



Database Structure

For Cora SeQuence and Cora Orchestration

November 2023

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General document information

Purpose

The purpose of this document is to provide an overview of the Cora SeQuence and Cora Orchestration database structure. This document briefs about the tables included in the database, the data held in these tables, and relationship between different database tables.

This document does not provide a complete list of database tables or fields but focuses only on the major ones.

WARNING

It is forbidden by any means to change or update Cora SeQuence and Cora Orchestration System tables' data or schema without using the product API code. However, you may add indexes on user tables to improve database performance.

Prerequisites

Intermediate knowledge of Cora SeQuence and Cora Orchestration.

Introduction

The default database for Cora SeQuence and Cora Orchestration is MS SQL database. However, if you are using Cora Orchestration with Orchestration Services then you have the choice to use either MS SQL database.

NOTE

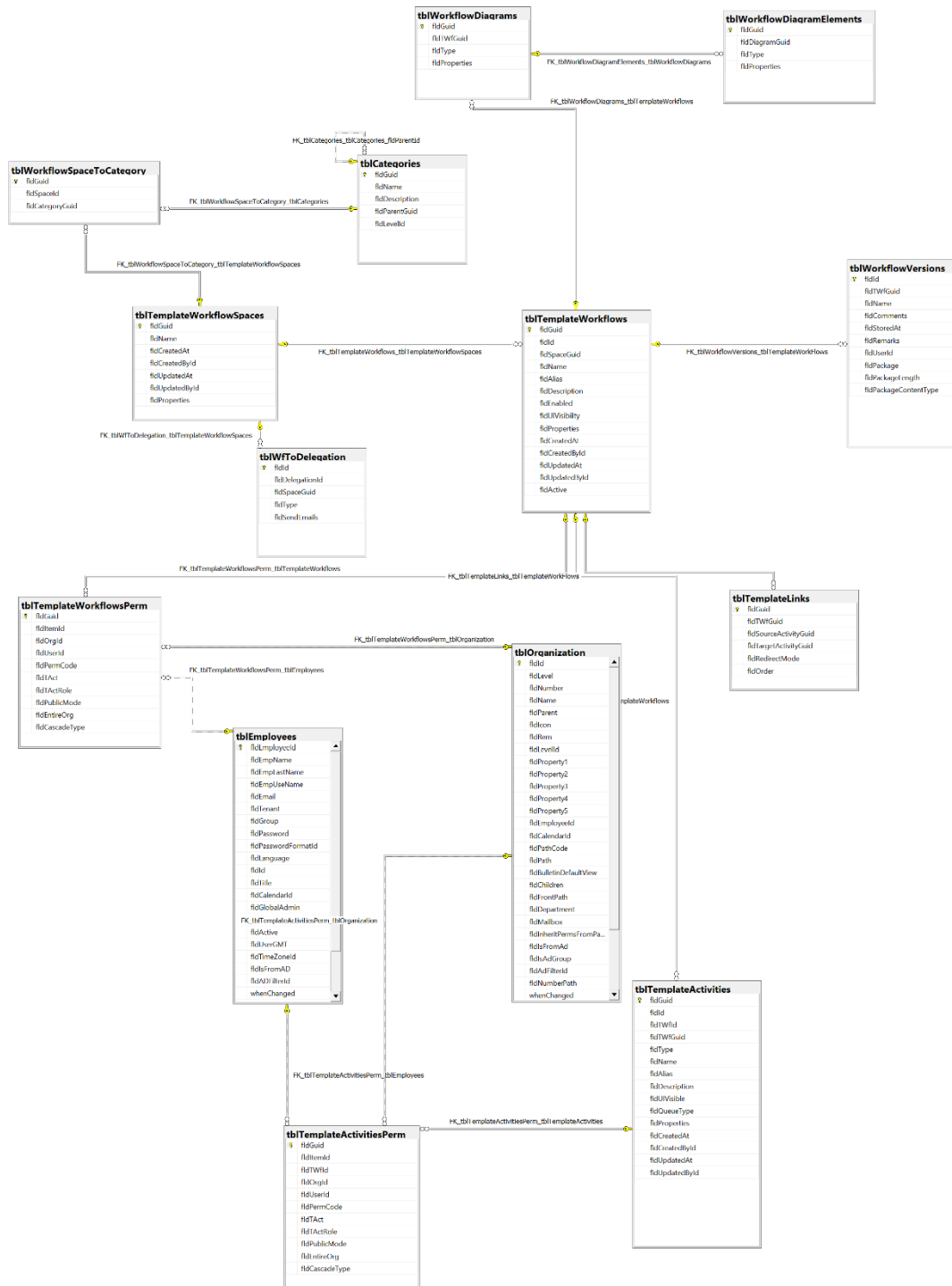
Starting with V10.0, `{{snippet.Sequence8}}` has been renamed to `{{snippet.coraOrchestration}}`.

