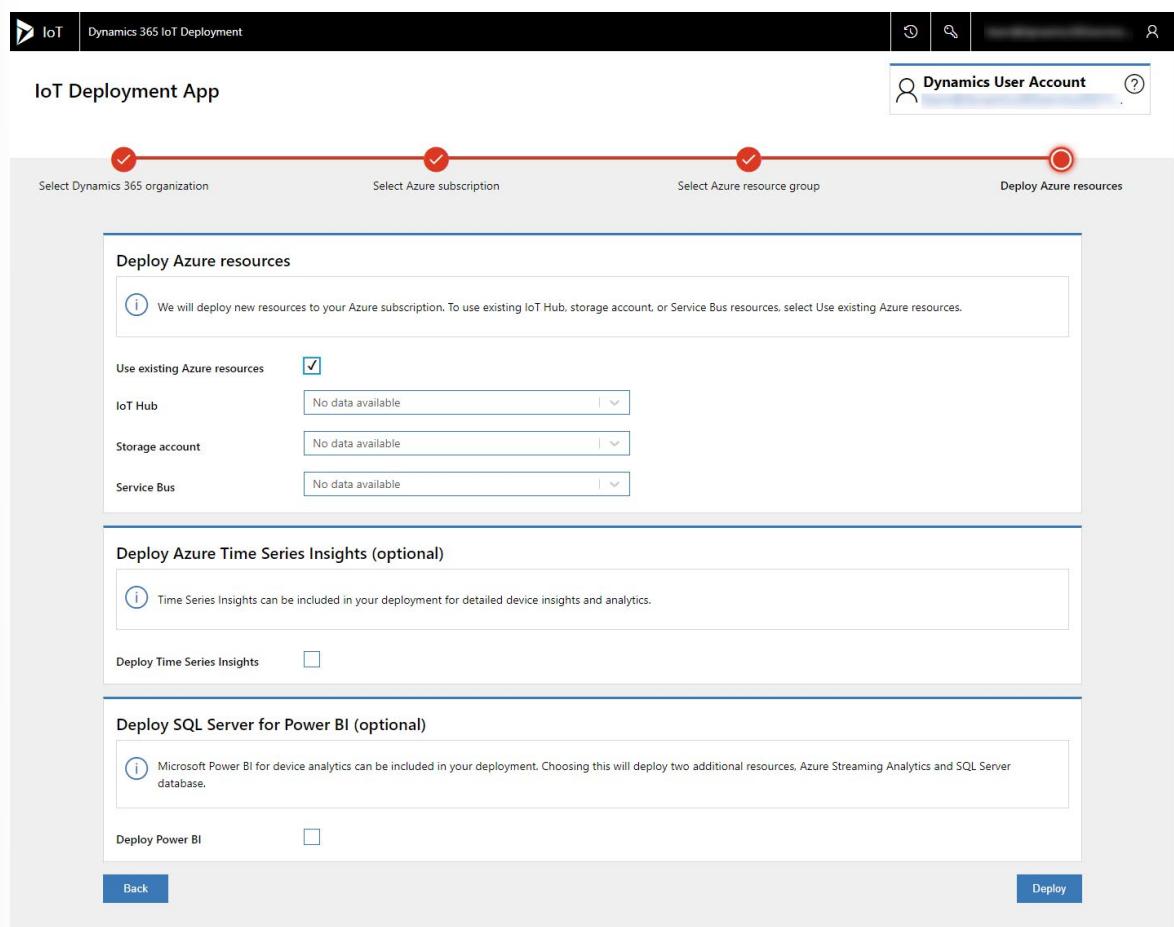
Installing Connected Customer Service for Azure IoT Hub

Connected Customer Service for Azure IoT Hub is deployed by following a step-by-step wizard that is started by navigating to the **IoT Deployment App**⁵ in a browser and sign in with your Dynamics 365 credentials.



In the IoT deployment app, you will select your Dynamics 365 environment and an Azure subscription. You can then either select existing Azure resources or ask the app to deploy new Azure resources from the template.

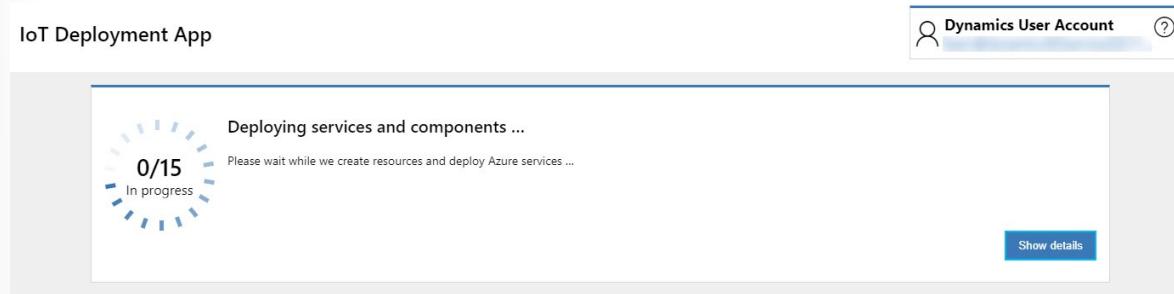
⁵ <https://iotdeployment.dynamics.com/>



[!Important]

To deploy Connected Customer Service for Azure IoT Hub you require Azure organizational account credentials with the ability to create an Azure resource group and Azure resources.

The app will deploy the resources showing the progress as shown in the following screenshot.

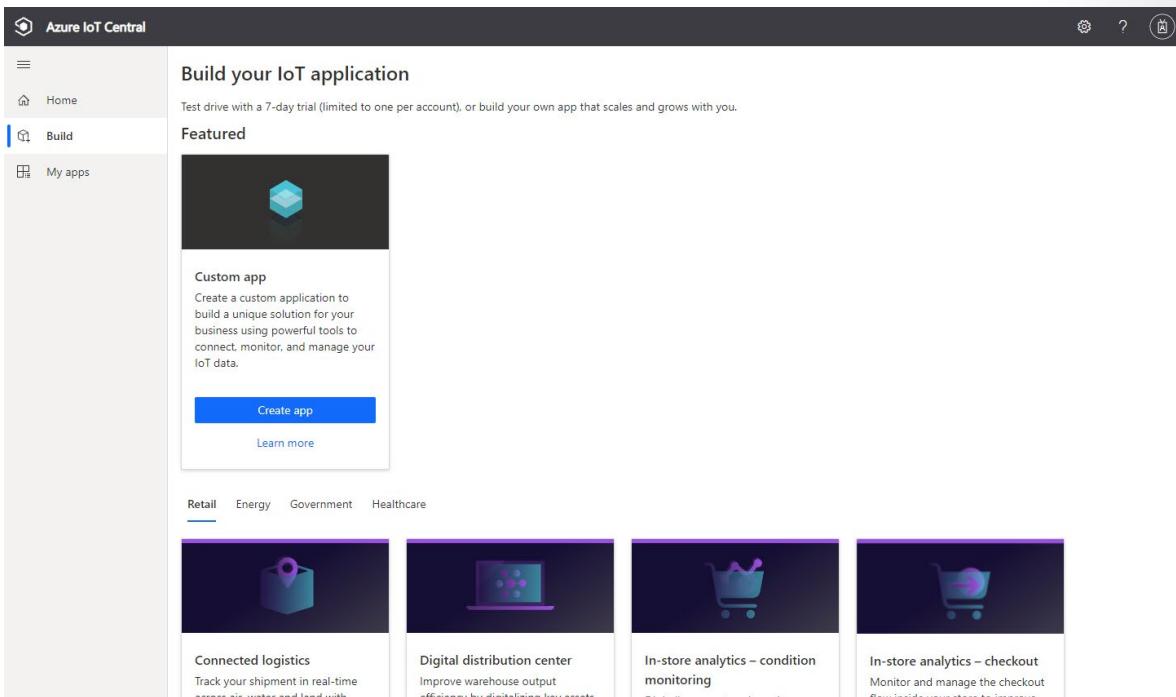


When the resources have been deployed you can start connecting devices to Dynamics 365 Customer Service.

Installing Connected Customer Service for Azure IoT Central

The installation of Connected Customer Service for Azure IoT Central requires that you first create an Azure IoT Central app.

First, navigate to [Azure IoT Central⁶](#) in a browser and sign in with your Dynamics 365 credentials. Under **Build**, select **Custom app**.



Click on **Create app** and the following screen will be displayed.

⁶ <https://apps.azureiotcentral.com/>

The screenshot shows the 'Create app' wizard in Azure IoT Central. On the left, a sidebar lists 'Home', 'Build', and 'My apps'. The main area has fields for 'Application name' (Custom 23cxw4pnjsf) and 'URL' (custom-23cxw4pnjsf.azureiotcentral.com). Below these are dropdowns for 'Application template' (Custom application) and 'Pricing plan'. The 'Free' option is selected, showing a 7-day trial and 5 free devices. Three other pricing plans are listed under 'Standard': 'Standard 0' (2 free devices, 400 messages/mo), 'Standard 1' (selected, 2 free devices, 5,000 messages/mo), and 'Standard 2 (most popular)' (2 free devices, 30,000 messages/mo). A red box highlights the 'Standard 1' section. To the right, sections for 'We've got you covered' (Pricing: no termination fees, Get pricing details), 'Security' (protecting products with built-in IoT security), and 'Scale' (investing in business, Microsoft invests in IoT) are visible. At the bottom, there's 'Billing info' with 'Directory' (dropdown), 'Azure subscription' (dropdown with placeholder '*****'), 'Location' (dropdown with placeholder '*****'), and a note about agreeing to the Subscription Agreement and Privacy Statement. At the very bottom are 'Create' and 'Cancel' buttons.

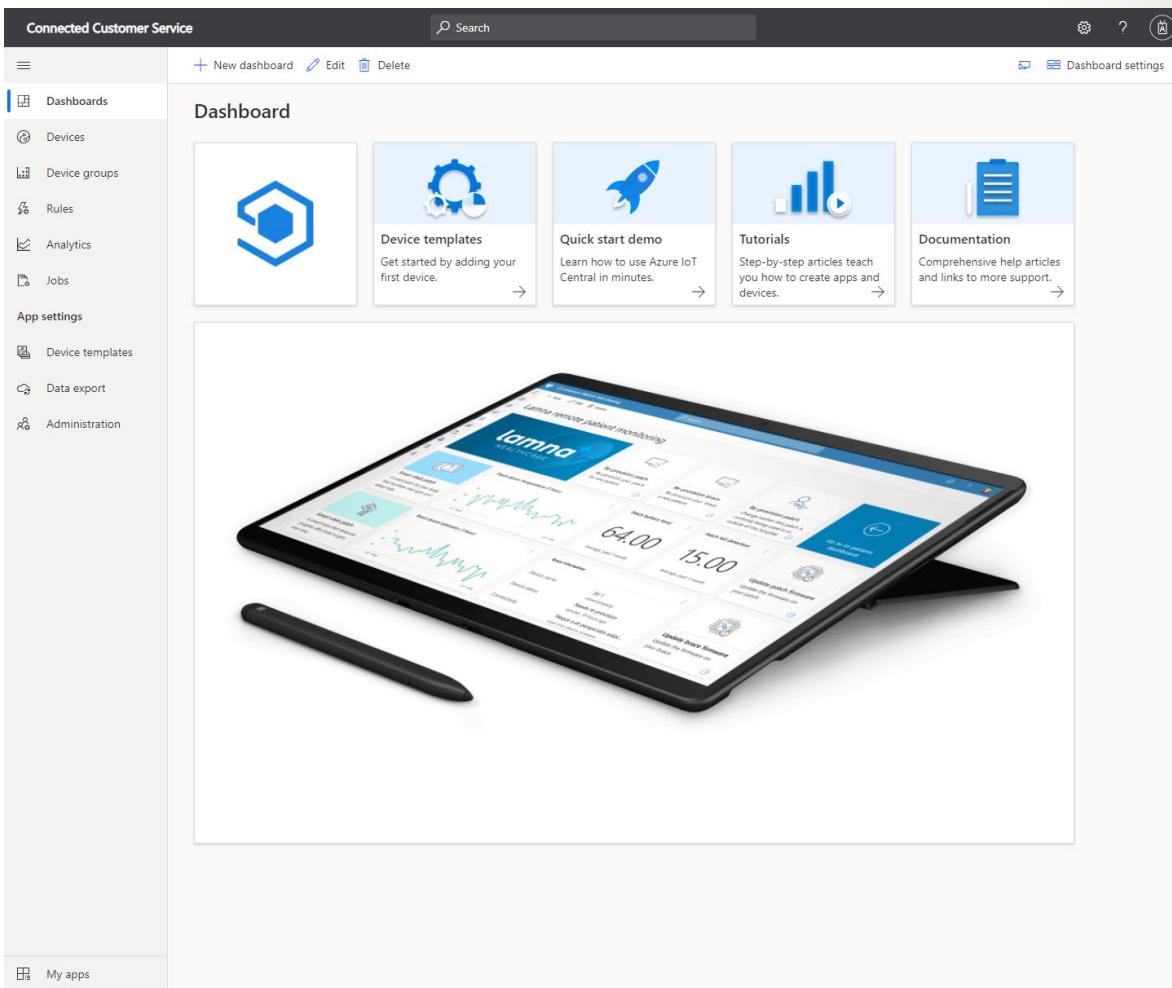
You need to give your app a name and ensure that the URL is unique.

[!IMPORTANT]

You should not use the Free pricing plan. You must choose one of the standard pricing plans to be able to connect IoT Central to Dynamics 365 using Power Automate cloud flows.

You need to choose the pricing plan and select your Azure subscription. Clicking **Create** will provision your IoT Central app

After a few seconds the app dashboard will be displayed.



You are now ready to add devices to Connected Customer Service.

Assets

Customer assets and IoT alerts

The components needed to interact with IoT devices are included in Customer Service hub and Customer Service workspace.

Connected Customer Service does not capture the actual data from IoT devices. IoT device data telemetry is captured in an Azure IoT hub, or an Azure IoT Central app. These Azure services not only capture the telemetry sent by the device but can communicate with the IoT device.

The following tables are included in Connected Customer Service and are a key subset of tables that support the integration with Azure IoT.

Table Name	Description
Customer asset	Represents customer equipment that you are responsible for supporting.

Table Name	Description
IoT alert	Represents a notable event sent from an IoT Hub or IoT Central.
IoT device	A connected device registered in IoT Hub or IoT Central.
IoT device category	Used to group devices together to simplify working with devices.
IoT device command	A message, or command, sent to IoT Hub or IoT Central to be sent onto a device.
Command definition	Pre-built commands that can be sent to registered IoT devices in response to items like IoT Alerts.
Property definition	Defines a device property or a parameter that can be used in a command definitions.

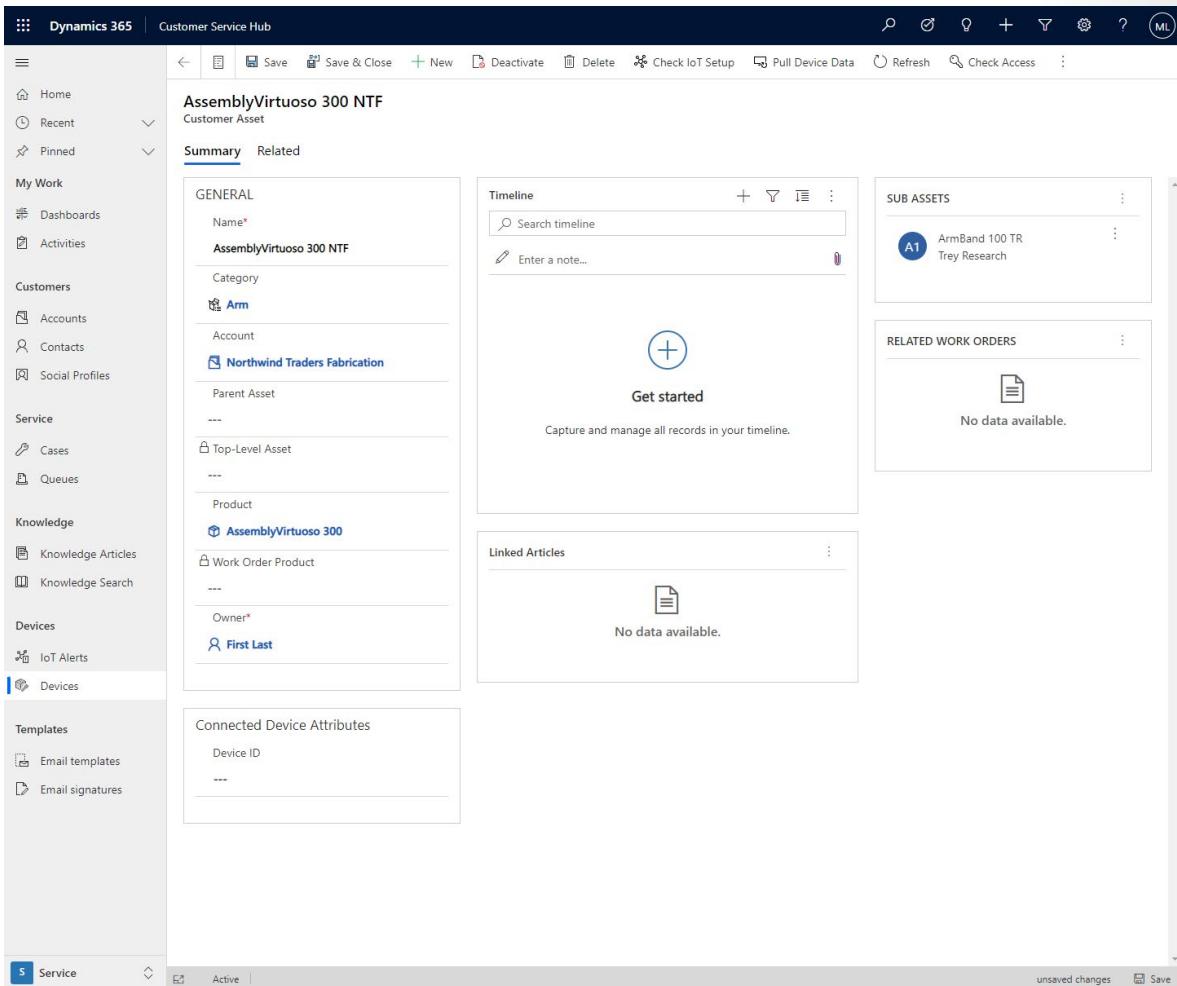
Customer assets and IoT devices

Customer assets let you keep track of equipment that you are responsible for monitoring. At their simplest, customer assets note which products are located at each customer location. Assets also track the service history of each asset.

