![Nintex logo]

Moving to the Cloud
with Nintex

White paper on Migration

Contents

Introduction

Cloud services have seen huge uptake in recent years as more and more organizations move workloads previously provided by costly on-premises solutions and their associated hardware to managed cloud-based services that are regularly updated and maintained and don't entail significant capex costs.

This is particularly true in the Microsoft arena, where customers have been taking advantage of the industry-leading Office 365 platform to migrate their on-premises SharePoint farms into SharePoint Online, an online service provided and maintained by Microsoft that offers world-class security, compliance, and capabilities.

This guide provides tips and considerations for Nintex customers looking to migrate their business processes from SharePoint on-premises to SharePoint Online. It is broken into three sections designed to assist in planning your migration, understanding some of the technical considerations, and explaining capability differences between the different platforms.

Section One provides an overview on planning your migration. Section Two discusses technical considerations. In Section Three, we provide a feature comparison between Nintex Workflow for SharePoint (on premises) and Nintex Workflow for Office 365.

At the end of this guide, you will be able to use the **Nintex Migration Planning Tool** to help map your migration timeline and identify resources such as migration tools and partners that can streamline and accelerate your journey to the cloud.
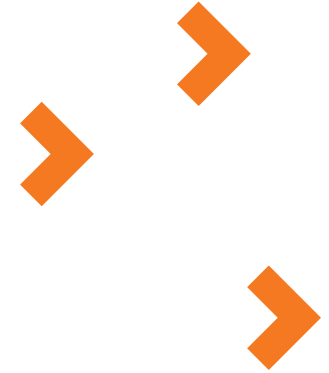
Planning your migration

Careful planning of your migration from on-premises to Office 365 is essential to minimize business impact and maximize the chances of success. The steps outlined below are based on the experience of hundreds of Nintex customers that have already moved to Nintex for Office 365.

STEP 1: AUDIT ALL CURRENT PROCESSES

The first step in planning a migration is to understand where every Nintex process is in your on-premises environment and build a complete register of processes.

Your register should be formatted to meet the specific requirements of your migration. However, some items that are often useful to include, in addition to workflow name and location, are:

BUSINESS OWNER – Who owns the process being migrated? Knowing this person simplifies communication during the migration and final business sign-off.

BUSINESS PRIORITY – This can be an important factor in how the process will be migrated. For example, can the business tolerate downtime in this process? Does it need to be migrated without any impact to business operations?

PROCESS COMPLEXITY – How complex is the workflow? Is it a simple process that will migrate with little or no issue, or more complex that will require additional development?

PROCESS FREQUENCY – How often does the workflow run? How many instances are created each day?

PROCESS CONTENT – How complex the process is? Does the workflow contain complex logic or custom actions, or interact with internal systems?

With Nintex, you can use several mechanisms to audit workflow processes in SharePoint on-premises. We recommend using Nintex process analytics (Nintex Hawkeye Inventory Lens) as the most comprehensive way to audit, but there are native basic reports available within Nintex for SharePoint, as well as PowerShell commandlets that you can use to review your data. These options are discussed later in more detail.

Additionally, our migration partners such as AvePoint, Quest (formerly Metalogix), and ShareGate" also have built-in reports that can help you audit your processes and SharePoint environments prior to migrating them.

Note: Auditing your existing automated processes in SharePoint is not the same as documenting your processes. As part of the migration initiative, Nintex recommends either updating your business process documentation for your automated workflows, or, if you have not yet done so, documenting your processes with a tool such as Nintex Promapp. This will ensure that you understand the value of these automated processes as you move them to Office 365.
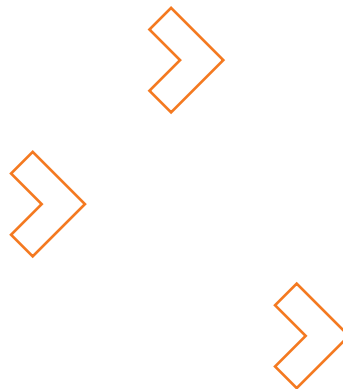
On-Premises Inventory