The Cora SeQuence and Cora Orchestration database includes following types of tables: Some of the tables are not supported in Orchestration Services.

- **Definition tables:** Tables that store the definition of workflows and activities.
- **Workflow deployment tables:** Tables that store workflow related data such as workflow versions and diagrams.
- **Workflow conversation tables:** Tables that store all conversation components related data. Not supported in Orchestration Services.
- **Role-based access tables:** Tables that store role-based access information.
- **Instance tables:** Tables that store the execution data of workflow and activity instances.
- **Organization-based structure tables:** Tables that store Organization related data like hierarchy, employees, roles, etc.
- **Security tables:** Tables that store security related data.
- **Archive tables:** Tables that store archived data. Not supported in Orchestration Services.
- **HotOperations tables:** Tables that store HotOperations data. Not supported in Orchestration Services.

Definition tables

The following diagram displays Cora SeQuence and Cora Orchestration definition tables and their relationship to each other:



In all the template tables, fldname stores the name of the entity as it will be used in design time, and fldalias stores the name of the entity as it will be displayed in the Flowtime to the end user.

NOTE

For multilingual capabilities, refer to the [multilingual configuration](#) article.

tbTemplateWorkflowSpaces

Holds the definition of the workflow spaces.

tbTemplateWorkflows

Holds the definition of workflows within the space.

Important fields

- fldproperties – Stores workflow properties such as variables, localization, and other metadata definitions as an XML object.

tbTemplateActivities

Holds the definition of activities within the workflow.

Important fields

- fldproperties – Stores activity properties like bindings, model and more as an XML object.

tbTemplateLinks

Holds the definition of the connections between activities.

Important fields

- fldRedirectMode – 3=All, 2=Automatic, 1=Manual, 0 =Disabled

tbSignatures

Holds the workflow signatures data when a user signs a workflow.

tblEmailTemplates

Holds all the email templates used in Cora SeQuence and Cora Orchestration.

tblMessageTemplates

Holds all the message templates used in Cora SeQuence and Cora Orchestration.

tblWorkflowDiagrams

Holds the location and size of all graphic objects defined in a workflow.

