

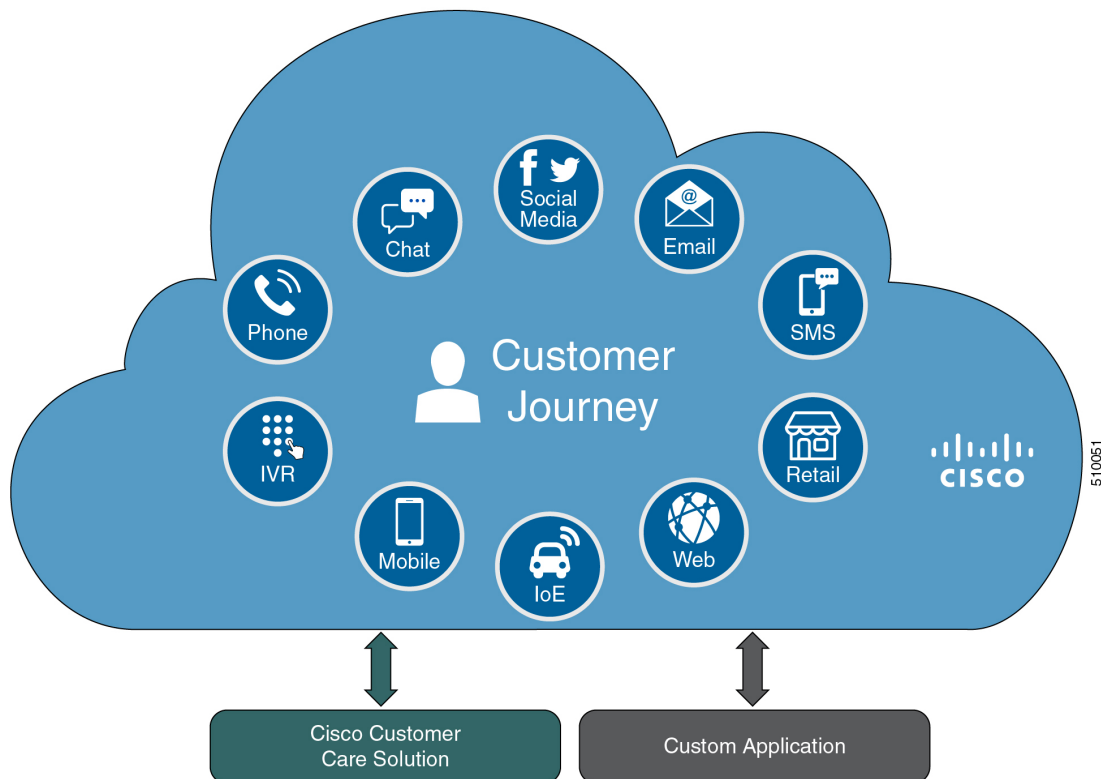


Context Service

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Context Service

Cisco Context Service is a cloud-based, omnichannel solution. Context Service captures customer interaction history and provides flexible storage of the customer interaction data across all channels (including voice, chat, email, and Internet of Things).



Context Service provides an out-of-the-box integration with Unified Contact Center Express. You do not need to install any additional components. With Context Service integrated with your contact center, agents can access a customer's previous interactions with your organization. Context Service provides this information to your agents through the Customer Context gadget in the Cisco Finesse desktop.

Context Service provides a flexible data store for storing customer interaction data. You can define what data you want to store and how to store it. Cisco hosts and manages the service, eliminating the need for your organization to deploy and manage servers. Your organization owns the data, even though it's stored in the cloud. Your organization controls access to sensitive data. Cisco partners cannot access protected data unless you grant them access.

For more information about Context Service, see Cisco Context Service Help Central at <https://help.webex.com/community/context-service>.

CCX Component Integration with Context Service

The following contact center components integrate with Context Service:

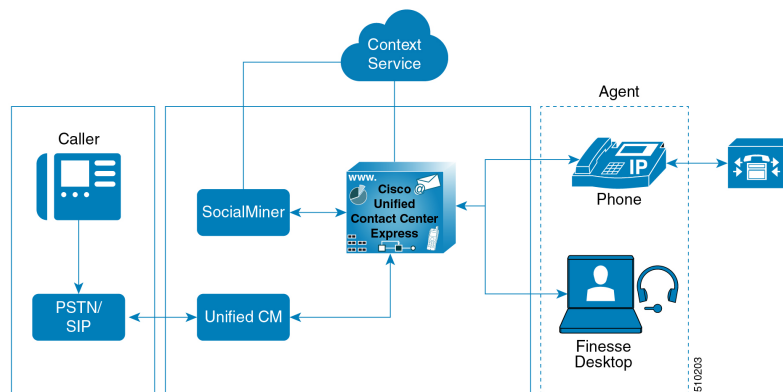
- **Cisco Finesse**—This enables an agent to view and update the POD or Activity for the tasks that they handle in a gadget.
 - **Fusion Management Connector** - This is the service that allows registration with Context Service. This runs on the primary node in the cluster.
 - **Finesse Auth** - This service is used by the Context Service gadget.

- **Cisco SocialMiner**—This creates the POD or Activity for every chat or email injected into Unified CCX.
- **Unified CCX Engine Service**—This creates the POD or Activity for all the Unified CCX handled voice calls. The Unified CCX call scripts must have the Context Service steps.

Design Considerations

This section details the design considerations that are required to be considered while integrating the Context Service feature with the Unified Contact Center Express solution. This will inform us of the complete task flow that is involved in the integration, configuration, onboarding, enabling, and using of the feature with the contact center solution.

Figure 1: Integration of Context Service with Unified CCX



Omnichannel Customer Journey

The omnichannel customer journey captures and displays a customer's complete interaction history.

