K2 SharePoint Workflow Integration - Scheduling

Scheduling Changes for K2 4.5 Update KB001390

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OVERVIEW

The following document discusses the changes implemented in K2 4.5 Update KB001390 for the scheduling component within K2 SharePoint Workflow Integration.

> **Note:**
> The changes and differences introduced are available in K2 4.5 Update KB001390 and later.

WHAT IS K2 SHAREPOINT WORKFLOW INTEGRATION SCHEDULING?

K2 SharePoint Workflow Integration Scheduling is the design change introduced in Update KB001390 in order to address performance and load impacts on the K2 SharePoint Workflow Integration when creating, actioning, and completing tasks within SharePoint. It also allows SmartActions to functions for SharePoint Workflow Integrated processes. Prior to Update KB001390 there were very limited scheduling capabilities inherent in the component. This has changed with the release of KB001390 and the entire component runs on a scheduling framework in order to create tasks, action tasks, complete tasks and complete the workflow instance.

COMPONENTS AFFECTED?

The following is a list of components that have been affected by the scheduling change.

Design Templates:

WorkflowIntegration.ClientSucceedingRule
WorkflowIntegration.ProcessFinishRule
Outcome.Action:SharePointAction
Outcome.Action:SharePointHelper
WorkflowIntegration.SharePointEventItem

Assemblies

SourceCode.SharePoint.Common
SourceCode.SharePoint.WebFrontEnd.Client
SourceCode.SharePoint.WebServices.K2SPFunctions
SourceCode.SharePoint.WebServices.Client
SourceCode.SharePoint.WebServices
SourceCode.SharePoint.Workflow.Proxy
SourceCode.SharePoint.Workflow.WebControls
SourceCode.SharePoint.Workflow
SourceCode.Workflow.Design
SourceCode.Workflow.RuntimeServices.Functions
SourceCode.Workflow.Wizards
SourceCode.WebDesigner.Authoring.SharePoint

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DESIGN TIME CHANGES

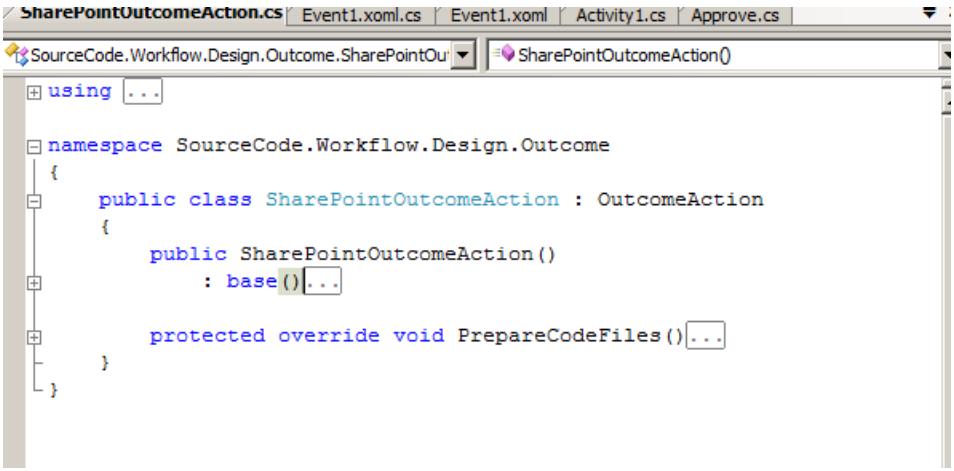
K2 Design Template Changes

Event Item

The event item design template has changed to enable scheduling to take place. A new call to schedule a SharePoint workflow modification is introduced in order to create a new task in SharePoint.

Action Item

Before KB001390 builds there was no distinction between action outcome types. There was one action outcome used by all client events. After KB001390 there is a new SharePoint action outcome that will be used for all SharePoint client events.



This new action outcome introduces a new XOML file and code behind that executes and facilitate the actioning of K2 SharePoint tasks.