Nintex Workflow for SharePoint provides a powerful inventory capability that can be used to identify all workflows within a site collection. The Nintex inventory tool will detail each workflow in the site collection and can be customised to show additional attributes that can then be exported to form the basis of a process register.
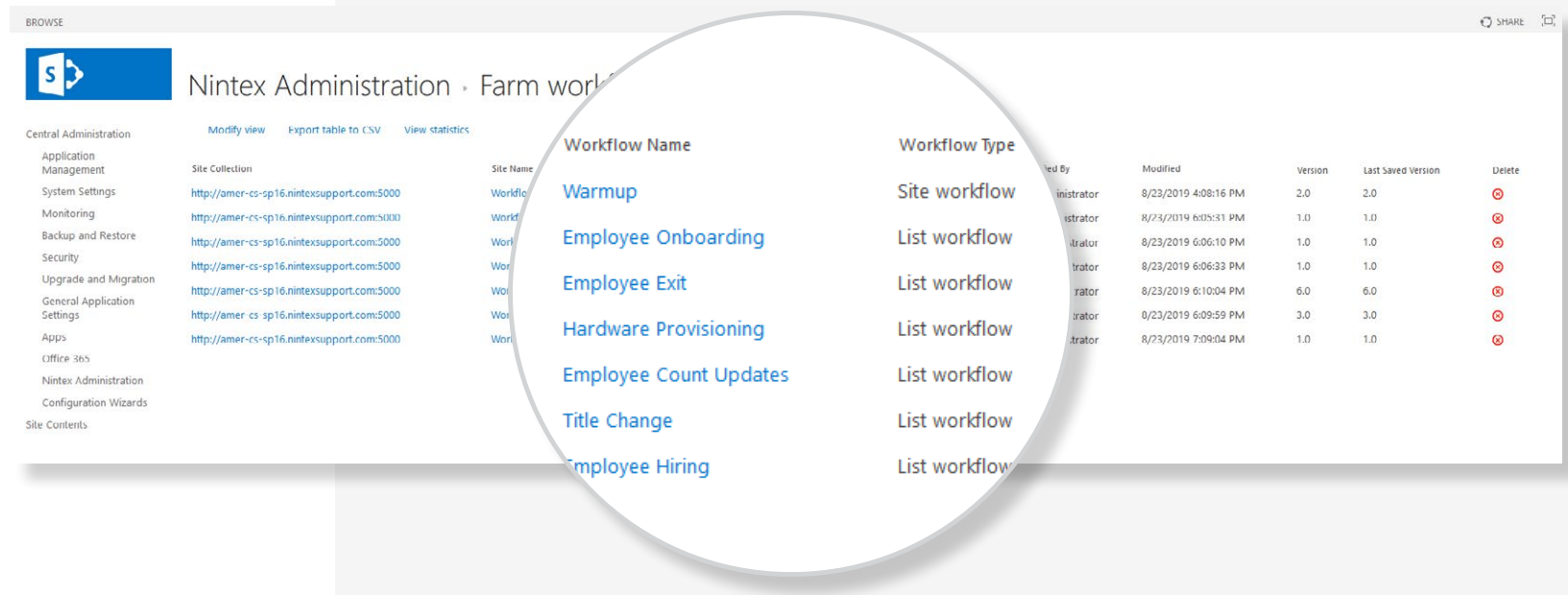
Nintex "Know Your Workflow" Script

The "Know Your Workflow" script provides an overview of workflow telemetry directly from your on-premises environment that can be analyzed outside of SharePoint. It will help review the number of published workflows and number of workflow instances, as well as the number of workflows per site or site collection.