tblWorkflowDiagramElements

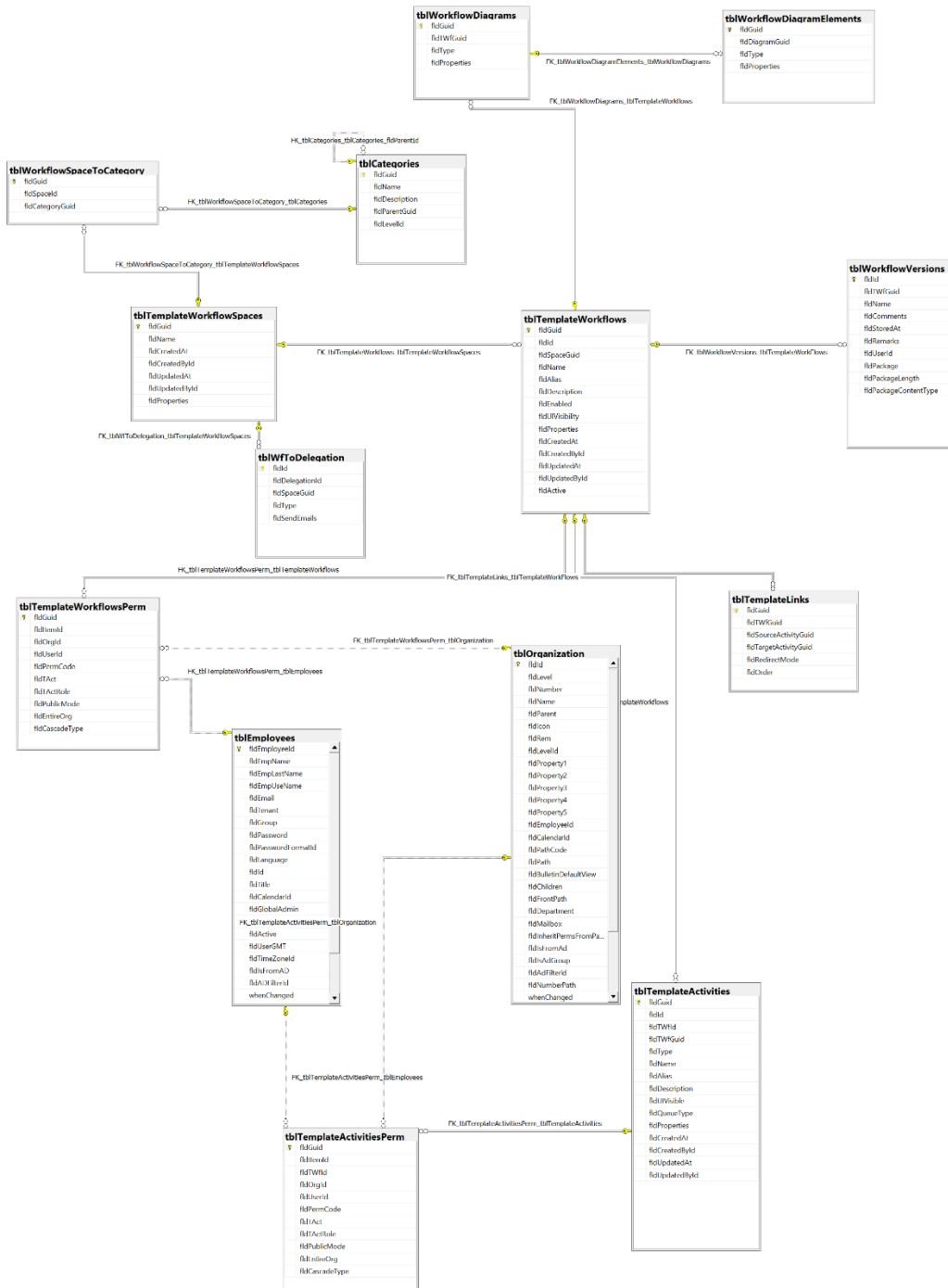
Holds all the diagram elements that represent an activity in a workflow.

tblWorkflowVersions

Holds version data of all workflows exported in Cora SeQuence and Cora Orchestration.

Workflow deployment tables

The following diagram displays Cora SeQuence and Cora Orchestration workflow deployment tables and their relationship to each other:



Workflow conversation tables

(These tables are not supported in Orchestration Services)

tblEmailComposerRecipientsAddressBook

Holds all the recipients' email addresses from Email Composer conversations component in Cora SeQuence and Cora Orchestration.

tblEmailComposerSignatures

Holds all signatures available for Email Composer conversations component in Cora SeQuence and Cora Orchestration.

tblEmailListenerMessages

Holds all the email messages received by Email Listener in Cora SeQuence and Cora Orchestration.

tblEmailListenerMessageAttachments

Holds all the attachments from email messages received by Email Listener in Cora SeQuence and Cora Orchestration.

