Migrating to SharePoint 2013

A COMPARISON OF ITS IMPACTS ON NINTEX WORKFLOW AND K2 BLACKPEARL

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Contents

Executive Summary

Since many workflows are started by, or perform changes in SharePoint® content – perhaps a new list item fires a workflow process, or a process modifies a library – upgrading to SharePoint 2013 can break your workflow processes.

The introduction of Microsoft's new Workflow Manager, and the separation of the workflow engine from SharePoint 2013, have downstream impacts on users of business process management software (BPMS), like Nintex Workflow and K2 blackpearl®.

For users of SharePoint 2010 looking to upgrade their Nintex Workflow solutions to use the new platform and its features, staying current with SharePoint can mean refactoring workflow processes or even shifting Nintex solutions altogether. Although it is possible for SharePoint 2010-based Nintex solutions to run "as-is" in SharePoint 2013, this capability may not extend beyond the 2013 edition.[1]

Nintex customers will have more decisions to make.

Since rebuilding 2010-based workflows is effectively a given (it's just a question of when), perhaps building them in a mature BPMS independent of SharePoint, and its new and presently incomplete workflow engine, is worthy of consideration.

Introduction

If you have either K2 blackpearl® - or Nintex Workflow-based workflow solutions integrated with Microsoft® SharePoint®, you have much to consider before migrating your workflows to SharePoint 2013. You may be asking questions like, "Can I run my SharePoint 2010 workflows on SharePoint 2013?" "Upgrading means I get to use all of the new SharePoint 2013 features, right?" And, "If I'm upgrading SharePoint, do I have to upgrade my workflow software too?" "What if I want to use SharePoint in the cloud?" This whitepaper offers some answers to questions such as these, to help you ascertain the impact upgrading to SharePoint 2013 may have on your environment.

The Challenge

A new, cloud-capable workflow engine is introduced in SharePoint 2013. Interfaces to SharePoint *content* – sites, lists, and libraries, for example – have also changed as a result of the new workflow architecture. This affects workflow products that utilize SharePoint content and products that rely on the SharePoint 2010 workflow host to manage their workflows.

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[1] Sheridan, Kelly. "Microsoft SharePoint Server 2016 Expected Later This Year - InformationWeek." *InformationWeek*. InformationWeek, 3 Feb. 2015. Web. 30 Apr. 2015. <http://www.informationweek.com/software/enterprise-applications/microsoft-sharepoint-server-2016-expected-later-this-year/d/d-id/1318927>.

Many workflows are triggered by changes to SharePoint content, and also interact with SharePoint content, but the workflows themselves run on top of a workflow host or engine. Some workflow products use SharePoint's built-in workflow host, and some use their own engine. Nintex Workflow is an example of the former; K2 blackpearl is an example of the latter. We will examine the impacts of a SharePoint 2013 upgrade on both of these workflow products – that is, how the upgrade will affect your ability to use pre-existing workflow processes built in Nintex Workflow and in K2 blackpearl, including how these products interface with content in an on premises SharePoint 2013 instance versus a cloud based environment such as Office 365™.

Before we can look at how BPMS solutions are impacted by a SharePoint 2013 migration, we must first look at the differences between SharePoint 2010 and 2013 and the recommended upgrade paths.
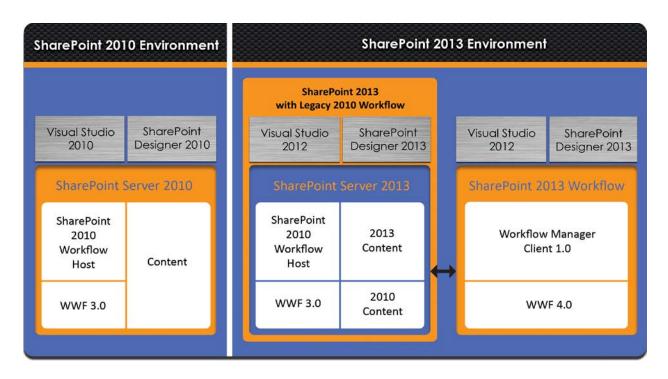

Figure 1

Relevant parts of SharePoint 2010 are compared with their equivalent SharePoint 2013 parts in Figure 1. Each version has the same available design tools (albeit different versions) and each is made up of content and a SharePoint 2010 workflow host. SharePoint 2013 maintains this for legacy reasons[2]. SharePoint 2013 can also host both 2010 content and 2013 content. But In

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[2] Microsoft Corporation. "Getting Started with SharePoint Server 2013 Workflow." *Getting Started with SharePoint Server 2013 Workflow*. Microsoft Corporation, 1 July 2013. Web. 24 Apr. 2015. <https://technet.microsoft.com/en-us/library/jj227177(office.15)>.

