IBM

IBM Cúram Social Program Management

# Cúram Milestone Developer Guide

Version 6.0.4

**Note**

Before using this information and the product it supports, read the information in Notices at the back of this guide.

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# Chapter 1

## Introduction

## 1.1 Objective

This document describes the design and processing of milestone functionality which is a key component of Cúram integrated cases. It describes milestone configuration and details how milestone processing can be customized to suit agency needs.

## 1.2 Prerequisites

The reader should be familiar with both the basic elements of case processing in the human services industry and with the functionality available in the Cúram Case Manager.

## 1.3 Audience

This guide is intended for developers responsible for customizing milestones to suit the business needs of an organization.

## 1.4 Background

Milestones functionality satisfies the following business requirements:

- Track the completion of significant events or tasks during the life cycle of a case.

- Provide configuration to associate milestones with a case.

- Provide administration to support the association of milestone configuration with case components and events.

- Support ability to create and complete milestones automatically.

- Capability to configure and use milestone waiver approval requests at user, organization unit, and milestone levels.

- Generic infrastructure support to create or complete milestone deliveries automatically based on raised events.

## 1.5 Chapters in this Guide

The following list describes the chapters in this guide:

**Configuring Milestones**

This chapter covers the administrative configuration options that are available for milestones.

**Milestone Entities**

This chapter describes milestone entities and the fields they contain.

**Milestone Business Processing**

This chapter describes milestone process classes and associated methods.

**Implementing a Generic Milestone Event Handler**

This chapter describes how to implement generic milestone event handlers to create deliveries when milestones are created and also when they are completed.

# Chapter 2

## Configuring Milestones

## 2.1 Introduction

Case milestones are used to track the completion of significant events or tasks during the life cycle of a case, for example, to track the submission, approval, and activation of a case. Each milestone has an expected start and end date during which the important event is scheduled to start and complete and an actual start and end date.

Cúram case management provides adminstration support to configure milestones, and to associate milestone configurations with cases. Capability to configure and use miletone waiver approval requests at user, organization unit, and milestone level is also provided. For example, a child care solution will configure milestones to track the completion of important events that occur on a child care case.

> **Note**
>
> Case milestones can be configured for integrated case, product, and screening case types; however; there is currently no functionality available within these case types to create milestone deliveries. Development effort is required in order to create milestone deliveries at the case level.

## 2.2 Milestone Configuration Settings

All case milestones are based on an associated milestone configuration. The following table describes the available milestone configuration settings (both optional and mandatory):

| Configuration Settings | How it is Used | Optional or Mandatory |
|---|---|---|
| Name and Type | The name and type are used to dis- | Mandatory |

| Configuration Settings | How it is Used | Optional or Mandatory |
|---|---|---|
| | tinguish the milestone configuration. When creating a manual milestone, a user must select the milestone configuration to be applied using the milestone configuration name. | |
| Earliest Start Day (days) | This setting is used to determine the expected start date for automatically created milestones. The expected start date is set to the current date on which the milestone is created plus the number of days defined here. This setting is also used to validate the expected start date entered by a user when manually creating a milestone. A milestone cannot have an expected start date earlier than this number of days after the start date of the case. For example, if the milestone is created on April 1 and this setting is 3, then the expected start date of the milestone cannot be earlier than April 4. | Mandatory |
| Duration (days) | This setting is used to determine the expected end date for all milestones. For manually created milestones, the expected end date is set to the user-entered expected start date plus this duration minus one. For example if the expected start date is April 1 and the duration is 7 days, the expected end date is set to April 6. For automatically created milestones, the same calculation is applied to the expected start date defined by the date on which the milestone was created and the Earliest Start Day (days). | Mandatory |
| Start Date | The start date determines the active, and thus availability, period of the milestone configuration. | Mandatory |
| End Date | The end date determines when the milestone configuration is no longer active. This date is not mandatory as milestone configurations can remain active for an indefinite time period. | Optional |