tblConversationItemTemplates

Holds all conversation item templates used in conversation components in Cora SeQuence and Cora Orchestration.

tblConversationItemSubTypes

Holds all the information about different conversation types like emails, tasks, and comments.

tblConversationItemSubTypeTemplate

Holds all the information about the conversation type templates added in the system.

tblWorkflowInstanceAttachments

Holds all the attachments only related to the workflow instances.

tblWorkflowInstanceConversations

Holds all the conversation items from workflow instances.

tblWorkflowInstanceConversationsAttachments

Holds all the conversation attachments from workflow instances.

tblWorkflowInstanceConversationsAttachmentsDeleted

Holds all the deleted conversation attachments from workflow instances.

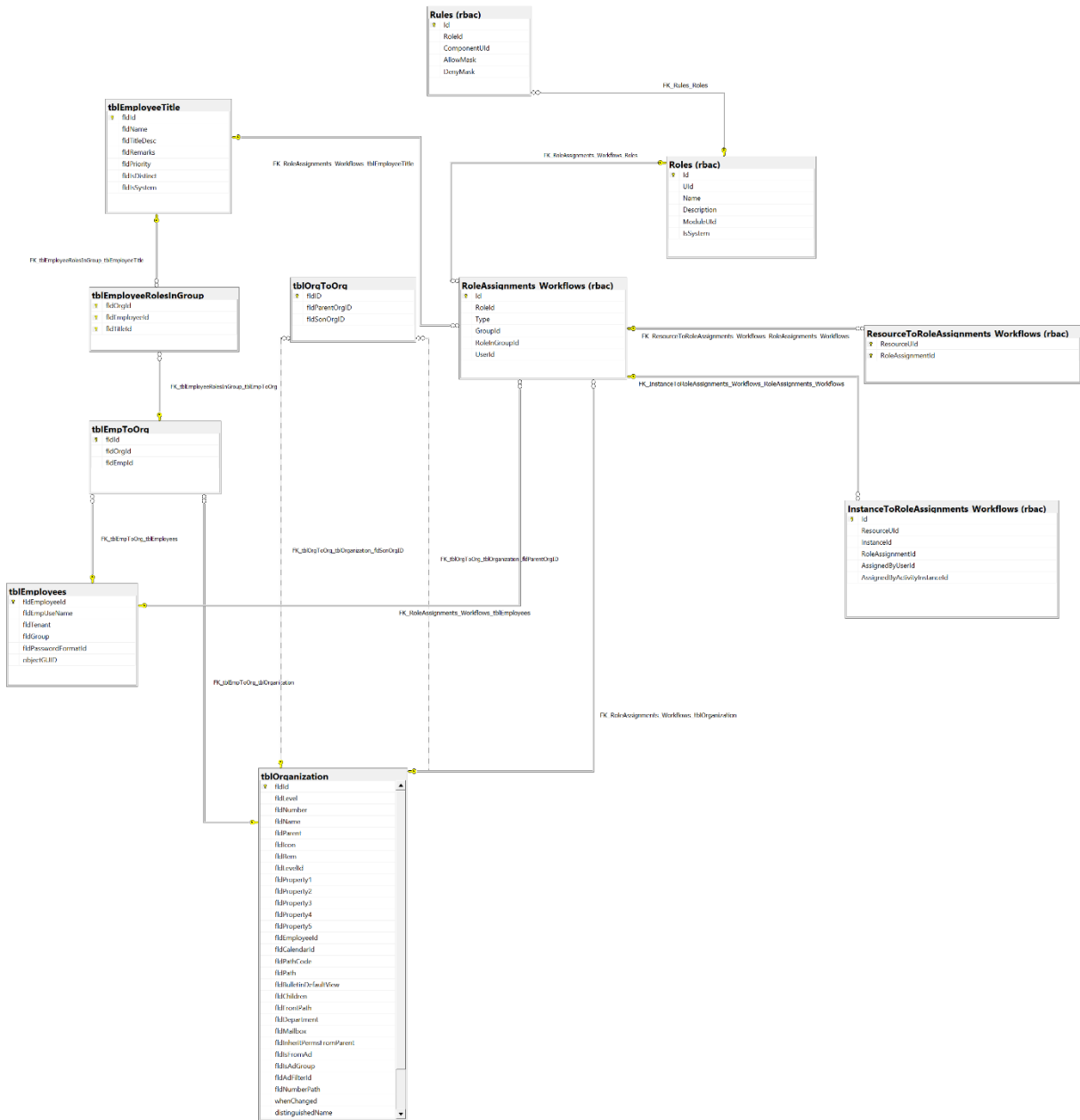
tblWorkflowInstanceConversationsDeleted

Holds all the deleted conversation items from workflow instances.