SharePoint 2013, there is a new product called Workflow Manager that runs independently of the SharePoint server.

Workflow Architecture

SharePoint 2010's workflow engine is built into the product. It runs on top of Windows Workflow Foundation 3 and has full integration with the SharePoint content databases. The workflow host provides management of the workflows and execution of processes, and works with the content hosted in the same environment (such as libraries, lists and tasks).

SharePoint 2013 boasts the aforementioned Workflow Manager 1.0. This new workflow engine communicates with SharePoint 2013 using REST calls and Service Bus messaging events, which allows it to work well with on premises instances of SharePoint Server, and equally well with cloud-based SharePoint instances such as is found in Office 365.[3]

SharePoint 2010 workflow functionality is retained by the inclusion of the legacy SharePoint 2010 workflow host.[4] This allows you to run SharePoint 2010 workflow operations inside of SharePoint 2013 – but there's more to consider.

Workflows Migrated from SharePoint 2010

SharePoint 2010 workflows migrated from SharePoint 2010 to the SharePoint 2013 environment rely on the built-in SharePoint 2010 workflow host.

> There is no migration path to Workflow Manager 1.0. Workflows intended to be executed by the new engine must be recreated in SharePoint 2013.

You can still create a SharePoint 2010 workflow and use all of the SharePoint 2010 workflow features by choosing the SharePoint 2010 workflow platform when in SharePoint Designer, however, you will be unable to access any of the 2013 workflow features.

Workflow Manager 1.0

Workflow Manager (WM) 1.0 is a separate product that runs on top of Windows Workflow Foundation 4.0.[5] It has a different feature set than the workflow engine built into SharePoint 2010. Some of the 2010 features are not available in this version, and some new features have been added. (See Appendix A for a list of new and deprecated workflow features in Workflow Manager.)

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[3] Microsoft Corporation. "What Is Workflow Manager 1.0?" *What Is Workflow Manager 1.0?* Microsoft Corporation, 11 Jan 2013. Web. 20 Apr. 2015. <https://msdn.microsoft.com/en/us/library/jj193471>.
[4] *Getting Started with SharePoint Server 2013 Workflow, op. cit.*
[5] *What Is Workflow Manager 1.0?, op. cit.*

In an on premises configuration, WM 1.0 can run on the Web front end or a separate server (as long as it is connected to the SharePoint 2013 farm); in an off premises scenario, WM 1.0 is ready for use with SharePoint Online/Office 365, and requires no additional configuration.

WM is comprised of the manager, a client, and tools. Workflow Manager 1.0 is the host for running and managing the workflows. Workflow Manager Client 1.0 contains the core assemblies and client API. Workflow Manager Tools 1.0 for Visual Studio 2012 is a collection of tools for authoring workflows for Workflow Manager.[6]

SharePoint 2010-based workflows may be called from within a SharePoint 2013-based workflow via SharePoint workflow interop.[7] You may also have SharePoint 2010 workflows already created that you wish to reuse in conjunction with your SharePoint 2013 workflows. Although using interop provides the means to leverage activities or features that do not exist in WM 1.0, we suggest reserving interop consideration for re-use of mature SharePoint 2010 workflows only.

Designing a Workflow in SharePoint 2013

Within SharePoint Designer 2013, you can choose which of the two platforms (SharePoint 2010 Engine or SharePoint 2013 Workflow Manager) will host your workflow. In order to do this, SharePoint Workflow Manager Client 1.0 must be installed and configured in your environment.[8]

As in previous versions, SharePoint Designer is the primary business-user tool for creating and publishing workflow definitions. It can also be used to package a workflow definition with or without associated SharePoint components. Developers might be more comfortable using an integrated development environment like Microsoft Visual Studio® to build a workflow (recall Workflow Manager Tools integrate with Visual Studio 2012[9]). Microsoft also touts Visio 2013® as a workflow development tool, and InfoPath 2013® for forms development.[10]

Upgrading content from SharePoint 2010 to SharePoint 2013 can only be done through backing up and restoring SharePoint databases.[11] [12] After migration, your content will be running in SharePoint 2010 mode.