With Connected Customer Service, you can connect customer assets to IoT devices that monitor the asset's health and trigger IoT alerts.

Customer Assets records in Dynamics 365 Customer Service are associated with IoT device records in Connected Customer Service.

Customer Assets are associated with the customer through their Account and can be categorized. They can also exist in a hierarchy with parent and sub-assets.



Screenshot of the Customer Asset form in Dynamics 365.

Once a connected device is associated with a customer asset, you can view any IoT alerts raised for the device from the customer asset form, and see the details for the IoT Device, and view the history of the device's data.

How IoT alerts are generated in Connected Customer Service

As data from devices is captured, rules within the Azure services define when an item should trigger an alert. Once an alert is triggered, the data needs to be sent to Dynamics 365 by Logic Apps, if using IoT Hub, and by Power Automate cloud flows, if using IoT Central.

After the IoT data is available in Dynamics 365, you can build business procedures for handling it.

Summary

IoT connected devices, such as sensors, are becoming a significant tool in servicing customers. A single device can have multiple sensors that can

proactively report important information back to the organization. By analyzing and understanding this data, organizations can begin to create support solutions to enhance their customer service. Connected Customer Service provides organizations with the tools that they need to remotely monitor and interact with IoT devices directly from the Customer Service hub and Customer Service workspace. With business process flows, organizations can create strategies for proactively creating cases based on alerts that are generated by connected devices.

This module examined how to get started with Connected Customer Service, including:

- Defining Connected Customer Service and exploring the different use cases that it can support.
- Understanding the differences between the deployment options for Connected Customer Service.
- Examining the process for configuring Connected Customer Service with Azure IoT Hub.
- Examining the process for configuring Connected Customer Service with Azure IoT Central.
- Explaining how Customer assets are associated with IoT devices.

You should be able to determine which deployment option, out of Azure IoT Hub and Azure IoT Central, to use in different scenarios.

The next steps from here would be to gain a deeper understanding of how to register devices and manage the interactions between Dynamics 365 Customer Services and IoT devices. This would include items like creating alerts with Power Automate cloud flows, and sending commands to devices.

Registering and manage devices

Devices

IoT devices

Almost any physical object can be transformed into an IoT device if it can be connected to the internet to be controlled or communicate information. A lightbulb can be switched on using a smartphone app, a motion sensor, a smart thermostat in your office, or even a connected streetlight.

When you begin to work with Connected Customer Service, you will find there are two critical aspects that drive how effective the solution is when working with and administrating IoT devices.

These aspects are:

- Effectively registering IoT devices with either an Azure IoT Hub or IoT Central.
- Effectively managing IoT devices and streamlining how you interact with them.

Any connected device that will be generating alerts or be interacted with will need to have a corresponding record defined. In the application, Connected Customer Service does this through the Customer asset and IoT device records.

Customer assets

The Customer asset record represents equipment at a customer location that is supported by the organization and service operations are performed on. The IoT device table plays a critical role in the solution, because it used to connect Customer asset records to physical or non-physical IoT devices within an Azure IoT Hub or an IoT Central app.

[!NOTE] Customer assets can be either IoT or non-IoT devices.

Connected Customer Service uses Dynamics 365's Connections and Connection Roles functionality to link Customer asset records with IoT device records. There is a connection role called IoT Connected Device. When a customer asset is registered as an IoT device, the connection is automatically created using this role.

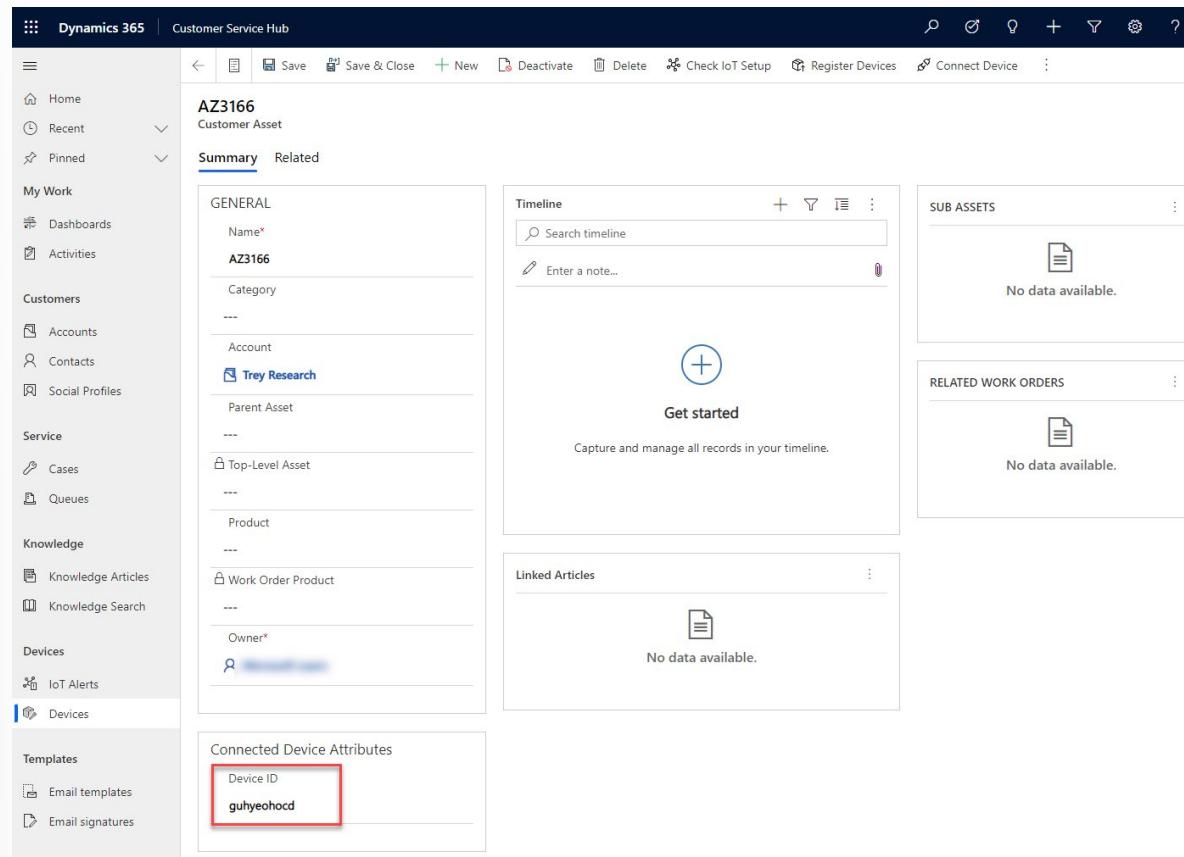
Customer assets can be configured in a hierarchy. It is common that a customer asset has multiple IoT-enabled sensors associated with it. In these scenarios, each of these IoT sensors will have a customer asset that is attached to the Master asset record.

IoT device registration

Before device and telemetry data can be consumed by Dynamics 365 Connected Customer Service, the device must first be registered with either Azure IoT Hub or IoT Central as an IoT device. Once a device is registered with Azure IoT Hub or IoT central (either directly in Azure, from Dynamics 365, or another means), a corresponding IoT Device record is created automatically in Dynamics 365.

There are different ways devices can be registered, including:

- **From a Customer Asset record:** After a customer asset record is created, an automation creates and registers an IoT Device in an IoT Central app or in an IoT Hub. The automation then creates an IoT Device record in Dynamics and then updates the Customer Asset record.
- **From a Device Registration in IoT Central or IoT Hub:** A device is created and registered in the IoT Central or IoT Hub. An automation such as a Power Automate Flow, goes into Dynamics 365 and creates the IoT device, and Customer asset record.



[!NOTE] In this training we will focus on using Connected Customer Service for IoT Central.

Creating a device in IoT Central

We will examine how to create a device in an IoT Central app. First, you need to select a device template. The template defines the properties of the device and details of telemetry that the device will send. In the IoT Central app, select **Device templates**. You will see a long list of pre-configured templates as well as the option to create a custom template.

The screenshot shows the 'Connected Customer Service' application. On the left, a sidebar menu includes options like Dashboards, Devices, Device groups, Rules, Analytics, Jobs, App settings, and Device templates (which is highlighted with a red box). Above the sidebar, there are two radio buttons: 'Select type' (selected) and 'Review'. The main area displays a grid of device templates. The first template, 'MXC-662X-2E/M4G', is listed under 'IoT Plug and Play'. The second template, 'MXCHIP AZ3166', is also under 'IoT Plug and Play' and is highlighted with a red box. Below these are two more templates: 'MY-501H Panic Button' and 'Ncube', both under 'IoT Plug and Play'.

Scroll down and select the **MXCHIP AZ3166** template, click **Next: Review**, and click **Create**.

You will then see the template's capabilities. The AZ3166 contains several sensors including temperature and humidity.

The screenshot shows the Azure IoT Central Device Template configuration interface. At the top, there is a message: "This device template is published. Editing published capabilities may cause breaking changes in dashboards, jobs, rules, or data exports. [Learn more](#)". Below this are standard navigation buttons: Version, Manage test device, Publish, Rename, and Delete.

The breadcrumb navigation shows: Device templates > MXCHIP Getting Started Guide > Model > MXCHIP Getting Started Guide.

The main title is "MXCHIP Getting Started Guide". Below it, it says "Application updated: now" and "Interfaces published: now".

The left sidebar has a tree view under "Model":

- Device Information
- Cloud properties
- Raw data
- Customize
- Views
 - Overview
 - About

The right panel displays the "MXCHIP Getting Started Guide" model details. It shows the model is "Root" and "Published". A note says "Add capabilities specific to this device model. [Learn more](#)". Below this are buttons for Save, Add capability, Edit identity, Export, Delete, and Edit DTDL.

A table lists the device capabilities:

Display name	Name *	Capability type *	Semantic type	X	V
Temperature	temperature	Telemetry	Temperature	X	V
Humidity	humidity	Telemetry	Relative humidity	X	V
Pressure	pressure	Telemetry	Pressure	X	V
Magnetometer X / mg...	magnetometerX	Telemetry	None	X	V
Magnetometer Y / mg...	magnetometerY	Telemetry	None	X	V
Magnetometer Z / mg...	magnetometerZ	Telemetry	None	X	V
Accelerometer X	accelerometerX	Telemetry	Acceleration	X	V
Accelerometer Y	accelerometerY	Telemetry	Acceleration	X	V
Accelerometer Z	accelerometerZ	Telemetry	Acceleration	X	V
Gyroscope X	gyroscopeX	Telemetry	Angular velocity	X	V

Devices in Azure IoT Central can either be real or simulated. Creating a simulated device is an excellent way to quickly verify your Connected Customer Service deployment.

In the IoT Central app, select **Devices** and then click **Create a device**.

A Device name and Device ID are generated. You will need to use the Device ID when creating the Customer asset and IoT device in Dynamics 365.

Create a new device X

To create a new device, select a device template, a name, and a unique ID. [Learn more](#)

Device name * ⓘ
guhyeohocd

Device ID * ⓘ
guhyeohocd

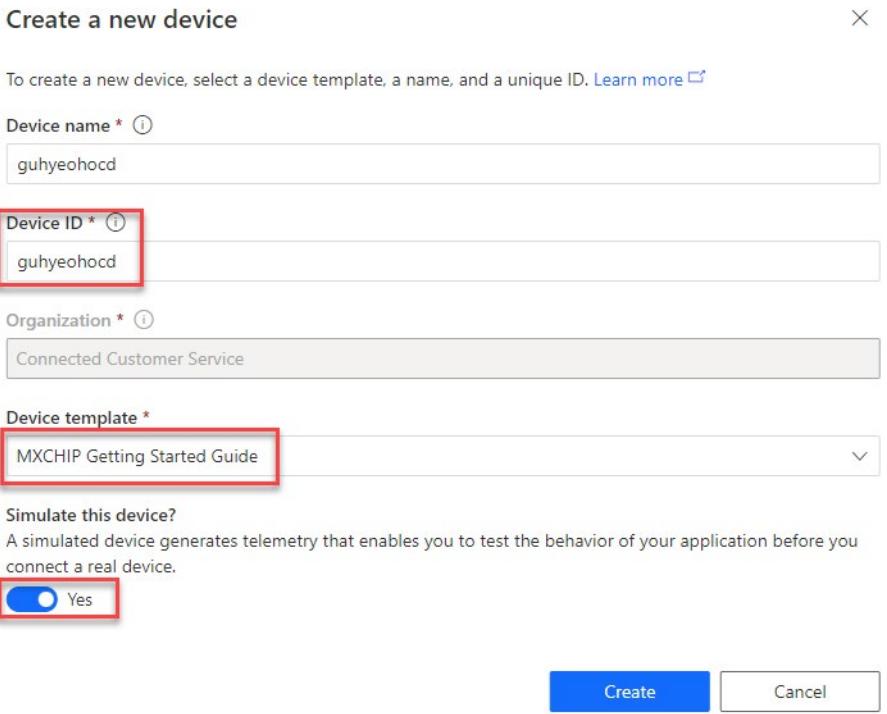
Organization * ⓘ
Connected Customer Service

Device template *
MXCHIP Getting Started Guide

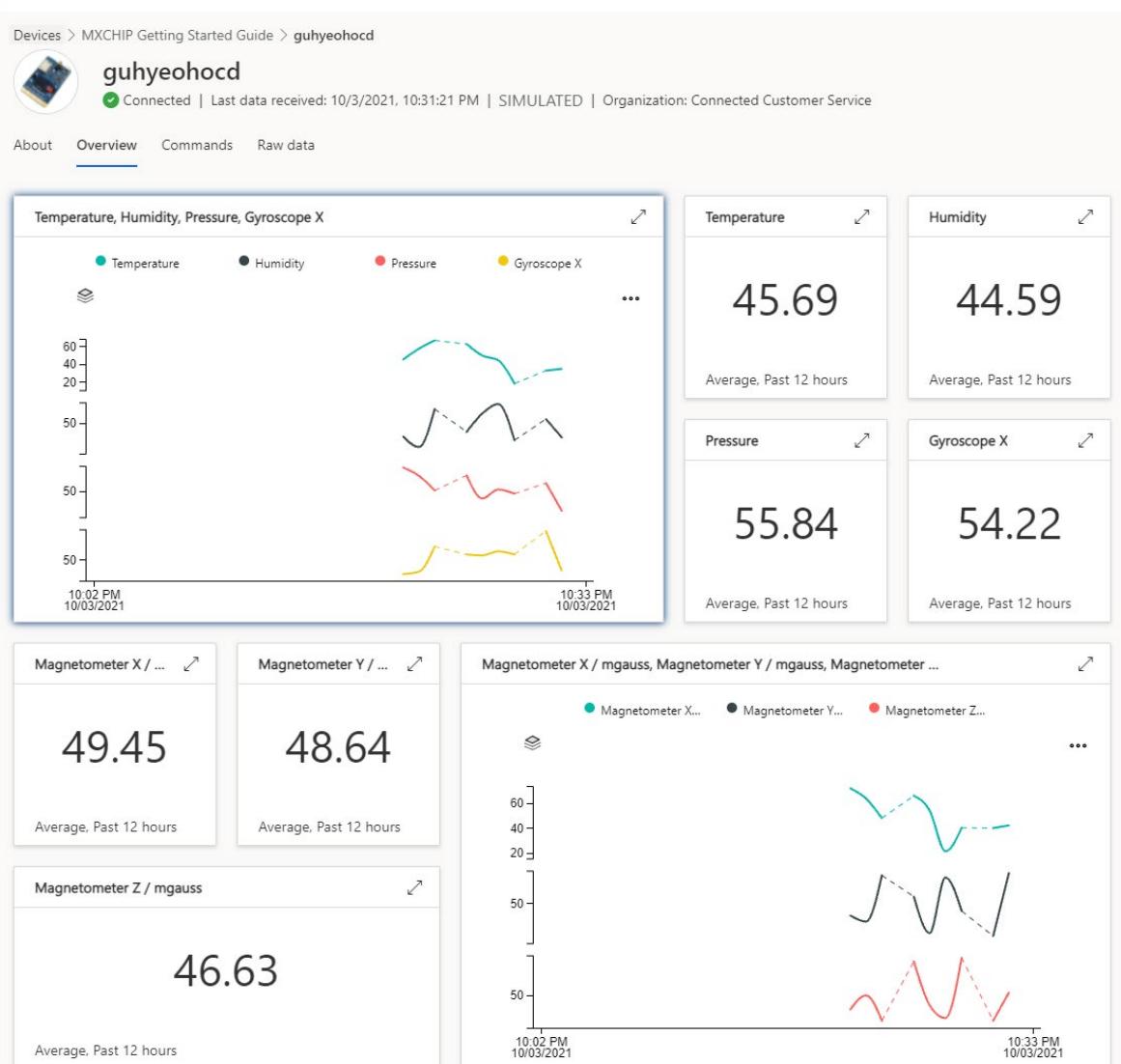
Simulate this device?
A simulated device generates telemetry that enables you to test the behavior of your application before you connect a real device.