Role-based access (RBAC) tables

These tables define the role-based access permissions to workflow instances.

The following diagram displays Cora SeQuence and Cora Orchestration RBAC tables and their relationship to each other:



tblRoles

Holds data about all the roles defined in Cora SeQuence and Cora Orchestration.

tblRules

Holds all the rules defined in Cora SeQuence and Cora Orchestration.

tblRoleAssignments

Holds all the data about the roles assigned to different users in Cora SeQuence and Cora Orchestration.

tblRoleAssignments_Workflows

Holds data about the roles assigned to different users for a workflow in Cora SeQuence and Cora Orchestration.

tblResourceToRoleAssignments

Holds the mapping data of resources to roles assigned.

tblResourceToRoleAssignments_Workflows

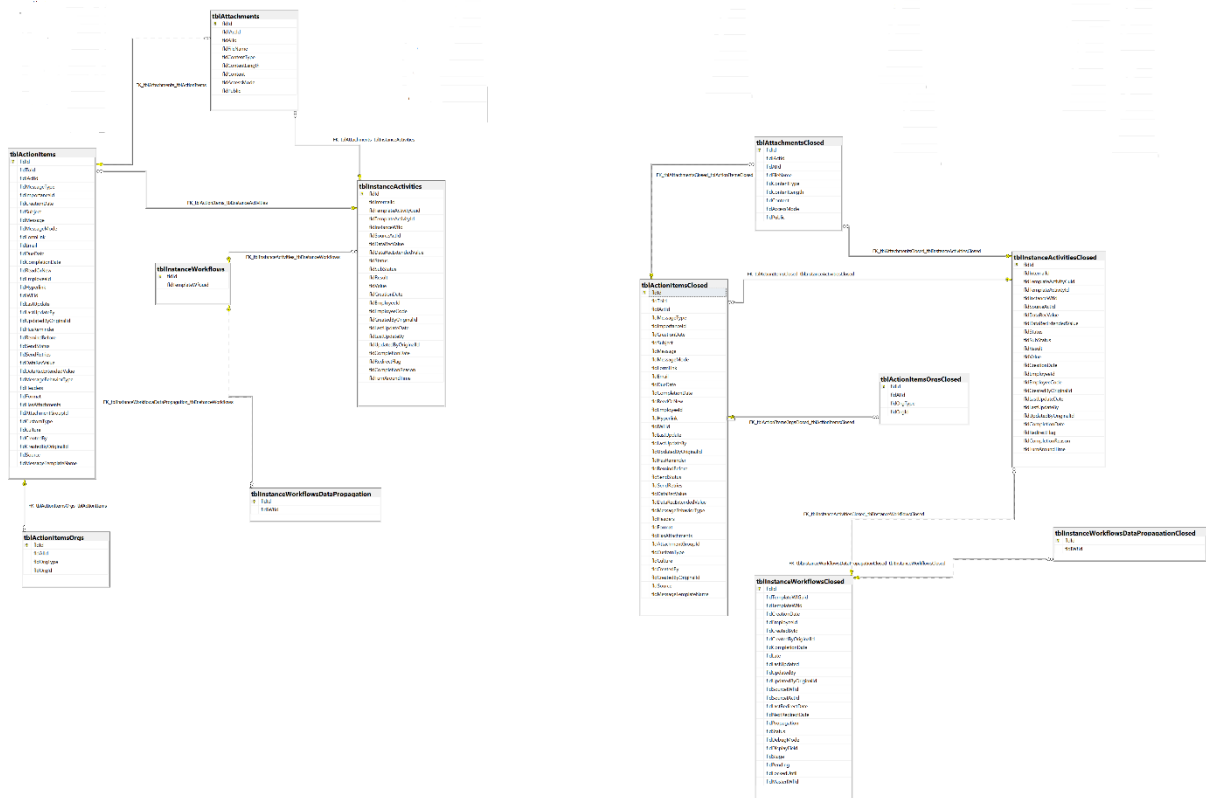
Holds the mapping data of resources to roles assigned to workflows.