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[6] Microsoft Corporation. "Workflow Manager." *Download 1.0 from Official Microsoft Download Center*. Microsoft. Web. 22 Apr. 2015. <http://www.microsoft.com/en-us/download/details.aspx?id=35375>.

[7] Microsoft Corporation. "Workflow Actions Available Using the Workflow Interop Bridge." *Workflow Actions Available Using the Workflow Interop Bridge*. Microsoft Corporation, 1 July 2013. Web. 1 May 2015. <https://msdn.microsoft.com/en-us/library/office/jj163929.aspx>.

[8] Microsoft Corporation. "What's New in Workflow in SharePoint Server 2013." *What's New in Workflow in SharePoint Server 2013*. Microsoft Corporation, 8 July 2014. Web. 23 Apr. 2015. <https://technet.microsoft.com/en-us/library/jj219638(v=office.15).aspx>.

[9] Microsoft Corporation. "What's New in Workflow in SharePoint Server 2013." *What's New in Workflow in SharePoint Server 2013*. Microsoft Corporation, 8 July 2014. Web. 23 Apr. 2015. <https://technet.microsoft.com/en-us/library/jj219638(v=office.15).aspx>.

[10] *Getting Started with SharePoint Server 2013 Workflow, op. cit.*

[11] "SharePoint 2013 Upgrade Process." *Download from Official Microsoft Download Center*. Web. 20 Apr. 2015. <http://www.microsoft.com/en-us/download/details.aspx?id=30371>.

[12] Microsoft Corporation. "Upgrade Content Databases to SharePoint 2013." *Upgrade Content Databases to SharePoint 2013*. Microsoft Corporation, n.d. Web. 21 Apr. 2015. <https://technet.microsoft.com/en-us/library/cc263299.aspx>.

Content databases are copied to the SharePoint 2013 farm via backup and restore from SharePoint 2010.[13] These copies are then attached and upgraded to SharePoint 2013 after your 2010 web applications are recreated and customizations are applied. The actual content upgrade is performed via a Windows PowerShell® command.[14] But the migrations will not be complete until after the site collection is upgraded.

At the site collection level, one can run a PowerShell command to upgrade all site collections to 2013, or you can run a deferred site collection upgrade, on a per site collection basis, that allows you to preview or evaluate the effects of the upgrade before committing to the change.[15]

What about Third Party Migration Tools?

Sharegate claims to be "the only recommended product to migrate Nintex Workflows and Nintex Forms between SharePoint versions and to Office 365." [16] Metalogix asserts "The Metalogix and Nintex product teams have worked together in order to provide you with comprehensive support for migrating Nintex workflows."[17] However, it should be noted that Sharegate and Metalogix aren't able to migrate workflows to run natively on the SharePoint 2013 workflow engine. A third-party tool that could actually perform such a migration – that is, moving your workflows to run on the new Workflow Manager – would have to rebuild your workflows in addition to managing the content artifacts. In short, without an upgrade capability for Workflow Manager, no third party tool is yet available to automagically build Workflow Manager-ready workflows from legacy processes.

Nintex

Nintex has several products in its suite. In this paper, we are concentrating on Nintex Workflow and Nintex Workflow for Office365.

Nintex Workflow provides a comprehensive, easy-to-use designer tool that replaces SharePoint Designer with a more intuitive interface. It also adds functionality that can be used within your workflow definitions.

Nintex Workflow 2010 works on top of a SharePoint 2010 environment, leveraging the SharePoint 2010 workflow host. Nintex Workflow 2013 is designed to run with on premises instances of SharePoint 2013, and creates workflows that run on the legacy SharePoint 2010 workflow host.

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[13] Microsoft Corporation. "Copy Databases to the New Farm for Upgrade to SharePoint 2013." *Copy Databases to the New Farm for Upgrade to SharePoint 2013.* Microsoft Corporation, 3 July 2014. Web. 27 Apr. 2015. <https://technet.microsoft.com/en-us/library/jj839720.aspx>.