| Configuration Settings | How it is Used | Optional or Mandatory |
|---|---|---|
| Expected Date Extension Allowed | This indicates whether or not the expected start and end dates for an automatically created milestone can be modified by a case worker. If this indicator is not set, then the expected start and expected end date calculated upon creation of a milestone are unchangeable. | Optional |
| Waiver Required | This indicates whether or not a waiver is required in order to change the expected start and expected end date for an automatically created milestone. This can only be set for milestone configurations which allow the expected dates to be extended (as described in the setting above). | Optional |
| Milestone Added | Any existing workflow event can be associated with the creation of a milestone. This event can be used to extend the OOTB milestone creation processing. For example, when a milestone is added, a workflow can be enacted to notify the case owner. | Optional |
| Milestone Complete | Any existing workflow event can be associated with the completion of a milestone. This event can be used to extend the OOTB milestone completion processing. For example, when a milestone is completed, a workflow can be enacted to notify the case owner. | Optional |
| Expected Start Date Not Achieved | Any existing workflow event can be associated with the expected start date in order to track the timeliness of the milestone. For example, if no actual start date is entered for the milestone and the expected start date passes, a workflow can be enacted to notify the supervisor that the milestone has not yet started. | Optional |
| Expected End Date Not Achieved | Any existing workflow event can be associated with the expected end date in order to track the timeliness | Optional |

| Configuration Settings | How it is Used | Optional or Mandatory |
|---|---|---|
| | of the milestone. For example, if no actual end date is entered for the milestone and the expected end date passes, a workflow can be enacted to notify the supervisor that the milestone has not been completed in a timely fashion. | |

Table 2.1 Milestone Configuration Settings

## 2.3 Associating Milestones with Cases

To support the manual and automatic creation of milestones within a case, it is necessary to set up an association between a milestone configuration and the case type (product delivery, integrated case, or screening type). There are two options for setting up these associations: either a new milestone configuration can be recorded at the same time it is associated with the case type or an existing milestone configuration can be selected.

When recording a new milestone configuration as part of the association process, the milestone configuration information must be defined. Additional association information can also be defined if the milestone is to be created automatically. The two main configuration settings for automatically created milestones are the creation event and the completion event. These events are used by the application to automatically create and complete an instance of the milestone.

For example, a milestone can be set up to track the approval of a product delivery case. To set up the automatic creation of this milestone, the Submit Case event can be selected as the creation event and the Approve Case event can be selected as the completion event. When a case is submitted for approval, the Submit Case event will trigger an instance of the milestone. Later when the case is approved, the Approve Case event will close the milestone instance.

The matching process for creating milestones within a case can be further specified using the component type and component category settings. A clear distinction can be made between creation and completion events at the case level and at the case component level. For example, the case component, Contract, can be set, with a creation event of Create Contract and a completion event of Close Contract.

When a contract is created, the Create Contract event will trigger an instance of the milestone and the application will associate both the contract ID and the case ID with it. Later when the contract is closed, the Close Contract event will use both of these IDs to find and close the correct milestone instance.

## 2.4  Configuring Milestone Waiver Request Approvals

A milestone waiver request may be required in order for the milestone expected start and end dates to be changed for an automatically created milestone. Milestone waiver request approval checks can be set up at the organization and user level. Expected start and end dates for manually created milestones can be changed without a waiver request. The milestone waiver request approval process is used to confirm that the changes in dates to the milestone are valid. Once a submitted request has been approved, the new expected start and/or end dates will take effect.

Milestone waiver requests can only be submitted (i.e., the expected dates for a milestone can only be changed) if the Expected Date Extension Allowed setting has been configured. The approval process (i.e. the need to submit a waiver request for approval) for these requests will only be necessary if the Waiver Required setting has also been configured. If the Waiver Required setting has not been configured, a user will be able to change the expected start and/or end dates directly.

Milestone waiver request approval check settings for a milestone include a setting that is used to determine the percentage of submitted waiver requests for a milestone of a particular type that need to be reviewed by a case supervisor, e.g., 40%. Alternatively, an administrator can indicate that all waiver requests for a milestone need to be reviewed by a case supervisor.

User configuration settings take precedence over organization unit settings. When a waiver request is submitted for approval, the system first checks the user's milestone waiver request approval check settings, then checks the milestone waiver request approval check settings for the organization unit that the user belongs to. After checking these settings, the system checks the approval settings at the milestone level. The system may determine at any point in this process that the milestone waiver request requires approval.