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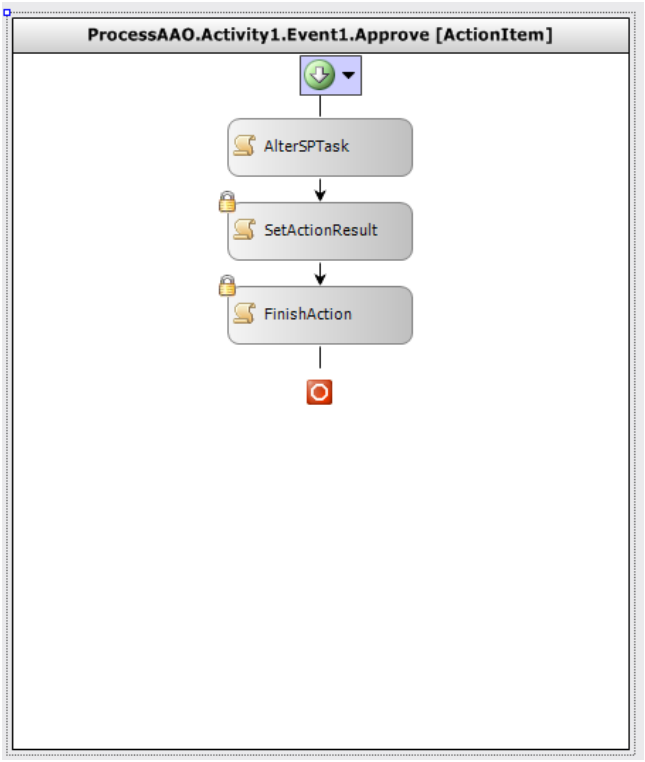

The new class file for handling the actioning of SharePoint actions uses a common helper class that performs the call to the K2 SharePoint web services in order to schedule the tasks.This helper class creates a web service connection and calls SheduleAlterSPTask web method in the K2 SP Workflows Web Services. It is at this stage that a SharePoint job item is added to the K2 failover jobs in order to action the task. The location to this helper class is {Program Files}K2 blackpearl\Bin\DesignTemplates\CSharp\WindowsWorkflowExtender\1033\Outcome.Action\SharePointHelper

Succeeding Rule

Once a task has been actioned and the succeeding rule executes, a cleanup is performed of tasks not started in Sharepoint. This is also scheduled by the K2 Workflow failover job. This completes all tasks for the activity and there should be no tasks in “Not Started” state once the succeeding rule has completed its execution cycle.

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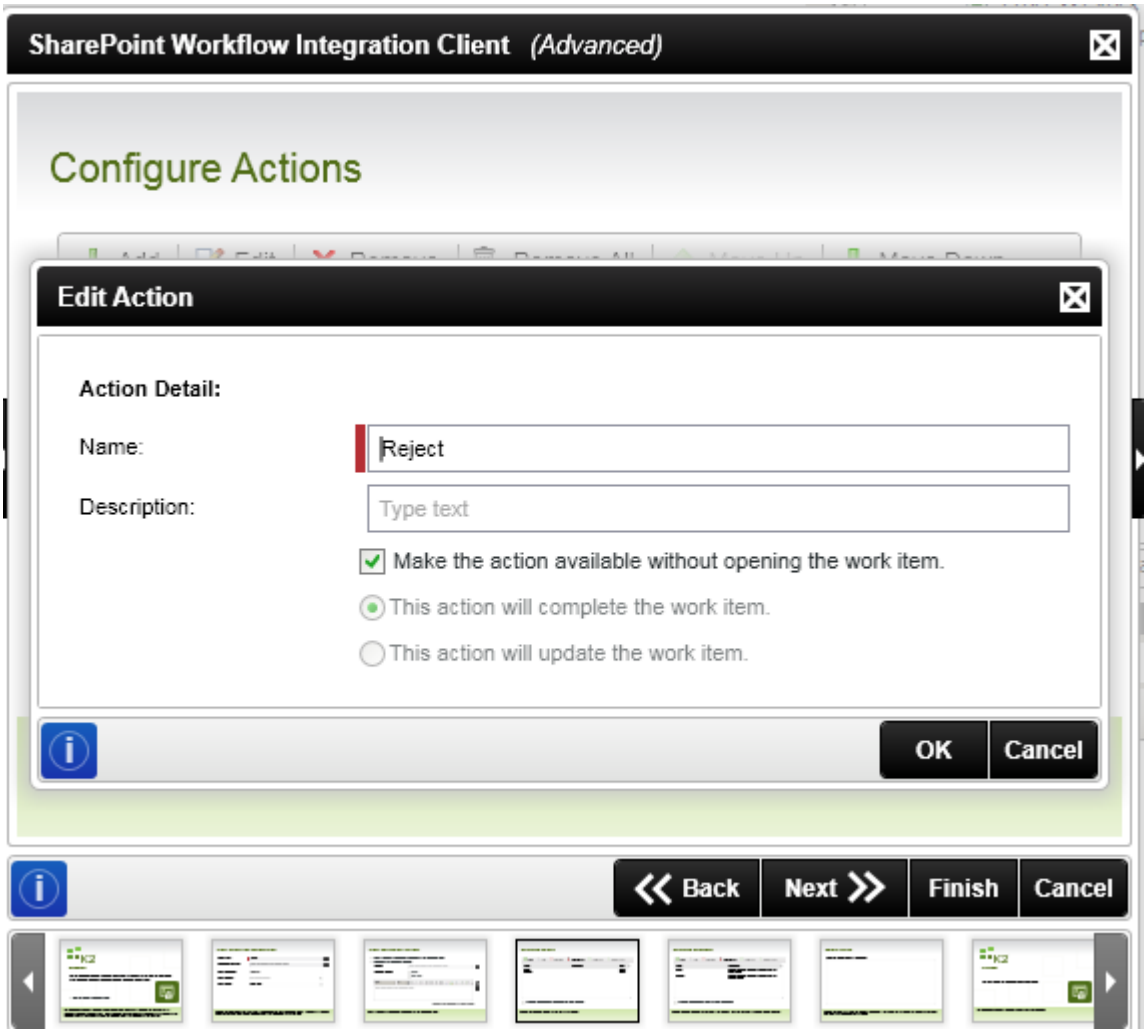
Wizard UI Changes