[14] *Upgrade Content Databases to SharePoint 2013, op. cit.*

[15] Microsoft Corporation. "Upgrade a Site Collection to SharePoint 2013." *Upgrade a Site Collection to SharePoint 2013.* Microsoft Corporation, 18 Dec. 2013. Web. 27 Apr. 2015. <https://technet.microsoft.com/en-us/library/jj219650.aspx>.

[16] Sharegate. "SharePoint Migration Made Simple | Sharegate." SharePoint Migration Made Simple | Sharegate. Sharegate. Web. 21 May 2015. < http://en.share-gate.com/sharepoint-migration>

[17] Metalogix. "Content Matrix Migration Features: File Share Pre-migration Tools, Powerful File Migration and Analyze Metadata." Content Matrix Migration Features: File Share Pre-migration Tools, Powerful File Migration and Analyze Metadata. Metalogix. Web. 22 May 2015. <http://www.metalogix.com/Products/Content-Matrix/More-Features-2.aspx#migrate>.

These workflows can access both SharePoint 2010 legacy content and SharePoint 2013 content hosted in the content database with which it is associated.

Nintex Workflow for Office 365 is a separate workflow offering which is designed to take advantage of the new Workflow Manager. Since there is no upgrade path to Workflow Manager, users of Nintex Workflow for Office 365 have to recreate their workflows to run on the platform. Users of Nintex 2013 must recreate their workflows using Nintex Workflow for Office 365 in order to run on Workflow Manager.

Nintex Live is a product used to connect Nintex Workflow for SharePoint to Office 365, making it possible to connect a Nintex 2013 workflow to cloud services.[18]

Nintex Workflow Migration Steps

First, you must upgrade to Nintex Workflow 2013. As previously discussed, SharePoint 2013 removed the ability to perform in-place upgrades, requiring upgrades by database attachment instead. Nintex Workflow follows the same model, because it uses the SharePoint workflow platform.

> Users of Nintex 2013 must recreate their workflows using Nintex Workflow for Office 365 in order to run on Workflow Manager.

You also can only upgrade from Nintex Workflow 2010 to Nintex Workflow 2013. If you have a previous version, you must first upgrade it to Nintex Workflow 2010.[19] [20]

The recommended method of upgrading from Nintex Workflow 2010 to Nintex Workflow 2013 is to move the Nintex 2010 content database and SharePoint 2010 content database in step with each other (assuming this is how your environment is configured).

The following high level steps show what is typically involved in a Nintex 2010 to 2013 migration, [21] given the following assumptions:

  a. SharePoint 2013 is installed and configured
  b. SharePoint 2010 databases are not yet attached
  c. The Web Application that hosts the 2010 content has been created.

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[18] Nintex. "Nintex Workflow for Office 365 Product Guide." *Nintex Workflow for Office 365 Product Guide*. Nintex, 25 June 2014. Web. 30 Apr. 2015. <https://community.nintex.com/docs/DOC-1192>.

[19] Billing, Emily. "Nintex Workflow 2010 - 2013 Upgrade Instructions." *Upgrading Nintex Workflow 2010 to 2013*. www.nintex.com, Sept. 2014. Web. 20 Aug. 2015. <https://community.nintex.com/docs/DOC-1205>.

[20] Billing, Emily. "Migrating Nintex Workflow FAQs." *Migrating Nintex Workflow FAQs*. Nintex, 13 May 2014. Web. 29 Apr. 2015. <https://community.nintex.com/docs/DOC-1008>.

[21] Ibid.

The steps are:

1. Jobs that host or interoperate with the SharePoint workflow engine must be stopped.
2. Install Nintex Workflow 2013.
3. Disable the scheduler.
4. Attach the SharePoint 2010 content database (Ensure that the content in the destination environment is the same as the source environment).
5. Either:
    a. Use an existing Nintex Workflow configuration database, that you detach and backup from your SharePoint 2010 environment[22], restore and attach the database and then connect to it.