# Chapter 3

## Milestone Entities

## 3.1 Objective

This chapter describes milestone entities and the fields they contain. It should be noted that tables are used to represent each of the following milestone requirements:

- the milestone configuration details available in the system

- the relationship between milestone configuration and a case type

- the milestone waiver approvals percentage for a user, organization unit or a milestone.

- the milestone deliveries created by the user or by the system

- the milestone waiver approvals requests for a milestone. A milestone can have multiple approval requests.

The following entities form the actual design of milestone functionality:

- MILESTONECONFIGURATION

- MILESTONELINK

- MILESTONEWAIVERAPPROVALCHECK

- MILESTONEDELIVERY

- MILESTONEWAIVERAPPROVALREQUEST

## 3.2 Milestone Configuration

MILESTONECONFIGURATION entity is focused on the administration of milestones within the Administration component. A milestone can be associated with one or more types of cases or service plans. This entity contains

the following fields:

| Entity Field | Description |
|---|---|
| milestoneConfigurationID | Unique reference number assigned by the system to the milestone configuration record. |
| name | Name of the milestone. This field is mandatory. |
| type | Type of the milestone. This field is mandatory. |
| earliestStartDay | The earliest number of days after the service plan or case start date that this milestone can start. This field is mandatory. |
| duration | Indicates how long this milestone should take to complete(this is used to calculate the expected end date of a milestone unless the milestone has been added as part of a service plan template in which case the duration on the template supersedes this value). This field is mandatory. |
| startDate | The date on which this milestone configuration becomes effective.This field is mandatory. |
| endDate | The date on which this milestone configuration will expire. |
| addedEvent | Indicates the event to be raised when a milestone of this type is added to a case or service plan |
| expctdStDateEvent | Indicates the event to be raised when the expected start date of the milestone has been reached and it's status is Not Started. |
| expctdEndDateEvent | Indicates the event to be raised when the expected end date of the milestone has been reached and it's status is Not Started or In Progress. |
| completeEvent | Indicates the event to be raised when the status of the milestone is Completed i.e. The actual end date has been entered and the status is Complete. |
| creationDate | The date on which this milestone was created. |

| Entity Field | Description |
|---|---|
| comments | General remarks entered by a user. |
| waiverRequired | Indicates if an approved waiver is required in order to modify the automatically created milestone delivery by system. |
| waiverAllowed | Indicates if a user can modify the Expected Start Date or Expected End Date of an milestone delivery that has been automatically created by the system. |
| commentsTextID | Unique Identifier correspoding to localized TextID of milestone comments. |
| nameTextID | Unique Identifier correspoding to localized TextID of name. |
| recordStatus | The status of the milestone i.e. Active or Cancelled. Logical deletion supported. |
| typeTextID | Unique Identifier correspoding to localized TextID of Milestone type. |

Table 3.1 Summary of MILESTONECONFIGURATION Entity Fields

## 3.3 Milestone Link

MILESTONELINK entity allows for the administration of the links between cases or service plan and milestones. This entity contains the following fields:

| Entity Field | Description |
|---|---|
| milestoneLinkID | Unique reference number assigned by the system to the milestone link record. |
| caseTypeID | Unique reference number of the case or service plan which is associated with the milestone record. |
| caseType | Type of case which is linked to the milestone configuration e.g. service plan, product, issue. |
| componentCategory | The category of a component associated to a case, which is linked to the milestone configuration. |
| componentType | Type of a component associated to a |

| Entity Field | Description |
|---|---|
| | component category, which is linked to the milestone configuration. |
| creationEvent | Identifies the event based on which a milestone delivery is created. |
| completionEvent | Identifies the event based on which a milestone delivery is completed. |
| milestoneConfigurationID | Unique reference number of the milestone record which is associated with the case or service plan record. |

Table 3.2 Summary of MILESTONELINK Entity Fields

## 3.4  Milestone Waiver Approval Check

MILESTONEWAIVERAPPROVALCHECK entity is focused on the administration of milestone waiver approval. A milestone waiver can be associated with user or milestone or organization unit.