A customer purchases a motorcycle from a company (Cumulus Motorcycle). The customer now has a problem with the motorcycle, so he needs to schedule an appointment with Cumulus Motorcycle for repair. He browses the Cumulus web site to locate the nearest service center and chats with a Cumulus agent to determine if the service center that he selected is open on Sundays. In the chat, he tells the agent that he will call when he is ready to schedule an appointment.

The customer calls to schedule a service appointment. The Unified CCX detects his call and sends his call to a Cumulus Motorcycle agent who is context aware. The customer agrees on a date for service. The agent confirms the appointment, and sends the appointment details to the customer. The customer brings his motorcycle into Cumulus Motorcycle for the scheduled service appointment, then picks up his repaired motorcycle.

Table 1: Components that enable the omnichannel customer journey

Activity	Components
The motorcycle dashboard indicates an error, and instructs the customer to contact Cumulus Motorcycle immediately.	The motorcycle sends diagnostic metadata to the Cumulus data center which is connected to Context Service. Cumulus Context Service account.

Activity	Components
The customer browses the Cumulus website to locate the nearest service center. He clicks the Schedule Service Appointment link to view the Cumulus Service Centers located near him. He views the nearest Cumulus Service Center and clicks the link to chat with a Cumulus agent.	SocialMiner Finesse The Cumulus backend server sends the IoT event data and creates an activity to show the current breadcrumbs in Context Service.
The customer calls to schedule a service appointment.	Unified CCX Finesse Other components
The customer receives the appointment details.	SocialMiner (Email)
The customer picks up his repaired motorcycle.	

Task Flow to Enable Context Service

To enable Context Service in your contact center solution, follow this task flow:

Sequence	Task
On board your Organization	
1	For information on how to install and configure the contact center solution see, Cisco Unified Contact Center Express Install and Upgrade Guide .
2	For information on how to configure the firewall to work with Context Service see, Context Service Network Connectivity Requirements, on page 18 . If there is no connectivity with the Context Service cloud, configure the proxy parameters to access Context Service through the HTTP proxy in the Cisco Unified Contact Center Express Administration. For details on how to configure see, https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-express/products-maintenance-guides-list.html .
3	For information on how to work with your Cisco Partner to on board your organization see, Enable Context Service for Your Organization, on page 5 .
Configure and Register Components	
4	For information on how to register Unified CCX with Context Service see, Register and Configure Context Service, on page 8 .
Check Status of Context Service	

Sequence	Task
5	For information on how to check the status of Context Service for all the components of the Unified CCX solution see, Context Service Status, on page 19 .
Create Scripts	
6	<p>For information on how to add Context Service steps to the Unified CCX scripts for the voice-based interactions only see, Cisco Unified Contact Center Express Scripting Guides at https://developer.cisco.com/site/express-scripting/documentation/.</p> <p>Two of the most common used Context Service use cases are bundled in the IVR script repository. Some of the most useful use cases from Context Service such as Last Agent routing, Priority customer identification, Route based on previous call outcome, Tag call for follow up and run outbound campaign on all tagged calls.</p>

Context Service Setup

Context Service Prerequisites

Before setting up Context Service, install and configure your contact center solution and any components you are integrating with Context Service (Cisco Finesse and SocialMiner).

Enable Context Service for Your Organization

Context Service enables you to store and access customer interaction data in the cloud, creating a flexible and seamless omnichannel customer journey experience. To use Context Service:

- Work with your Cisco account partner to enable Context Service for your organization.
- Register Context Service for your organization to use with your contact center application.
- Connect your contact center application to Context Service.



Note You need Java Runtime Environment (JRE) version to 1.8.0_151 or later to use Context Service.

Create a Customer Organization and Enable Context Service

Your Cisco account partner can provide Context Service entitlement to your [Cisco Webex Control Hub](#) account.

This example shows how a partner adds a Context Service subscription to a customer organization. The example assumes that:

- The partner is a full administrator or sales administrator and can add trials.

- The [Cisco Webex Control Hub](#) account or the organization and accounts associated with the organization have been created.

Example: Add a Trial Service

Context Service is not tied to the trial services, and does not expire when the trial period is complete.

1. Log in with your partner credentials to the [Cisco Webex Control Hub](#).
2. Click **Start Trial** on the Overview page. The **Start New Trial** window opens.

3. Enter details about the trial:
 - **Customer Information:** Enter the name of the customer company and an email for the administrator.
 - **Trial Services:** Select the trials to add to this customer. To enable Context, select **Message**.
 - **Licenses Quantity:** Specify the number of licenses required for this customer trial. This number is usually the number of users who use this service. This option applies only to the Trial Services. Context Service is not bound by the number of licenses specified here.
 - **Trial duration** Specify the duration the trial lasts before you must purchase the service. This option applies only to the Trial Services and not Context Service.



Note Context Service entitlement does not expire when the specified trial period ends. The organization can continue to use Context Service beyond the date of the specified Trial Duration.



Note You cannot change the customer name and administrator email after you create the trial. You can modify the other terms of the trial as needed.

Make sure that the email you provide is not already associated with a [Cisco Webex Control Hub](#) account.

4. Scroll down to the **Non Trial Services** section and select **Enable Context Service for Cisco Unified Contact Center**.
5. Click **Next**.
6. A message is displayed that asks if you want to set up the services for the customer. Click **No**.

You now have provided Context Service entitlement to the organization. The customer now receives a welcome email at the specified email address with the subject line **Welcome to Cisco Spark Service**.

Welcome to Cisco Spark

Your trial starts today

Your 90 day trial powered by Cisco CCBU Test Partner Org has begun
and ends on Aug 24,2017

Go to [Cisco Spark Control Hub](#) to begin using your services.

[Get Started](#)

The Cisco Spark Team



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The customer must click **Get Started** in the email and sign in to [Cisco Webex Control Hub](#) to begin their trial. The customer uses the credentials in the email to sign in and is prompted to create a password.