       Or

    b. Configure a new one (in which case any Nintex Live services must be added to it). It is recommended to migrate the SharePoint content database in lockstep with the Nintex content database.[23]
6. Enable the Nintex 2013 workflow actions.
7. Restore Nintex Live ID if you have one.
8. Attach the Nintex 2010 Workflow content database.
9. Activate the Nintex Workflow Web Application
10. Map the SharePoint Content Database to the Nintex Content Database
11. Restart all stopped services
12. Upgrade web application from classic to claims authentication (which is required for SharePoint 2013 and may require workflows to be reconfigured and republished).[24]
13. You may need to restart running workflows – particularly if they have any actions that use credentials due to the claims upgrade.[25]

After such an upgrade, you will have your original SharePoint 2010 content copied and running under the SharePoint 2013 umbrella in 2010 legacy mode and the Nintex Workflows upgraded to Nintex 2013, running on top of the legacy SharePoint 2010 workflow host.

Then you can create workflows that work with the SharePoint 2013 objects such as lists and libraries or the 2010 content running in legacy mode, without the 2013 workflow features.

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[22] Billing, Emily. "Nintex Workflow Backup and Restore." *Nintex Workflow Backup and Restore.* Nintex, 4 June 2014. Web. 30 Apr. 2015. <https://community.nintex.com/docs/DOC-1094>.
[23] Ibid.
[24] Billing, Emily. "Claims Based Authentication Nintex Workflow 2010 2013 Migration." *Claims Based Authentication Nintex Workflow 2010 2013 Migration Version History.* Nintex, 23 June 2014. Web. 29 Apr. 2015. <https://community.nintex.com/docs/DOC-1181>.
[25] Billing, Emily. "Migrating/ Upgrading - What You Need to Know." *Migrating Upgrading What You Need to Know.* Nintex, 10 June 2014. Web. 29 Apr. 2015. <https://community.nintex.com/docs/DOC-1088>.

Deployed Workflows after Migration

When you have migrated to Nintex 2013 and the content is running in 2010 legacy mode, (and it has not been upgraded to a 2013 artifact) workflow should continue to be triggered from the relevant SharePoint tasks such as adding an item to a library. Nintex asserts your workflow should work equally well after migrating the content to 2013.

Workflows that use content within the 2010 legacy mode data should still function, because the content database and Nintex Workflows were re-associated after the move, assuming that best practice was followed and the content database and workflow database were moved together.

In order to use SharePoint Workflow 2010 functionality within these workflows, one would need to use the interop facility to call a 2010 workflow running under the legacy 2010 workflow host within your SharePoint 2013 environment.

K2

K2 blackpearl is K2's premier workflow product. K2 also has another workflow offering tailored for online instances of SharePoint/Office 365, called K2 Appit for SharePoint. At a high level, both products have similar feature sets.

K2 blackpearl has its own standalone workflow engine. This engine does not rely on SharePoint in any way, and is neither affected nor influenced by what workflow engines SharePoint may run.

> K2 blackpearl has its own standalone workflow engine. This engine does not rely on SharePoint in any way, and is neither affected nor influenced by workflow engines SharePoint may run.

Although it may be used completely independently of SharePoint, K2 blackpearl supports full integration to SharePoint 2010 and 2013 content, including Office 365 and other cloud-based SharePoint 2013 implementations. As with Nintex Workflow, K2 blackpearl allows you to trigger workflows directly and seamlessly from lists and libraries, and to integrate with task lists.

K2 Appit for SharePoint uses the same standalone workflow engine, and is tailored to building workflows and forms based on SharePoint lists and libraries. Like blackpearl, Appit also uses K2 SmartObjects as its data layer.

SmartObjects

A single workflow can access any combination of SharePoint versions and content, even if it is held in different SharePoint configurations. These can be accessed from events within the workflow or through K2's data access layer. Called SmartObjects, these data adapters allow information to be presented to the workflows in an abstracted way.

One SmartObject method could access information from multiple sources, such as a SharePoint list combined with a Microsoft SQL Server® table, and present it as one combined dataset. Unlike SharePoint 2013, which restricts data access to within the site hosting the workflow, SmartObjects can access SharePoint data regardless of where it lives.[26]

Perhaps more importantly, SmartObjects connect directly with line-of-business systems. This means your data continues to reside in your business systems instead of being copied into your SharePoint application.[27]
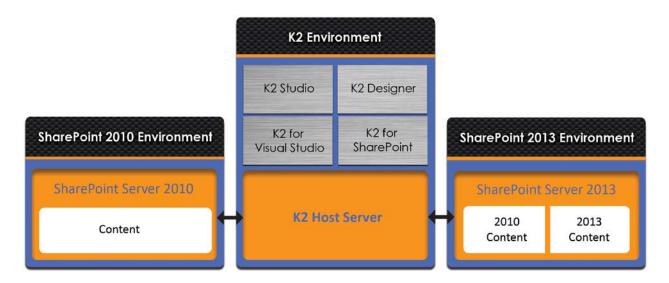

Figure 2: K2 blackpearl integrating with SharePoint 2010 and SharePoint 2013 Content

Working with SharePoint 2013 Content

As long as you are running a recent update of K2 blackpearl[28], it will support full integration with SharePoint 2010 and 2013 (on premises in SharePoint 2013, or off premises on SharePoint Online/Office 365).