| Entity Field | Description |
|---|---|
| milestoneWaiverApprovalCheckID | Unique reference number assigned by the system to the milestone waiver approval check record. This field is mandatory. |
| percentage | Percentage of waiver requests for the milestone that requires approval. This field is mandatory. |
| type | Type of milestone waiver approval check. This field is mandatory. |
| status | The status of the milestone waiver approval check i.e Active or Cancelled. Logical deletion supported. This field is mandatory. |
| milestoneConfigurationID | Unique identifier of the milestone configuration on which this milestone waiver approval check is based. |
| userName | The user name of the milestone waiver approval check. |
| organisationUnitID | Unique organization unit reference number of the milestone waiver approval check. |
| comments | General remarks entered by a user. |

| Entity Field | Description |
|---|---|
| versionNo | Version number of the milestone waiver approval check. |

Table 3.3 Summary of MILESTONEWAIVERAPPROVALCHECK Entity Fields

## 3.5  Milestone Delivery

MILESTONEDELIVERY entity is focused on the addition of a milestone to any type of case, e.g., service plan, product delivery.

| Entity Field | Description |
|---|---|
| milestoneDeliveryID | Unique identifier assigned by the system to this milestone record. This field is mandatory. |
| milestoneConfigurationID | Unique identifier of the milestone configuration on which this milestone is based. This field is mandatory. |
| caseID | Unique identifier of the case to which this milestone has been added. This field is mandatory. |
| ownerUserName | Unique identifier of the user who is the milestone owner. This field is mandatory. |
| expectedStartDate | Date on which the milestone is expected to start. This field is mandatory. |
| expectedEndDate | Date on which the milestone is expected to end. This field is mandatory. |
| actualStartDate | Date on which the milestone started. |
| actualEndDate | Date on which the milestone ended. |
| comments | General remarks entered by a user. |
| status | Status of this milestone i.e. Not Started, In Progress or Completed. This field is mandatory. |
| createdBySystem | Indicates whether this milestone delivery is system generated record. This field is mandatory. |
| relatedID | Identifier which relates the instance of a milestone to a component cat- |

| Entity Field | Description |
|---|---|
| | egory or a component type of a case instance. |

Table 3.4 Summary of MILESTONEDELIVERY Entity Fields

## 3.6 Milestone Waiver Approval Request

MILESTONEWAIVERAPPROVALREQUEST entity is focused on the milestone waiver approval request raised by the user and is only applicable for system generated milestone deliveries.

| Entity Field | Description |
|---|---|
| waiverApprovalRequestID | Unique reference number assigned by the system to the milestone waiver approval request record. This field is mandatory. |
| approvalRequestID | Unique reference number of approval request record. |
| milestoneDeliveryID | Unique reference number of a milestone delivery to which milestone waiver approval request is related. This field is mandatory. |
| originalExpStartDate | Date on which the milestone was originally expected to start. This field is mandatory |
| requestedExpStartDate | Date on which the milestone is being requested to start. This field is mandatory |
| approvedExpStartDate | Date on which the milestone is approved to start. |
| originalExpEndDate | Date on which the milestone was originally expected to end. |
| requestedExpEndDate | Date on which the milestone is being requested to end. |
| approvedExpEndDate | Date on which the milestone is approved to end. |
| requestComments | Comments entered by a user when submitting a milestone waiver request for approval. |
| approvalComments | Comments entered by a user when approving a milestone waiver request. |

| Entity Field | Description |
|---|---|
| requestedDate | Date on which this milestone waiver approval request created. This field is mandatory. |

Table 3.5 Summary of MILESTONEWAIVERAPPROVALREQUEST Entity Fields

# Chapter 4

## Milestone Business Processing

### 4.1 Objective

The functionality for event driven milestone creation/completion and waiver processing has been implemented using the following business process classes:

- MilestoneConfiguration

- MaintainMilestoneWaiverApproval

- MaintainWaiverApprovalRequest

- MilestoneDelivery

These process classes and their methods are described below.

