Using ERPConnect Services with Nintex Workflow

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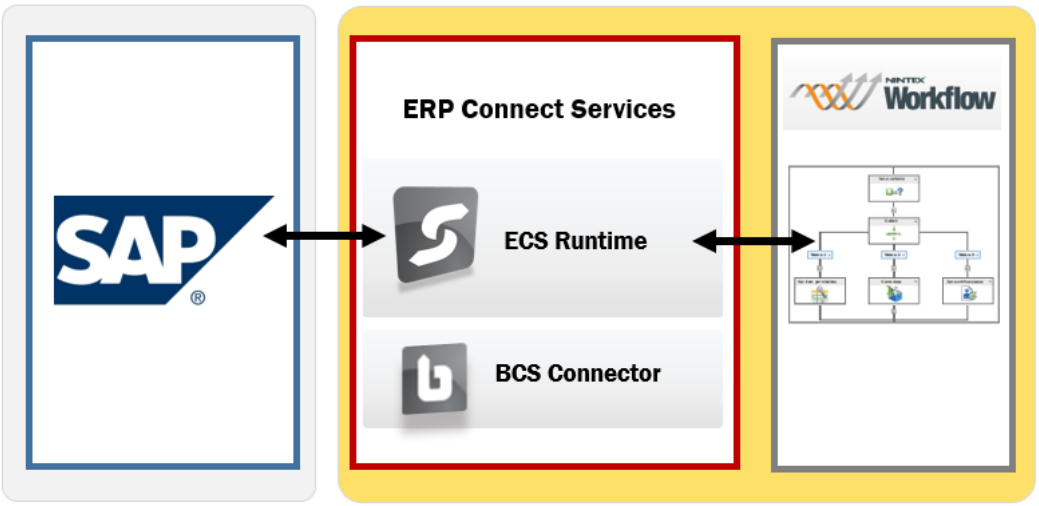
1 Introduction

ERPConnect Services simplifies the integration of SAP data into your SharePoint environment. Customers that use Nintex Workflow in their SharePoint environment can utilize ERPConnect Services to access SAP data in their workflow scenarios. This document provides you with an overview and specific examples of how Nintex Workflow can work together with ERP Connect Services in scenarios that require SAP data access.



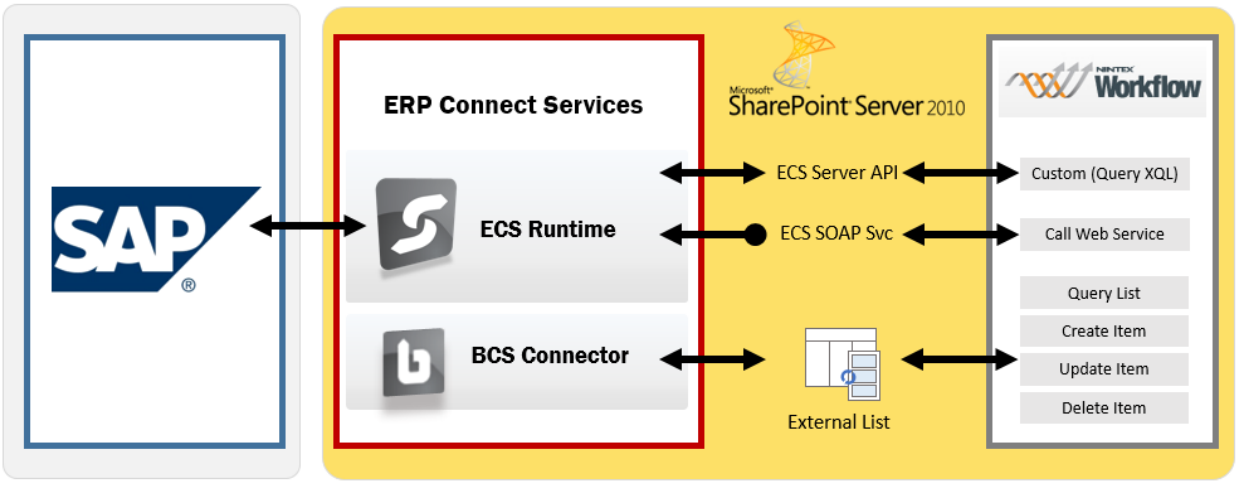
2 Integration Options

With ERP Connect Services, access to SAP data in a SharePoint environment is provided in three ways:

2.1 Using Business Connectivity Services (BCS) and External Lists

With the BCS Connector Designer which is part of ERPConnect Services you can easily create an external content type for SAP data without the need to write any code. You can publish the content type directly to the SharePoint BCS metadata store and create an external list with SAP data in SharePoint. The connectivity between the external list and the SAP system is enabled through ERPConnect Services and can support create, read, update and delete (CRUD) operations on SAP data.

Nintex Workflow offers the standard workflow actions *Query List*, *Create Item*, *Update Item* and *Delete Item* that can be used on SharePoint external lists.



2.2 Using the SOAP service provided by ERPConnect Services

The ECS runtime provides SOAP (and REST) service endpoints which can be used by an application to access SAP data.

Nintex Workflow offers the standard workflow actions *Call Web Service* (for SOAP calls) and *Web Request* (for SOAP and REST service requests).

An example for how the Call Web Service action can be used with ECS is outlined below. The formatting of the data in the service request XML (or JSON) can be somewhat difficult and may require an HTTP monitoring tool such as Fiddler. Nintex Workflow includes another standard action Query XML which can be used to parse the results of a web service call.

2.3 Using the Server API provided by ERPConnect

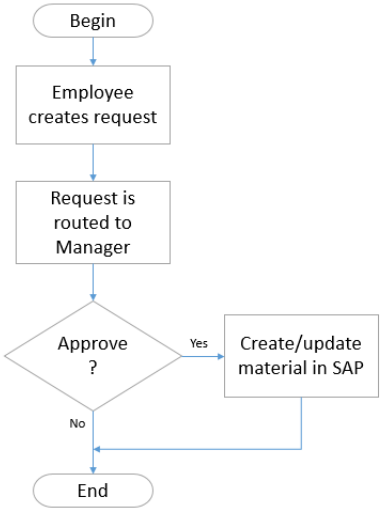
This option eliminates the task of constructing the service request in the workflow. Using the Nintex Workflow SDK, a custom action can be developed which can work directly with the ERPConnect Services Server API and hide the service request details from the user. By specifying an XQL (Extract Query Language) statement which is built into ERPConnect Services, SAP objects including tables, function modules, or cubes can be queried using an SQL-like syntax.

3 A Simple Workflow Scenario

The following steps describe how you can configure a simple workflow scenario that enables material master data maintenance in SAP. In this scenario, the workflow functionality is supported by Nintex Workflow and the data access to SAP is enabled by ERPConnect Services.

In the scenario, an Employee navigates to a SharePoint site and fills out a request form to create or update a material master record in SAP. The request is then routed to a Manager for approval.

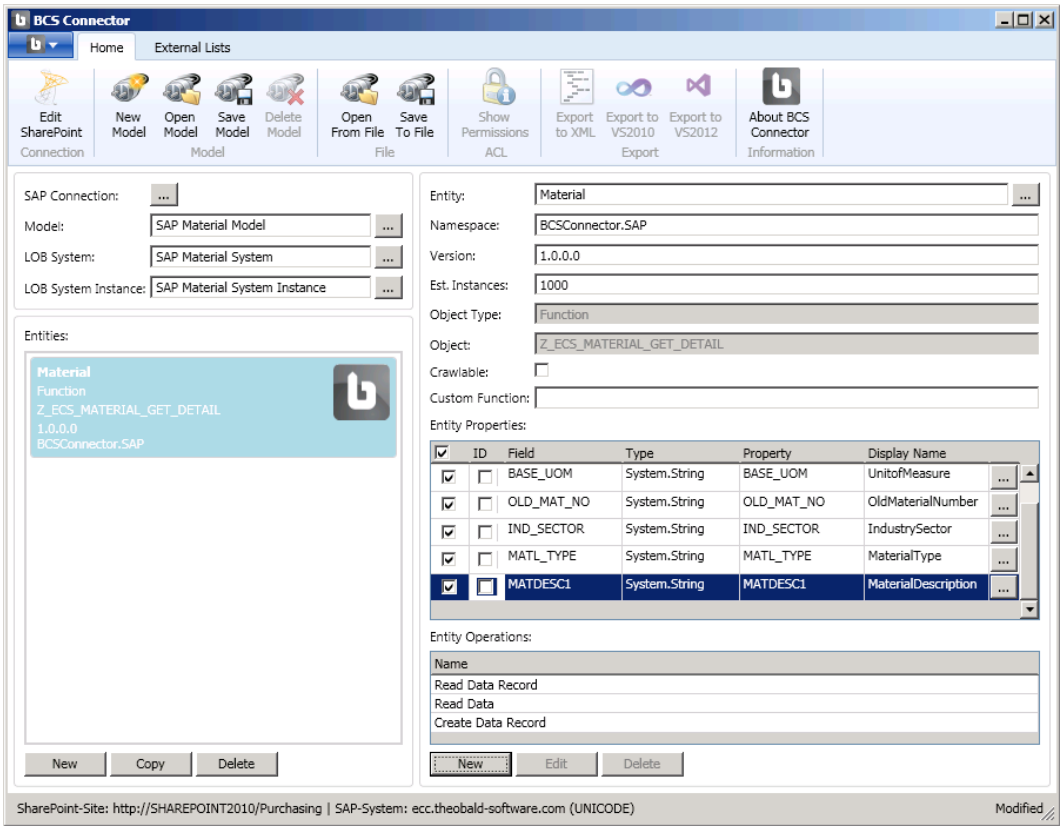
If the Manager approves, the material master record is created/updated in SAP.