Yes

Create Cancel



Select the template, toggle simulate this device, and click **Create**. The device will be created and within a few minutes you will be able to see the randomly generated telemetry for the device.



Creating a device in Dynamics 365 Customer Service

In the Dynamics 365 Customer Service hub, create a new Customer asset record. After the record has been created you can enter the Device ID for the simulated device created in IoT Central and click **Save** and then click Register **Device**.

CUSTOMER ASSET
Smart Refrigerator SM-12013

GENERAL

- Name: Smart Refrigerator SM-1...
- Account: A. Datum Corporatio...
- Parent Asset: ---
- Master Asset: ---
- Product: ---
- Work Order Product: ---
- Owner: Derik Bormann

Connected Device Attributes

- Device ID: SM-12013
- Registration Status: ---

Sub Assets

Name	Account	Product	Registr...	Parent Asset
SM-12013 Zone 2 Moisture Sensor	A. Datum Corporat...	---	---	Smart Refrigerator ...
SM-12013 Zone 1 Moisture Sensor	A. Datum Corporat...	---	---	Smart Refrigerator ...
SM-12013 Temp Sensor	A. Datum Corporat...	---	---	Smart Refrigerator ...

RELATED WORK ORDERS

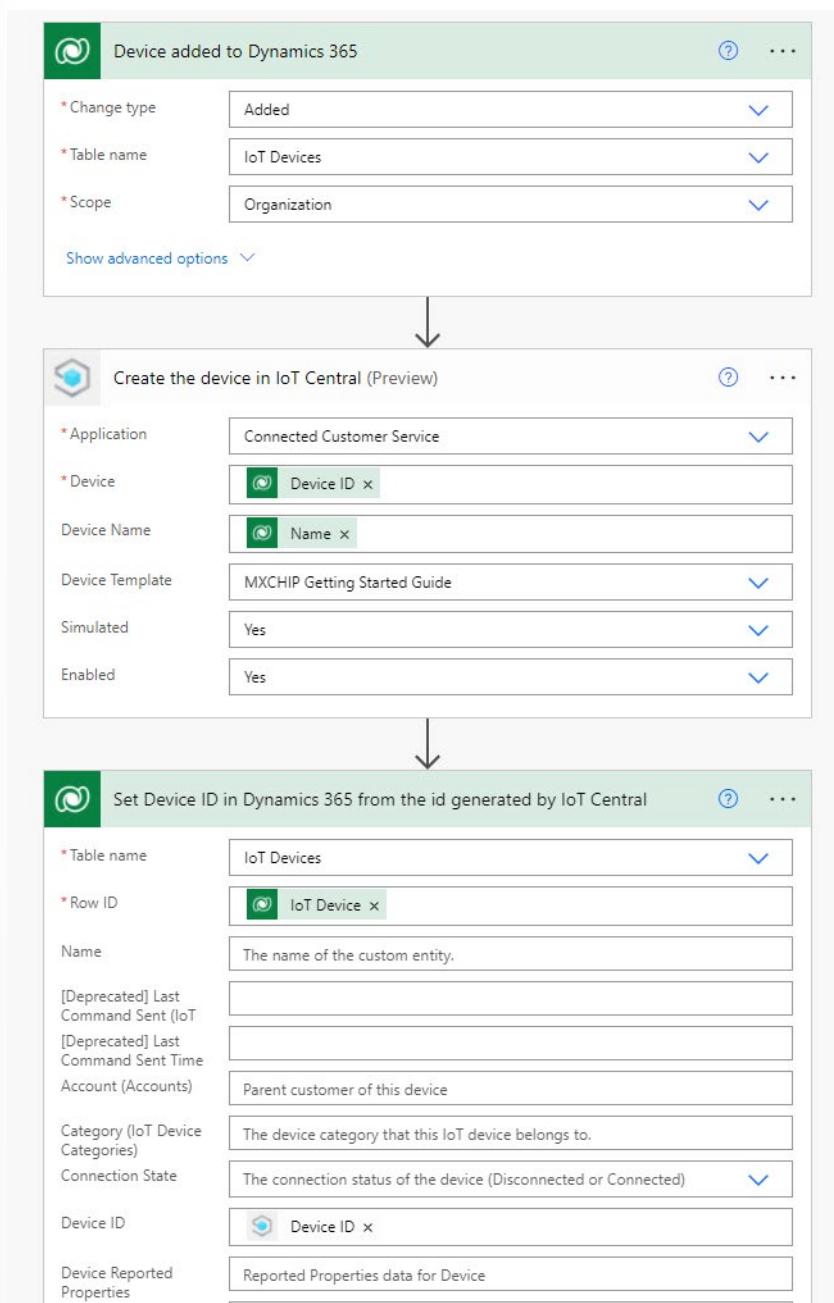
Work Order Number	Service Account	Created On	System Status
No data available.			

[!NOTE] The solution provided with the Connected Customer Service for IoT Hub will automatically create the IoT device record in Dynamics 365 when the device is added to the Azure IoT Hub. For Connected Customer Service for IoT Central you need to create the IoT device record manually or build a Power Automate cloud flow to do this for you.

There is a Power Automate template, **When a device is created in Dynamics 365, update IoT Central**. This flow template will create a device in IoT Central automatically.

[!Important] The latest version of Azure IoT Central is V3. Many of the templates use the V2 IoT Central connector. You will need to update the flows to use the V3 connector.

Here is the Power Automate cloud flow that creates new devices in IoT central when an IoT device record is added to Dynamics 365.



Screenshot of a Power Automate flow to create a device in IoT Central.

You are now ready to use Power Automate to create cloud flows to link IoT Central to Dynamics 365 Customer Service.

Generate alerts from IoT devices

Once your IoT-enabled customer assets are registered with either Azure IoT Hub or IoT Central, readings from the devices will be captured based on the configuration. From within Azure IoT Hub or IoT Central, you can define how and when you want to trigger an alert that can be sent back into Dynamics 365. For example, let's say that you have an IoT-enabled thermostat. The device will constantly send temperature

readings back to the IoT hub. As soon as a temperature reading that is outside of your specified threshold is discovered, it will generate an IoT alert record in Dynamics 365.

If you use the Connected Customer Service for IoT Hub deployment option, device data will be available in Dynamics 365. This data can be captured in multiple ways:

- **IoT Alert:** When an alert is generated, details about the alert are included as JSON with the alert.
- **Pull Device Data:** Initiates a device data pull directly from the IoT Device record in Field Service.
- **Scheduled Data Pull:** Similar to a direct device data pull, except that it is done on a defined schedule.

If you use the Connected Customer Service for IoT Central deployment option, the ability to pull device data and display inside Dynamics 365 is not available. You need to build Power Automate cloud flows that link IoT Central to Dynamics 365.

Creating alert rules in IoT Central

IoT Central allows you to create rules that when triggered can perform actions when the selected telemetry crosses a specified threshold. One of the actions is to trigger a Power Automate cloud flow. To create a rule, click on **Rules** in the IoT Central app and click **+ New**.

In the rule you select the telemetry you wish to monitor, the time window, and the conditions as shown in the following screenshot.

The screenshot shows the Azure IoT Central Rules editor interface. On the left, a sidebar menu includes options like Dashboards, Devices, Device groups, Rules (which is selected), Analytics, Jobs, App settings, Device templates, Data export, and Administration. The main area is titled 'MXCHIP Temperature rule' with an 'Enabled' toggle switch. It has sections for 'Target devices' (Device template set to 'MXCHIP Getting Started Guide'), 'Conditions' (triggered by 'all of the conditions are true'), 'Time aggregation' (set to 'Off'), and 'Actions'. Under Conditions, there is a telemetry rule: 'Temperature' > 'Is greater than' '60'. A note says 'After you click **Save**, you can add create Power Automate flow to be an action for this rule.'

After you click **Save**, you can add create Power Automate flow to be an action for this rule.

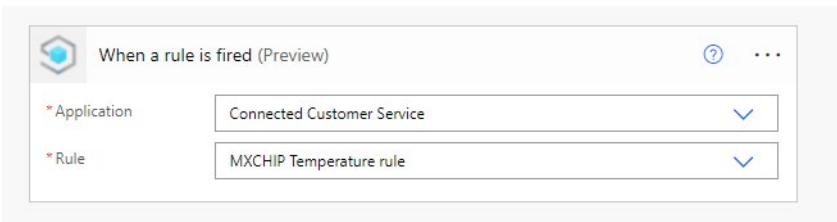
Creating IoT Alerts for IoT Central with Power Automate

In Power Automate, create a new automated cloud flow and select the **IoT Central connector**. There is one trigger, **When a rule is fired**.

[!Important]

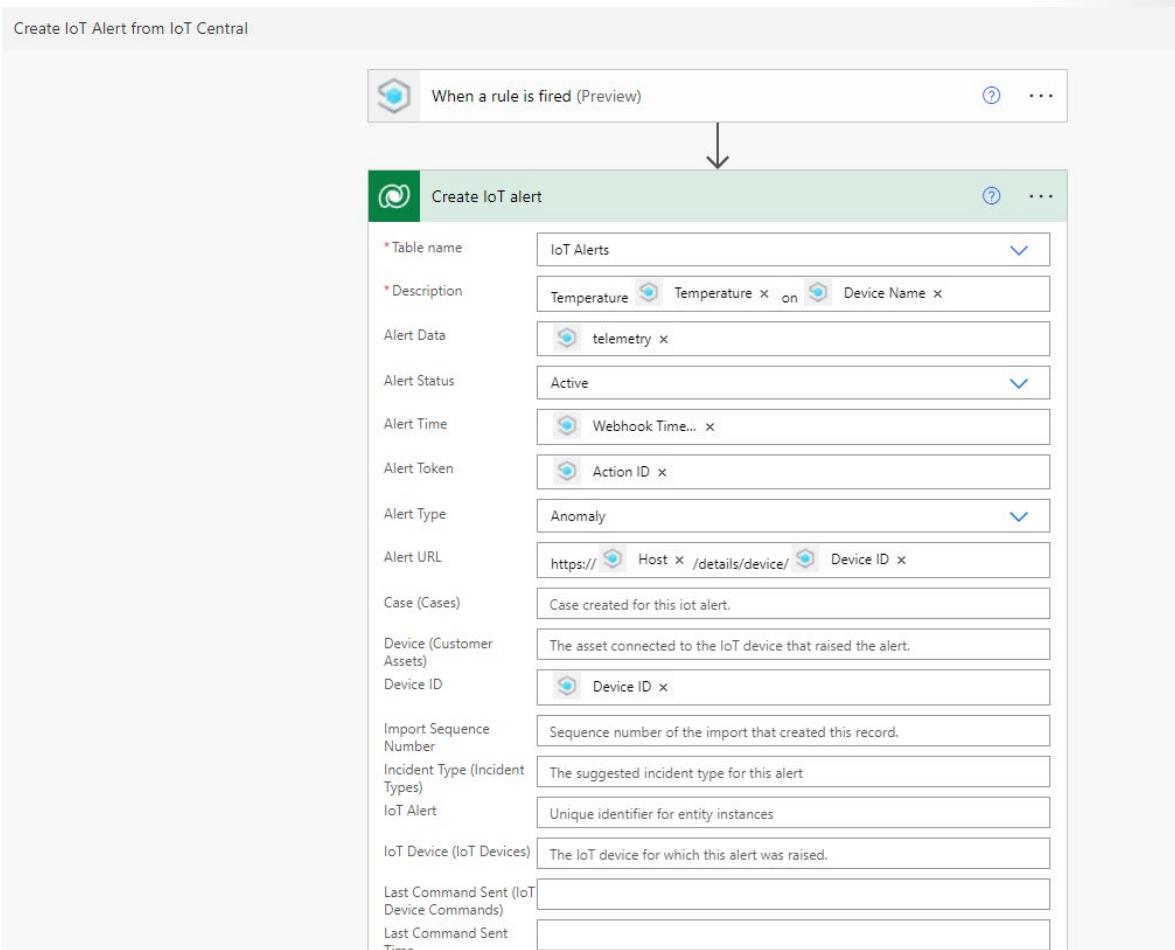
The latest version of Azure IoT Central is V3. You need to select the IoT Central V3 connector.

You need to select the IoT Central app and the IoT central rule as shown in the following screenshot.



You need to use the Dataverse connector to create an IoT Alert record as shown the following screenshot.

Create IoT Alert from IoT Central



Field	Description
* Table name	IoT Alerts
* Description	Temperature on Device Name
Alert Data	telemetry
Alert Status	Active
Alert Time	Webhook Time...
Alert Token	Action ID
Alert Type	Anomaly
Alert URL	https:// Host /details/device/ Device ID
Case (Cases)	Case created for this iot alert.
Device (Customer Assets)	The asset connected to the IoT device that raised the alert.
Device ID	Device ID
Import Sequence Number	Sequence number of the import that created this record.
Incident Type (Incident Types)	The suggested incident type for this alert
IoT Alert	Unique identifier for entity instances
IoT Device (IoT Devices)	The IoT device for which this alert was raised.
Last Command Sent (IoT Device Commands)	
Last Command Sent Time	

Below is an example of an IoT alert generated using this flow.

The screenshot shows a workflow titled "IoT Alert to Case Process" with the status "Active for less than one min...". The process has five steps: "Created (< 1 Min)" (highlighted in red), "Create Case", "Identify", "Research", and "Resolve". The "Owner" field is empty.

General Asset Details Commands Related

Description: Temperature 84.657429543285 on guhyehoecd

Alert Type: Anomaly

Alert Token: fd027277-d8b1-484d-ae55-...

Alert Time: 10/3/2021 10:37 PM

Alert Status: Active

Alert URL: https://connected-cust...

Device

- Device:** AZ3166
- Device ID:** guhyehoecd

Alert Data

- temperature:** 84.65742954328499

Device summary

- New IoT Alerts:** 5 (Last 1 Day)
- New Cases:** 0 (Last 30 Days)
- New Work Orders:** 0 (Last 30 Days)

Working with Alert Data

After an IoT alert is generated, you need to identify what your next course of action should be. The IoT alert record itself contains several pieces of information including the type of alert, time, device ID, and alert data.

The Alert Data field consists of JSON data that contains the specific detail about the event. The data included can vary depending on the device. The information in the Alert Data field will generally dictate what specific next step should be taken. When starting to build automations around next steps, it is important to understand what tools and information are available, and how those tools allow you to achieve your goal.

Out of the box, there are several actions that can be leveraged to assist in automating items like creating and registering devices and interacting with IoT Alert records. When an alert is received the specific data related to the alert is in a field called Alert Data. The data in the Alert Data field is in the JSON format. The text below represents an example of what would pass to the Alert Data field when an IoT Alert is raised.

```
{ "deviceid": "smt-1298", "readingtype": "Temperature", "reading": 113, "eventtoken": "c802338d-60f2-4a79-b45c-e164e2191ce0", "threshold": 70, "ruleoutput": "AlarmTemp", "time": "2018-09-06T15:58:08.964Z" }
```

Generally, you cannot directly use the contents of the Alert Data field because you might be looking to query based on one of the properties, not all of them. You must first parse out the relevant parameters that you want to work with, so you can use those to drive query on and drive next steps.