tblInstanceToRoleAssignments_Workflows

Holds mapping data of instances to roles assigned to workflows.

Instance tables

The following diagram displays the Cora SeQuence and Cora Orchestration Instance tables and their relationship to each other:



tblInstanceWorkflows

Holds the records of instance workflows. (There is one record for every new instance that has been created from a workflow template.)

Important fields

- fldSourceWfld – parent workflow instance id
- fldStatus – Stores the status of the workflow.

Status	Value	Description
Created	0	The workflow instance was created.

Status	Value	Description
Executing	1	The workflow instance waits to resume its execution.
Idle	2	The workflow instance finished its execution and waits for user\system input.
Completed	3	The workflow instance was completed.
Deleting	4	The workflow instance deletion process has started.
Deleted	5	The workflow instance deletion process has finished.
Aborting	6	The workflow instance abort process has started.
Aborted	7	The workflow instance was aborted.

tblInstanceActivities

Holds the records of instance activities that are created during the execution of a workflow instance.

Important fields

- fldResult – Stores the activity result.
 - 1 = the activity execution has ended with success
 - 2 = the activity execution has ended with failure
- fldStatus – Stores the status of the activity.

Status	Value	Description
Created	0	The activity instance is created.
Pending	2	The activity instance waits to resume its execution.
Executed	3	The activity instance finished its execution and waits for redirect.
Redirected	4	The activity instance is redirected.

<i>Status</i>	<i>Value</i>	<i>Description</i>
Completed	5	The activity instance is redirected and completed.
Deleted	6	The activity instance is deleted.
RolledBack	7	The activity instance is rolled back.

- fldLastUpdateDate – Date when the activity was last updated.
- fldCompletionDate – Date when tasks and activities were completed.
 - Forms/Tasks: when the form/task was submitted.
 - System activities: this is updated upon activity completion.

tblActionItems (Not supported in Orchestration Services)

Holds all the messages that are created in the system. Action items can be related to activity.

For example: Task, workflow, question, or none of them.

Important fields

- *fldTold* – Stores the recipient id (connect to tblEmployees).
 - fldMessageBehaviorType* – Empty Guid = Default,
 AF9B7DB7-EF8D-41C7-B8D6-4DD212252978 = LoadBalancing Queue,
 ED598F50-F934-4EFA-8C80-EB2707B99D02 = Broadcast Queue
 - fldSource* – 0 = System,
 1 = User
 - fldCustomType* –
 25B8725D-61C0-4424-8A7C-0235139A4655 = RecalledMessage, F883F524-2707-4959-8713-08B4D504B238 = Comment, 100215E0-AB4C-4D11-BB7C-0FC313248895 = Delegation, E966270A-8759-45CD-B222-3CAB5A7F0DB0 = Question, E993B9F3-3A3F-4DE6-B38B-A086A1729CA1 = Rollback, 67244068-B77E-410D-B26D-E34A607514FD = Answer
 - 78EC444B-DA5E-4A3D-BDBF-179653C03BE4 = Reminder
 - fldSendStatus* – 1= Not Sent,
 2= Sent,
 3= Failed.
 - fldMessageMode* – 0 = None,