3.1 **Step 1:** Create the external content type for SAP material data

In the *BCS Connector Designer* which is part of *ERPConnect Services*, you first define the connections to your SharePoint and SAP systems.

You will then create a new Entity. Select the SAP table or function module that you want your entity to be based on, in this example we use custom function modules (Z modules) that simplify the access to material data in SAP.

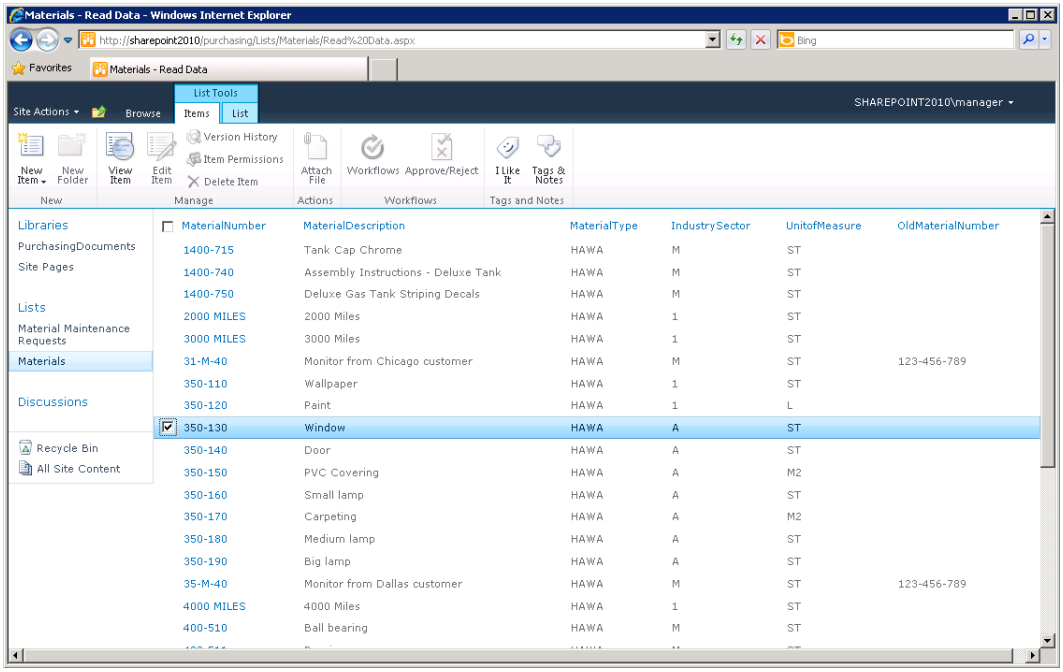


Add the desired operations for the entity, in this example we will add the *Read Data Record*, *Read Data* and *Create Data Record* operations.

Save the model to SharePoint.

3.2 **Step 2:** Create and verify the external list in SharePoint

Using the *BCS Connector Designer*, create a new external list on your SharePoint site, based on the SAP material entity. Navigate to the SharePoint list and make sure data is displayed and that the *View Item* and *New Item* buttons are active on the ribbon.

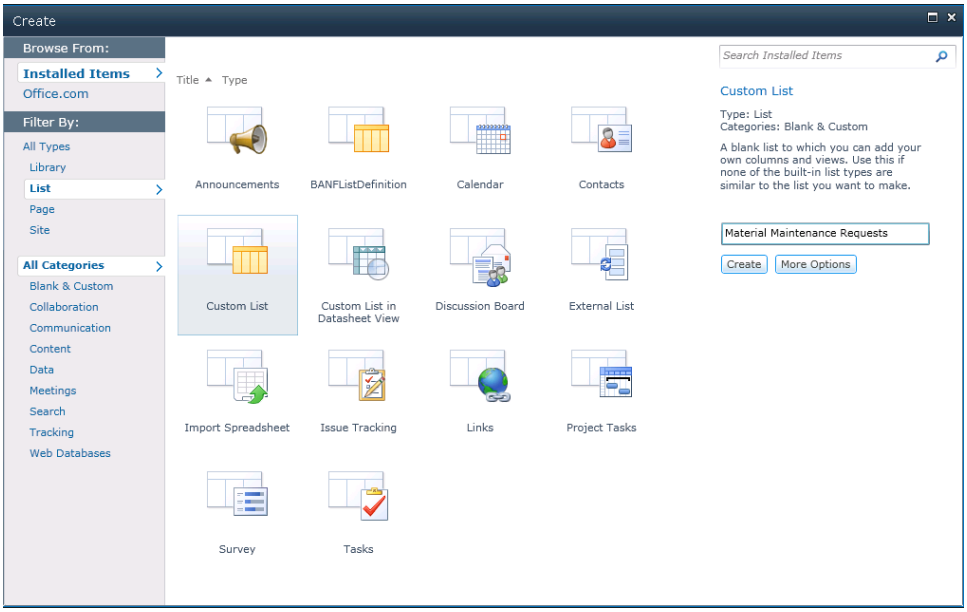


3.3 **Step 3:** Create a SharePoint list for Material Maintenance Requests

In our scenario, the *Material Maintenance Request* list will be used to capture a request to create a new material record in SAP.

Create the list with the following properties:

- *Type* = Custom List
- *Name* = Material Maintenance Requests



Add the following columns to the list:

Column	Type
Priority	Choice: High (1), Normal (2), Low (2)
Material Number	Single line of text
Material Name	Single line of text
Material Type	Single line of text
Industry	Single line of text
Unit	Single line of text
Old Material Number	Single line of text
Due Date	Date only
Notes	Multiple lines (3) of text

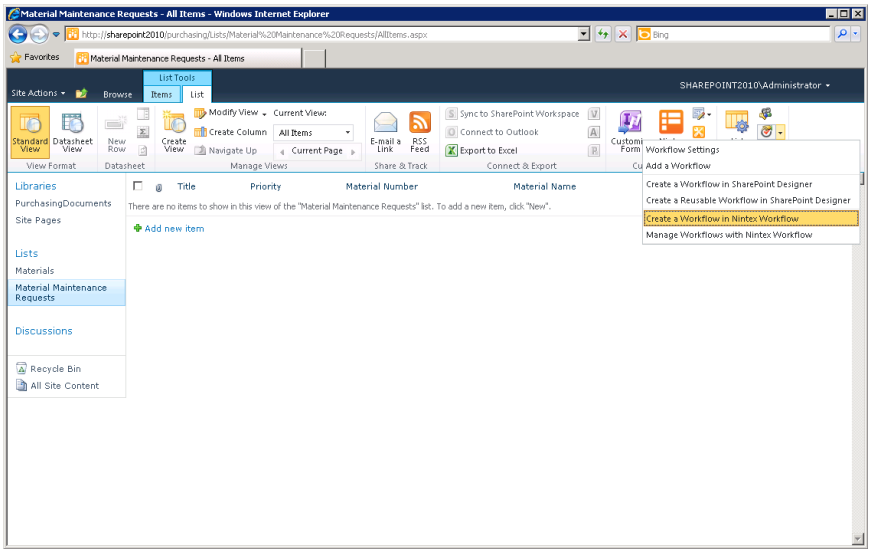
Columns

A column stores information about each item in the list. The following columns are currently available in this list:

Column (click to edit)	Type	Required
Title	Single line of text	✔
Priority	Choice	
Material Number	Single line of text	✔
Material Name	Single line of text	✔
Material Type	Single line of text	
Industry	Single line of text	
Unit	Single line of text	
Old Material Number	Single line of text	
Due Date	Date and Time	
Notes	Multiple lines of text	
Created By	Person or Group	
Modified By	Person or Group	

3.4 **Step 4:** Create a Nintex Workflow

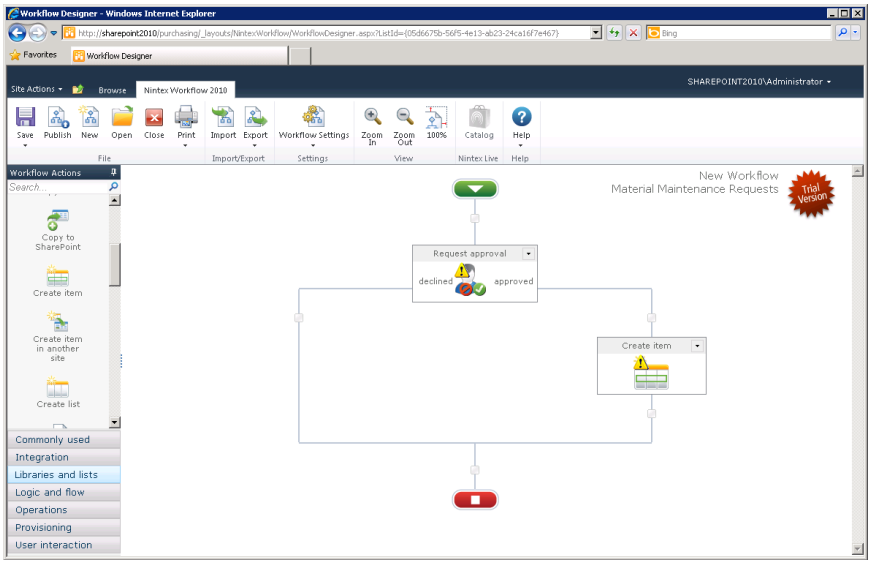
Navigate to the *Material Maintenance Requests* list and under *List -> Settings* select *Create a Workflow in Nintex Workflow*



Select *Blank* as the workflow template.