### 4.2 Milestone Configuration

The process class which supports the business process MilestoneConfiguration is Product.

| Method | Description |
| --- | --- |
| cancelMilestoneConfiguration | This method sets the status of a milestone configuration to canceled. |
| createMilestoneConfiguration | This method creates a milestone configuration record. The milestone type of a milestone configuration must be unique. |
| listMilestoneConfigurationsForCaseType | This method lists all active and canceled milestone configuration records. |
| modifyMilestoneConfiguration | Modifies the details of a milestone |

| Method | Description |
| --- | --- |
| | configuration record. |
| readMilestoneConfiguration | Reads the details for a milestone configuration record. |
| addInvestigationCaseExistingMilestone | This method adds a set of existing milestones to the investigation case. |
| createInvestigationCaseMilestone | This method creates a new milestone configuration and then creates the link between the milestone and the investigation case. |
| listMilestone | This method lists all the milestones which are currently associated with a particular product. |
| listUnassociatedMilestone | Lists all the active milestones not already associated with a particular product. |
| removeMilestone | This method removes the link between a milestone and a product. |
| cancelApprovalCheckForInvestigation | This method allows an administrator to cancel an Investigation Approval Check for a particular investigation. |
| getComponentList | This method returns a list of components based on the component base type. This method works on a hook mechanism and is based on the component base type which is being passed to it. |
| getSubComponentList | This method returns a list of sub components based on the component base type. The list of sub components retrieved is also handled by a hook mechanism which is driven by the component base type. |
| addInvestigationCaseExistingMilestoneWithConfig | This method adds a set of existing milestones to the investigation case along with configuration details such as component category, component type, creation event and completion event. |
| modifyMilestoneLinkAssociation | This method modifies associated configuration details such as creation event, completion event, component type and sub component type for the milestone link. |

Table 4.1 Summary of MilestoneConfiguration Methods

## 4.3 Maintain Milestone Waiver Approval

| Method | Description |
|---|---|
| viewOrgUnitMWApproval | This method returns milestone waiver approval check details based on the milestone waiver approval check id for an organizational unit. A similar method exists for users. |
| listMilestoneApprovals | This method lists the milestone approval checks for a particular milestone configuration. It also determines whether a new milestone approval can be created or not. |
| listUserMWApprovals | Returns a list of milestone waiver approval check records based on the organizational unit id. |
| viewUserMWApproval | Returns milestone waiver approval check details based on the milestone waiver approval check id. |

Table 4.2 Summary of MaintainMilestoneWaiverApproval Methods

## 4.4 Maintain Waiver Approval Request

The process class which supports the business process MilestoneConfiguration is ProductDelivery.

| Method | Description |
|---|---|
| readMilestoneDeliveryDetails | This method reads milestone details such as expected start date and end date administratively configured for the milestone. |
| createWaiverApprovalRequest | This method allows users to create a waiver request for a milestone and submit it for the approval. It also checks whether the manual approval is required or not based on case supervisor or milestone approval checks. If not required it approves the waiver request automatically. |
| listMilestoneWaiverRequests | This method lists all the waivers requested for a milestone along with |

| Method | Description |
|---|---|
| | the status whether it is in submit status or approved or rejected. |
| readMilestoneWaiverRequests | This method reads the details of waiver request. |
| approveWaiver | This method allows to approve the waiver request. It also checks the date validations and whether the approver has the supervisor privilege to approve the waiver or checks he approval check for a user or for user belonging to a organization and which has approval check. |
| modifyAndApprove | This method allows system to modify the waiver request details and approve the waiver request. It also checks the date validations and whether the approver has the supervisor privilege to approve the waiver or checks the approval check for a user or for user belonging to a organization and which has approval check. |
| rejectWaiver | This method allows to reject the waiver request. It also checks the date validations and whether the logged in user has the supervisor privilege to reject the waiver. |
| readExpStartAndEndDate | This method reads the expected start date and end date of a waiver request. |
| readWaiverIndicatorDetails | This method will set a boolean parameter to true only when the Expected Time Frame indicator is set to true and if Waiver Required indicator is set to false in the Administration application for a milestone. Based on this boolean value the user will be allowed to change the Expected Start and End Date at the client side. |
| modifyMilestoneForWaiver | This method is used to modify the milestone delivery details |

Table 4.3 Summary of MaintainWaiverApprovalRequest Methods

## 4.5 Milestone Delivery

The methods listed below are part of the APIs which support automatic creation of milestone deliveries using the milestone configuration.