Your Cisco Context Service is ready. To use the service, connect to Cisco Contact Center with Context Service Enabled. See [Register Context Service](#) for more information.

Component Configuration and Registration

Register and Configure Context Service

Registering applications with Context Service is easy if your Cisco Webex Control Hub account has been entitled for Context Service.

For Cisco Context Center on-premise applications, simply use the built-in registration process. A browser window displays and prompts you to log in to Cisco Webex Control Hub. Log in and follow the on-screen instructions to authorize the application to connect to Context Service.

Use the Context Service Management gadget to register Unified CCX with the Context Service.

Before you begin

Ensure that your web browser allows popups.

When your organization is entitled for Cisco Context Service, you must have received an email requesting a sign-in and a password change. Sign in using the registration email, and change the password. Now your organization is entitled to use Context Service.

If the browser requires a proxy to connect to internet, configure the browser to use proxy. See the browser documentation about configuring proxy.

Procedure

- Step 1** Verify the Context Service parameters as specified on the **System Parameters Configuration Web Page**. If Unified CCX server has to access Context Service via HTTP proxy, configure the proxy parameters and select proxy type as HTTP .
- Step 2** If you are not already signed in, sign in to the **Cisco Finesse Administration** console.
- Step 3** To register Unified CCX with the Context Service, in the **Context Service Management** gadget, click **Register**. For more information about Context Service registration, see <https://help.webex.com/community/context-service>.
- Note** If the Unified CCX FQDN is not added as an exception in the blocked popup window settings of the browser, the opened registration and deregistration popup windows do not close automatically. You must manually close the popup windows.
- Step 4** You are prompted to log in and enter your Cisco Webex Control Hub admin credentials to complete the registration.
- Note** If you encounter any issues with the Context Service connectivity and would want to reregister or troubleshoot the issue, click **Deregister**.

During the Registration process, at any time if you wish to cancel the registration, click **Cancel**. If registration fails or context service cannot be reached, you can reregister by clicking the **Register** button.

In case of Context Service failures, you will receive RTMT alerts.

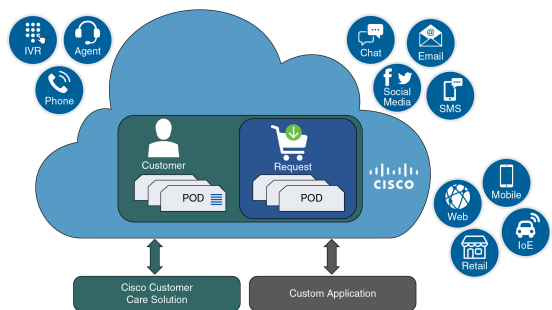
- Note** If using Firefox, enable the **dom.allow_scripts_to_close_windows** config to ensure that any additional tabs opened for context service registration close as expected. To do this:
- Enter `about:config` in the Firefox browser.
 - Click **I accept the risk**.
 - Search for `dom.allow_scripts_to_close_windows` config.
 - Double click to change the value field to `True`.
 - Restart your browser.

What to do next

If context service registration is done by enabling the proxy setting option, configure the browser proxy with the URL specified in the Context Service Management gadget.

Context Service Data Model, Fields, and Fieldsets

Context Service is a flexible and secure data store in the cloud that connects the customer journey across different media channels. These media channels include voice, email, chat, mobile, and web. Information from different media channels often exists across multiple applications without an effective way to bring it together. Context Service enables you to better understand disparate data by creating a map of customer interactions. Context Service helps your agents follow the customer journey and provide relevant and immediate assistance, enhancing both the customer and the agent experience. Context Service enables Cisco Contact Center customers to deliver a seamless omnichannel experience through an out-of-the-box integration with Cisco Customer Care products and with APIs for third-party integrations.



Context Service Objects

- **Customer data**—Describes who a specific customer is. For example, this includes information such as name, address, and phone number. The customer object type provides a way of linking personally identifiable information (PII) with a customer ID.
- **Activity data**—Describes a specific customer interaction. Activities are also known as PODs. Each activity reflects one step in the customer journey as the customer seeks to fulfill a request. For example, an activity occurs when a customer interacts with your organization by:

- Browsing your organization's website.
- Emailing your organization.
- Calling your organization and using an IVR menu.
- Chatting with an agent.

You can associate activities with a customer or a request.

- **Request data**—Describes what the customer wants. Requests are also used to group activities together that are related to a specific customer issue. For example:

A customer goes online to make a credit card payment. The customer runs into an issue making the payment online, and makes a phone call instead. Attempting to make the payment online and making a phone call are two separate activities. These two activities belong to the same request, making a credit card payment.

You must associate each request with a customer.

- **Detail data**—Provides additional information on another object type. For example:
 - Notes made by an agent during an activity.
 - Feedback from the customer about an activity.

You must associate each detail with a request or an activity.

Context Service Fields and Fieldsets

Fields allow you to define the structure of the context data that is stored in Context Service objects. Fieldsets are logical grouping of fields based on your business needs. For example, you can create a shopping basket fieldset with four fields:

- Items in the cart.
- Items in a wish list.
- Total price.
- Estimated shipping costs.

You can use the Context Service fields and fieldsets to create a flexible data model. You can:

- Use the Cisco base fields and fieldsets or create your own custom fields and fieldsets.
- Add a field to multiple fieldsets.
- Associate multiple fieldsets with a single Context Service object.
- Associate the Cisco base fieldsets and your own custom fieldsets with the same Context Service object.
- Add or remove fields from a fieldset without changing any of the objects that are associated with that fieldset.



Note Each Context Service object must have at least one fieldset assigned to it.