There is only one UI change that has occurred in the wizards and that is to enable the user to select batch actions on the Edit Action Screen:



Users can now toggle this check box and, at runtime, can batch action SharePoint Client Event actions.

Important: Should the user have selected any required fields on the action page this check box will be disabled by default and the user will not be able to batch action.

The options to either **complete** or **update** are still disabled and all SharePoint Workflow integration client event submissions must complete the task.

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RUNTIME CHANGES

The main change to the runtime aspect of workflow integration is that tasks are no longer triggered to complete through SharePoint but rather through K2 Server. All requests to alter the state of the workflow instance are scheduled from the K2 server within the design time templates and then executed by the K2 workflow failover job.

K2 SharePoint OOTB Pages

Before KB001390, K2 SharePoint Workflow Pages would directly alter tasks that were being actioned. This would in turn invoke the K2 workflow proxy that would then action the item. This does not occur any longer. A call to action the K2 worklist item within the task pages is made instead. This is done via the runtime services and workflow client is used to action the worklist items.

Runtime Sequence of Events

Below is a brief overview of what occurs at runtime when an instance is started.

No	Event	Description
1	SharePoint workflow started	The SharePoint workflow is started either manually or automatically.
2	K2 workflow instance started	The K2 Workflow proxy is invoked and K2 workflow client is used to start a K2 process instance.
3	Task scheduled	A K2 Workflow Integration Client Event is run and a call to K2 SharePoint Web services is made to schedule a task creation.
4	Task created via K2 Failover	The K2 Workflow Failover executes and modifies the workflow instance in SharePoint and a task is created.
5	Task actioned from UI	The user actions a task from the worklist via batch action, the K2 OOTB SharePoint pages, or by using SmartActions.
6	Task action scheduled	The K2 SharePoint action item is executed and a task action is scheduled for the K2 Workflow Failover job.
7	Task actioned via K2 Failover	The failover fires and the scheduled task action is executed and the workflow is modified to complete the task.
8	Succeeding rule fires	In the case where the succeeding rule fires a task cleanup operation is scheduled in order to complete any tasks that are still “Not Started” in SharePoint.
9	Task cleanup	Task cleanup occurs and the K2 Workflow Failover job completes any

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		tasks associated to the activity being completed.
10	K2 process finish rule	The K2 process finish rule fires and a workflow instance modification to finish the SharePoint workflow instance is scheduled.
11	SharePoint workflow instance complete	The K2 Workflow Failover job fires and completes the SharePoint workflow instance.

SEQUENCE DIAGRAM

The following is a component sequence diagram to illustrate the logical sequence.