Download the KYWF script directly from nintex.com

Nintex Hawkeye

Nintex Hawkeye can provide a detailed inventory of all workflows within a SharePoint on-premises environment. Through the Hawkeye Inventory Lens, users can identify attributes such a when a workflow was last run, its frequency, who published it, and other attributes.
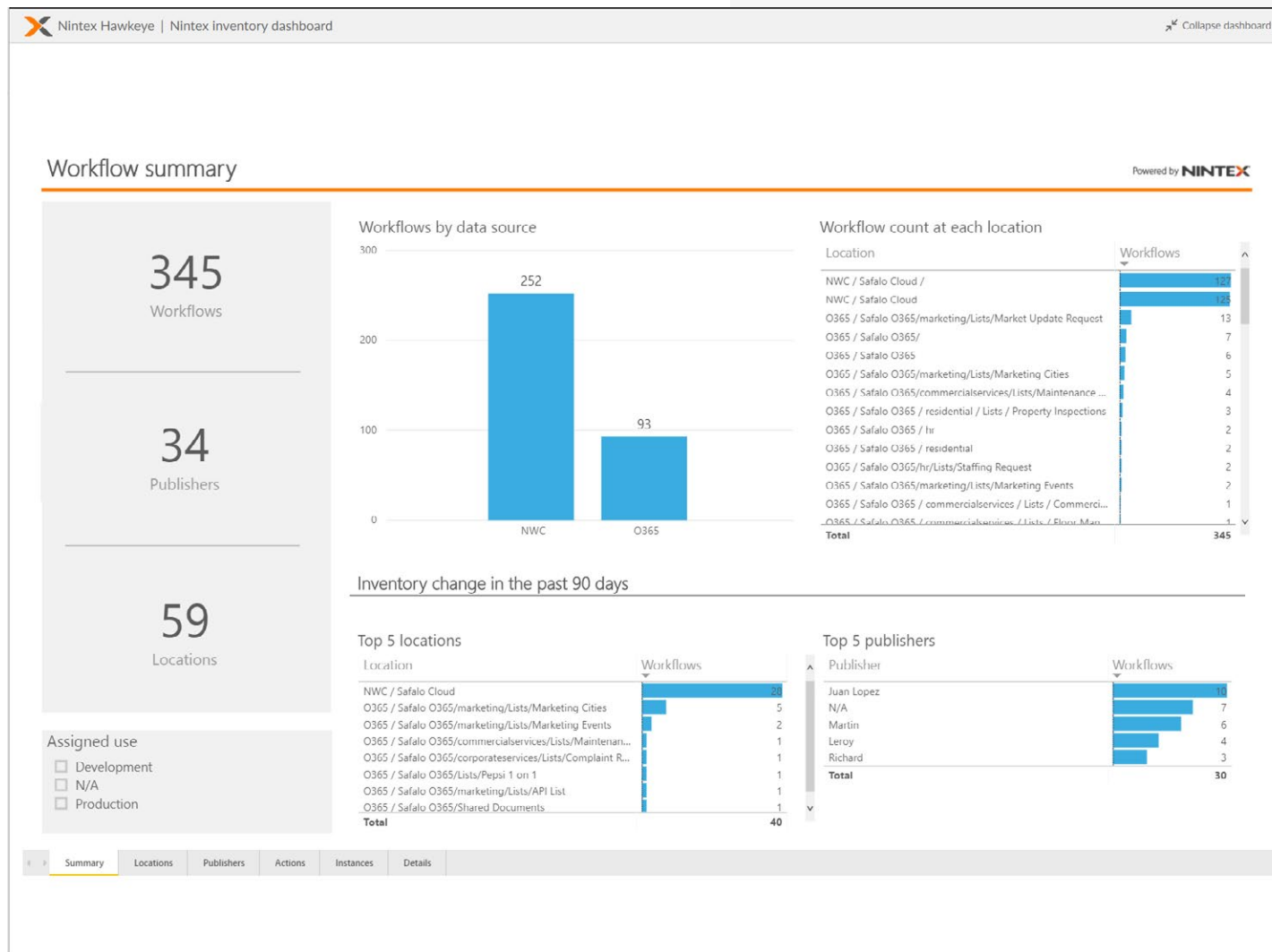
STEP 2: CONFIRM THE SUITABILITY OF THE PROCESS TO BE MIGRATED

Step 2a – Workflow characteristics

Within Office 365, Nintex workflows now utilize the Microsoft Office 365 Workflow Manager (WFM) infrastructure for workflow execution. Workflow Manager is a multi-tenant service operated and maintained by Microsoft that support many users simultaneously. As with all multi-tenant services, there are certain protections to ensure each user across all organizations using the Microsoft Workflow Manager infrastructure get a "fair slice" of the available workflow processing power so that one user does not monopolize the resources.

These protections can affect how workflows run, especially workflow processes that exhibit the following traits:

- Performing queries against large sets of SharePoint items

- Updating metadata on large numbers of SharePoint items

- Workflows that have many thousands of instances running at the same scope (site).

These types of protections are consistent across shared multi-tenant cloud services and are relevant to most Software as a Service migration discussions. In migrating to the Microsoft cloud, this is relevant to discussions of Nintex Workflow, SharePoint Designer, and associated workloads in the Office 365 environment.

During migration planning, assess whether your workflow processes exhibit any of the above traits. If they do, there are several options available:

CONSIDER REFACTORING THE PROCESS – Can the process be refactored to reduce the number of items it interacts with? Is it possible to filter the data earlier in the process? Can the process be redesigned to be more effective?

CONSIDER A MORE APPROPRIATE TECHNOLOGY – Should the business process continue to reside in SharePoint as it moves to the cloud? Would a technology such as SQL, a Data Warehouse, or a workflow tool hosted in Azure such as Nintex Workflow Cloud be more appropriate?

SHOULD THE PROCESS BE MIGRATED AT ALL – Should the process be moved to the cloud in the first place? If the process can't be moved to a different technology or refactored, does it need to be migrated? Or, if it runs on a legacy system, is a technology such as robotic process automation more appropriate?

For more details of the protections mentioned above, see the **Workflow Throttling** section of this document.