For example, you could use different fields for an activity for incoming calls and an activity for Mobile App shopping:

Field Type	Activity for Incoming Calls	Activity for Mobile App Shopping
Cisco base fields	<ul style="list-style-type: none"> Context_Notes Context_POD_Activity_Link 	
Custom fields	<ul style="list-style-type: none"> IVR Menu Selected Caller Authenticated 	<ul style="list-style-type: none"> Browsing Information Cart Items

Each individual Context Service data object is limited to 256 KB.

Table 2: Context Service Object Properties

Object Property	Customer	Request	Activity	Detail
id : Unique object identifier.	✓	✓	✓	✓
parentId : Unique identifier representing a parent Context Object.	N/A	N/A	✓ Optional property that links the activity with a request.	✓ Required property that links the detail with either a request or an activity.
customerId : Unique identifier representing a customer.	N/A	✓ Required property that links the request with a customer.	✓ Optional property that links the activity with a customer.	N/A
created : Object creation time stamp.	✓	✓	✓	✓
lastUpdated : Time stamp of when the object was last modified.	✓	✓	✓	✓
state : Indicates if the object is active or closed. For more information, see Object State in the Context Service SDK Guide .	✓	✓	✓	✓

Object Property	Customer	Request	Activity	Detail
contributors: Users or Machine accounts that created or updated an object.	✓	✓	✓	✓
mediaType: Indicates the type of media in activity. There are eight possible media types: <ul style="list-style-type: none"> • Voice • Video • Chat • Email • Mobile • Social • Web • Event 	N/A	N/A	✓	N/A
fieldsets: The fieldsets assigned to the object. Object must have at least one fieldset assigned. Fieldsets define which fields apply to the object.	✓	✓	✓	✓
tags: List of tags for the activity.	N/A	N/A	✓	N/A

The object properties `id`, `created`, `lastUpdated`, `contributors`, and `state` are automatically populated when you create an object.

For a complete list of Cisco base fields and information on creating custom fields, see [Fields and Fieldsets in the Context Service SDK Guide](#).

Which Data Should Be Stored in Context Service Objects?

Context Service provides a way for you to collect siloed information and creates breadcrumbs that allow you to follow a customer journey. You can design the data stored in the Context Service objects based on your business requirements and workflows. Before you decide about what data to store, consider these questions:

- Which kind of data do you need to help you solve your specific use case?
- Where is the information you need currently stored?
- Who needs access the information to solve your specific use case?

Examine the journey that your customer follows. This helps to not only answer these questions, but also to find the best way of bringing the disparate pieces of information together. For example, the customer starts on online on a website and follows up with a phone call. Does your IVR or agent know about the previous website visit? Can your IVR identify a repeat caller and offer different options? Use these observations to identify application silos or organizational silos in the user journey. Identify the gaps in the information and build a Context Service data model to provide the breadcrumbs required to fill the gaps. For example, an online retail organization who wants to see if customers added items to their cart and did not buy them. The organization also wants to offer alternate suggestions based on the product customers are looking for. The object, an activity here, must have two fields. One that records the items in the customer's cart and one that lists all the products browsed. The data model design is also dynamic, that is, you can choose to add new fieldsets any time. The online retail organization decides after few months, that survey score information adds value. They can then add a survey score field to the design, without impacting existing Context data.

Context Service Data Privacy Model

Each field is defined by a data type and a security classification.

Context Service provides endpoint encryption so that sensitive data is not stored or transported in plain text. When you define a field, you specify how the field classifies data. You can classify data as:

- **Personally Identifiable Information (PII)**—Information associated with an individual who contacts your support center. PII is stored and transported in an encrypted format and requires a key to access the data. With endpoint encryption, PII can only be decrypted at the client.
- **Non-PII Encrypted**—Information that is not associated with an individual, but is considered confidential. Encrypted data is stored and transported in an encrypted format. Encrypted at endpoint, this data can only be decrypted at the client.
- **Unencrypted**—Information that is not PII and is not confidential. Unencrypted data is stored as plain text, but transported over an encrypted layer (HTTPS).

For example, name, email, and phone-number are personally identifiable. Therefore, the default fields that hold these types of data classified as PII, and are endpoint encrypted. Rewards card balances may not be PII. You can store them as Unencrypted. Non-PII Encrypted fields may be fields such as "Context Title", the title of an activity.



Note Context Service does not prevent you from entering PII or confidential information in unencrypted fields. Ensure that your data is stored in the appropriate field with the correct classification.

You can also define additional boundaries for your data by using lab mode and production mode. For more information, see [Context Service Modes](#).

Context Service Modes

You can set the mode when you create the Context Service client connection or register with Context Service. The two modes are Lab and Production.

- **Lab mode:** Use this mode to test, develop, and debug Context Service. Lab mode contains nonproduction data and allows you to delete objects and flush all data. You can continue to test and develop in the Lab mode after you deploy a version to Production mode. You cannot access data created in Production mode while in Lab mode.
- **Production mode:** Use this mode when you deploy Context Service in your application. You cannot delete objects in this mode. Make sure you test Context Service using the Lab mode before you deploy the service in your application. You cannot access data created in Lab mode while in Production mode.

If multiple applications in your organization are using Context Service, make sure all the applications are using the same mode. Data created in one mode cannot be accessed in another mode.



Note Context Service creates strict security boundaries between data created in Production and Lab modes by using separate accounts per workgroup per machine. This model enables you to isolate data between the two modes. When you register your application, both modes are enabled on the registered machine with the same connection data.

Default Fields and Fieldsets as Templates

Cisco provides a few base fields in base fieldsets as template. You can add more fields or fieldsets to a POD or Activity via a Unified CCX script. The model is to create custom fields, add them to a fieldset, and set the fieldset on the POD or Activity or Customer object. The table below reflects the `cisco.ccx.pod`, `cisco.SocialMiner.pod`, and `cisco.base.pod`, which are template fieldsets from Cisco.

Fieldset	Field	Data Type	Description
cisco.ccx.pod	Agent_ID	string	Unified CCX scripts use this for setting the ID of the agent to whom the call is routed so that it could be used for making routing decisions.