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[26] SourceCode Technology Holdings, Inc. "K2 Appit for SharePoint and SharePoint 2013 Technical Comparison." *K2 Appit for SharePoint and SharePoint 2013 Technical Comparison* 2015. Web.
[27] Ibid.
[28] K2 blackpearl 4.6.7 or later.

Regardless of whether your content has been migrated to SharePoint 2013 or is still running on SharePoint 2010, a workflow can be created that runs with both. (One may have a workflow pulling from multiple SharePoint farms where content is in 2010 or 2013, or even multiple farms of the same version. For example, one may have a workflow that is triggered from a 2010 list and writes to a new 2013 list.)

Access to Office 365 or other off premises SharePoint site collections is seamless and once set up, a person designing a workflow could be oblivious to where it actually lives.

K2 blackpearl Migration Steps

In order to use SharePoint 2013 content as part of your solution, you must first make sure to update your software to a version that supports SharePoint 2013.[29]

The main steps are:

1. Install the K2 for SharePoint package which provides the connectors required in order for SharePoint 2013 to talk with K2. Note: this can be done any time before upgrading or using any SharePoint 2013 content.
2. Install the K2 SharePoint 2013 app to the SharePoint app catalog. Installing directly onto the server provides the full range of features.
3. Install the app on a SharePoint site collection and connect to the relevant K2 Farm.

Using any of the suggested SharePoint 2013 migration methods, you may choose to upgrade your content database to SharePoint 2010 legacy mode under SharePoint 2013, or go further and migrate that content to SharePoint 2013.[30] Or, you can create new 2013 content. In any case, your workflows can access this data.

Deployed Workflows after Migration of the Content Database

Users of K2 blackpearl who have migrated their SharePoint content to 2010 compatibility mode (provided it has not been upgraded to a 2013 artifact), should experience no interruption. Those workflows should continue to be triggered from the relevant SharePoint content, such as adding an item to a library.[31]

K2 blackpearl users who have migrated the 2010 content to 2013 – using the methods described in the SharePoint migration section of this document – may have to update their processes to work with the updated SharePoint content, although this was not confirmed by K2.

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[29] K2. "How To: Move from SharePoint Server 2010 to SharePoint Server 2013 in a K2 Environment." *K2com RSS*. K2, 27 Aug. 2014. Web. 21 Apr. 2015. <http://help.k2.com/KB001380%23migration%20for%20K2>.
[30] Microsoft Corporation, *op. cit.*
[31] Assuming the URL remains the same, and no data such as server names were hardcoded into the solution.

Only workflows that use content migrated from 2010 legacy mode to 2013 native content (that is, leveraging new SharePoint 2013-based functionality) will require some modification to work with the new content.

Conclusion

The introduction of Microsoft's new Workflow Manager, and the separation of the workflow engine from SharePoint 2013, have downstream impacts on users of business process management software like Nintex Workflow and K2 blackpearl.

Users of SharePoint 2010 who are considering upgrading Nintex Workflow solutions to take full advantage of the 2013 platform must rework existing workflow processes and change Nintex products. Because SharePoint 2013 also contains the 2010 workflow host, users interested in only porting their workflows over (without using the new features) can migrate their processes to the legacy engine – but they will likely have to refactor their processes to function in future SharePoint releases.

Obviously, one has the option in SharePoint 2013 to build new workflows which will naturally take advantage of the new features of Workflow Manager. Users can also call existing workflows within SharePoint Workflow 2010 using the interop feature for those cases when missing features of Workflow Manager are a problem.

> Given that Workflow Manager is incomplete in its first version, a product like K2 blackpearl – which does not require SharePoint – may seem very compelling as a go forward strategy.