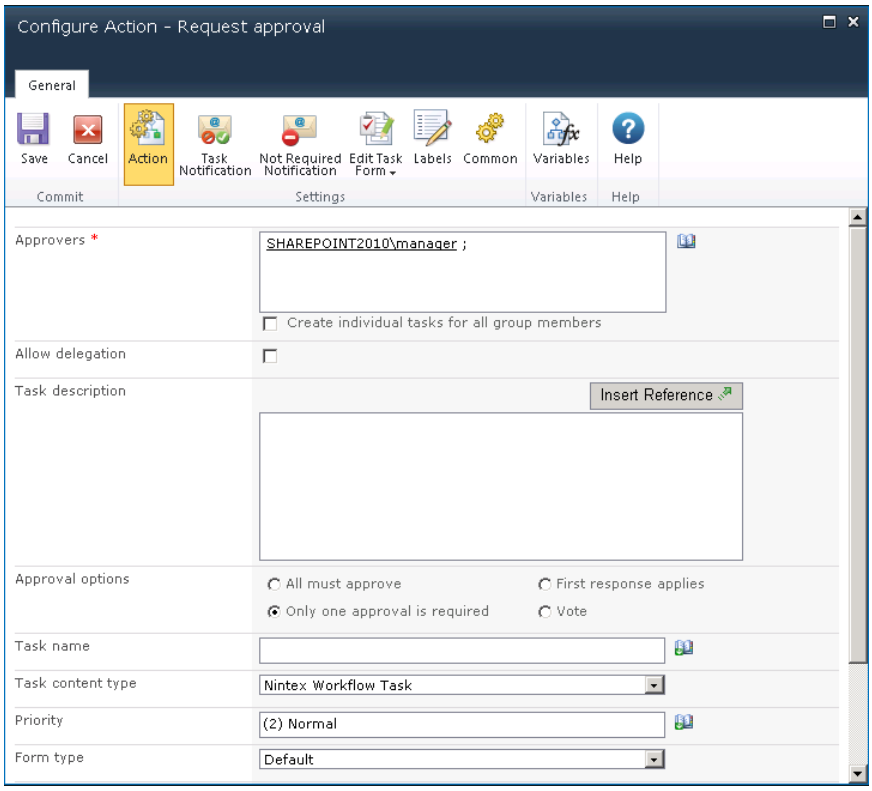
Add two actions to the workflow as shown below:

- *Request approval*
- *Create item*



Configure the *Request approval* action with the following properties:

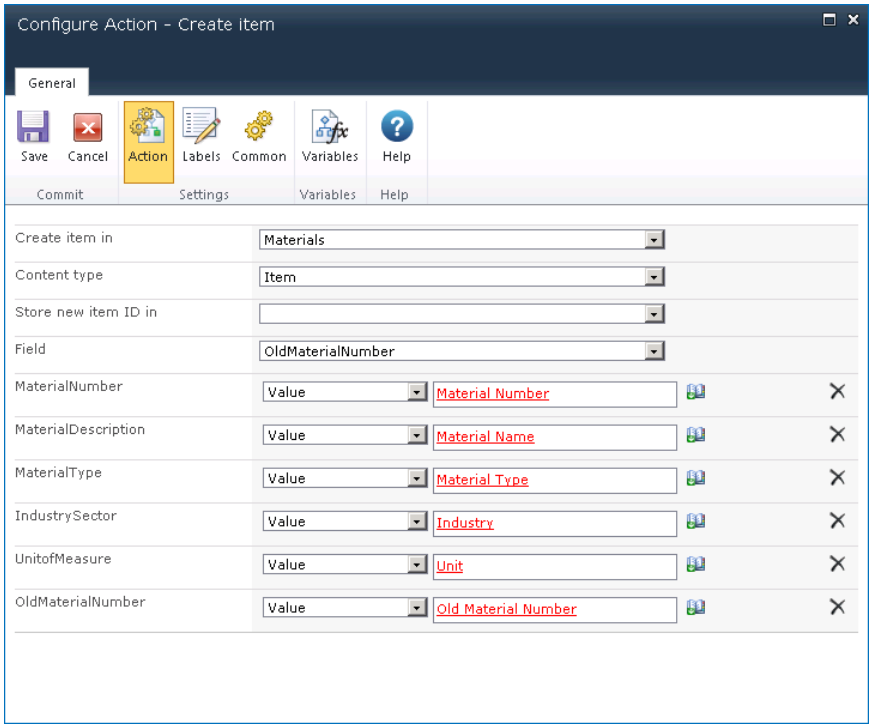
- *Approvers* = SHAREPOINT2010\manager
- *Approval options* = Only one approval is required



Save the workflow action.

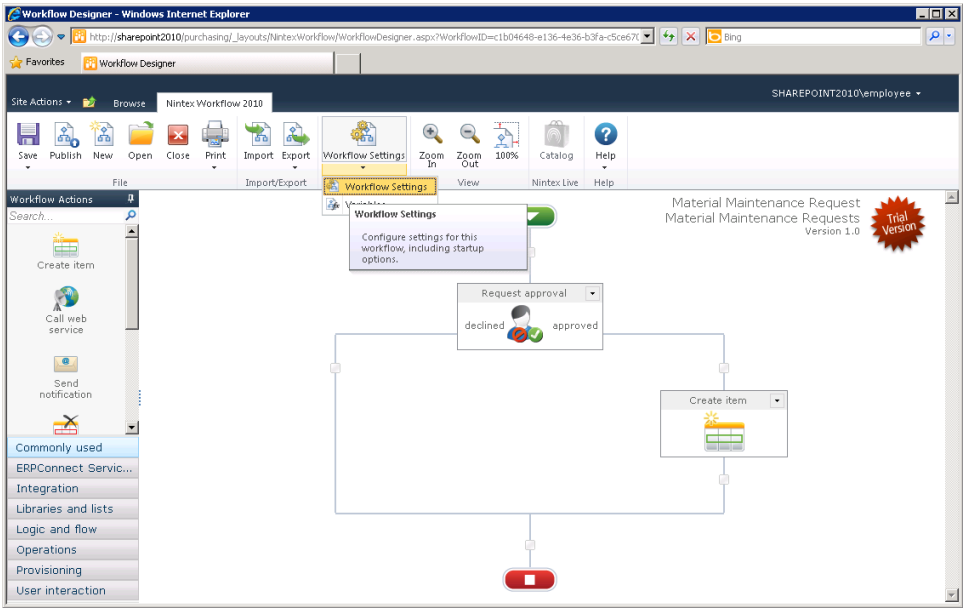
Configure the *Create Item* action:

Add the fields that are required to create a new item to the action. Using the *Insert Reference* button next to each field, you can select the *Item Properties* of the *Material Maintenance Request* list as shown below.

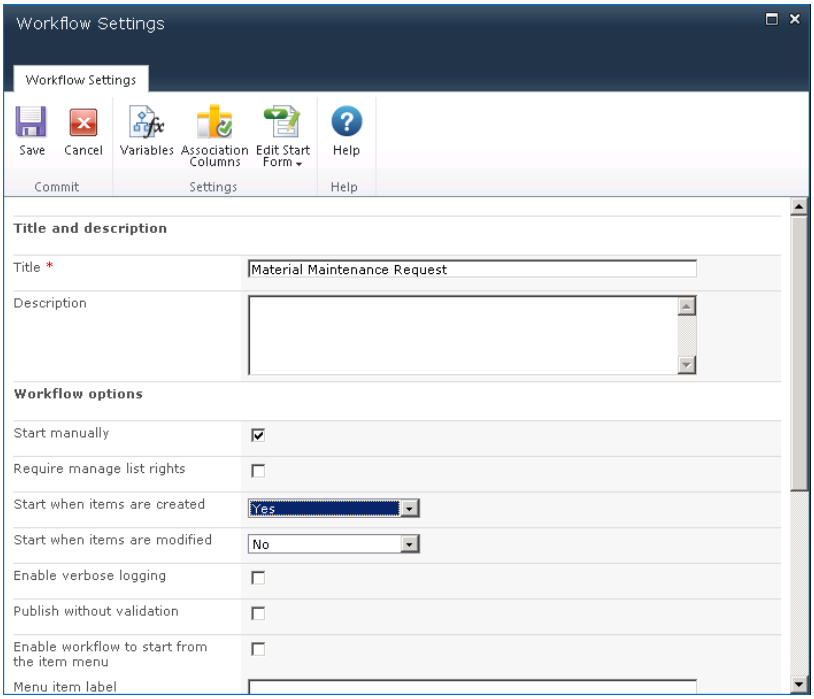


Save the workflow action.