Fieldset	Field	Data Type	Description
cisco.ccx.pod	CCX_CSQ	string	Unified CCX scripts use this for setting the CSQ where the call is sent to so that it could be used for making routing decisions.
cisco.SocialMiner.pod	SM_SocialContact_Author	string	This is required for SocialMiner to auto populate the information for integration.
cisco.SocialMiner.pod	SM_SocialContact_Subject	string	This is required for SocialMiner to auto populate the information for integration.
cisco.SocialMiner.pod	SM_SocialContact_Description	string	This is required for SocialMiner to auto populate the information for integration.
cisco.SocialMiner.pod	SM_SocialContact_RefURL	string	This is required for SocialMiner to auto populate the information for integration.
cisco.base.pod	Context_Notes	string	Finesse Context Service gadget adds this fieldset if not found since it is needed for the user interface.

Fieldset	Field	Data Type	Description
cisco.base.pod	Context_POD_Source_Cust_Name	string	This is hidden in the gadget. This helps to keep track of the source field if different from the one associated with the customer object. This helps the gadget to pre-fill the customer portion of the user interface for an unknown caller.
cisco.base.pod	Context_POD_Source_Email	string	This is hidden in the gadget. This is a Tracking field for Auto Create. This helps the gadget to pre-fill the customer portion of the user interface for an unknown caller. This helps to keep track of the source field if different from the one associated with the customer object.
cisco.base.pod	Context_POD_Source_Phone	string	This is hidden in the gadget. This is a Tracking field for Auto Create. This helps the gadget to pre-fill the customer portion of the user interface for an unknown caller. This helps to keep track of the source field if different from the one associated with the customer object.

Fieldset	Field	Data Type	Description
cisco.base.pod	Context_POD_Activity_Link	string	Finesse Context Service gadget adds this fieldset if not found since its needed for user interface.
cisco.base.rating	cccRatingPoints	string	This field helps to capture the chat rating in an Activity (POD) in Context Service.

The customers can be looked up based on the following fields in the **cisco.base.customer** fieldset.

Fieldset	Field	Data Type	Description
cisco.base.customer	Context_First_Name	string	First name of the contact.
cisco.base.customer	Context_Last_Name	string	Last name of the contact.
cisco.base.customer	Context_Street_Address_1	string	Street address of the contact.
cisco.base.customer	Context_Street_Address_2	string	Street address of the contact.
cisco.base.customer	Context_City	string	City name of the contact.
cisco.base.customer	Context_State	string	State name of the contact.
cisco.base.customer	Context_ZIP	string	Zip details of the contact.
cisco.base.customer	Context_Country	string	Country name of the contact.
cisco.base.customer	Context_Home_Phone	string	Home phone number of the contact.
cisco.base.customer	Context_Mobile_Phone	string	Mobile phone number of the contact.
cisco.base.customer	Context_Home_Email	string	Home email address of the contact.
cisco.base.customer	Context_Work_Email	string	Work email address of the contact.
cisco.base.customer	Context_Customer_External_ID	string	External identification details of the contact.

Get Started with Context Service

This section describes the high-level tasks required to get started with Context Service. These tasks are detailed in the following sections of the guide.

1. Ask your Cisco Partner to create your organization account and enable Context Service.
2. Cisco Partner gets access to Cisco Spark Control Hub portal.
3. Partners enable Context Service for customers through the Cisco Spark Control Hub by starting a New Trial.

Context Service Network Connectivity Requirements

Context Service is a cloud-based service and requires that call center components using Context Service to be able to connect to the public Internet.

Context Service uses port 443 (HTTPS).

The following URLs must be whitelisted in your firewall so that your contact center components can connect to, and receive data from Context Service.

- *.webex.com
- *.wbx2.com
- *.ciscocontextservice.com



Note Use wildcard URLs in your allowed list because Context Service is accessed through multiple subdomains. Context Service subdomain names can dynamically change.

If you register Context Service by enabling the proxy setting option, configure the browser proxy with the URL specified in the Context Service Management Gadget.

Solution Serviceability

This section details the various serviceability requirements that are available for this feature. This involves the logs, alerts, and Context Service Status page that are available for the Context Service feature that can be used for any troubleshooting-related purposes.

Logs

The Cisco Unified CCX components such as Finesse, SocialMiner, and Unified CCX monitor their individual connectivity with Context Service and log the statistics info for every component. These logs are helpful for troubleshooting purposes. The logs of the following components can be located at:

- Unified CCX- MIVR Logs

- Fusion Management Connector - /opt/cisco/ccbu/logs/fusion-mgmt-connector directory
- Cisco Finesse - /opt/cisco/desktop/logs/finesse-auth
- Cisco SocialMiner - /opt/cisco/mmca/logs/runtime

Alerts

Unified CCX generates alert messages to notify the administrator when a predefined condition is met. The system sends alerts as email or displays alerts as a popup message on Real Time Monitoring Tool (RTMT). The following are some of the scenarios when the system send alerts with preconfigured messages:

- When an activated service fails to start.
- When the connection with Context Service fails.
- When the SocialMiner fails to connect to Context Service.
- When there is an issue in the execution of the Context Service Steps.

Context Service Status

The **Context Service Status** web page from the **Tools** menu in the Cisco Unified CCX Serviceability displays the status of Context Service for all the listed components of the Unified CCX solution.

The Context Service parameters for all the components like, Finesse, SocialMiner, Unified CCX, and Fusion Management Connector (FMC) are displayed.

The following parameters are displayed with their respective values for a particular **Component:Host Name**.