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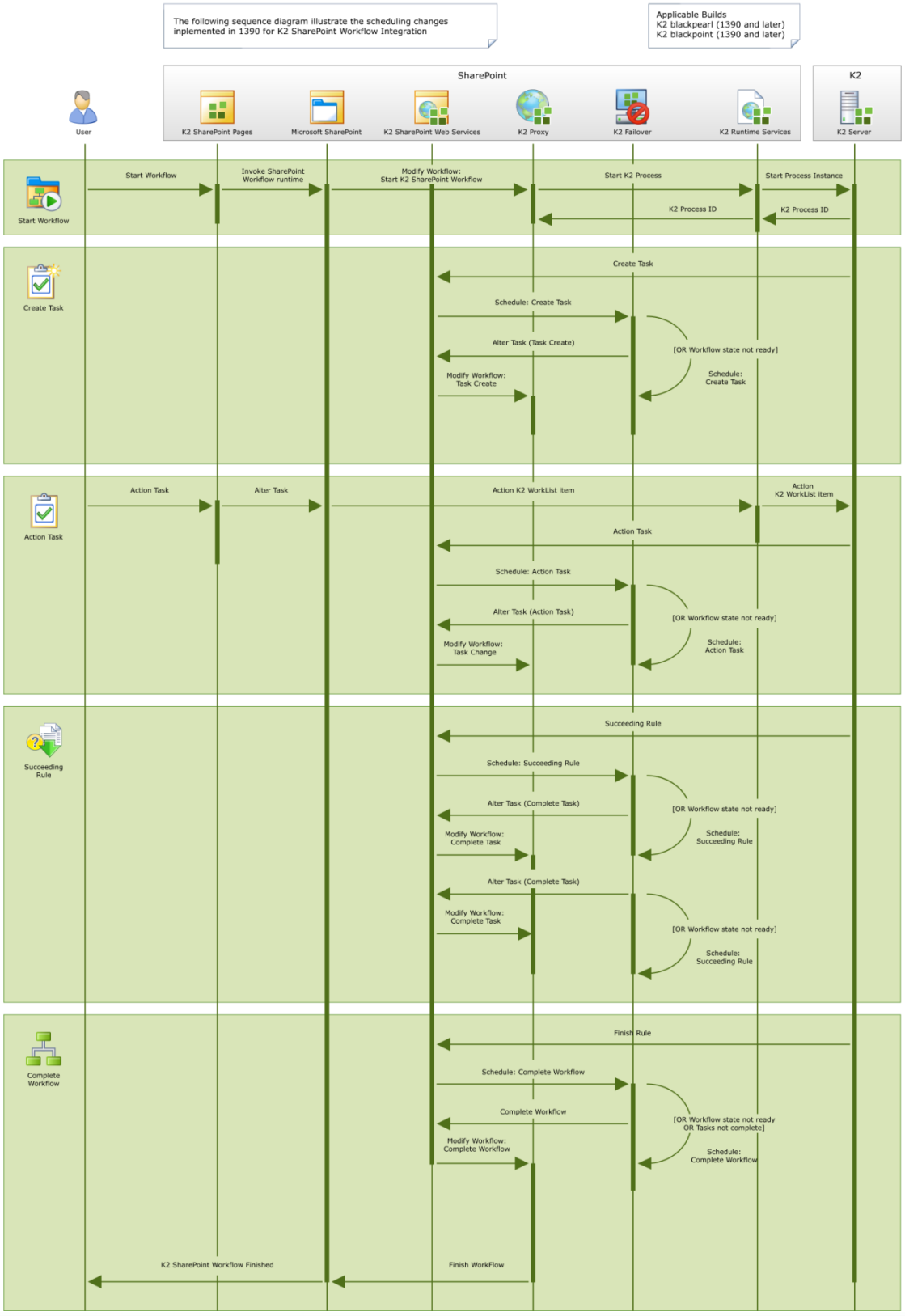
K2 SharePoint Workflow Integration - Component Sequence Diagram

Diagram depicting the execution sequence between K2 SharePoint Workflow Integration Components and Microsoft SharePoint



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BACKWARDS COMPATABLITIY

All existing process instances continue to function as they have in the past. The existing KPRX processes can continue to be deployed against the old design time templates. Should you decide to utilize the new scheduling capabilities, you must update the design time templates for the process and redeploy. From this point onwards the process executes with scheduling capabilities as detailed in this whitepaper. If you want SharePoint Workflow Integration processes to be batch-actionable, and also SmartActionable, processes must be updated to run withthe new scheduling mechanics. When you make the choice to enable batch actions on the Edit Action screen, you are prompted to update design templates.

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