From the workflow ribbon, select *Workflow Settings -> Workflow Settings*



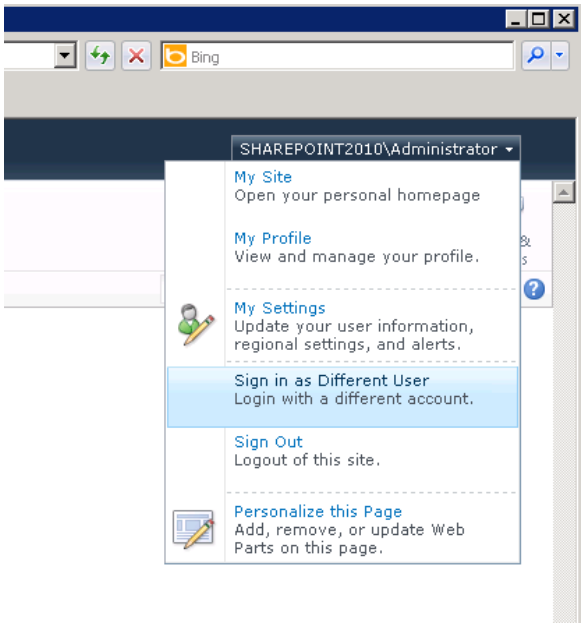
Change the option *Start when items are created* to *Yes*.

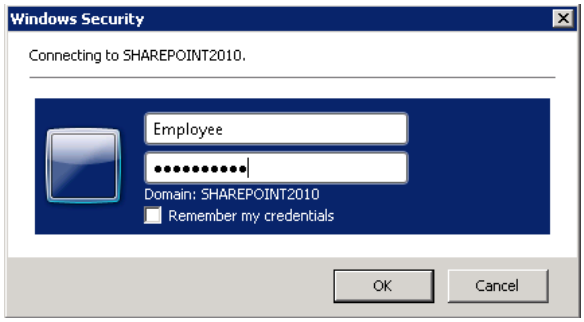


Save and then *Publish* the workflow.

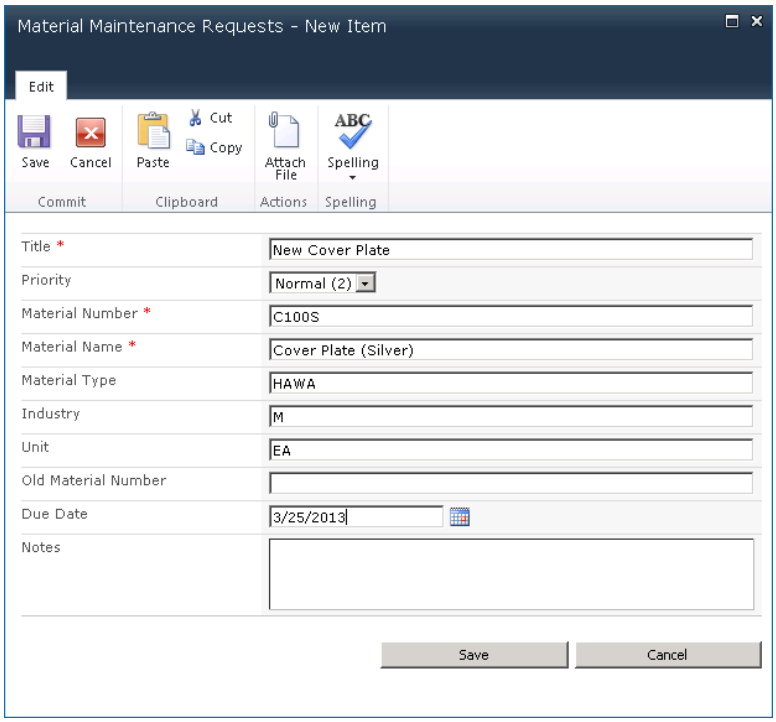
3.5 **Step 5:** Create a new Material Request

On your SharePoint site, sign in as the *Employee* user:



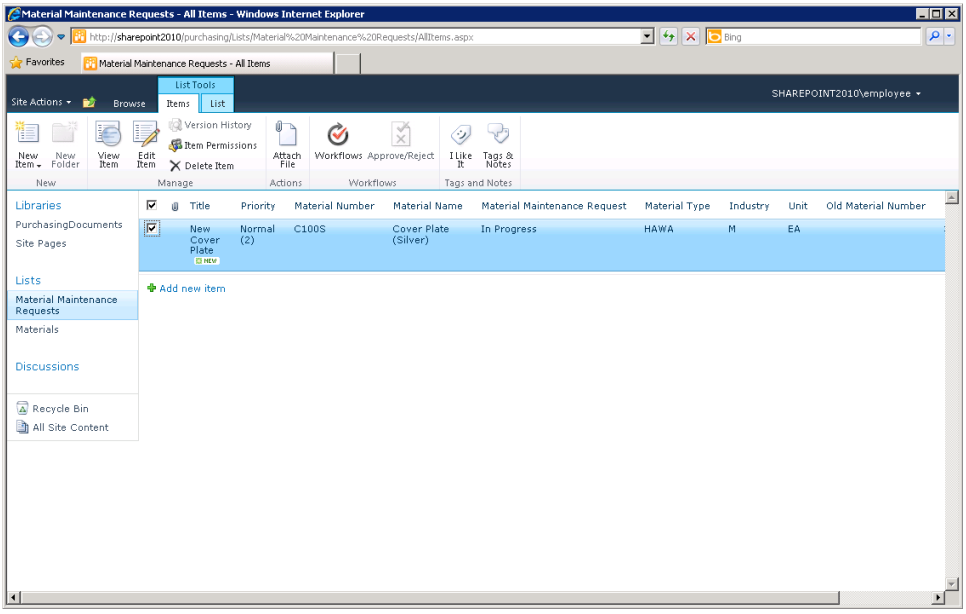


Create a new *Material Maintenance Request* item:

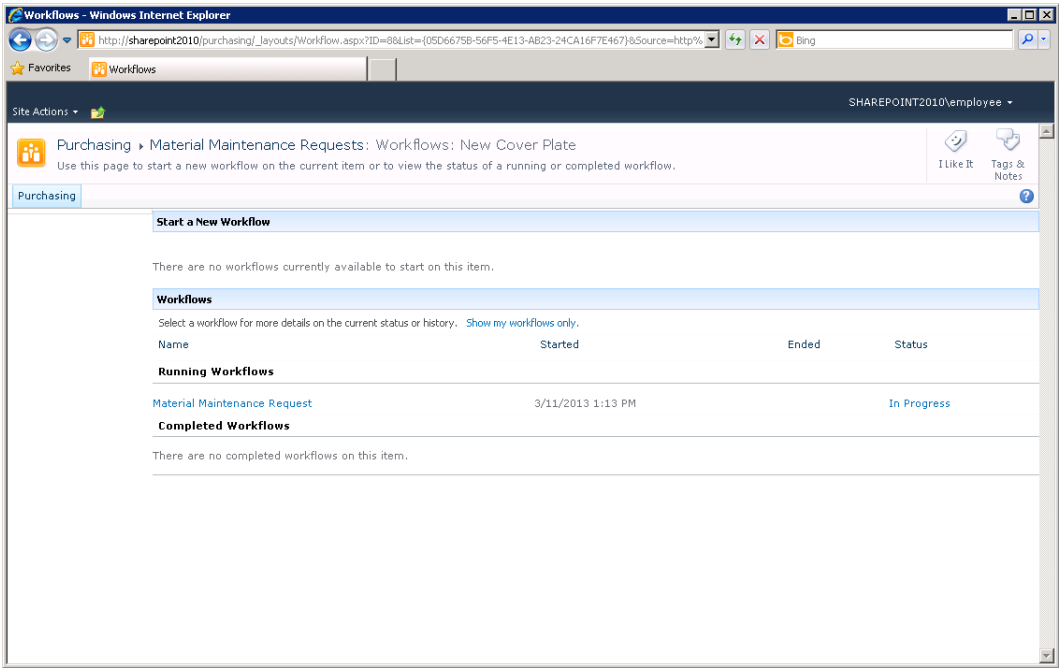


Save the item.

Select the new item in the list, then select the *Workflow* button from the ribbon.