If we were to parse out the JSON string above, we can see that it is communicating the following:

Parameter	Value
Deviceid	Smt-1298
Readingtype	Temperature

Parameter	Value
Reading	113
Eventtoken	c802338d-60f2-4a79-b45c-e164e2191ce0
Threshold	70
Ruleoutput	AlarmTemp
Time	09/06/2018 06:58:08 AM

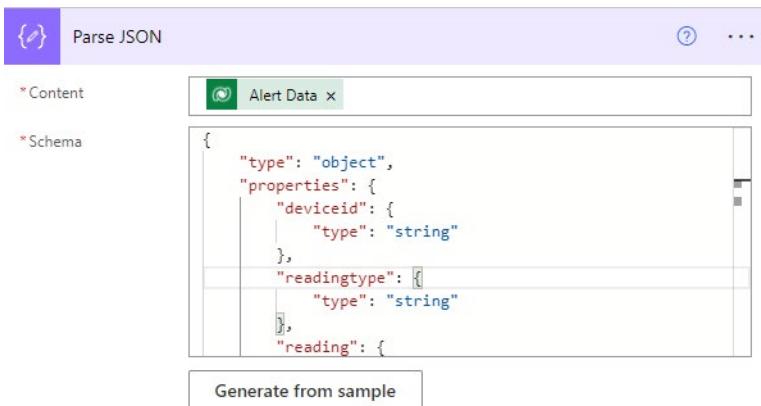
Using Power Automate to parse data

Power Automate includes an action called Parse JSON. When you trigger the Parse JSON action, the JSON from the Alert Data field will be parsed into Individual Properties. The schema must be defined so the command knows how to parse the data. Sample payloads from the IoT Alert can be used to generate the Schema.

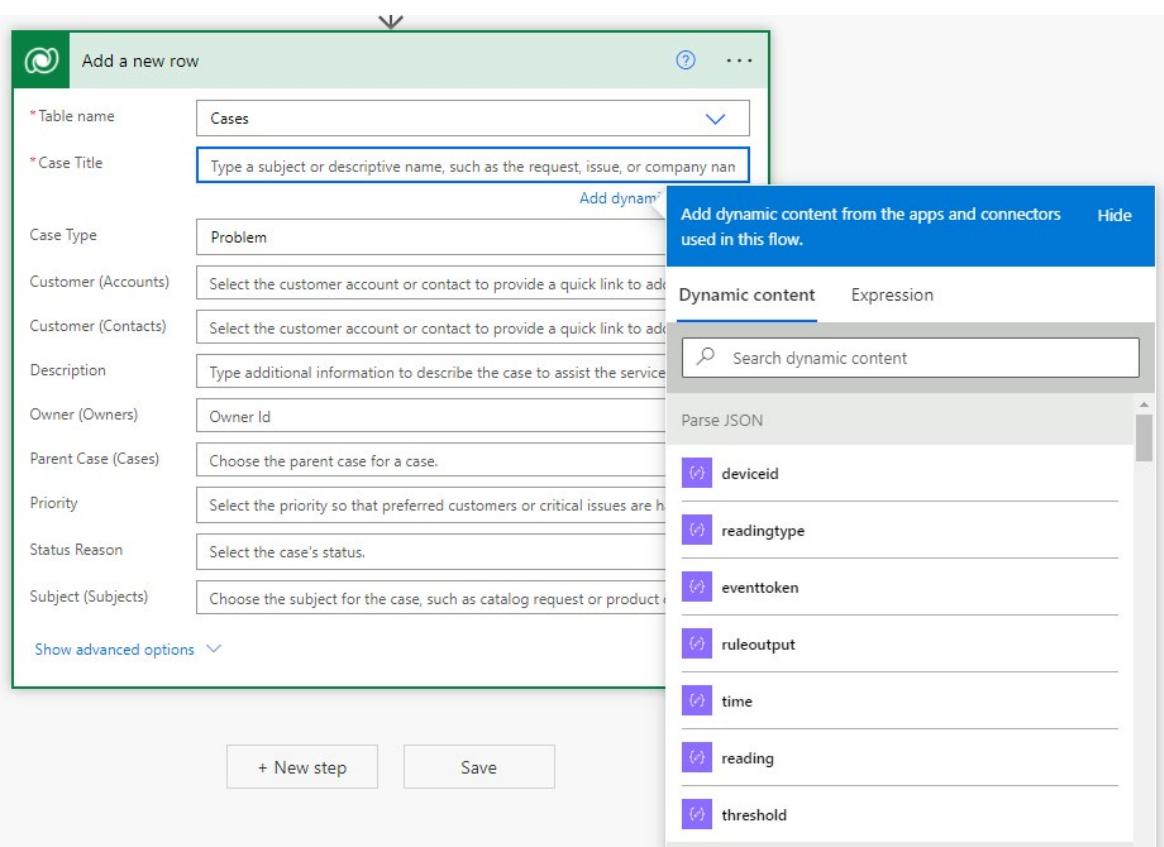
In the image below, we used the same JSON string that was included in an IoT Alert to create the Schema:

```
{"deviceid": "nest1234", "readingtype": "Temperature", "reading": 80, "eventtoken": "cf5e690-ee88-4ca8-a75d-3b86ac61295c", "threshold": 70, "ruleoutput": "AlarmTemp", "time": "2019-10-19T16:42:26.457Z"}
```

You can see that it created multiple properties that represent each item passed in the JSON such as the deviceid, readingtype, reading, etc.



Once the data has been parsed, it can be used to populate other fields in the IoT Alert just as we did with the workflow. Each property can now be used as dynamic content in any future step in the flow.



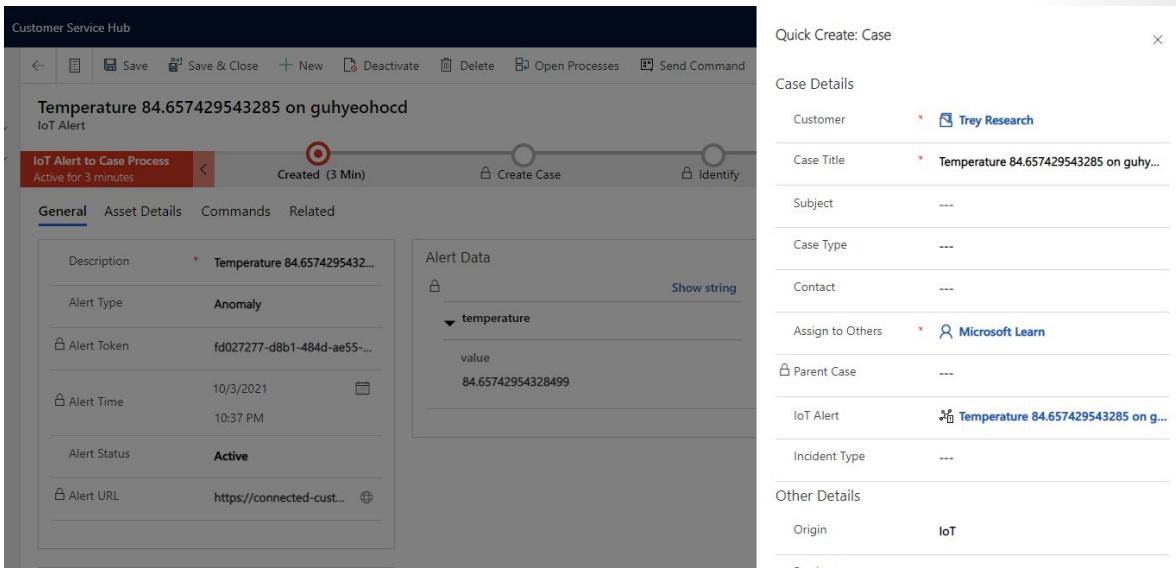
If we used this approach to parse JSON string from earlier, we could create a flow in Power Automate that does the following:

- First, the flow executes when a new IoT Alert record is created.
- The Parse JSON action is executed to parse the JSON into individual properties.
- Next, the flow updates the IoT Alert record with the output value of one of the returned properties. For example, the Reading property is used to update the Device Reading field.
- Another flow could be triggered on the update of the Device Reading field, the does the following:
 - If the Device Reading field is between 70 and 85: It will create a Command related to the IoT Alert that send a reset command to the device.
 - If the Device Reading field is greater than 85 degrees, the workflow will complete with a status of succeeded.

Creating cases from IoT alerts

When you receive an alert from a device, your service team can manually monitor the alerts and troubleshoot the issue remotely. If the issue is not resolved by sending a remote command, the service representative can create a case to work further on the issue. The provided business process flow guides you through the process of manually responding to IoT alerts.

The initial stage on the business process flow is on the IoT alert record, the following stages are for the case. If you select the first stage and click **Next Stage**, you can create a case. The Quick Create pane appears as shown in the following screenshot.



After creating the case, the Alert status on the IoT alert record is changed to **In Progress - Case Created** and the record is read-only. When the case is resolved, the status of the IoT alert is automatically changed to **Closed**.

Security roles required for Connected Customer Service

Security roles for Connected Customer Service allow administrators to give appropriate access to Internet of Things (IoT) entities, including alerts, assets, devices, and commands,

The following security roles are included with Connected Customer Service:

- **IoT - Administrator:** All privileges for all records on Customer assets, IoT devices, IoT alerts, and associated tables.
- **IoT - Endpoint User:** A special role used by Microsoft to connect Dynamics 365 to IoT Hub systems.

[!NOTE]

Any user who needs to work with device registration and device data pulls (IoT Hub) requires both the IoT Administrator and IoT Endpoint User security roles.

You may need to create your own security roles to provide the privileges required for your users.

[!IMPORTANT]

These built-in roles are designed to supplement other roles such as Customer Service Representative or CSR Manager; they only contain the privileges for Connected Customer Service and do not contain the privileges that users require such as Accounts, Contacts, Cases, and Activities.

Interactions

Manage interactions with IoT devices

Once your devices have been registered as IoT devices, readings from those devices will be captured and communicated back to Azure IoT Hub or IoT Central. When a device raises an exception, it will be sent back to Dynamics 365 as an alert. For example, let's say that your organization manages smart trash bins. The trash bin will constantly send trash level readings to Azure IoT Hub or IoT

Central. As soon as a reading outside a defined range is detected, an alert will need to be raised, and through an automation such as a Power Automate flow or a Logic App, an IoT alert record is created in Dynamics 365.

Many times, when an IoT Alert is received, the first step is to attempt to remotely interact with the device and potentially send commands to the device. There are several record types that can be leveraged to assist in remotely managing and interacting with these devices.

Let's examine some of the key record types used for device management and interaction.

- **Device Category:** Device categories are used to group together multiple devices by the type of device. Device categories can be leveraged for reporting purposes, management, and to simplify device interactions. For example, you might create temperature and humidity categories to separate out temperature related IoT devices or commands from IoT devices or commands that are more humidity focused.
- **Command:** These represent the actual action or "command" that should be executed against a specific IoT device. They typically consist of different JSON properties that are passed to the device that does something to the device. For example, If you wanted to set the temperature and humidity of a device to specific values, you would pass the following JSON script to the device using a command record. `{"CommandName": "Set Values", "Parameters": {"Reading": {"Temperature": "60", "Humidity": "40"}}}`
- **Command Definition:** A command definition represents a predefined command that can be added to a command record. It contains multiple pre-configured properties that can be modified to the process of sending to devices. When a command is created, a command definition can be selected. Any properties in the definition will be populated with default values, but those values can be over-ridden. For example, you could create a command definition called set values. In the command definition you could pre-define the parameters; such as reading, temperature, and humidity. When the command definition is selected, it will auto-populate the command, and you can manually change any parameters needed.
- **Property Definition:** A property definition is used to define what specific properties are available and that can be passed as part of a command definition. For example, if you created the set values command definition as defined above, each parameter such as reading, temperature, and humidity would have a property definition defined for them that was associated with the set values command definition.

Command Definitions

Many times, you will have several IoT devices that either do the same thing or have similar properties that are reported back and potentially need to be interacted with. While generated IoT alerts are device specific, there are often common properties between devices that need to be interacted with. Each command specifies which of those different properties are being used for that specific device. For example, let's say that we want to send a message back to a device that will let the device know (or the display on the device) that a technician

was dispatched to resolve the issue. Each time this occurs, a command would need to be created in Connected Customer Service that includes the following JSON message:

```
{"CommandName": "Notification", "Parameters": {"Message": "Technician has been dispatched"}}
```

In the above example, there are three specific components that are being sent to the device as part of the message.

- **CommandName:** This represents the name of the command that is being set to the device. In the above command, the Command Name is "Notification"
- **Parameters:** Used to declare the specific properties that are being interacted with as part of the command. These will include all the properties the command is interacting with. In the above command everything that follows Parameters (In this case "Message" represents Properties that are being interacted with as part of this command)
- **Property:** The specific Property to be interacted with, and the value that should be pushed to the Property. Properties are typically defined as Name / Value pairs. For example, "Message" represents the message Property that can be used to send a message to the device. "Technician has been dispatched" is the actual value that is being passed to the Message Property.

While you do have the ability manually define the JSON to for each command using the format that is defined above. The reality is that you are likely defining multiple commands that are basically doing the same thing. That's where a Command Definition comes in. A command definition is basically a wrapper that pre-defines the command name and parameters you want to use in a command. By pre-defining parameters set in a specific command, users and/or automation processes need only to modify the property values relevant to what the command is trying to do. When a command is created, the user/process can simply select the command definition it wants to use.

The image below represents a Command Definition named Notification that will generate the same JSON from our original example automatically.

Notification
IoT Device Command Definition

General **Related**

Name	* Notification	
Command Parameters		
✓ Name ↑ ▾	Type ▾	Editable ▾
Message	String	Yes

Screenshot of a command definition.

Each command definition defined, can be associated with one or more property definitions. A property definition represents a specific parameter that is being used as part of a command. Any parameters defined for a command definition are auto populated with default values that were defined for the specific property definition being used. Those values can either be used as is overwritten at the time the actual command is created.

Property Definitions

Property definitions make it easy to pre-define specific properties that are associated with IoT Devices.

A Property definition contains the following information:

- **Name:** The name of the specific property. In our above example, Message would be set as the name, since that is the Property we want to define.
- **Type:** Defines the type of Property it is.
- **Parent Property:** Specifies that the property is a child property of another property.
- **Editable:** Specifies if the property will be editable when used in a command definition.
- **Visible:** Specifies if this is a hidden property that should not be shown in the command definition.
- **Additional Properties:** Additional items that are specific to that property type than can be defined. For example: A default text string that will be used with a Message Property.

There are six different types to choose from. | **Type| Description |**

| — | — | | **String** | Used when the value you want to pass to a property is a text-based value.

Additional Properties Include: max length and default value.

Example: A message property would use the string type since the contents of the message will be text. | | **Date and Time** | Used when the value to pass to a property is date and/or time based.

Additional Properties Include: minimum and maximum values. | |

Boolean | Used when you want to pass one of two possible values to a property.

Additional Properties Include: Display name for true, display name for false, and default value. | | **Whole Number** | Used when you want to pass a whole number to the property.

Additional Properties Include: minimum, maximum, and default value. | |

Decimal Number | Used when you want to pass a decimal number to the property.

Additional Properties Include: minimum, maximum, and default value as well as decimal precision | | **Object** | Used when the item you want to pass is an object.

Example: A reading property might contain both a temperature and humidity property. By setting the reading property to a Type of Object, you will be able to define specific sub-properties for it. |

Using Properties Definitions in Command Definitions

When you look at the data being sent as part of an IoT Alert or are sending a remote command to a device, you will see several properties associated with the alert data or the message to be sent. The properties represent a Name / Value pair that displays or provides relevant parameters related to the event.

For example:

- A temperature related IoT Device Alert might include the device ID, type of reading, the actual reading, reading, or the threshold that was exceeded.
- A command you are sending back to an IoT Device might include the message to be sent, or a specific value that you want to set a property to.

Command definitions can be used to create pre-defined commands that have the specific parameters that you want to work with predefined. This is done by creating property definitions and associating those property definitions with specific command definitions. A Property Definition defines specific details about the property being passed to the command.

Let's look at the example command below:

```
{"CommandName": "Notification", "Parameters": {"Message": "Technician has been dispatched"} }
```

The parameters are specific properties that we want to include in the command. The "Message" property tells us that we want to send a message to the device, and the text is the message that we want to include in the message. The message property above is good example of where Property Definitions could be used.

Message
IoT Property Definition

General Related

Name	* Message
Type	* String
Unit	---
Parent Property	---
Editable	Yes
Visible	Yes
Additional Properties	Show string
MaxLength	

Default	
Technician has been dispatched	
DisplayName	

Screenshot of a property definition.

Working with Parent Properties

Many times, a property will have multiple sub-properties that make up the entire property definition. In this case you can use parent properties to relate a property to multiple sub-properties.