STEP 3: CONFIRM THE SUITABILITY OF THE PROCESS TO BE MIGRATED

Step 2b – Actions & platform capabilities

Just as there are differences in capability and behavior between SharePoint on-premises and Office 365, there are also differences in the actions and capabilities available in Nintex for these different platforms. While Nintex strives to ensure that these differences are minimal, limitations in the available APIs and platform capabilities provided by Office 365 can introduce differences that will affect process migration.

ACTIONS

Most of the actions available in on-premises workflow have a comparable **workflow action in Office 365**. However, as the Office 365 workflow engine is based on a different technology (WFM), a number of actions are either not available due to capabilities simply not being present in Office 365 or behave slightly differently in the cloud. This may impact your workflow migration.

Nintex has worked closely with our migration tool partners to ensure their migration products clearly identify these differences so you can take them into account in your migration planning.

PLATFORM CAPABILITIES

If a workflow process leverages a platform capability such as Scheduled Workflows, Conditional Start, Workflow Constants or User Defined Actions, the Office 365 platform provides parallel functionality that in many cases is more robust.

Further details of Office 365 platform capabilities are outlined in Part 3 of this document.

STEP 4: SELECT AN APPROACH FOR MIGRATION

There are many strategies for migrating from SharePoint on-premises to Office 365. Nintex has worked directly with three migration partners that specialize in the migration of SharePoint assets and content, including Nintex assets, ensuring that they are migrated in sync.

AvePoint
www.avepoint.com

Support options:
https://www.avepoint.com/blog/migrate/nintex-workflows-avepoint/

ShareGate
www.sharegate.com

Support options:
https://support-desktop.sharegate.com/hc/en-us/articles/115000600187-Nintex-FAQ

Quest (formerly Metalogix)
www.quest.com

Support options:
https://support.quest.com/technical-documents/metalogix-essentials-for-office-365/2.1.5/advanced-installation-guide/nintex-workflow-migration-to-sharepoint-online

The final option for migration is that of manual migration, taking your process design from on-premises and manually rebuilding it in Office 365. While there will always be some manual refactoring required, Nintex strongly suggests leveraging a migration partner to move most the workflows automatically and then remediate where necessary.

Did you know

It is not possible to migrate 'running' workflows from one platform to another. Your migration plan will need to drain out all workflows from one platform and recommence in the target.

STEP 5: READY FOR MIGRATION!!

The last step is to migrate your processes to Office 365, giving you the benefits of the Microsoft premier cloud and the continually updated cloud platform from Nintex.

Section 2

Technical Considerations for Migration of Nintex

INTRODUCTION

When moving a process to the cloud, there are several technical considerations that are often overlooked but that need to be understood to ensure your processes will migrate and operate as expected in Office 365. This section outlines these considerations.

NETWORK LATENCY

For cloud services, the user's proximity to where the service is hosted is crucial. If you are using a cloud service that is located in the UK, yet will be accessing and using that service from Australia, every interaction with the service will have to travel from Australia to the UK and back again. While these calls are quick, if a service is making hundreds of calls a second, transit times can quickly add up and introduce latency, making the experience appear slow to end users.

SaaS companies understand the importance of minimizing latency and often employ strategies such as local caching, content delivery networks, and, most important, localized data centers.

Latency can be a particular issue for apps built on Microsoft's Office 365 platform. Each time services interact with SharePoint Online (SPO) to read or write data, they call SPO and then wait for the response. This can result in unacceptable performance, manifesting itself as SharePoint pages being slow to load and delays interacting with Nintex services such as Nintex Forms and the Nintex Workflow Designer.

When installing a trial or purchasing Nintex for Office 365, you will be asked for your address and assigned to the closest data center.

Nintex for Office 365 provides data sovereignty in four data regions around the globe to reduce latency and serve the markets of North America, Europe, Asia and Australia.

Some early adopters of Microsoft Office 365 and Nintex may find that their Microsoft Office 365 tenant or Nintex data center is not in the best location to ensure low latencies for their users.

In such cases, Nintex Support can assist in migrating your Nintex for Office 365 tenant to a location that is closer and therefore reduces latency. If you believe this issue may be affecting your organization, please contact Nintex Support via your **Customer Central** instance or **email** with the following information:

OFFICE 365 TENANT LOCATION
The location of your Office 365 tenant via the Office 365 portal or your Microsoft support contact.

NINTEX FOR OFFICE 365 REGION
This can be confirmed by opening Nintex Workflow for Office 365 and selecting Information > **About** from the menu and noting the region displayed in the About dialog.

WORKFLOW THROTTLING

Nintex Workflow for Office 365 leverages the Workflow Manager (WFM) of Office 365. In Office 365, the WFM engine operates on a multi-tenant model, allowing one WFM farm to serve hundreds of customers across Office 365. To ensure a consistent experience across the shared infrastructure, WFM implements various controls to limit processing and fairly distribute resources, including the key control of throttling.