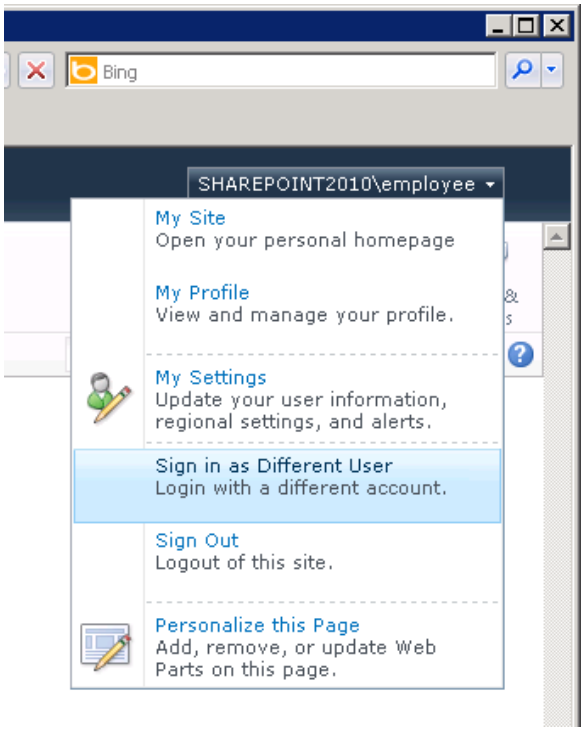


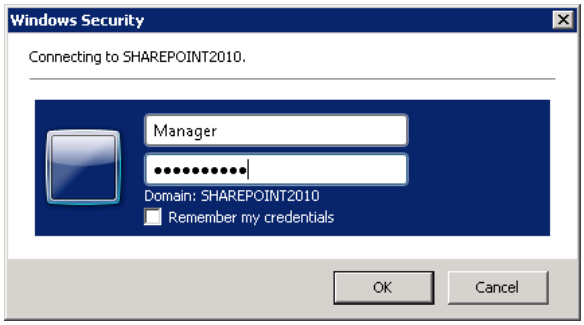
A running workflow should be displayed with a status of *In Progress*.



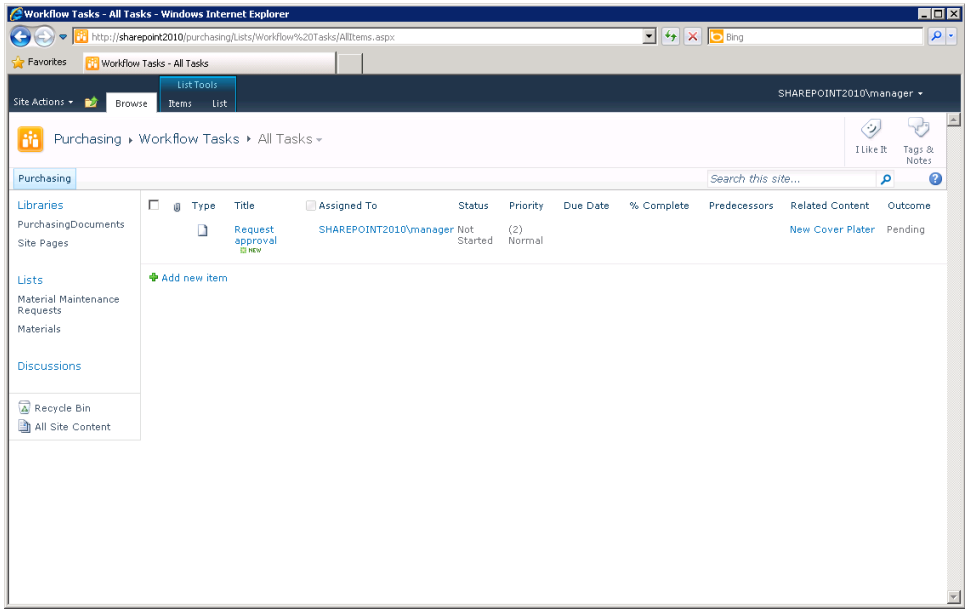
3.6 **Step 6:** Manager Approval

On your SharePoint site, sign in as the *Manager* user:

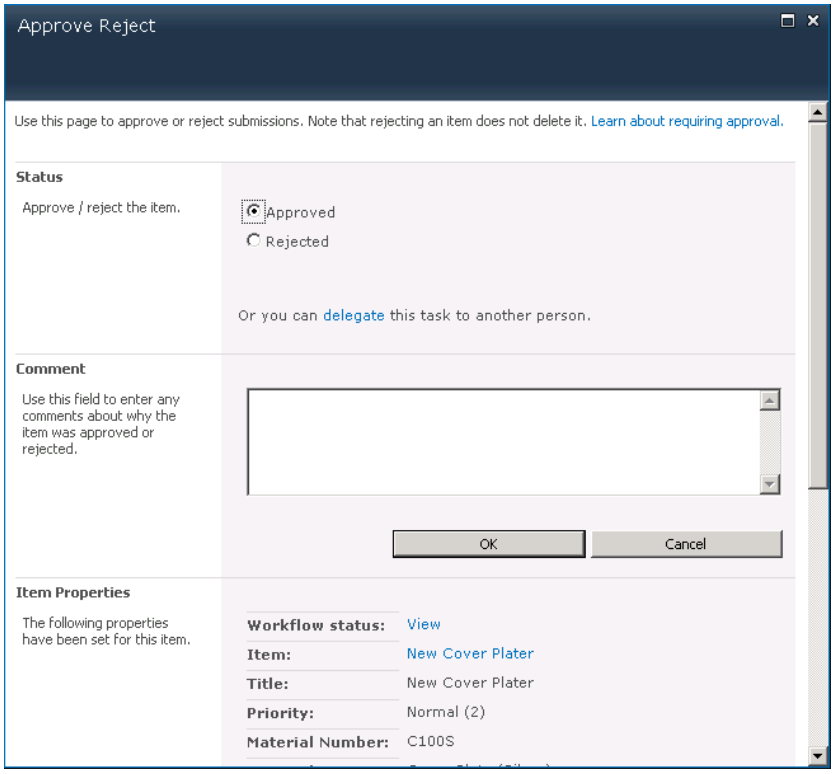




Navigate to *All Site Content -> Lists -> Workflow Tasks*

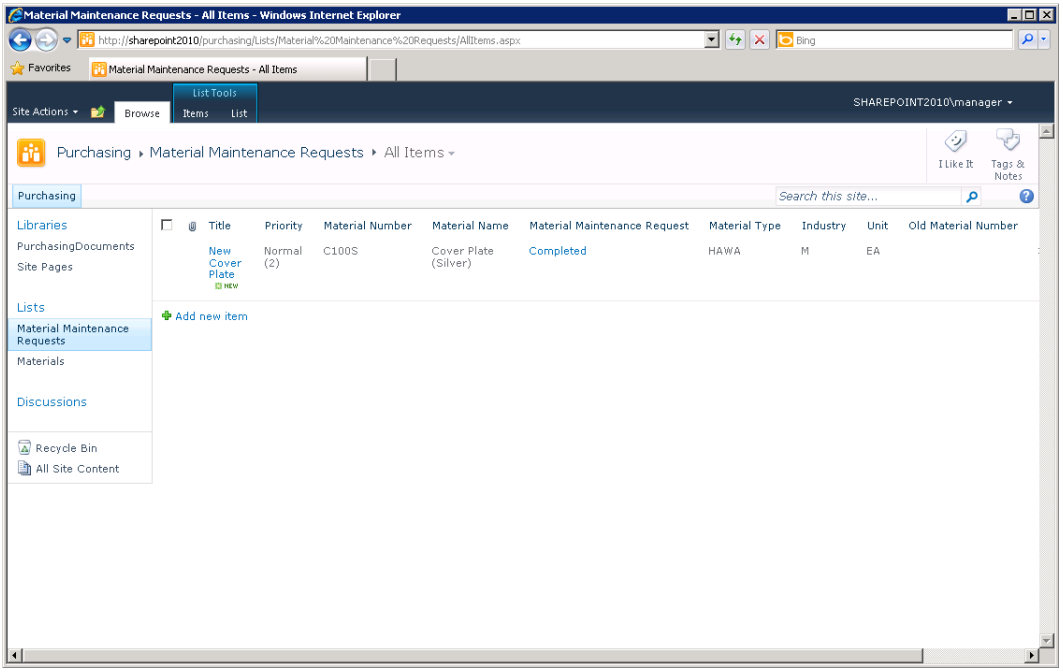


Open the task item, set the *Status* to *Approved* and select *OK*.