1 = Send Link, 4 = Email Only
fldMessageType - 1 = Notification,
2 = Task

tblActionItemsOrgs (Not supported in Orchestration Services)

Holds all the relation between the organization and employees, and if there is any organization change that affect the action items (messages for example) that data is updated in this table.

tblActionItemsAttachments (Not supported in Orchestration Services)

Stores action item attachments. As part of version 9.X we have enabled the possibility to change the location of attachments from the DB to file storage or Azure Blob storage.

tblActionItemReminders (Not supported in Orchestration Services)

Hold all the action item reminders.

tblFiles

Stores the file metadata like name, Id, type, connection, and size.

The content of the file is not stored in the database, it is stored in file storage or Azure Blob storage.

tblFileBlobs

Stores the file content, in case the default SQL configuration applies.

tblAttachments

Holds the attachment(s) attached to a form in a workflow execution.

tblInstanceWorkflowsDataPropagation

Holds the global variables for all the workflows. The column names are driven by the variable caption. Each time a workflow is executed, an activity places values in these variables.

This table is used in grids.

tblTemplateSolutions

Holds full definition of the solution. For example, information about the master workflow and the resource group.

tblSolutionCases (Not supported in Orchestration Services)

Holds the master workflow data, to which a solution is assigned.

tblAllocatedSolutionCases (Not supported in Orchestration Services)

Holds all the data about groups to which case is allocated when we execute the execution plan.

tblSolutionTasks (Not supported in Orchestration Services)

Holds only dynamic task data.

tblAllocatedSolutionTasks (Not supported in Orchestration Services)

Holds all the data about groups to which dynamic task is allocated when we execute the execution plan, and about task assignment (role or user).

UACTXXX

Holds the data that is captured during the activity execution. UACT can be related to forms or integration activities.

For integration activities, Cora SeQuence and Cora Orchestration persists the response and request of the call.

In form-based UACTs, there can be a record per activity, per workflow, or per action items, depending on the key definition in the data model.

UWFXXX

Holds the variables for a workflow template. Values are set and updated during workflow execution.

NOTE

Closed Table are populated during a nightly back-office job. There may be closed items in the regular tables until the job cleans them to the closed tables.

XXXXXClosed (Not supported in Orchestration Services)

We have a window service that takes all the records that have closed data and copy the data into the closed tables. The service then deletes the copied data from the open tables.

Following is the list of closed tables in Cora SeQuence:

tblActionItemsAttachmentsClosed

Stores action item attachments whose source workflow instances were closed.

tblActionItemsClosed

Holds all the messages created in the system whose source workflow instances were closed.

tblActionItemRemindersClosed

Stores action item reminders whose source workflow instances were closed.

tblActionItemsOrgsClosed

Holds all the relation between the organization and employees whose source workflow instances were closed.

tblAllocatedSolutionCasesClosed

Stores all the data about groups to which case is allocated on plan execution for source workflow instances that were closed.

tblAllocatedSolutionTasksClosed

Stores all the data about groups to which dynamic task is allocated on plan execution for workflow instances that were closed.

tblAttachmentsClosed

Holds attachment(s) from closed workflow instances.

tblInstanceActivitiesClosed

Holds all the closed workflow instance activities.

tblInstanceActivitiesRollbackClosed

Holds all the closed workflow instance activities that have been rolled back.

tblInstanceWorkflowsClosed

Holds the records of closed workflow instances.

tblInstanceWorkflowsDataPropagationClosed

Holds the global variables for all the closed workflow instances.

tblInstanceWorkflowsRollbackClosed

Holds all the closed workflow instances that have been rolled back.

tblSolutionCasesClosed

For closed workflow instances, holds the master workflow data, to which a solution is assigned.

tblSolutionTasksClosed

Holds only dynamic task data for closed workflow instances.

tblWorkflowInstanceAttachmentsClosed

Holds all the attachments only related to the closed workflow instances.

tblWorkflowInstanceConversationsClosed

Holds all the conversation items from the closed workflow instances.

tblWorkflowInstanceConversationsAttachmentsClosed

Holds all the conversation attachments from the closed workflow instances.