Throttling is common in cloud services and follows the principle that when a resource is requested too many times in a defined period, future requests will be throttled (slowed by the workflow engine) or denied (terminated by the workflow engine) to ensure other users get fair access to the resource.

Microsoft has published guidance on the various workflow throttle types and limits that may be encountered, and design recommendations to address them, at **Microsoft guidance on throttling and performance.**

Did you know

SharePoint Online and the Workflow Manager are independent services, each with their own throttles, limits and performance characteristics.

SHAREPOINT THROTTLES

Similar to workflow throttling, SharePoint has a number of throttling mechanisms to ensure that resources are allocated fairly among customers and users.

While it is rare to encounter SharePoint throttling, and Nintex takes steps to ensure that workflows minimize calls to SharePoint, Nintex has implemented sophisticated retry logic that adapts to throttle responses from SharePoint online and maximizes the chance of your process completing without error.

For more information on throttles in SharePoint, click **here.**

ACCESS CONTROL LISTS (ACL) OR UNIQUE SECURITY SCOPE LIMITS

Another key consideration when using SharePoint Online is applying unique security scopes to content. SharePoint leverages a construct called an Access Control List (ACL) to define who may access content in a SharePoint list or library. Like all software, SharePoint Online limits the number of ACLs that can be defined. At the time of publication, Microsoft has documented a limit of 5,000 unique security scopes per list. Above that number, the application of additional security scopes will become unreliable and may fail inside a workflow.

These limits can be encountered when updating security settings for particular users against a large list or library, such as employment contract documents or perhaps leave request items.

In such situations, additional up-front planning can mitigate the limits being encountered. Items to consider include:

REDUCING THE NUMBER OF PERMISSIONS
Look for commonality in permissions and try to minimize the number of unique security scopes used, or leverage security groups

USE MULTIPLE SITES OR LISTS
Instead of having one list with all the items within it, consider splitting the process up to use multiple lists, perhaps splitting by geography, department or even first letter of the surname, allowing each grouping to have its own limit of 5,000 unique security scopes.

Further information on SharePoint Online limits can be seen **here**.

TIGHT LOOPS IN THE WORKFLOW DESIGN

As mentioned in Part 1, certain workflow designs do not run well in the cloud. These include workflows that have what is considered a tight loop — a process that iterates through a list of data and performs an action on each loop such as updating an item, or calling out to an external service. Such processes can trigger SharePoint and the Workflow Engine's throttle protections, resulting in the workflow being slowed down.

REDUCE THE NUMBER OF INSTANCES CREATED

A customer's workflow might be throttled if there are too many instances running on the same scope (list or library). Workflow for SharePoint on-premises had a similar construct that would limit the number of concurrent workflows running on a single content database. However, a few simple design choices can reduce the potential to run into these issues.

USE A QUERY
Don't iterate through large sets of data. Imagine a list of 5,000 items. Don't iterate over the list and potentially cause a throttle from the high number of loops. Instead utilize a query action to get back only those records that meet your criteria, and iterate through those items.

LEVERAGE SCHEDULED SITE WORKFLOWS
Instead of creating hundreds of single-item workflows, each looping constantly to see if an item meets its criteria, use a scheduled site workflow that runs once and does the check. This will significantly reduce the number of workflow instances, be more resilient, and reduce the chances of being throttled.

Workflow Size

While most users will not run into issues with workflow size, as with all software, certain limits may be encountered, specifically if you are building large and complex workflows in the cloud.

With the SharePoint on-premises platform (used by Nintex Workflow on-premises, SharePoint Designer and several other vendors), workflows could run into problems when the underlying workflow code reached 500kb or around 100 actions and could not be written back to disk within the time limits of the SharePoint platform. This led to customers splitting workflows into smaller chunks as a workaround.