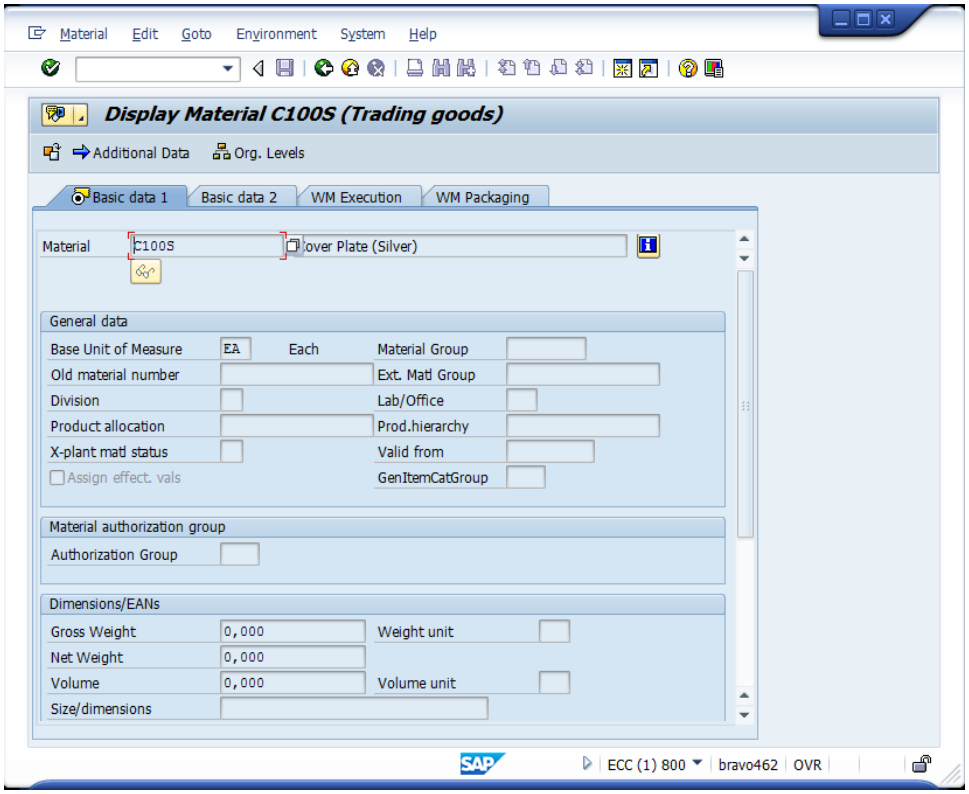
3.7 **Step 7:** Workflow / Task Status Validation

Navigate back to the *Material Maintenance Request* list and verify that the workflow status column shows *Completed*.



3.8 **Step 8:** SAP Validation

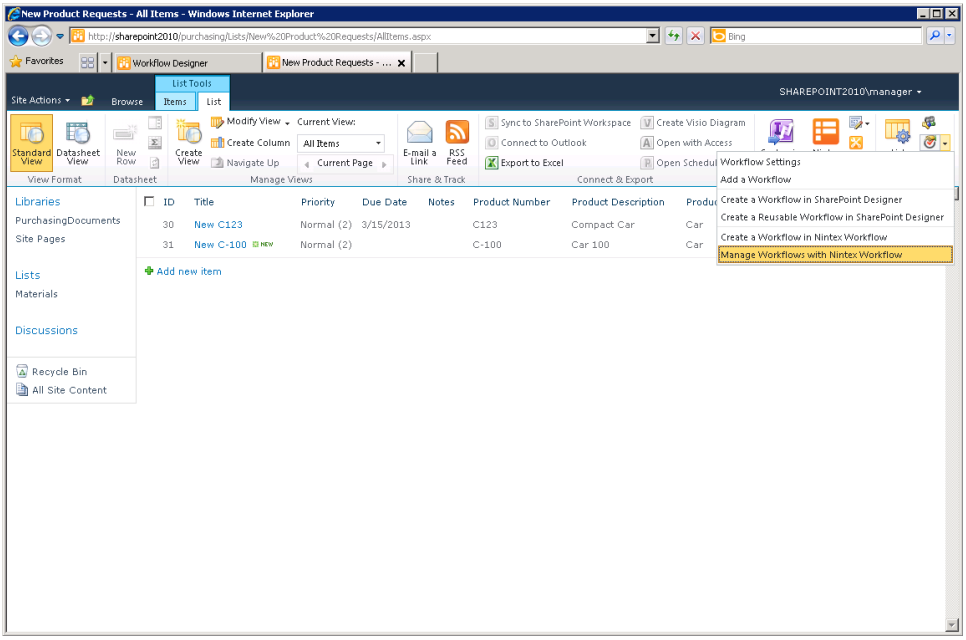
Using transaction *MM03* (Display Material) in SAP, verify that the material record has been created.



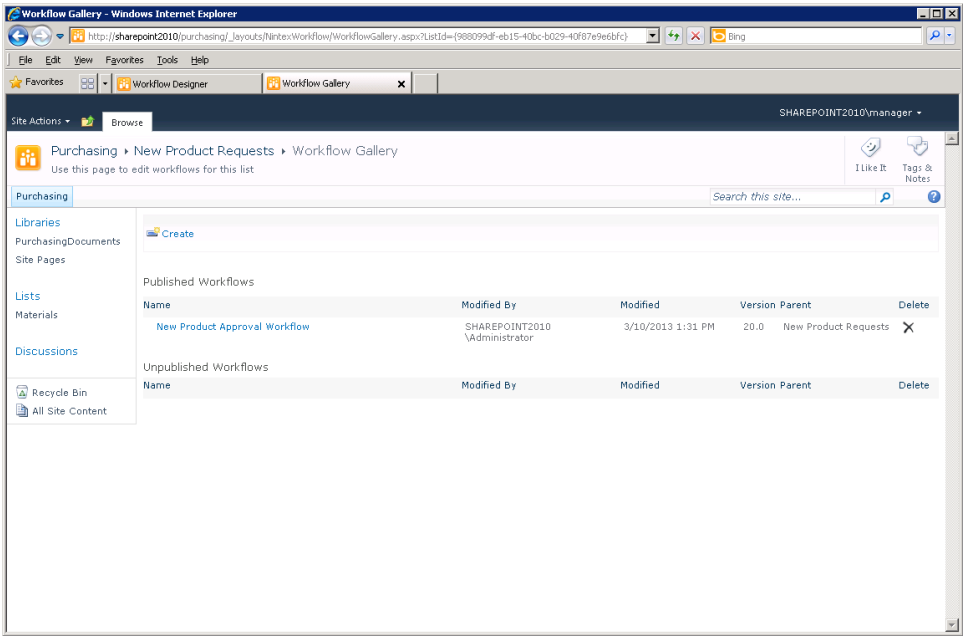
3.9 **Step 9:** Workflow Variation 1 – Call Web Service

In the following steps, you will modify the workflow to use the *Call Web Service* action instead of the *Create item* action to create the material record in SAP.

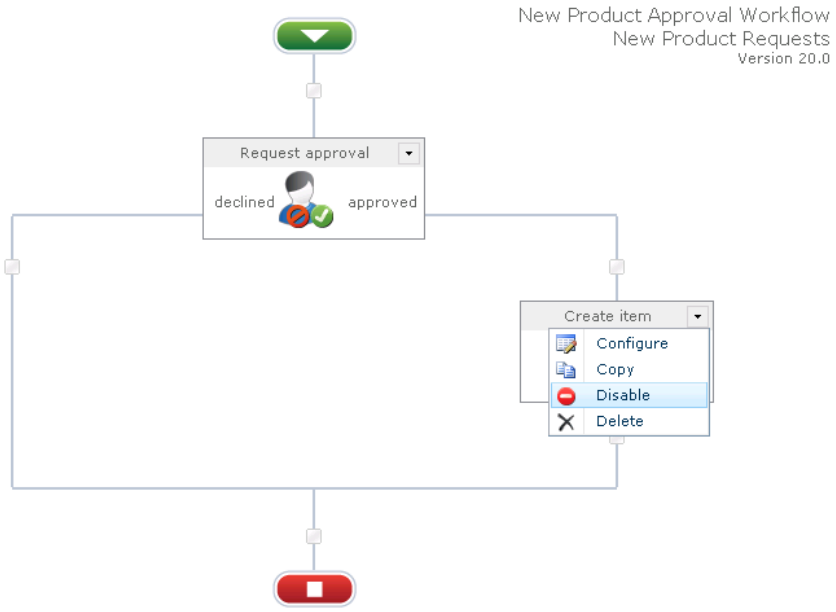
Navigate to the *Material Maintenance Requests* list and from the workflow *Settings* select *Manage Workflows with Nintex Workflow*