Let's look at the example below:

```
{"CommandName": "Set Values", "Parameters": {"Reading": {"Temperature": "30", "Humidity": "30"}}}
```

In this example reading would be considered the parent property for temperature and humidity. We would set reading type to object. This defines that the reading property should be considered an object, and it may contain other properties that make up the overall value. Both the Temperature & Humidity property definitions would have the Reading property definition set as the parent property.

Parameter Name	Type	Parent Property
Reading	Object	None
Temperature	Text	Reading
Humidity	Text	Reading

When we create a command definition that needs to leverage the reading property, we only need to include a reference to the reading property definition. Because

reading has a type of object, and both temperature and humidity have reading as the parent property, this ensures that when the reading property is used, both the temperature and humidity properties will also be included.

Name	Type	Unit	Parent Property
Reading	Object	---	---

Child Properties		
Humidity	Whole Number	Reading
Temperature	Whole Number	Reading

Command Definitions Using This As Parameter		
Set Values	Created On	10/4/2021 12:25 AM

Screenshot of a parent property definition.

Not only do command definitions make it easier to streamline the process of building commands to send to devices, but because of the property definitions, it's easier to use Power Automate to identify and manipulate specific values that you want to pass in a command.

Commands

Send commands to devices

When a device isn't working properly, the system receives an alert. To troubleshoot the issue remotely, you can send a command by choosing a registered device or by using an existing IoT alert. The command will be sent to the IoT Hub or to the IoT Central app which will then send a cloud-to-device message.

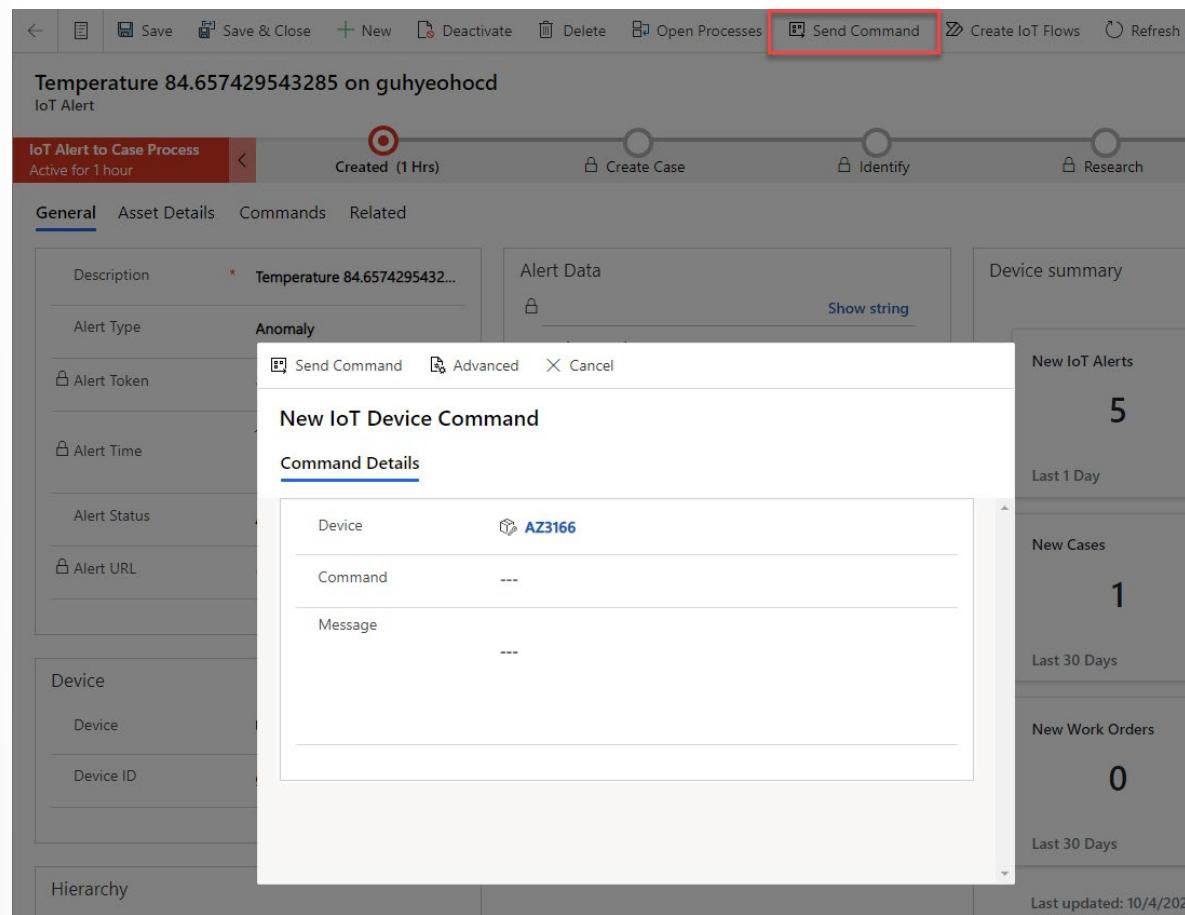
Creating a command

Commands are typically formulated as JSON. You can either construct a command manually or use a command definition, a set of pre-configured properties that can be added to a command.

You can send a command from an:

- IoT alert
- IoT device

Clicking on **Send Command** will open a popup form where you can either select a Command definition or enter a command in the Message field.

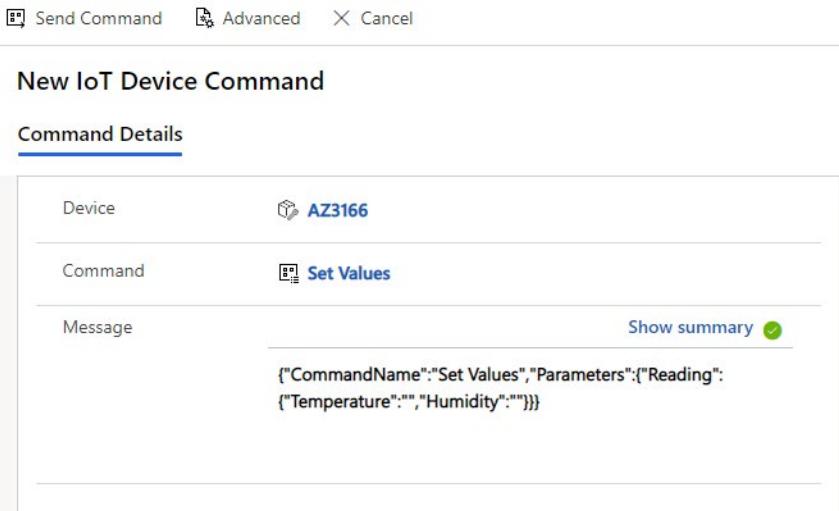


Screenshot of the Send command popup form.

For example, you could just enter the following JSON string to reset a device.

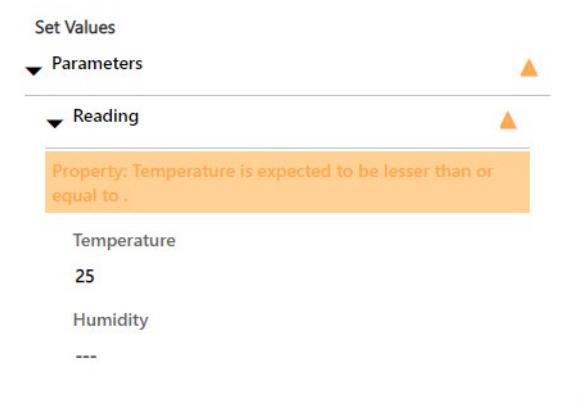
```
{"CommandName": "Reset", "Parameters": {"Reset": true}}
```

Selecting an existing command definition generates the JSON from the properties as shown in the following screenshot.



Screenshot of Send command using a command definition.

Clicking on **Show summary** enables you to enter values for the command's properties as shown in the following screenshot.



Screenshot of Send command with show summary.

Sending commands with Connected Customer Service for IoT Hub deployment

If you have deployed Connected Customer Service with IoT Hub, the command will be sent using Dataverse plug-in code to the Azure Service Bus.

Sending commands with Connected Customer Service for IoT Central deployment

If you have deployed Connected Customer Service with IoT Central, you need to build a Power Automate cloud flow to send the command from Dynamics 365 to IoT Central.

[!Important] The Power Automate template **When command is sent from Dynamics 365, run the command on IoT Central** uses the V2 IoT Central

connector. You will need to update the flow to use the V3 connector or create a flow from blank.

In Power Automate, create a new automated cloud flow and select the Microsoft Dataverse connector and When a row is added, modified, or deleted. You should configure the trigger as follows:

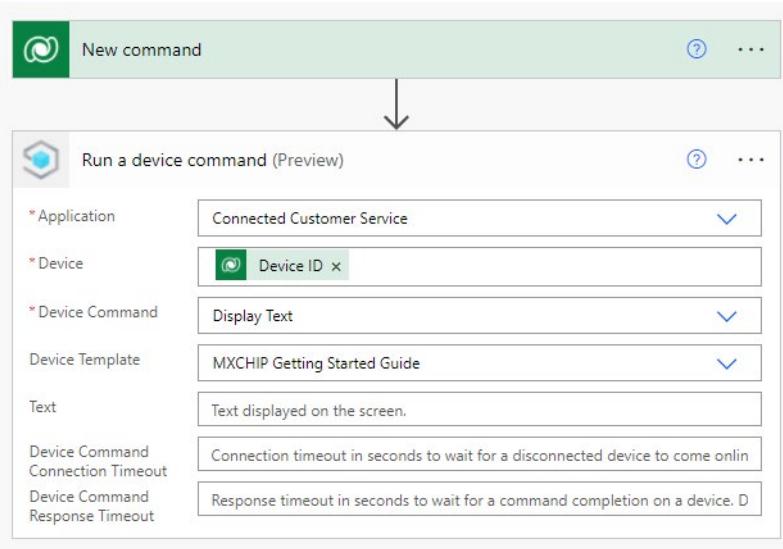
- **Change type:** Added
- **Table name:** IoT Device Commands
- **Scope:** Organization

Click on **+ New step** and select the **IoT Central connector** and the **Run a device command** action.

[!Important] The latest version of Azure IoT Central is V3. You need to select the IoT Central V3 connector.

You need to select the IoT Central app and the IoT central rule. You should use Dynamic content to insert the Device ID.

Next, you must select the Device Template. Once you have selected the template, you can select the Device Command as shown in the following screenshot.



Screenshot of Power Automate send device command step.

Depending on the template and command you have selected, the relevant parameters will be made available in the step. In the previous screenshot you can add the text to display in the LED screen of the device.

[!NOTE] As the command is generated as JSON in Dynamics 365, you will need to add a Parse JSON action to extract the properties from the command and set the fields in the Run a device command action.

Summary

In this module you saw how Dynamics 365's Connected Customer Service solution can be leveraged to remotely manage IoT devices and enforce business processes for managing devices.

This module examined how to remotely manage IoT devices with Connected Field Service, including:

- How to register devices.
- How to create IoT alerts using Power Automate.
- Converting IoT alerts to cases.
- The security roles included with Connected Customer Service.
- How to manage interactions with IoT devices.
- How to send commands to devices.
- How to leverage some of the out of the box actions to assist in automation.

The next steps from here would be to gain a deeper understanding of interacting with devices. This would include understanding how device twins can be used to report and query information. You should also explore some of the additional features available for interacting with devices using commands. This would include items like device categories, command and property definitions.

Module 10 Implement Microsoft Power Platform

Create custom apps

Introduction to Power Apps and Dataverse

The Microsoft Power Platform is a suite of apps, services, connectors, and a data platform that provides you with an opportunity to build custom apps for your business needs. Microsoft Power Platform is made up of four key products: Power Apps, Power Automate, Power BI, and Power Virtual Agents.

In this module, we'll focus on Power Apps and how you can use Power Apps together with Dynamics 365 Customer Service. This module does not explain in detail how to create tables or build apps but the modules explains how we can use Power Apps with Dynamics 365 Customer Service. In the summary of this module are links to other learning modules for the building of apps.

Power Apps provides a rapid low code development environment for building custom apps for business needs. It has services, connectors, and a scalable data service and app platform, **Microsoft Dataverse**, to allow simple integration and interaction with existing data. Power Apps enables the creation of web and mobile applications that run on all devices.

People use apps in their daily life, and the business context should be no exception. Most out of the box solutions don't meet all business needs or integrate effortlessly with other business programs. Power Apps eases users into app development with a simple interface so that every business user or pro developer can build custom apps.

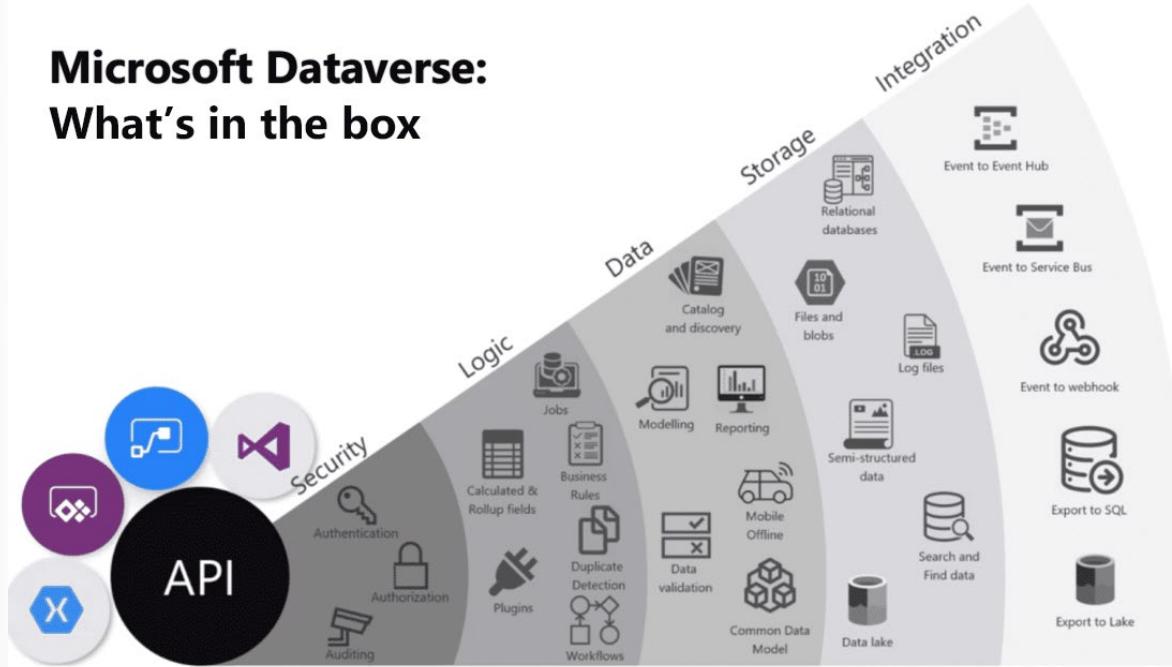
Microsoft Dataverse

Microsoft Dataverse is a cloud-based, low-code data service and app platform, which allows you to leverage the security and connectivity of Microsoft services. Dataverse connects easily to all aspects of Microsoft Power Platform so that you can fully control, automate, and strengthen your business. With standard tables and columns, as well as the ability to easily define relationships between your data, Dataverse was built for powerful, scalable solutions.

Dataverse is designed to be your central data repository for business data, and you might even be using it already. Behind the scenes, it powers many Microsoft Dynamics 365 solutions such as Customer Service,

Marketing, Field Service, and Sales. It is also available as part of Power Apps and Power Automate with native connectivity built right in.

Below is a visualization that brings together the many offerings of Microsoft Dataverse.



As you can see, Microsoft Dataverse offers a great deal of functionality. Below is a brief explanation of each category of features.

- **Security:** Dataverse handles authentication with Azure Active Directory (Azure AD) to allow for conditional access and multi-factor authentication. It supports authorization down to the row and column level and provides rich auditing capabilities.
- **Logic:** Dataverse allows you to easily apply business logic at the data level. Regardless of how a user is interacting with the data, the same rules apply. These rules could be related to duplicate detection, business rules, workflows, or more.
- **Data:** Dataverse offers you the control to shape your data, allowing you to discover, model, validate, and report on your data. This control ensures your data looks the way you want regardless of how it is used.
- **Storage:** Dataverse stores your physical data in the Azure cloud. This cloud-based storage removes the burden of worrying about where your data lives or how it scales. These concerns are all handled for you.
- **Integration:** Dataverse connects in different ways to support your business needs. APIs, webhooks, eventing, and data exports give you flexibility to get data in and out.

Connectors

Microsoft Power Platform leverages data across many platforms. To do this, the components of Microsoft Power Platform use connectors. You can think of connectors as a bridge from your data source to an app or workflow, which allows information to be conveyed back and forth. Connectors allow you to extend your business solutions across platforms and add functionality for your users.

Microsoft Dataverse is one such connector. Through the Microsoft Dataverse connector, Power Apps can access the data used in Dynamics 365 Customer Service.

Power Apps and Dynamics 365 Customer Service

Using the Microsoft Dataverse connector, Power Apps can connect to Dynamics 365 applications, including Dynamics 365 Customer Service apps.