With the Workflow Manager engine used by both SharePoint Designer (SharePoint 2013) and Nintex Workflow for Office 365, there are two different limits that can impact customers building large workflows. In that case, the 500kb workflow definition size or 100 workflow action limit previously used for on-premises workflows are no longer relevant.
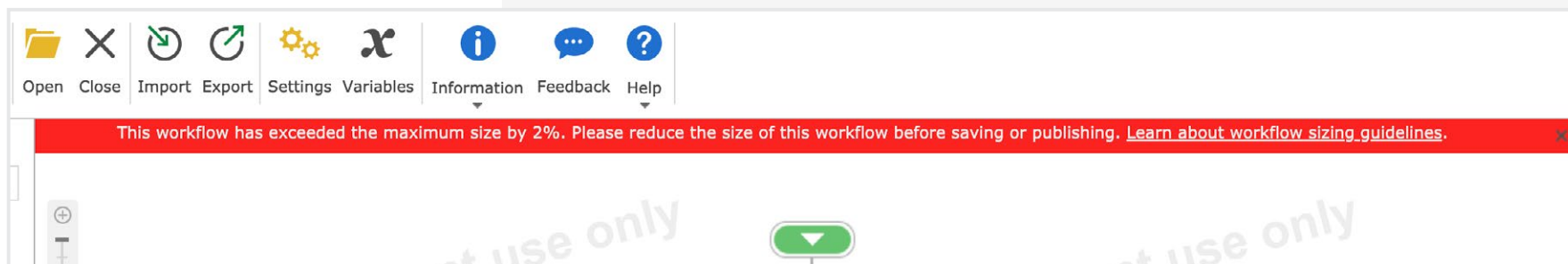
Workflow Memory Size

Once a workflow has been published, before it can be run, the various XAML activities are assembled in memory before execution as a combination of the published design and references to other internal activities required by the engine. At the time of publication, each workflow can have a maximum memory size of 100MB.

NINTEX LIVE ACTIONS

To bring additional functionality to the SharePoint Online workflow platform, Nintex leverages our Nintex Live service infrastructure. This extends the capabilities and number of available actions within Nintex Workflow for Office 365. Given that Live actions communicate with Nintex services out to the Office 365 environment, there are a couple of points that users should consider.

Action Execution Time

Each time a Live action executes, the action will make an authentication call against Nintex Live with the credentials provided inside the action. This can cause the action to take slightly longer to run than a native workflow action.

User Authentication

Nintex Live workflow actions will execute using the credentials specified within the action configuration. This means the user will need permission to perform the respective workflow action (such as creating or deleting a list item).

Nintex Live Communication Security

All communication to the Nintex Live service is done through the Transport Layer Security (TLS) protocol. Communication between Office 365 and Nintex Live can take place at Design Time and/or at Run Time when the workflow executes and sends action configuration details to Nintex Live. More information about Nintex Live and security can be found within the Nintex product documentation.

Feature comparisons between on-premises and Office 365

This section outlines key feature differences between Nintex for SharePoint on-premises and Nintex for Office 365 in the cloud. While we have strived to cloud-enable all the features available in Nintex for SharePoint, several changes were necessary either due to constraints of the Office 365 platform or to make the functionality more relevant for the cloud.

COMPONENT WORKFLOWS AND USER DEFINED ACTIONS

Nintex Workflow for Office 365 introduces a concept called a Component Workflow that allows a piece of logic to be packaged as a single workflow and called from any other workflow in Nintex Workflow for Office 365 (or Nintex for SharePoint on-premises or Nintex Workflow Cloud, for that matter). With a Component Workflow, you can choose to package repeated logic, or logic that you want to ensure executes in a particular way, and call that instead of asking workflow designers to manually build it the same way every time.

What makes Component Workflows so powerful is that they allow the designer to pass variable information to and from the calling (parent) workflow, meaning you can pass important context information, perform logic on it, and update the variables before passing that information back.

Nintex recommends that users migrating User Defined Actions from Nintex Workflow on-premises to Nintex Workflow for Office 365 leverage Component Workflows to address needs typically handled by a User Defined Action.

Swapping to a component workflow could not be simpler. Simply take the User Defined Action workflow from on-premises and recreate it as a workflow within the Nintex Workflow for Office 365 designer. You will need to ensure that the same input and output variables are made available within the new component workflow.

At publish time, make sure you check "Enable Component Workflow."

There are two options that can be configured to control where the Component Workflow is called from:

OTHER WORKFLOWS WITHIN THIS OFFICE 365 TENANT

Allows you to limit the calling of this workflow from within your Office 365 tenant. If you choose this option, you can also choose to inherit workflow instance metadata such as the initiator and manager values.

EXTERNAL APPLICATIONS, USING A HTTPS API ENDPOINT

Allows the workflow to be called by other tenants, products or custom applications, using a secure endpoint.

Call Component workflow from

| Other workflows in this Office 365 tenant | Disabled |
| External applications, using a HTTPS API endpoint | Disabled |

Assigned use   ○ Development   ● Production

Select the option that describes the intended use of the workflow.

Once the workflow is published, it can be referenced in other workflows by leveraging the "Run Component Workflow" action and choosing the correct value from the Component Workflow Field.

The action configuration will automatically update to reflect the fields the Component Workflow requires. Make sure you configure these with the various variables required for input and output.