Table 3: Context Service Parameters

Parameter Name	Description
State	The state of the component is displayed. The state can be, Registered or Not Registered or Unknown or Stopped for Context Service.
Status	The status of the component is displayed. The status can be, Online or Offline or Unknown or No Connectivity or Ready to Register .
Mode	This displays whether the component is connected to the Context Service in Lab mode or in Production mode. Note This parameter is not applicable for Fusion Management Connector.
Last Fetched At	The time stamp when the last connectivity status is identified.
Action	This provides an option, Initialize , to reinitialize the Context Service connector of Unified CCX component that is in Stopped state.
Static SDK Version	The static SDK library version used by the component to connect to the Context Service is displayed.
Extension SDK Version	The dynamic SDK library version used by the component to connect to the Context Service is displayed.

Parameter Name	Description
Proxy	This displays the HTTP proxy configured in Unified CCX for the connectivity to Context Service.

The possible scenarios for the parameter values are:

- When the state of the component is **Registered** the status can be **Online**, **Offline**, or **No Connectivity**.
- When the state of the component is **Not Registered** the status can be **Offline**, **Ready to Register**, or **No Connectivity**.
- When the state of the component is **Unknown** the status also is **Unknown**.



Note When the status is **Online** it indicates that the connectivity of the component with Context Service is successful. When the status is **Offline** it indicates that one or more critical services of Context Service is not working or there is an issue with network connectivity.

For troubleshooting purpose, you may click **Export** to download the data required for troubleshooting that can be shared with Cisco Support.

Troubleshooting Context Service Registration Process

This section lists the issues and the possible solutions during registration of the components with the Context Service Cloud.

Context Service Registration Incomplete

When registering or de-registering Context Service with Finesse, the process stops responding and continues to display one of the following messages:

Registration is in progress

OR

Deregistration is in progress

These messages could occur for the following reasons:

- The proxy is invalid or not reachable. Make sure that the proxy URL is correct and reachable from Finesse.
- The browser pop-up is disabled. Ensure the browser pop-up is enabled.
- The Context Service Cloud services may not be reachable. For more information, see the Fusion Management Connector (FMC) logs located at:
`/opt/cisco/ccbu/logs/fusion-mgmt-connector` directory.
- Fusion Management Connector (FMC) is still in the loading state.

Unable to Onboard Context Service

Unable to onboard Context Service and the **Registration** button is not available with the error message.

```
"Unable to determine the registration status of the system. Please refresh the page."
```

Restart the Platform Tomcat (Fusion Management Connector web application), if the Platform Tomcat is down.

Incorrect Email Address or Password Error Message is Shown When Trying to Register Unified CCX to Context Service

When you try to register Unified CCX to Context Service with incorrect credentials, the following error is shown.

```
You've entered an incorrect email address or password.
```

Check to see if you have obtained the correct credentials for your organization and use those credentials to register Unified CCX to Context Service.

Context Service Registration Status Invalid

Registering Context Service with Finesse clients can fail with this error:

```
The Context service registration status is invalid. Check the Settings and try again.
```

This error could occur for the following reasons:

- An invalid client setting update results in an invalid registration state. To ensure that the update keeps the connector in registered state, perform the following:
 1. Correct the client settings.
 2. Save and refresh the page.

If the update is unsuccessful, try restarting the Cisco Tomcat service. If the issue still persists, re-register Context Service.

- Connection data is invalid. Restart Cisco Tomcat service. If that doesn't help, contact Cisco Support.

Unable to Determine Context Service Registration Status or Client Settings

Context Service Management displays the following error messages in Cisco Finesse Administration:

- Unable to determine registration status from system
- Error while retrieving Context Service client settings from Database

These errors occur when the Fusion Management web application, deployed on the Platform Tomcat is down, or the Cisco Tomcat service is down in Cisco Finesse.

When this occurs:

- Verify that the Cisco Tomcat service is up and running. The service may not respond with an XML in some error scenarios.
- Restart Platform Tomcat and try again.
- Check the logs under: `/opt/cisco/ccbu/logs/fusion-mgmt-connector` for more information.

Registration Is Shown as Successful in Finesse Gadget, but RTMT Sends an Alert

Registration Is Shown as Successful in Finesse Gadget, but RTMT Alert "ContextServiceInitializationFailed" is Shown. Fusion Management Connector Logs Show an Error "Attempt to Connect Failed. Context Service Steps Will Fail"

Registration is shown as successful in the Finesse gadget, but the Real Time Monitoring Tool (RTMT) Alert `ContextServiceInitializationFailed` is shown. The Fusion Management Connector logs shows the error `Attempt to connect failed`. Context Service steps will fail.

RTMT Alert: Alert Name = `ContextServiceInitializationFailed`. Alert Description = "Context Service failed to initialize."

Sample MIVR Logs: 25179: Jul 27 16:15:03.990 IST
`%MIVR-CONTEXT_SERVICE-1-CONTEXT_SERVICE_INITIALIZATION_FAILED:Context Service Initialization Failed:`

Sample ManagementConnector-fusion-mgmt-connector logs: Error on CREATE: `https://hercules-a.wbx2.com/v1/connectors` Jul 28 2016 16:13:02.298 +0530: CS_LOG [sdk_log_level=ERROR]: Error: try #1: Exception trying to connect=`com.sun.jersey.api.client.ClientHandlerException: connect=com.sun.jersey.api.client.ClientHandlerException: java.net.UnknownHostException: hercules-a.wbx2.com: Name or service not known` Jul 28 2016 16:13:02.298 +0530: CS_LOG [sdk_log_level=ERROR]: Attempt to connect failed: `java.net.UnknownHostException: hercules-a.wbx2.com: Name or service not known`

Context Service Registration is tried with the below scenarios:

1. Connectivity to Context Service (CS) cloud is not available.
2. Proxy is used to access Context Service cloud, but with one of the following issues:
 - a. An Invalid proxy is entered
 - b. The Correct proxy is configured, but proxy type is not selected as HTTP

Check if the network connectivity to the Context Service cloud is up. If the proxy is used to access Context Service cloud, enter the valid proxy values and select HTTP as the Proxy Type. If the preceding does not resolve the issue, deregister and register again.