The tables and columns used to store Customer Service data are created automatically in Dataverse when you deploy Dynamics 365 Customer Service. These tables and columns can be used in Power Apps. You can also create your own custom tables and columns in Dataverse to meet specific requirements not met by Dynamics 365 Customer Service.

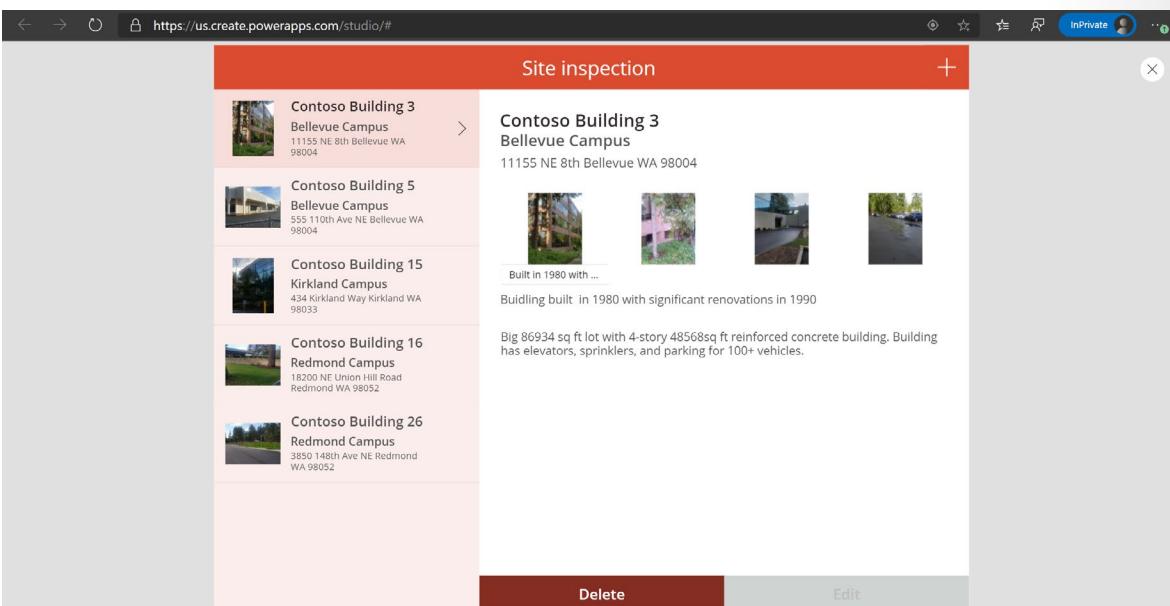
With the native functionality of Dynamics 365 Customer Service apps, you can embed Power Apps. This functionality allows organizations to use Customer Service apps, combined with Power Apps, to fit the needs of the business without major customization. This also allows you to connect to other services and data sources easily with no development experience.

Different types of Power Apps

When you start with Power Apps, you'll find two types of apps in the Power App studio, canvas and model-driven apps. You can use both canvas and model-driven apps to build Power Apps that solve business problems for task and role-specific scenarios.

Canvas apps start with the user experience, crafting a highly tailored interface with the power of a blank canvas and connecting it to your choice of 500+ data sources. One of those data sources is Microsoft Dataverse and you can easily build apps connected on Dynamics 365 data.

You can build canvas apps for web, mobile, and tablet applications designing the app by dragging and dropping elements onto a canvas, just as you would design a slide in PowerPoint. It is important to note that canvas apps are not replacements for all customizations in Dynamics 365, but they do extend your possibilities, especially when you want to create task oriented apps.



Model-driven apps start with your data model. Model-driven apps build up from the shape of your core business data and processes in Microsoft Dataverse, to model forms, views, and other components.

Unlike canvas app development where the designer has complete control over the app layout, with model-driven apps much of the layout is determined for you and designated by the components you add to the app. By using model-driven apps, you can automatically generate great UI that is responsive across devices and this UI is used by Dynamics 365 Customer Service apps. Model-driven app design is a component-focused approach to app development and its design doesn't require code. Model-driven apps can be simple or complex.

[!NOTE]

The Dynamics 365 Customer Service apps are model-driven apps that use Microsoft Dataverse for its data store.

Portal apps are external-facing web applications that allow users outside their organizations to sign in with a wide variety of identities and view and create data in Dataverse.

Portal apps internal and external users secure access to your data either anonymously or through commercial authentication providers like LinkedIn, Microsoft, Facebook, and Google, or enterprise providers such as Azure AD B2C. Portals also allow you to set authentication requirements, customize data for each user, and allow users to submit their information privately with straightforward admin controls.

Portal apps use Microsoft Dataverse to hold its configuration and you can add web pages and change content of the portal website without needing a web developer.

There are templates for different scenarios including a customer self-service portal that is used with Dynamics 365 Customer Service.

Creating a canvas apps for customer service

There are many requirements for customer service and support operations that are not met out-of-the-box with Dynamics 365 Customer Service. Dynamics 365 and the Power Platform offers several options for customizing and extending Dynamics 365 Customer Service to meet such requirements. You can, for example:

- Use the logic features in Dataverse to validate data.
- Create Power Automate cloud flows to integrate with other systems.
- Use Dataverse workflows to update statuses and send emails.
- Create Power Apps Component Framework (PCF) controls to create rich user-interface experiences.
- Build plug-ins to perform business logic.
- and many others.

In many scenarios, you may be better to create new apps using Power Apps than customizing the Dynamics 365 Customer Service app. For example, where the functionality you require is not provided by the Dynamics 365 app, it can be quicker and easier to build a new app that shares data through Dataverse with Dynamics 365 Customer Service.

Example scenario

Consider this scenario, a call center has a quality assurance team that listens to calls made by agents and evaluates them against a set of policies. While Dynamics 365 Customer Service Insights can tell supervisors about the sentiment of the call, it cannot verify that the agent has followed the guidelines for handling the call. The call center requires a system to capture the quality check results and track any nonconformances and corrective actions. Customizing Customer Service Insights is not possible, so a new app is required.

A possible solution for this requirement might include:

- Custom tables and columns in Dataverse.
- Relationships from the custom tables to the case table and to the agent user.
- A Canvas app to capture the quality check results against the case.
- A Power Automate cloud flow to randomly generate the list of calls and cases to perform quality check on.
- A Model-driven app to view the quality check results.
- A Business process flow to manage the steps in nonconformances.
- A Power BI dashboard to show trends in quality scores and allow management to analyze scores.
- Power Automate cloud flows to notify of nonconformances and handle approvals of corrective actions.

Canvas apps

Building a canvas app on tables held in Dataverse is very straightforward. You can create task-based apps, such as capturing quality check results, that save data to Microsoft Dataverse.

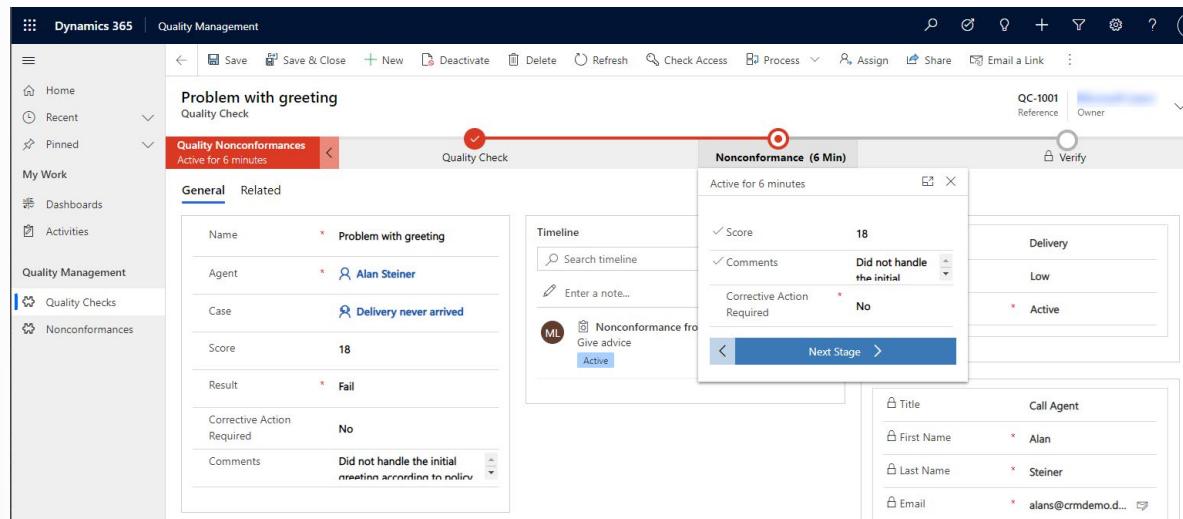
In the following screenshot is a simple canvas app that captures this data.

The screenshot shows a Microsoft Canvas app interface titled "Quality Check". The app contains the following fields:

- Name:** Problem with greeting
- Agent:** Alan Steiner
- Case:** Delivery never arrived
- Score:** 18
- Result:** Fail
- Comments:** Did not handle the initial greeting according to policy

Model-driven apps

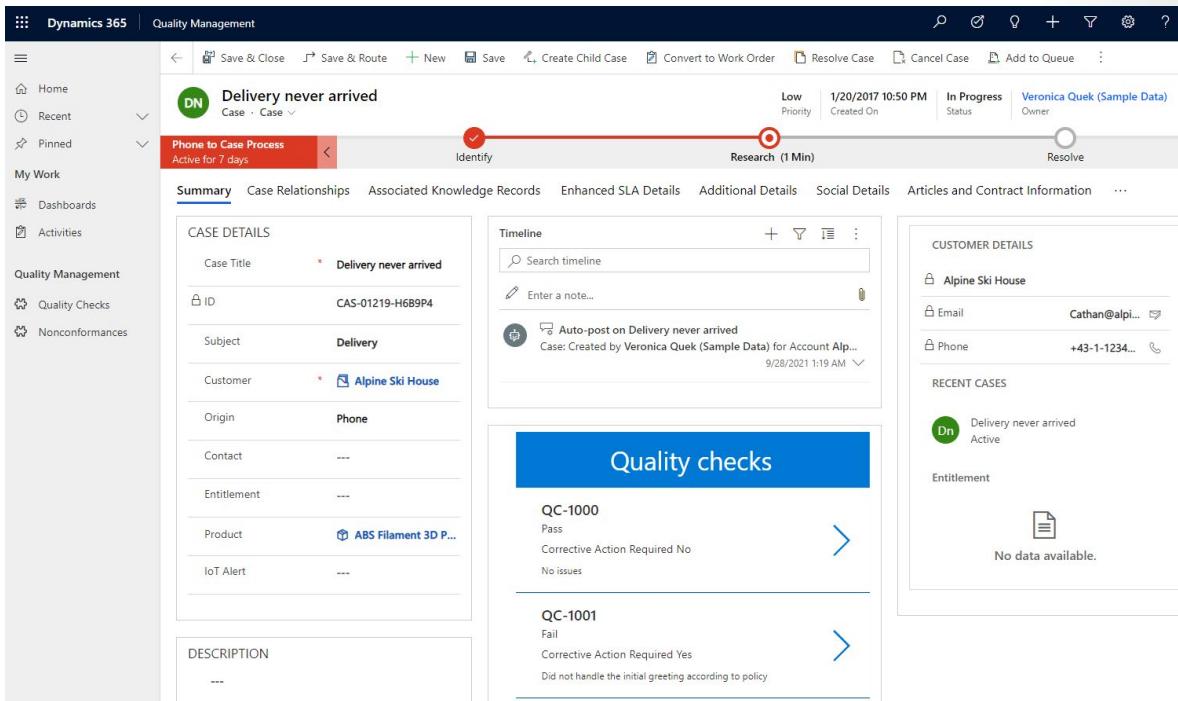
In the following screenshot is a simple mode-driven app that manages the nonconformance business process.



Embedding a canvas app on a model-driven form

With embedded canvas apps, you can bring the flexibility of canvas apps to model-driven forms. Using an embedded canvas app, you can for instance:

- Display data from a variety of sources right next to data from Microsoft Dataverse.
- Use and update data from other data sources.
- Interact with the data in fields the model-driven app form.
- Trigger Power Automate flows from buttons in the embedded canvas app.
- Perform complex logic that is not possible in model-driven app forms without requiring coding.
- Create wizard-like user interface to guide the user through a complex set of decisions based on data.
- any many others.



Deploying a self-service portal for customer service

Provide self-service support - When your business is growing, rather than having to employ extra staff in call centers, you could use Power Apps portals to add self-service capabilities to your website so that your customers can search knowledge articles, engage with other customers, find answers, and create support cases when needed (that go directly into Dynamics 365 Customer Service), all without a single interaction from your resources.

Portal templates

Portal templates are pre-configured portal solutions that are available to accelerate deployment. Power Apps portals are customizable, but a portal template will provide a pre-configured environment that is immediately suitable for specific scenarios.

Each portal templates include a particular set of features that are designed to accelerate solution development that targets the selected audience.

Customer self-service portal: A customer self-service portal enables customers to access self-service knowledge, support resources, view the progress of their cases, and provide feedback.

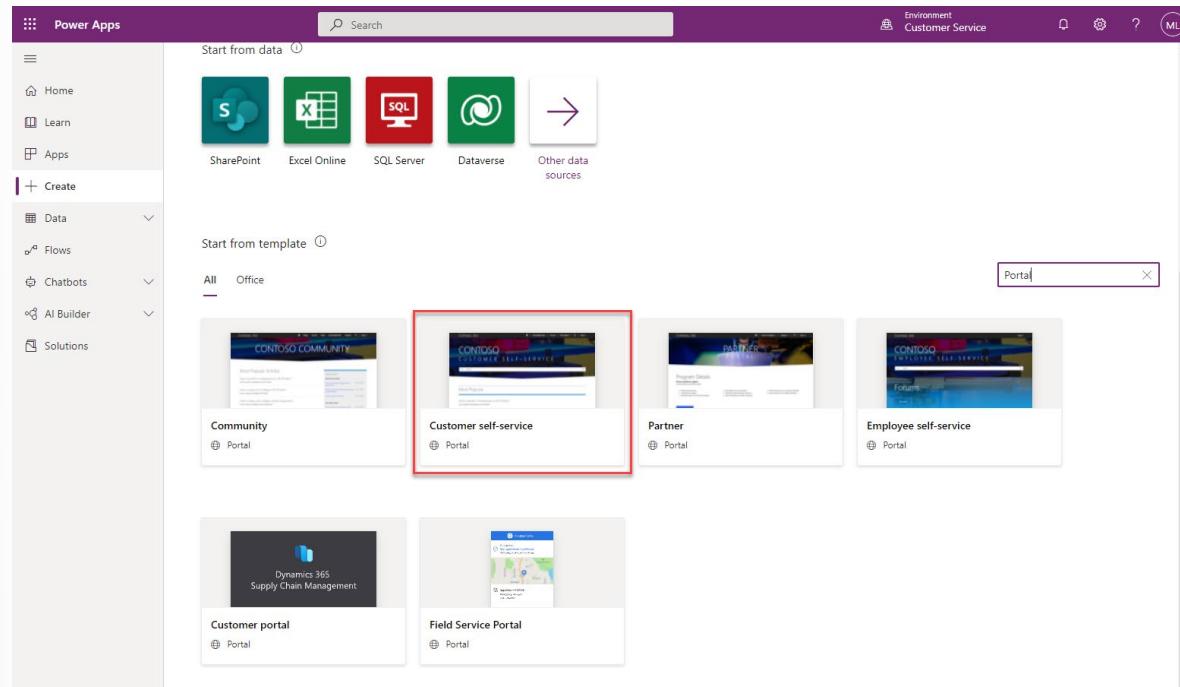
Provision a Customer self-service portal

The high-level steps to provision a self-service portal are:

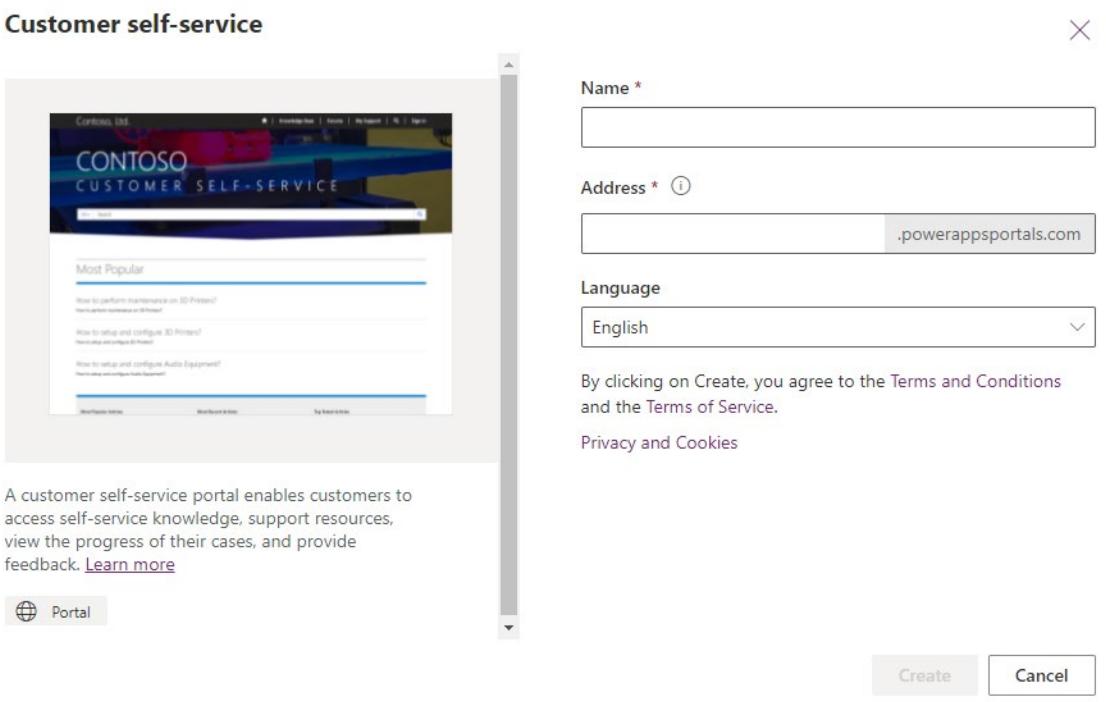
1. Navigate to the **Power Apps Maker portal**¹.