No third party tool is yet available to automatically build Workflow Manager-ready workflows from legacy processes.

K2 customers are largely free of these concerns, because K2 workflow products contain their own workflow engine. K2 users won't need to rebuild processes, and won't have to join together old and new versions to get at all the features they need.

Also, K2 customers are not forced to lockstep upgrades of SharePoint with K2 product upgrades in order to build workflows against them. By running updates when you need them within K2, users will gain access to all new features as they are released.

In either case, through Nintex migration or installing the K2 for SharePoint 2013 update, you can use SharePoint 2013 content, both as a trigger for workflows and to interact with during a workflow.

What does this mean to those who want to upgrade to SharePoint 2013 and beyond? Well, for users faced with rebuilding their workflows to run on Workflow Manager, perhaps it's time to also consider whether moving to a product that sits beside SharePoint (such as K2 blackpearl) or on SharePoint Workflow or Workflow Manager (as does Nintex) is better for your enterprise. For example, moving to K2 shouldn't require much more effort than rebuilding your existing processes for Workflow Manager, and this option offers the added benefit of a mature workflow platform, free of the challenges that sitting on an ever changing platform currently present. Given that Workflow Manager is incomplete in its first version, a product like K2 blackpearl – which does not require SharePoint – may seem very compelling as a go-forward strategy.

Appendix A – Changes to Workflow features in SharePoint 2013

The following actions are new in the SharePoint 2013 Workflow Manager 1.0.[32] [33]

- Assign a Task
- Start a Task Process
- Go to This Stage
- Call HTTP Web Service
- Start a List Workflow
- Start a Site Workflow
- Build DynamicValue
- Get Property from DynamicValue
- Count Items in DynamicValue
- Trim String
- Find Substring in String
- Replace Substring in String
- Translate Document
- Set Workflow Status
- Create a Project from Current Item [Microsoft Project]
- Set the current project stage status to this value [Microsoft Project]
- Set the status field in the idea list item to this value [Microsoft Project]
- Wait for Project Event [Microsoft Project]

Some features of the SharePoint 2010 Workflow platform that are dependent on Windows Workflow Foundation 3.0 are deprecated in SharePoint 2013 Workflow Manager 1.0. The following SharePoint 2010 features are not available on the SharePoint 2013 platform: [34]

- Stop Workflow
- Capture a Version of the Document Set
- Send Document Set to Repository
- Set Content Approval Status for the Document Set
- Start Document Set Approval Process
- Declare Record
- Set Content Approval Status
- Undeclare Record
- Add List Item
- Inherit List Item Parent Permissions
- Remove List Item Permissions

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[32] Microsoft Corporation. "What's New in Workflows for SharePoint 2013." What's New in Workflows for SharePoint 2013. Microsoft Corporation, 31 July 2013. Web. 23 Apr. 2015. <https://msdn.microsoft.com/en-us/library/jj163177.aspx>.

[33] Microsoft Corporation. "Workflow Actions Quick Reference (SharePoint 2013 Workflow Platform)." *Workflow Actions Quick Reference (SharePoint 2013 Workflow Platform)*. Microsoft Corporation, 14 Mar. 2013. Web. 24 Apr. 2015. <https://msdn.microsoft.com/EN-US/library/office/jj164026.aspx>.

[34] Microsoft Corporation. "Workflow Actions Available Using the Workflow Interop Bridge." *Workflow Actions Available Using the Workflow Interop Bridge*. Microsoft Corporation, 1 July 2013. Web. 23 Apr. 2015. <https://msdn.microsoft.com/en-us/library/jj163929.aspx>.

- Replace List Item Permissions
- Lookup Manager of a User
- Assign a Form to a Group
- Assign a To-Do Item
- Collect Data from a User
- Start Approval Process
- Start Custom Task Process
- Start Feedback Process
- Copy List Item (SharePoint Designer 2013 supports only the document-copying action.)

Conditions:

- If current item field equals value
- Check list item permission levels
- Check list item permissions

Steps:

- Impersonation Step:

Data sources:

- User Profile lookup

Other features:

- Visio integration
- Association Column
- Content Type Association for reusable workflow
- Require Manage List/Web Permission' feature for list/site workflow
- Globally reusable workflow type
- Workflow visualization option
- Set this field in the project to this value [Microsoft Project]

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