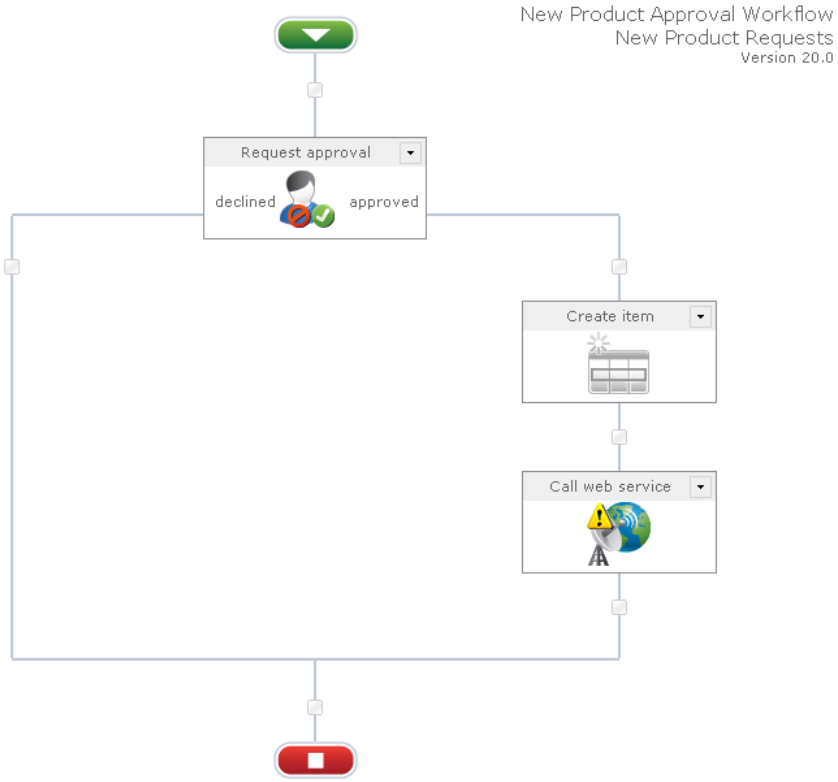
Select the *Product Approval Workflow* for editing.



Disable (or *Delete*) the *Create item* activity



Add a *Call web service* activity as shown below.



Configure the *Call web service* activity:

URL = http://sharepoint2010/_vti_bin/ERPConnectService.svc/mex

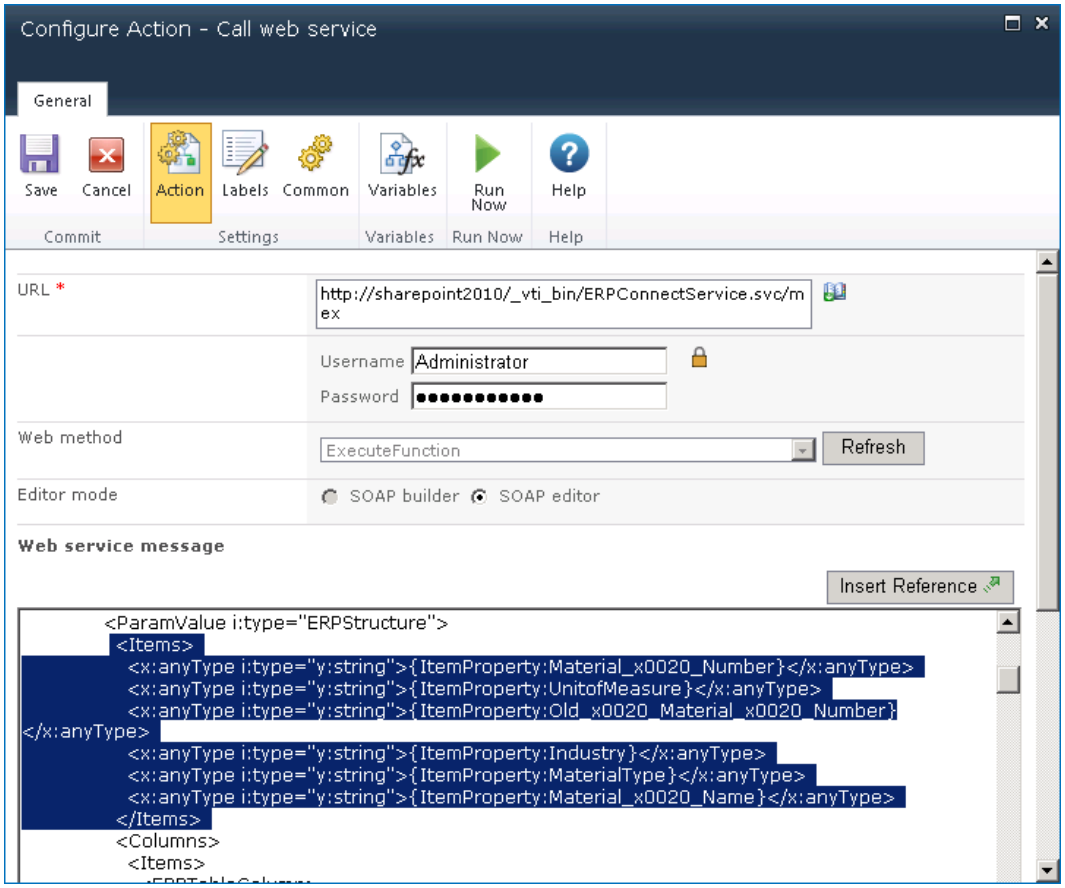
Username / Password = (specify credentials of user with sufficient privileges to invoke the service)

Web method = ExecuteFunction

Web service input = (paste the contents of the attached file *SOAP request XML.txt*)

SOAP Request XML.txt

The SOAP message will contain the references to the *Item Properties* of the *Material Maintenance Request* list.



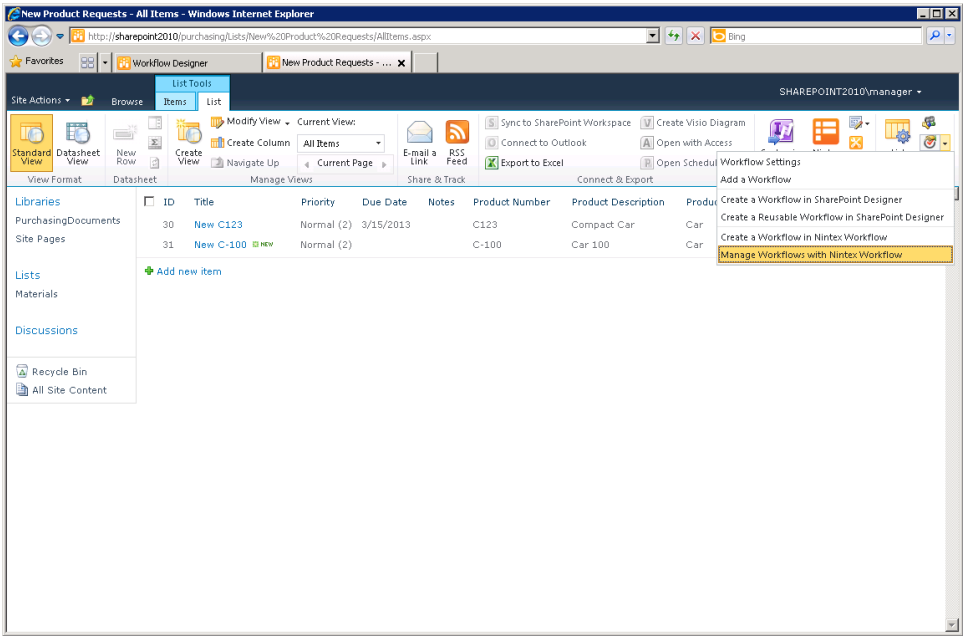
Save and then *Publish* the workflow.

Repeat **steps 5-8** from above to verify the functionality of the updated workflow.

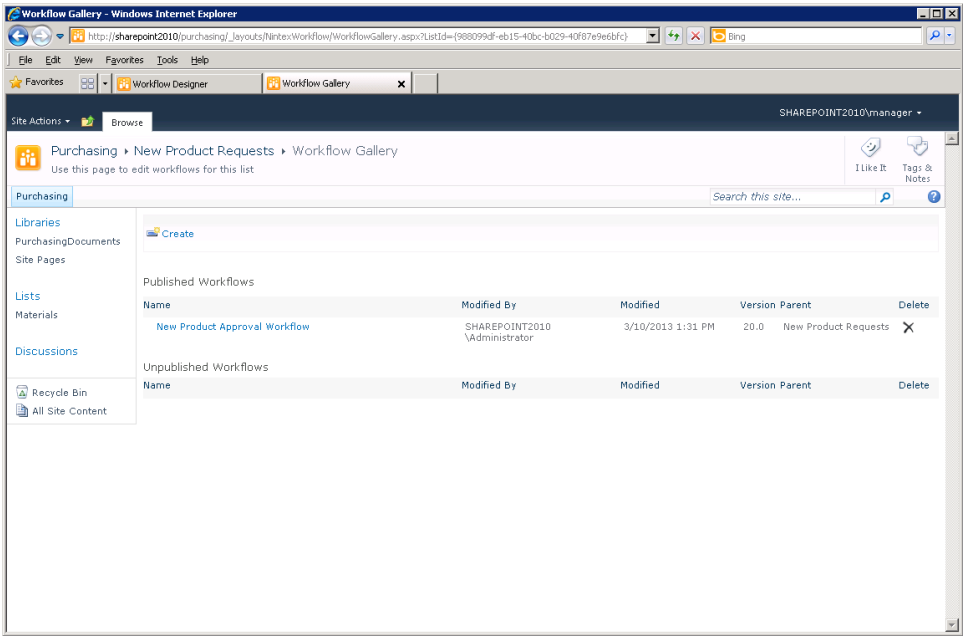
3.10 **Step 10:** Workflow Variation 2 – Query XQL (Custom Action)

In the following steps, you will modify the workflow to use the custom action *Query XQL* instead of the *Call web service* action to create the material record in SAP.