¹ <https://make.powerapps.com>

2. Select your Dynamics 365 Customer Service environment by using the environment selector in the upper-right corner.
3. On the left pane, select **Create**.
4. Scroll down to **Start from template** section.
5. In the search box on the right-side of the screen, enter **Portal**.



6. Select the Customer-self-service template.



7. Provide a name and unique address (URL) for the portal.
8. Select the language.
9. Select **Create** to start the portal provisioning process.

The provisioning process takes around 45 minutes. After portal provisioning has completed, the portal will appear in the list as an app of type Portal.

Name	Modified	Owner	Type
Microsoft Learn Self-service portal	...	[REDACTED]	Portal
Portal Management	...	[REDACTED]	Model-driven
Customer Service Hub	...	SYSTEM	Model-driven

[!IMPORTANT]

Only one Power Apps portal can be provisioned for each Dataverse environment.

Customer self-service portal

The Customer self-service portal provides the following methods for customers to resolve their own issues:

- Knowledge articles
- Forums

- Support cases

The screenshot shows a web browser displaying the Contoso Customer Self-Service portal. The header includes links for Home, Knowledge Base, Forums, My Support, a search bar, and a sign-in button. The main content area features a banner with the text "CONTOSO CUSTOMER SELF-SERVICE". Below the banner, a section titled "Most Popular" lists three articles: "How to perform maintenance on 3D Printers?", "How to setup and configure 3D Printers?", and "How to setup and configure Audio Equipment?". Each article has a small description below it.

Knowledge articles

An effective way to maximize the use of helpful content is the ability to search and surface knowledge articles on a Power Apps portal. This feature uses the Dynamics 365 Customer Service knowledge articles (used for internal customer service management) and provides a mechanism to surface articles on a Power Apps portal.

An organization can determine which of its existing knowledge articles should be surfaced on the portal by setting the Internal flag and by associating the knowledge article to the appropriate categories.

A portal visitor will be able to navigate through the category structure to locate a specific knowledge article or by using the keyword search features of the portal.

When entering a support case, the portal user might be redirected to browse potentially related knowledge articles to provide a more immediate response to a question and also reduce the case load of the support organization.

An organization that provides online customer support will benefit from publishing knowledge articles on the portal in the following ways:

- Reduction in the number of logged cases because customers might find the answers and information that they need in existing knowledge articles.
- Improved customer service and satisfaction because customers are able to find information before needing to open a support ticket.

Forums

Forums allow members of a particular community with common interests to post questions, start discussions, or ask for help.

An organization will choose forums as a way for their community to interact with each other by asking questions, starting discussions, or by looking for help.

Having an active and engaging forum will strengthen a particular community and potentially alleviate customer and community support resources.

Organizations can have their support staff monitor and actively participate in forums. Support staff, along with other community members, would answer questions and provide information that will help resolve the customer's issues and provide a public archive of the solution for others who might encounter the same issue in the future.

Support cases

The Dynamics 365 Customer Service Case functionality is surfaced on Power Apps portals with the Customer self-service portal template.

An organization can allow customers to sign in to the portal and begin the support process by first seeing if the particular question or issue can be resolved with existing information in forum posts or knowledge articles.

If the provided information is not sufficient to resolve the issue, the customer can create a new support case through the portal. This action will create a corresponding case record in Dynamics 365 Customer Service. The case can be assigned to a particular support representative or team that is following the same business processes that are defined for using the Customer Service Hub.

The support representative can follow existing processes and procedures to resolve the case, such as referring to a knowledge article or providing steps to resolve the issue by using traditional support channels (phone, email). The support representative can also associate a portal comment activity record to the case, which is visible on the case timeline in Dynamics 365 and the portal. Additional configuration by using Dataverse workflow and email integration will allow the customer to be notified of updates to the case with a hyperlink to the portal.

A key benefit of support cases is that customers who want to submit a ticket are presented with options to review existing knowledge articles and forum posts because these items might help resolve the customer's question in a faster manner.

Customization of Dynamics 365 Customer Service Case management

Dynamics 365 Customer Service has several items in Case management where the functionality can be customized. These are documented customizations that you can make on Dynamics 365 Customer Service to change how the Customer Service apps behave.

The following list contains some of the supported customizations for Dynamics 365 Customer Service.

- **Remove validation on contact and customer for cases in Customer Service:** By default when creating a case, the contact must be associated with the selected account. In some scenarios you may want the contact on the case not to be restricted to contacts linked to the account. You can set the msdyn_IncidentShouldValidatePrimaryContact environment variable to 0 to allow any contact to be selected.
- **Allow updates for resolved and canceled cases:** You can allow the information on the case to be updated after the case has been resolved. For example, for General Data Protection Regulation compliance, you want to remove certain data from your case records. You can change this setting in **Service Management > Service Terms > Service Configuration Settings**.

Case update after resolution

This allows updates to canceled or resolved cases on the backend--for example, using Power Automate flow.

Allow updates for

Resolved and canceled cases

- **Modify the case resolution dialog:** You replace the standard resolve case dialog with a customizable dialog or the Quick Create form. You can then customize the case resolution dialog to suit your business needs. For example, you can modify the dialog to add fields like Resolution type or remove fields like Billable Time, if they don't apply to your business scenarios. You change this setting in **Service Management > Service Terms > Service Configuration Settings**.

Resolve case dialog

Select the style of the

Resolve Case dialog

Quick create dialog

box.

- **Add a timer in forms to track time against SLAs:** A timer helps users gauge the amount of time they have to complete a key performance indicator (KPI) that is typically associated with a service level agreement (SLA). You can add the timer control to forms where you have a date field such as a target that you have to meet.
- **Enable search control for subjects in custom forms:** The search control for subjects provides intuitive and fast search results, the search term is highlighted in the results, and allows for easy removal of the search string with a single click.
- **Add the Knowledge Base Search control to forms:** You can add the Knowledge Base Search control to forms to make it easy for users in your organization to find knowledge articles so they can answer common customer questions and resolve their issues right from the records, without having to switch to a different application. This control is on the case form by default but you can add to other forms as required.
- **Add a skill control for routed records:** You can add the skill control to forms so that users can see the skills used to route the record.

Details for these customizations can be found in [Microsoft Docs²](#).

Summary

There are always requirements that cannot be met out of the box with Dynamics 365 Customer Service. The Power Platform allows you to meet many of the gaps in requirements with less effort and without requiring coding skills.

This module examined ways to address some gaps with Power Apps, including:

- How the Power Platform can be used to customize Dynamics 365 Customer Service
- How to Use Power Apps with Dynamics 365 Customer Service
- How to deploy a self-service Customer Service portal
- How to customize case management

² <https://docs.microsoft.com/dynamics365/customer-service>

Your next steps would be to learn how to build Power Apps to address gaps in requirements. The following Microsoft Learn modules and Microsoft Docs articles will get you started.

- **Get started with Power Apps canvas apps³**
- **Get started with model-driven apps in Power Apps⁴**
- **Embed a canvas app on a model-driven form⁵**
- **Introduction to Power Apps portals⁶**

³ <https://docs.microsoft.com/learn/modules/get-started-with-powerapps/>

⁴ <https://docs.microsoft.com/learn/modules/get-started-with-model-driven-apps-in-powerapps/>

⁵ <https://docs.microsoft.com/powerapps/maker/model-driven-apps/embed-canvas-app-in-form>

⁶ <https://docs.microsoft.com/learn/modules/intro-portals/>

Integrate a Power Virtual Agents bot

Introduction

A typical call center can handle thousands of customer-related issues on any given day. With so many issues coming in daily, even the most efficient organizations can become overwhelmed if their agents are dealing with all customer issues personally. At the same time, customers don't want to wait in a queue to talk to a live agent, whether it's on the phone or through a live chat. Customers want their issues handled and resolved as quickly as possible.

One way that organizations are addressing this issue is with bots. Bots can simulate a human conversation with a customer through a chat interface. This approach allows organizations to use bots to deflect commonly reported or simple issues away from agents, therefore freeing the agents to focus on more complex issues. A bot can be a customer's first point of interaction on a support issue. The bot can gather additional information or assist in resolving the issue. If the bot is unable to resolve the issue, it can escalate the conversation and send it to a live agent.

Microsoft Dynamics 365 Omnichannel for Customer Service can be integrated with a variety of bot technologies to work seamlessly to pass conversations between them. Omnichannel for Customer Service can initially route a conversation to a customer service bot and receive conversations that are escalated to live agents in the application. One of the simplest ways to create an integrated bot solution with Omnichannel for Customer Service is to integrate it with a Power Virtual Agents bot.

Overview of Power Virtual Agents

Microsoft Power Virtual Agents helps organizations automate routine conversations and allow their agents to focus on high-value interactions. Power Virtual Agents conversations can be escalated and handed off to human agents. When a conversation is escalated to a human agent, they will see the full transcript of bot conversations and have complete context while engaging with customers. Bots that are created in Power Virtual Agents can be connected to an Omnichannel for Customer Service environment. After you have created and connected the bot to an Omnichannel for Customer Service environment, you can add it to different queues and configure it to route chat sessions to queues.

Integrating a Power Virtual Agents bot with Omnichannel for Customer Service gives you the following capabilities for bot conversations:

- **Seamless integration** - Bots can be integrated across all channels without the need to add channel-specific code in the bot.
- **Integrated escalation** - Transferred bot conversations include the full context of the conversation.
- **Monitoring** - Bot conversations can be monitored in real time by using the supervisor dashboard so that you're aware of conversation details such as the customer's satisfaction.

- **Automated routing** - Configurable rules will selectively route incoming requests to bots based on context, such as issue type or the type of customer. For example, you can route low complexity issues to bots, or route the conversation to a sales or support bot based on the webpage browsing history of the customer.
- **Analytics** - Bot transcripts are available in Microsoft Dataverse after the conversation is complete. Historical dashboards provide insights into the effectiveness of the bots through metrics, such as resolution rate, escalation rate, resolution time, escalation time, and average sentiment.

Prerequisites

Your organization will need to have the appropriate licensing for services that are being used with your Omnichannel for Customer Service instance such as the Dynamics 365 Chat Service or Digital Messaging. Additionally, you will need Power Virtual Agents licensing and a Microsoft Azure subscription.

For a seamless handoff from a Power Virtual Agents bot to Omnichannel for Customer Service, you will need to configure the integration as follows:

- **Register an application in Azure.** The Application registration is used to facilitate the handoff from the Power Virtual Agents bot to Omnichannel for Customer Service.
- **Create a Power Virtual Agents bot.** This step represents the bot that will initially handle incoming conversations from different channels before it escalates to a live agent, if needed.
- **Configure a Power Virtual Agents bot to hand off to Omnichannel for Customer Service.** The bot will need to be configured to point to your Omnichannel for Customer Service environment to ensure that conversations can be sent there when they are escalated.
- **Configure Omnichannel for Customer Service.** The bot will need to be added to the necessary Omnichannel for Customer Service queues. Routing rules will need to be created in Omnichannel for Customer Service to ensure that escalated conversations are routed to the correct queues.

The remainder of this module will examine each of these steps in more detail.

Create an Azure Active Directory application

Every conversation in Omnichannel for Customer Service is eventually distributed to an omnichannel user. An omnichannel user could represent a live agent or a bot user. A bot user is essentially a user in Omnichannel for Customer Service that is supported by an application. In this case, the server application is a Power Virtual Agents bot. Omnichannel for Customer Service refers to these bots as application users. When conversations are routed to the application user, the Power Virtual Agents bot takes over and provides the necessary interaction with the customer.

Because the bot is an application user, the application that will support the bot needs to be registered in Microsoft Azure Active Directory (Azure AD). Azure AD authenticates the application just as it would a human user. Before a bot can be integrated, you'll need to create an application registration in Azure AD. After the application registration has been defined, a Power Virtual Agents bot can be associated with the registered application.

Only users with necessary permissions can add items in your Azure tenant and make the necessary application registrations. You can create the application registration on the [Azure portal](#)⁷. You can register your apps by going to Azure Active Directory and creating a new registration under **App registrations**.

Three primary areas that can be defined when you create the application registration are:

- **Name** - User-facing name of the application. This information can be changed later, if necessary.
- **Supported account types** - This area defines who can access the application.
- **Redirect URI (optional)** - This option is the URL where the app is located.

The screenshot shows the 'Register an application' page in the Azure portal. At the top, there's a breadcrumb navigation: Dashboard > Microsoft - App registrations > Register an application. The main section is titled 'Register an application'. A warning message states: '⚠ If you are building an application for external users that will be distributed by Microsoft, you must register as a first party application to meet all security, privacy, and compliance policies. [Read our decision guide](#)'.

Name: The field contains 'example-app'. Below it, a note says 'The user-facing display name for this application (this can be changed later)'.

Supported account types: A radio button group is shown, with the first option 'Accounts in this organizational directory only (Microsoft)' selected. Other options include 'Accounts in any organizational directory' and 'Accounts in any organizational directory and personal Microsoft accounts (e.g. Skype, Xbox, Outlook.com)'. There is also a 'Help me choose...' link.

Redirect URI (optional): A dropdown menu shows 'Web' and a text input field containing 'https://contoso.org/exampleapp'. Below this, a note says 'We'll return the authentication response to this URI after successfully authenticating the user. Providing this now is optional and it can be changed later, but a value is required for most authentication scenarios.'

At the bottom, there's a link 'By proceeding, you agree to the Microsoft Platform Policies' and a large blue 'Register' button.

After you have defined the necessary information, select the **Register** button.

For more information, see creating an Azure Active Directory Application.

This process will create the initial application registration. For purposes of this learning module, these steps fulfill the necessary requirements to deploy the Power Virtual Agents bot to the application. However, depending on your deployment scenario, technology being used, security policies, and so on, you might need to configure additional items in the application.

Additional items that you might want to consider include:

- **Assign a role to the application** - Allows the application to access additional resources in your Azure subscription. For more information, see Assign a role to the application.

⁷ <https://portal.azure.com/?azure-portal=true>

- **Certificates and secrets** - Help manage authentication and control application security. For more information, see Certificates and Secrets.
- **Access policies on resources** - Allows you to define additional permissions that your application might need. For more information, see Configure Access Policies.

Now that you have created an application registration, you can build the Power Virtual Agents bot and configure it to hand off conversations to Omnichannel for Customer Service.

Configure the Power Virtual Agents bot

Integrating a Power Virtual Agents bot shares the full history of the conversation (the context) and any user-defined variables with Omnichannel for Customer Service. This feature allows Omnichannel for Customer Service to route incoming escalations to the appropriate live agent queue, and it also allows the live agents to review exactly what occurred in the prior conversation so that they can resume at that point. This aspect prevents agents from potentially asking for information that was previously captured by the bot.

Plan your bot

When you are creating a bot, consider how information that is collected by the bot could impact the conversation if it needs to be transferred to an agent. Power Virtual Agents bots can ask questions to gain information and store it for later use as variables. Variables can be made available throughout the bot and used to personalize messages that are provided to customers, determine how the bot interacts with the customer, or indicate that it should be passed to other applications as input parameters. Variables can also be useful when a bot transfers a conversation to an agent. Data from these variables can be used by Omnichannel for Customer Service routing rules to ensure that the conversation is sent to the appropriate location. For example, if a customer service bot asks a customer to provide a reason for reaching out, and the customer indicates "billing," then the word "billing" is stored in the conversation as a variable. When the conversation is transferred to Omnichannel for Customer Service, a routing rule can identify this item as a billing request and then ensure that it is routed to the correct location.

For more information, see using variables in a bot.