Administration configuration allows the user to associate work flow events with a milestone type for the creation and completion of milestone deliveries. When such events are raised, the appropriate event handlers use create or complete milestone delivery APIs.

| Method | Description |
| --- | --- |
| createMilestoneDelivery | This method Creates milestone delivery based on event details. All milestone deliveries created by this method will have 'Created By System' indicator set to true. The earliest start day will be added to the current date to calculate the expected start date of this milestone delivery. |
| completeMilestoneDelivery | This method completes milestone delivery based on event details. If related ID has been passed as a parameter then a search for milestone deliveries is based on the 'Related Id'. Once retrieved these milestone deliveries are completed. If the related id is not passed then a search based on case type, component and the completion event is made. The list of milestone deliveries retrieved are then completed. |

Table 4.4 Summary of MilestoneDelivery Methods

# Chapter 5

## Implementing a Generic Milestone Event Handler

### 5.1    Introduction

This chapter describes how to implement a generic milestone event handler to automatically create or complete milestone deliveries based on raised events.

### 5.2    Create Milestone Delivery when Milestone Creation Event is Raised

Customers who wish to have milestone deliveries created when a milestone creation event is raised should follow the steps below.

- For milestones configured at the case level:

    1. Configure the Creation Event for a milestone.

    2. Define an entry in handler_config.xml to map the configured Creation Event class to 'MilestoneCreationEventHandler'.

    3. Customers should raise the creation event with 'caseID' as primary data.

- For milestones configured on case component level:

    1. Configure the Creation Event for a milestone.

    2. Define an entry in handler_config.xml to map the configured Creation Event class to 'MilestoneCreationEventHandler'.

    3. Implement the sample interface 'MilestoneComponentDelivery' and provide an implementation for the 'populateMilestoneCreationDetails' method. This method should populate the milestone creation start date as per the business requirements.

4. Create a module class that extends the AbstractModule (com.google.inject.AbstractModule).

5. Define a Map Binder to bind implemented class to 'MilestoneComponentDelivery' interface.

```
Ex: MapBinder<String, MilestoneComponentDelivery> mapbinder
          = MapBinder.newMapBinder(binder(), String.class,
MilestoneComponentDelivery.class);
mapbinder.addBinding().toInstance
(new 'customimplentationclass'();
```

6. Customers should raise the creation event with 'caseID' as primary data and ID of the component as the secondary data.

## 5.3 Complete Milestone Delivery when a Milestone Completion Event is Raised

Customers who wish to complete a milestone delivery when a milestone completion event is raised should follow the steps described below.

- For milestones configured at the case level:

  1. Configure the Completion Event for a milestone.

  2. Define an entry in handler_config.xml to map the configured Completion Event class to 'MilestoneCompletionEventHandler'.

  3. Customers should raise the completion event with 'CaseID' as primary data.

- For milestones configured at the case component level:

  1. Configure the Completion Event for a milestone.

  2. Define an entry in handler_config.xml to map the configured Completion Event class to 'MilestoneCompletionEventHandler'.

  3. Implement the sample interface 'MilestoneComponentDelivery' and provide an implementation for the method 'populateMilestoneCompletionDetails. This method should populate the milestone actual end date as per the business requirements.

  4. Create a module class that extends the AbstractModule (com.google.inject.AbstractModule).

  5. Define a Map Binder to bind the implemented class to the 'MilestoneComponentDelivery' interface.

```
Ex: MapBinder<String, MilestoneComponentDelivery> mapbinder
= MapBinder.newMapBinder(binder(), String.class,
MilestoneComponentDelivery.class);
mapbinder.addBinding().toInstance
(new 'customimplentationclass'();
```

> **ⓘ Note**
>
> There is no need to repeat Step 4 and 5 If the entry already exists in the module class.

6. Customers should raise the completion event with 'caseID' as the primary data and the ID of the component as the secondary data.

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