XXXXXRollback

If we would like to rollback what has been done while executing until specific point in time, we will be able to find the relevant info into the rollback tables. We keep data of which instance has been rolled back. The metadata for these instances is copied into the rollback tables, tblInstanceWorkflowRollback and tblInstanceActivityRollback. This info is then deleted from the operative tables.

tblInstanceActivitiesRollback

Holds data of the instance activities that have been rolled back.

- fldGlobalAdmin – indicates if the user is defined as a global admin or not.
 - 1: user is defined as a global administrator in Cora SeQuence and Cora Orchestration application.
 - 0: user does not have global administration rights.

tblEmpToOrg

Holds the relation between employees and their groups.

Important fields

- fldEmpOrgTitle – The value indicates the employee role in the group. The role name and description can be retrieved from tblEmployeeTitle.
- fldOperator – indicates if the employee role is group manager or not.
 - 1= The employee is a group manager of the group,
 - 0 = the employee is not a group manager.

tblOrganization

Holds all the groups and OUs defined in Cora SeQuence and Cora Orchestration.

tblOrgToOrg

Holds the relation between Groups/OUs in the Organization structure.

tblEmployeeTitle

Holds the roles defined in Cora SeQuence and Cora Orchestration.

Each employee has a defined user role and a role within the group.

tblEmployeeRolesinGroup

Holds all the roles for a specific employee within a group.

This table is similar to the tblEmpToOrg, table and gives details between tblEmployees, tblOrgaznization, and tblEmployeeTitle.

tblCalendars

Holds calendars data with working days, non-working days and vacations.

This table has connections to tblEmployees and tblOrganization tables.

tblEmployeeExtendedProperties

Holds all the extended properties of users defined in Cora SeQuence and Cora Orchestration.

By default, the table is only with one column, fldEmployeeId.

tblOrganizationExtendedProperties

Holds all the extended properties of Groups and OUs defined in Cora SeQuence and Cora Orchestration.

By default, the table has only one column, fldId.

tblPasswordFormats

Holds available password formats in Cora SeQuence and Cora Orchestration. There are three ways to store passwords in our system, clear text, internal encryption, and hash.

Security table

tblSecrets

Holds the encrypted secret data.

Archiving tables (Not supported in Orchestration Services)

tblArchivingFilesQueue

Holds all the files in queue for archiving.

tblArchivingGlobalConfiguration

Holds the archiving global configuration settings.

tblArchivingProfilesVersions

Holds the archiving profiles versions.

tblArchivingQueue

Holds all the profiles in queue for archiving.

The profile defines how to archive workflow's data. During the archiving the archiving global configuration settings are also considered.

tblArchivingWorkflowInstancesToExclude

Holds the workflow instances to be excluded from archiving.

Use this table when you need to prevent some specific workflow instances from being archived.

HotOperations tables (Not supported in Orchestration Services)

NOTE

Applies to Cora Sequence 8.x with HotOperations license.
All the USL tables are deprecated in version 9.0 and later.

The following tables support HotOperations entities.

USL[Solution GUID]_Cases

Stores cases created in HotOperations, and indicates if there was manual allocation.

USL[Solution GUID]_AllocatedCases

Stores manual allocation of cases.

USL[Solution GUID]_Tasks

Stores dynamic tasks properties such as subject due date and others.

USL[Solution GUID]_AllocatedTasks

Stores dynamic tasks allocation (replicated from the case) and manual assignment type.

USL[Solution GUID]_TaskEmployeeAssignments

Stores manual assignment by employee name.

USL[Solution GUID]_TaskRoleAssignments

Stores manual assignment by role.

Optimizing performance

You can optimize Cora SeQence database performance by adding indexes on the following tables:

- UACTXXX
- UWFXXX
- UStatsXXX
- UStatsXXXXHistory

NOTE

Do not add any index insertions besides the above.