Working with variables is one part of designing a bot and controlling how customers interact with it. Power Virtual Agents contains many different features that help control a conversation flow and could have an impact on how the conversation is transferred. One of those key features is Topics, which dictates the conversation paths that customers are guided on while interacting with a bot.

Transfer conversations to agents

Two primary components that are involved when a bot transfers to an agent are:

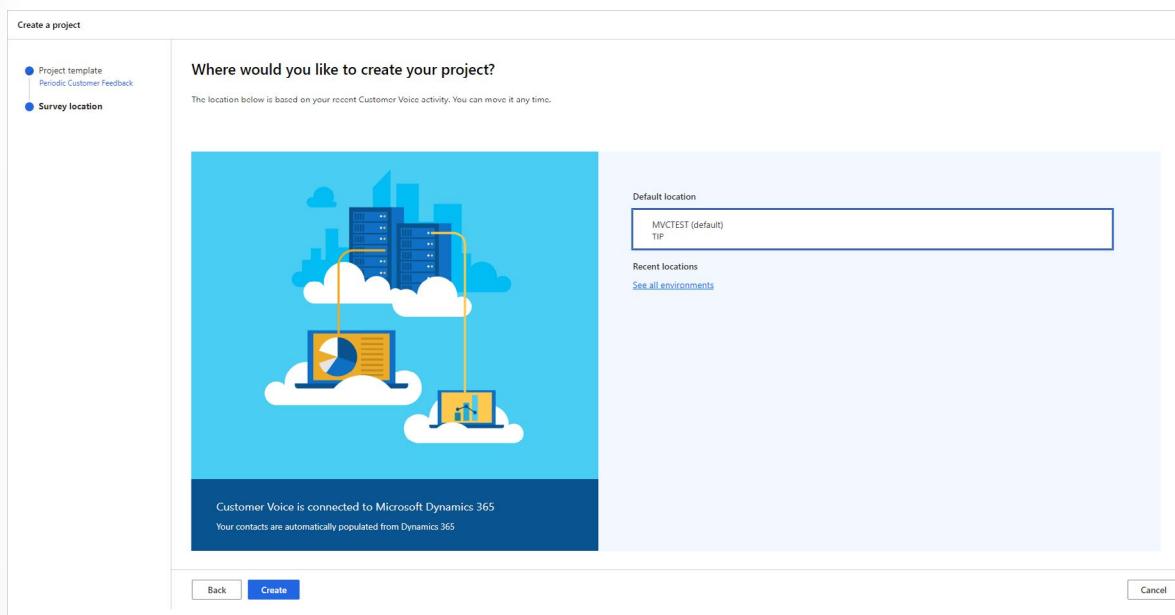
- Telling the bot when to transfer the conversation to an agent.
- Telling the bot where, or to which queue, to transfer the conversation.

Tell the bot to transfer the conversation to an agent

How a Power Virtual Agents bot tells the bot that it's time to transfer a conversation to an agent is always the same. Power Virtual Agents includes what is referred to as a "conversation node," called **End the conversation**. Conversation nodes are used to interact with the customer. They can display a message,

ask customers a question, or direct them to a different topic. The **End the conversation** node signifies the end of the entire conversation and provides two actions that can be initiated:

- **End with survey** - A survey appears that asks the user if their question or issue was answered or resolved correctly.
- **Transfer to agent** - Escalates the conversation to a live agent.



Bot authors can end a conversation and transfer to an agent from within a specific topic. For example, if a customer indicates to the bot that their entire Point of Sale system is down, the bot can automatically call the **End the conversation** node and transfer it to an agent. Another way that this task could be accomplished is by escalating the topic. All bots include a conversation topic called **Escalate**. The **Escalate** topic includes a message that is presented to the customer and then calls the **End the conversation** node to transfer to an agent. **Escalate** topic is automatically triggered when someone types something like "speak to agent." It could also be triggered from within another topic by selecting **Go to another topic** and then selecting it.

Configure where to hand off the conversation

The second part of facilitating the transfer to an agent is to configure the bot to send the conversation to a specific engagement hub. Power Virtual Agents support the ability to send to an Omnichannel for Customer Service environment or to a custom engagement hub. Only bots that have been published can be used to ensure that the end-to-end capabilities work as expected. Make sure that you have published your bot prior to validating the integrated experience.

During configuration, you will need to specify if the conversations are to be routed to a Dynamics 365 Customer Service environment or a custom engagement hub. If you select Omnichannel for Customer Service environment, you'll need to define which Dynamics 365 environment will be used with in the individual bot. Each bot can only be configured to send conversations to one Omnichannel for Customer Service environment. If you need conversations

from multiple bots to be sent to a specific Dynamics 365 environment, each bot will need to be configured individually.

To configure the handoff, select the **Settings** icon and then select **Transfer to agent**. The **Transfer to agent** screen allows you to define how the bot will facilitate handoff to different applications like Omnichannel for Customer Service. Select the Dynamics 365 Omnichannel for Customer Service tile to begin the configuration process.

The screenshot shows the 'Transfer to agent' configuration interface. On the left, there's a preview of a survey titled 'Periodic Customer Feedback'. The survey has a single question: '1. How would you rate your overall satisfaction with {{companyname}}?' with a five-star rating scale. On the right, under 'Variables', there are fields for 'First Name', 'Last Name', and 'locale'. The 'locale' field is set to 'companyname' with a value of 'the company', which is highlighted with a red box. A 'Variables' button is also visible.

The primary component that you need to provide is the application ID for the app that you previously registered in Azure Active Directory. Omnichannel for Customer Service models bots as application users in the application. Modeling bots as application users ensures that the bot can have conversations set to it like a human agent would. It is important that the application ID is unique to your organization (your Microsoft Dataverse organization or environment). Each bot that will interact with the same Omnichannel for Customer Service environment will need to use a different application ID. You might need to create multiple application registrations to support multiple bots.

In your Azure portal, go to Azure AD and select **App registrations**. All registered applications will be displayed. Select the application that you want to use with the bot. The **Application ID** field will be on the application's overview page. Copy the ID and paste it into the Power Virtual Agents **Application ID** field.

Power Virtual Agents uses a Microsoft Teams channel to communicate with Omnichannel for Customer Service. As you follow the setup wizard, if a Teams channel has not been enabled, a Teams channel will be enabled automatically.

Enter Power Virtual Agents Application ID

X

This Application ID will allow Omnichannel for Customer Service to connect with Power Virtual Agents.

Follow these steps:

1. Go to [Azure App registration](#).
2. Find the App registration for Power Virtual Agents, or create one if it doesn't exist.
3. Copy the **Application ID** of this App registration.
4. Return to this page and paste the Application ID into the field.

Power Virtual Agents Application ID

This value will come from the app registration in Azure AD.

Not sure how to create a new App registration? [Learn more about Azure App registration](#)

Next

The last part of the configuration process is to select the Omnichannel for Customer Service environment that you want to use with this bot. Make sure that you are selecting an environment that has Omnichannel for Customer Service provisioned. The list shows all available environments, even if Omnichannel for Customer Service is not provisioned.

After the connection has been established, you can select the **Go to Omnichannel** link to continue configuring the bot connection in Omnichannel for Customer Service.

Remove the Omnichannel for Customer Service connection

If you no longer want to hand off conversations from a bot to your Omnichannel for Customer Service environment, you can disconnect it from the environment. You can disconnect by selecting the **Settings** icon and then choosing **Transfer to agent**. At the bottom of the **Transfer to agent** screen, the environment that the bot is currently connected to will be listed. Selecting the **Disconnect** button will disconnect the bot from the currently configured environment. Once disconnected, you will be able to walk through the connection process again to connect to a different environment.

Work with content display issues

As you work with the handoff integration, you might find that some items, such as emojis and certain types of notes or variables, might not render as intended. One reason could be because of limitations within Omnichannel for Customer Service or the integration between them.

For more information, see [Omnichannel for Customer Service issues and limitations](#).

For more information, see [known limitations with Power Virtual Agents integration](#).

Configure Omnichannel for Customer Service

After a Power Virtual Agents bot has been configured to send conversations to Omnichannel for Customer Service, you need to configure Omnichannel for Customer Service to understand what to do with incoming conversations. Configuration is performed in the Omnichannel Administration app.

When you connected the bot to the Omnichannel for Customer Service environment, a bot application user was automatically created. The virtual agent user needs to be associated with at least one Omnichannel for Customer Service queue. When a conversation is sent to the queue, it is directed to the virtual agent bot user, which will launch the Power Virtual Agents bot. Conversations in a queue are always routed to bot users before live agents, for example, if your organization wants conversations that are coming into their default queue to be sent to a virtual agent. By adding the virtual agent user to the default queue, all conversations that are sent to the default queue will be automatically sent to the virtual agent. This method applies across the different channels that an organization uses. If the organization allows Short Message Service (SMS) as a channel, SMS messages that are received by the default queue will be sent to the bot, and the bot will communicate with the customer through SMS.

Control how conversations are routed

Omnichannel for Customer Service uses routing rules to send conversations to different queues based on information that is related to the conversation. For example, incoming conversations that are related to billing could be sent to a Billing queue. Conversations that are related to support could be sent to a Support queue. Routing rules can use actual details from the conversation and contextual data that is stored in context variables to appropriately route the conversation. When a Power Virtual Agent bot escalates a conversation into Omnichannel for Customer Service, escalation rules are used to make sure that the bot can route the conversation to the appropriate agent.

Escalation rules can be set up in two ways:

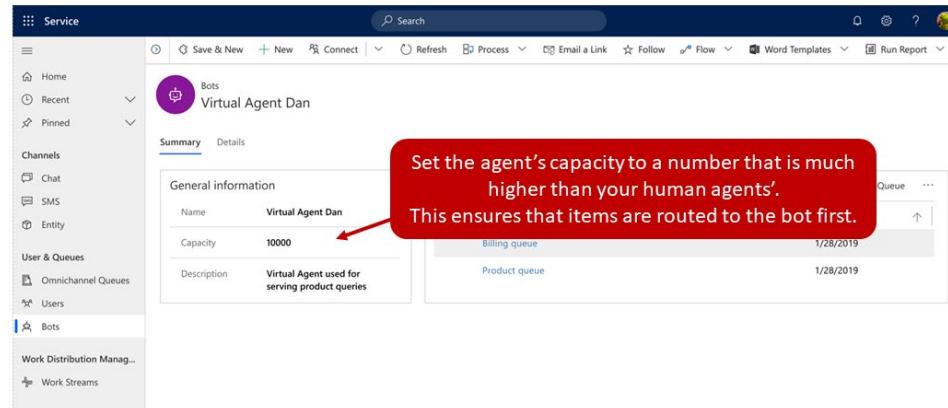
- **Add the bot to an existing human agent queue** - When a handoff is triggered, customers are transferred from the Power Virtual Agents bot to the human agent according to the escalation routing rules. (*This option requires little to no additional configuration because it uses existing rules.*)

For more information, see [routing rules](#).

- **Create a bot queue and a human agent queue** - This option requires a separate "bot" queue and dedicated agent queues. You might need to create an additional work stream that contains context variables and appropriate routing rules to route the customer queries.

Create separate bot and human agent queues

Typically, bots are developed to receive customer items first, gain more information, and then pass the item to a human agent, if necessary. For this process to occur, a bot user must be added to a queue where incoming messages will be routed to, which will ensure that the bot receives incoming messages.



If you create a dedicated queue for bot conversations, such as a "Virtual Agent" queue, you can add a virtual agent bot user to the queue. When conversations are sent to the queue, the bot will take over. To handle conversations after the bot has handed the conversation back to Omnichannel for Customer Service, you would create one or more "Agent" queues. These queues might represent billing or support issues, locations, or any other element that could impact how an item is routed. Live agents would need to be added to each queue that they can receive work items from. When in the queue, the conversation is handed off to the next available agent.

Capture the conversation context

When a Power Virtual Agents bot facilitates a handoff to another system, it automatically includes variables that can be consumed by the other system to better understand the context of the conversation. When Omnichannel for Customer Service receives the conversation, it can review these context variables and decide what to do next.

Power Virtual Agents includes the context variables when it transfers a conversation to an agent, as shown in the following table.

Context	Purpose	Example
va_Scope	Helps route escalations to a live agent	"bot"
va_LastTopic	Helps route escalations to a live agent and helps prompt a live agent	"Return items"
va_Topics	Helps prompt a live agent	["Greetings", "Store Hours", "Return Item"]
va_LastPhrases	Helps route escalation to a live agent and helps prompt a live agent	"Can I return my item"

Context	Purpose	Example
va_Phrases	Helps prompt a live agent	["Hi", "When does store open", "Can I return my item"]
va_ConversationId	Helps uniquely identify a bot conversation	GUID
va_AgentMessage	Helps prompt a live agent	"Got a gift from: HandoffTest"
va_BotId	Helps identify the bot that is handing off a conversation	GUID
va_Language	Helps route escalation to a live agent	"en-us"
All user-defined topic variables	Helps prompt a live agent	@StoreLocation = "Bellevue"

The work stream will need to include any context variables that were created during setup for the bot to handle the customer queries appropriately. For example, if you want to use the va_Scope variable to help identify if it is coming from a bot or a live person, you would need to add a context variable called va_Scope to the work stream. This parameter would need to be defined for all bot variables that will be used, including variables that were created during the writing process.

Virtual Agent Work Stream
Work Stream

Push
Work Distribution Mode

Live chat
Channel

Omnichannel PRRD Pipeline
Owner

Rules Templates Smart assist bots Routing rule items

+ New ⌂ Refresh ⌂

Display Name	Name	Type
va_Scope	va_Scope	Text

For more information, see context variables.

Configure routing rules

After you define the context variables that were used by the work stream, routing rules need to be created to send the conversation to the correct queue. Routing rules include a condition and a destination queue. When an item comes in, the routing rules will be tested against the item in the order that they are defined in the application. When a rule condition is true, the item is routed to the destination queue. Any remaining rules will not run because a match was found. When you are working with bots, conditions can be built by using the context variables such as va_Scope.

For this example, you will need to define two routing rules:

- Route incoming conversations to a virtual agent bot.
- Route conversations that are escalated from the virtual agent to a human agent.

When Power Virtual Agents sends a conversation to an agent, it will automatically set the `va_Scope` context variable to `bot`. If the conversation was not escalated from a bot, the `va_Scope` context variable will be empty. By using this information, you can determine what to do with a conversation.

The image contains two screenshots of the Dynamics 365 Customer Service interface, each showing a 'General' tab and a 'Condition' tab for a routing rule.

Screenshot 1 (Top): Routing Rule for a Virtual Agent Bot

- General Information:** Name: Agent RR1, Owner: Omnichannel PRRD, Work stream: Virtual Agent Work St..., Queue: CCI One Q, Description: ---.
- Condition:** AND: Context variable Equals bot.
- Annotation:** A red callout box states: "Condition determines if the conversation was escalated from a bot."

Screenshot 2 (Bottom): Routing Rule for Escalated Conversations

- General Information:** Name: Bot RR1, Owner: Omnichannel PRRD, Work stream: Virtual Agent Work St..., Queue: CCI Bot One Q, Description: ---.
- Condition:** AND: Context variable Does Not Contain Data.
- Annotation:** A red callout box states: "Condition determines if conversation was initiated by a live person."

For example, if the value of the `va_Scope` context variable equals `bot`, you know that the conversation is coming from a Power Virtual Agents bot and should be routed to a human queue. If the `va_Scope` context variable does not contain data, it should be automatically sent to the bot queue.

For more information, see [Omnichannel for Customer Service](#).

For additional information, see [queues](#).

Summary

The primary advantage of a customer service-focused bot is that it can engage with your customers to provide a personalized self-service support experience. The bot can communicate with the customer in a natural language conversation just as a human agent would. This feature allows customers to self-support and obtain assistance on common issues. It also frees agents to focus on more complex issues.

Organizations that use Omnichannel for Dynamics 365 Customer Service and Power Virtual Agents can create an integrated scenario where conversations can be routed to a Power Virtual Agents bot first, and then if needed, seamlessly route the conversation along with its context to a human agent. Omnichannel for Customer Service will route and distribute the conversation to the next available agent.

This module examined how organizations can use Power Virtual Agents and Omnichannel for Customer Service to create an integrated support solution, including:

- Providing a high-level overview of how the two applications can be used together to create an integrated solution with a seamless handoff between them.

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- Reviewing the process for creating an application registration in Azure Active Directory to use with a Power Virtual Agents bot.
 - Explaining how to configure a Power Virtual Agents bot to trigger an agent handoff and send it to an Omnichannel for Customer Service instance.
 - Examining the process to configure a bot user in Omnichannel for Customer Service and associate it with different queues to implement handoff back and forth between applications.

Your next step would be to gain a deeper understanding of the additional tools that are available for Omnichannel for Customer Service to further enhance the agent experience. This learning would include examining how Dynamics 365 Productivity Tools can be used to facilitate automation and provide agent guidance with features such as agent scripts and smart assist.