Navigate to the *Material Maintenance Requests* list and from the workflow *Settings* select *Manage Workflows with Nintex Workflow*

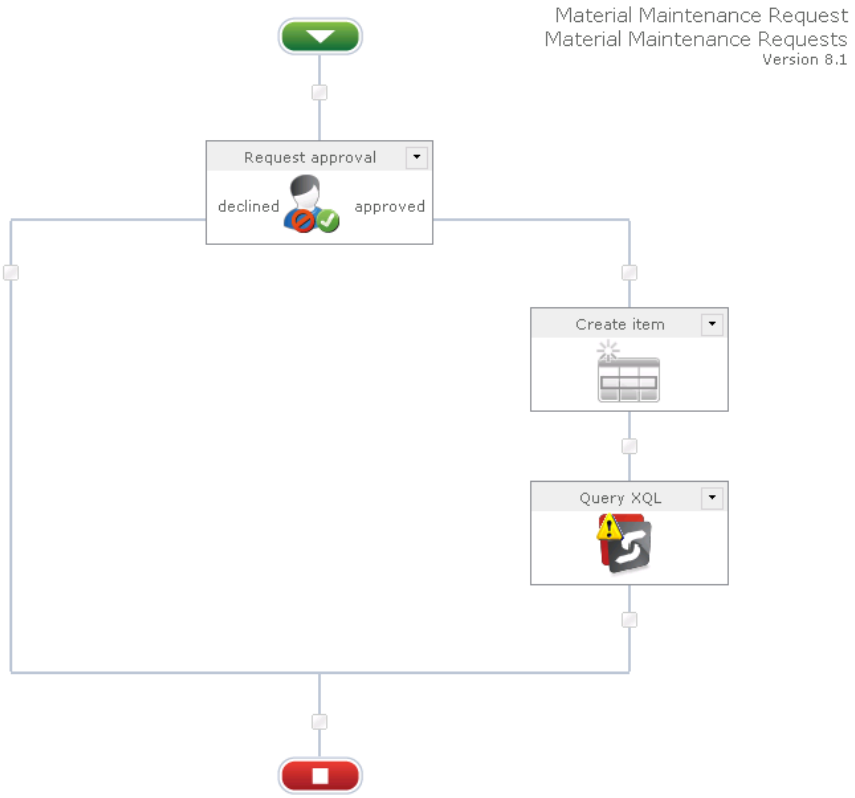


Select the *Product Approval Workflow* for editing.



Delete (or *Disable*) the *Call web service* activity

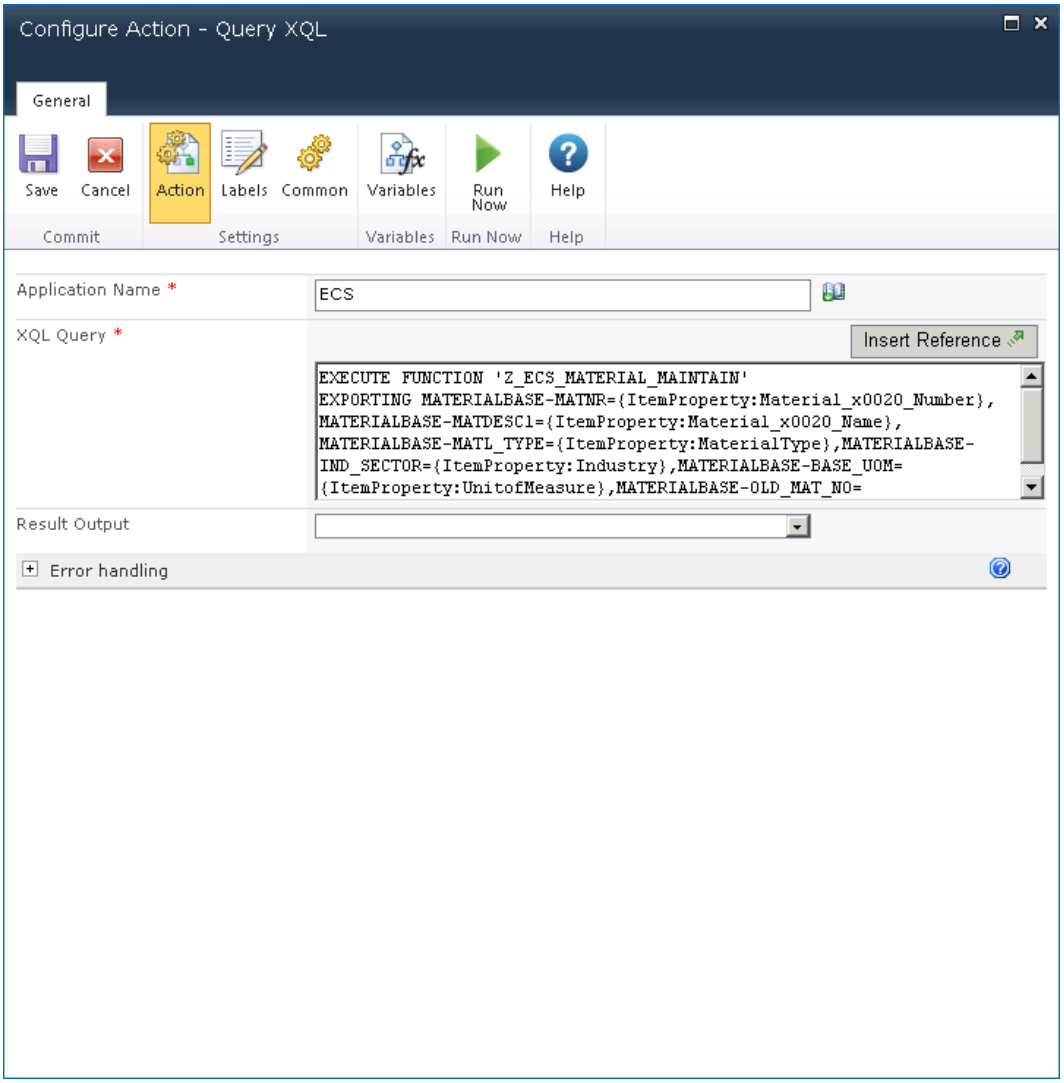
Add a *Query XQL* action as shown below.



Configure the *Query XQL* activity:

Application Name = (ERPConnect Services Application that is configured in your SharePoint system)

XQLQuery = (XQL Query to create the material record in SAP) In this example: EXECUTE FUNCTION 'Z_ECS_MATERIAL_MAINTAIN' EXPORTING MATERIALBASE-MATNR='{ItemProperty:Material_x0020_Number}', MATERIALBASE-MATDESC1='{ItemProperty:Material_x0020_Name}', MATERIALBASE-MATL_TYPE='{ItemProperty:MaterialType}', MATERIALBASE-IND_SECTOR='{ItemProperty:Industry}', MATERIALBASE-BASE_UOM='{ItemProperty:UnitofMeasure}', MATERIALBASE-OLD_MAT_NO='{ItemProperty:Old_x0020_Material_x0020_Number}'



Save and then *Publish* the workflow.

Repeat **steps 5-8** from above to verify the functionality of the updated workflow.

3 Conclusion

This document outlined three different options for using ERPConnect Services with Nintex Workflow.

For SharePoint solutions that utilize the Business Connectivity Services and external lists for access to SAP data, the list actions (*Query List*, *Create Item*, *Update Item*, *Delete Item*) that are provided with Nintex Workflow can be used to integrate SAP data into your workflow scenario. The advantage of this integration option is that the list actions in Nintex Workflow are easy to configure and utilizing external lists in SharePoint can be useful for additional scenarios and to verify SAP data access. Using the BCS Connector which is part of ERPConnect Services, you can create an external content type for an SAP table or function module with just a few steps and save it directly to SharePoint.

With ERPConnect Services, your SharePoint solution can also access SAP data directly, without the use of the Business Connectivity Services layer or external lists. Within a Nintex Workflow, you can use the custom *Query XQL* action to directly access SAP data, for example to read from a table or to invoke an SAP function module. The *Query XQL* action is easy to configure and the *XQL Explorer* tool is provided as part of ERPConnect Services to construct and verify an XQL statement. Further, the result of the *Query XQL* action is formatted as XML data and can be parsed using the standard *Query XML* action in Nintex Workflow.

Using the standard Nintex Workflow actions *Call Web Service* or *Web Request* also enables direct access to SAP data with the SOAP and REST services provided by the ERPConnect Services runtime. The disadvantage of this option is that the service requests have to be properly formatted which can be somewhat difficult to accomplish in the workflow. The custom action *Query XQL* eliminates this task and hides the complexities of the service request from the end user.