Run Component Workflow

Save   Cancel | Feedback   Help

Component workflow *

Call General Ledger ▼

Last modified on 5/5/2019 at 5:30:27 PM

◉ Wait for Component workflow to complete before continuing
Select to receive output variables
◯ Run both workflows concurrently

Inputs

Name
Text

{Workflow Context:Instance ID}

⊕ Advanced Lookup

Description
Text

{Workflow Context:Workflow name}

⊕ Advanced Lookup

Outputs

This workflow does not contain any output parameters.

SCHEDULED WORKFLOWS

Nintex Workflow for Office 365 has a powerful workflow scheduling capability that allows site workflows to be scheduled to run at certain days and times. The Scheduled Workflow capability can be leveraged to run "batch like" workflows on a regular schedule instead of propagating hundreds of individual looping workflows.

The Scheduled Workflow capability is enabled by clicking on the "..." of the workflow process in the Workflow Gallery and choosing **Schedule.**

Each workflow can have up to five defined schedules, each of which can have a different recurrence schedule. For example, you could run a process every weekday at 5:00pm and again on the last day of the month. Because Office 365 supports global business operations, scheduled workflows also can be configured to recognise different time zones.

CONDITIONAL START

A key area of innovation in Nintex Workflow for Office 365 relative to Nintex Workflow on-premises is the Conditional Start capability. On-premises workflows have limited options for conditional start, which restricted its usefulness and caused workflow designers to build custom logic into their workflow designs to take advantage of it.

With Nintex Workflow for Office 365, we have made several improvements to the Conditional Start feature, allowing multiple conditions to be configured encompassing logic operators such as AND and OR.