Context Service Registration or Steps Fail with Timeout Error

Context Service Registration (or) Steps fail with a Timeout Error. Sample error message in MIVR logs:

Task: 123456789 failed with exception `java.util.concurrent.TimeoutException`
 OR Task: 123456789 failed with exception `com.cisco.thunderhead.errors.ApiException Reason='Timeout Request'`

If context Service is irresponsive to the requests sent by Unified CCX, then:

- Update the Request Timeout parameter under the **System Parameters** tab in the **appadmin** for Context Service. or
- Update the `requestTimeoutMillis` in `contextserviceconfiguration` REST API URI : `http://<server>/adminapi/contextserviceconfiguration`

```
Timeout = 2 * RequestTimeout (This will be retried once after 1 try)
```

Context Service Registration Incomplete Due to Pop-Up Window

As part of Context Service registration process, a pop-up window is displayed for Cisco Spark login. After the registration is complete, the popup window does not close automatically and the following error message is displayed:

```
Please wait while Finesse completes the Context Service registration.
CAUTION: Do not close this window, otherwise the registration may fail.
This window will close automatically when the registration is complete.
```

When this error message occurs:

Check the registration status in the Finesse Administration page. If the registration is complete, the pop-up window closes automatically.



Note If you are using Firefox, enable the `dom.allow_scripts_to_close_windows` config to ensure that any additional tabs opened for context service registration close as expected.

Context Service Registration Incomplete Due to Page Refresh

As part of Context Service registration process, do not refresh the pop up page while the registration or deregistration process is in progress. This may result in an **Undefined** state for that respective component.

Hostname Cannot be Empty Error Message is Seen in REST API

This error message is seen in REST API (URL: `http://<uccx-server>/adminapi/proxyconfig`).

```
HostName cannot be empty as it is currently being used by Context Service.
```

The hostname is empty in the **proxyConfig** and **proxyType** is **HTTP** in `contextServiceConfiguration`.

Do not set the hostname as empty in the **proxyConfig** if the **proxyType** is selected as **HTTP** in `contextServiceConfiguration`.

HTTP Proxy Related Error Message Shown in AppAdmin Or in REST API.

```
Http proxy not set error message is shown in the AppAdmin Or the Http proxy is not
configured error message is shown in REST API.
```

The GUI error is shown in the AppAdmin System Parameters page: `Http proxy is not set`. The REST API error is shown: `HTTP proxy is not configured`. (URL: `http://<uccx-server>/adminapi/contextserviceconfiguration`).

HTTP is selected as the Proxy Type without entering HTTP proxy parameters. Enter HTTP proxy parameters if HTTP is selected as the Proxy Type.

Troubleshooting Context Service Connectivity Process

This section describes the various connectivity related issues that are encountered and the troubleshooting that can be performed for a possible solution.

Context Service Connection Data Not Published

The connection data is published to Unified CCX Engine, SocialMiner, and Finesse in the following scenarios:

- De-registering or cancelling Context Service.
- Registering with Context Service.
- Updating connection data when Context Services sends a notification.

This issue can occur when there is a change in the connection data in the cloud. Also, check for the following log statements in the fusion-management-connector logs at

`/opt/cisco/ccbu/logs/fusion-mgmt-connector/:`

- `Error occurred while fetching runtime connector information from DB`
- `There are no runtime connectors registered in system currently`
- `Exception occurred while fetching connection data`
- `Exception occurred while publishing connection data`

If the issue persists, contact Cisco Support.

Context Service Initialization Fails for Unified CCX

Unified CCX Context Service Initialization fails and the Real Time Monitoring Tool (RTMT) alert `ContextServiceInitializationFailed` is shown with the following messages.

RTMT Alert: Alert Name = `ContextServiceInitializationFailed`. Alert Description = "Context Service failed to initialize."

When the error occurs, the Context Service step fails. Check the MIVR logs. The sample logs are:

```
Sample MIVR Logs: 25179: Jul 27 16:15:03.990 IST
%MIVR-CONTEXT_SERVICE-1-CONTEXT_SERVICE_INITIALIZATION_FAILED:Context
Service Initialization Failed: Reason=TickleHandler.call() - Unexpected
exception occurred while notifying Context Service registration
status,Exception=ApiError with errorType: unknownError, errorData:
/discovery/apps/v1, errorMessage: Connect to
discovery.rciad.ciscoctxservice.com:443
[discovery.rciad.ciscoctxservice.com/10.232.38.58] failed: Connection
refused
```

Context Service initialization in engine is tried with the following scenarios:

- Connectivity to Context Service cloud is not available.
- The proxy is used to access Context Service cloud, but with one of the following issues:
 - Invalid proxy is entered.
 - Correct proxy is configured, but the proxy type is not selected as HTTP.

Check if the network connectivity to the Context Service cloud is up. If the proxy is used to access Context Service cloud, enter the valid Proxy values and select HTTP as the Proxy Type. If the above does not resolve the issue, Deregister and Register again.

Enable Trace Settings for Issues Related to Context Service

All logs related to Context Service and Context Service Step Failures are in Debug Level. Context Service SDK logs are captured in Unified CCX using LIB_TPL subfacility of MIVR logging. STEP_CONTEXT_SERVICE, CONTEXT_SERVICE, and LIB_TPL are by default Debug enabled for Context Service.

Enable the following logs for more information:

STEP_CONTEXT_SERVICE - XDebug : For each Step's input level details.

CONTEXT_SERVICE - XDebug1 : For each Step execution's begin and end status.

LIB_TPL - XDebug1 : For enabling detailed Context Service SDK logging.

If your issue is still unresolved, contact Cisco Support.

Periodic Logging of Context Service SDK Connector Status

- Context Service status information is logged periodically into the respective log files.
- The periodic interval is 30 minutes, and this is synchronized to the wall clock time. The log should appear at 1100hrs, 1130hrs, 1200hrs and so on.
- The status message lists the overall status, services used by the connector, information on whether it is reachable, latency and so on.
- Fusion Management Connector logs are located at `/opt/cisco/ccbu/logs/fusion-mgmt-connector`
- Finesse Auth logs are located at: `/opt/cisco/desktop/logs/finesse-auth`.
- SocialMiner logs are located at: `/opt/cisco/mmca/logs/runtime`.
- Unified CCX logs are logged in the MIVR logs.

Periodic Logging of Context Service JMX Counters

The JMX statistics information is logged into the logs located at `/opt/cisco/desktop/logs/finesse-auth` directory" with the text "CS_SDK_STATS_SUMMARY".



Note This statistics information is not logged into the Fusion Management Connector logs.

Troubleshooting Context Service Runtime Process

This section describes the runtime related issues that are encountered during the runtime connection with the Context Service Cloud. The troubleshooting tips and the possible solution for each are presented.

Activity Not Created for Incoming Chat/Email Contact in Agent Desktop

The agent is unable to see any activity in the Agent Desktop while on Chat or Email.

Finesse administration shows Context Service as registered, but the registration was not successful in SocialMiner .

- Verify if SocialMiner was configured with Context Service from Unified CCX. If there is no configuration, then register Context Service again from Unified CCX or Contact TAC.

Unable to Access Customer Context Information

In the Cisco Finesse desktop gadget, there may be instances where the customer's context information is not accessible and the following error message is displayed:

```
Experiencing issues with accessing customer's context information
```

This error message could occur due to the following reasons:

- Invalid client settings. Check and correct the client settings.
- Due to connectivity issues. Check if the Context Service connectivity is accessible from Cisco Finesse.
- Cisco Finesse is not registered with Context Service. Check your Context Service registration. If Context Services is not registered, try again

Logs for Successful Create POD (Activity) Step

Check for the below logs to track a successful Create POD (Activity) Step:

```
99056: Jul 27 12:55:47.760 IST
%MIVR-CONTEXT_SERVICE-7-UNK:ContextServiceClientWrapper.createPOD() ThreadID:25269
Context Service createPOD() started.systemInLabMode:false 99057: Jul 27
12:55:48.015 IST
%MIVR-CONTEXT_SERVICE-7-UNK:ContextServiceClientWrapper.createPOD()
ThreadID:25269 Context Service createPOD() completed 99058: Jul 27
12:55:48.016 IST %MIVR-CONTEXT_SERVICE-7-UNK:Successfully Created POD :
POD [PODId=56aa0bb0-53cb-11e6-a01b-9f8b9c5b2fea,
customerId:64913110-3de9-11e6-a364-4746c80d8064, #PODData=2,
CreateDate=null, LastModifiedDate=Wed Jul 27 12:55:47 IST 2016,
MediaType=voice, Contributors=[F1-UCCX1(machine)], Tags=[Tag1, Tag2]]
```

LookupCustomer Could Not Find the Customer Though the Customer was Created

Customer was created in the Lab mode and the LookupCustomer is done in the Production mode or conversely.

Do the LookupCustomer in the same mode in which the customer was created or create the customer in the mode in which LookupCustomer is done.

Context Service Steps Fail with the Fieldset Error Message

The Context Service steps fail with the following fieldset error message.

```
MIVR-STEP_CONTEXT_SERVICE-7-UNK:Exception Occured while Creating POD : :
Exception=ApiError with errorType:notFound, errorData: id,
errorMessage:Fieldset entry abc.xyz.123 not found.
```

The Dictionary fieldsets are not used, as specified by the organization.

Update the Editor Script with the correct fieldset names.

Context Service Steps Failing with the Field Error Message

The Context Service steps fail with the following field error message.

```
MIVR-STEP_CONTEXT_SERVICE-7-UNK:Exception Occured while Creating POD : :
Exception=ApiError with errorType: invalidData, errorData: dataElements,
errorMessage: Non-existing field specified in data elements set.
```

The Dictionary fields are either not used or incorrect, as specified by the organization. This could be because the field is preceding or trailing a white space.

Update the Editor Script with the correct field names.

Create POD Is Successful but POD Data Not Displayed in Gadget

Create POD is successful, but the POD data not displayed in Gadget. This could be due to PODID not set in POD.ID ECC variable.

Set the PODID in the POD.ID ECC variable through the **Set Enterprise CallInfo** step in the Editor.

If your issue is still unresolved, contact Cisco Support.

Context Service Steps Failing with the ArrayIndexOutOfBounds Exception

The Context Service steps fail with the following ArrayIndexOutOfBounds Exception.

```
MIVR-STEP_CONTEXT_SERVICE-7-EXCEPTION:com.cisco.expression.ExpressionArrayIndexOutOfBoundsException:
null;
```

LookupCustomers step and RetrievePOD step will be successful for no customers found and no activities retrieved respectively. The Success Exit state indicates the cloud operation status.

Do a length check for the result array of LookupCustomers step and RetrievePOD step before you do any operations on the object. For example, `if (lookupResult.length>0) then do GetCustomerInfo()`

Deregister a Component with Context Service

After registering a server, you can deregister it if you decide to stop using Context Service with that server.

Before you begin

Ensure that your web browser allows popups.

Procedure

- Step 1** Launch the **Context Service Management** page for the server.
- Step 2** Click **Deregister**.
Your browser displays the Cisco Spark sign-in page.
- Step 3** Sign in with your [Cisco Webex Control Hub](#) admin credentials and confirm the removal of your Hybrid Services cluster.
You are redirected to the application page for the completion of the deregistration process. The browser window closes automatically after a successful deregistration. Avoid making any changes to the client settings until the deregistration is completed successfully.
-