Complex Conditional Start logic can be defined separately both for items that are newly created on a SharePoint list and for items that have been modified/edited.
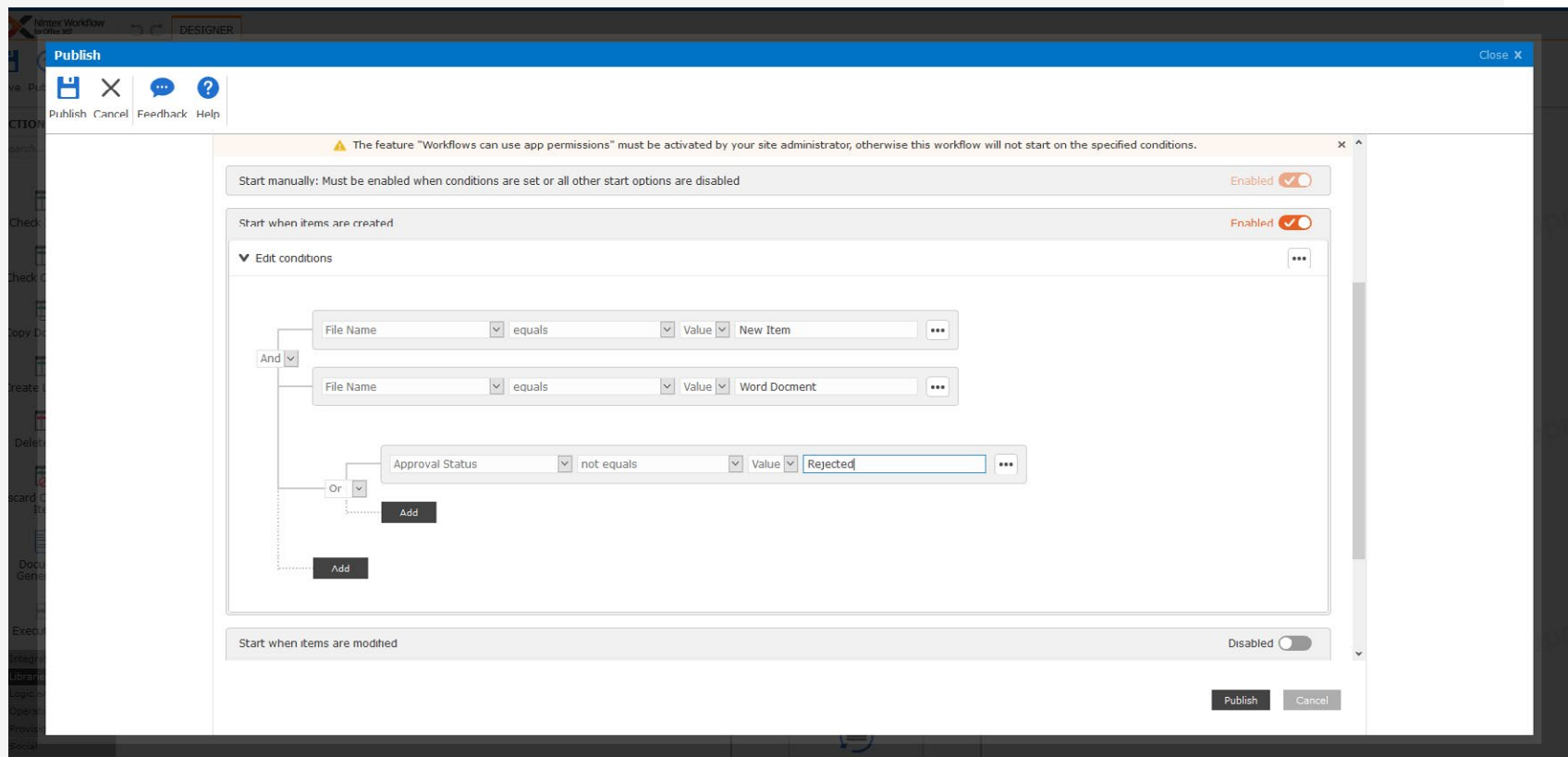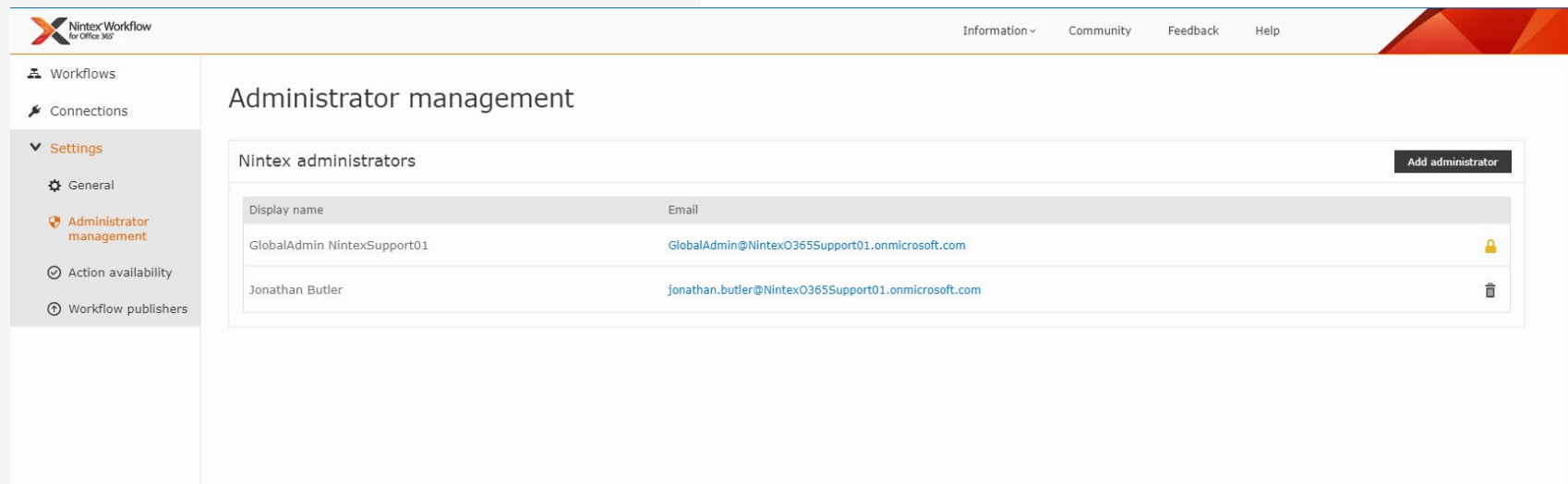
NINTEX ADMINISTRATOR

A key feature in Nintex Workflow for Office 365 is that of the Nintex Administrator. Once configured, the Nintex Administrator can centrally manage configuration of settings and other governance capabilities that previously were not available.

Setting up a Nintex Administrator

Before any tenant-wide features or capabilities can be activated, at least one administrator must be configured. To do so, navigate to the Workflow Gallery and click on the Settings option on the left-hand menu and choose Administrator Management.

If no administrator has been configured, you will be presented with a screen inviting you to Register as a Nintex Administrator. Clicking on that link will open a dialog to request a user with Global Administrator privileges to authenticate and register as an administrator.

Once the first Administrator has been set up, other administrators can be registered regardless of whether they are Global Administrators of Office 365.

ALLOWED PUBLISHERS

Once an administrator has been created, an option is available in Settings to limit who can publish workflows in the tenant. This capability can be particularly useful to implement governance around who may use valuable subscription workflow entitlements by publishing workflows to production.

By default, the Allowed Publishers feature will allow anyone in the tenant with Design Permissions to publish a workflow. However, you may restrict workflow publishing to specific users, so that all other users may save workflows but not publish them.
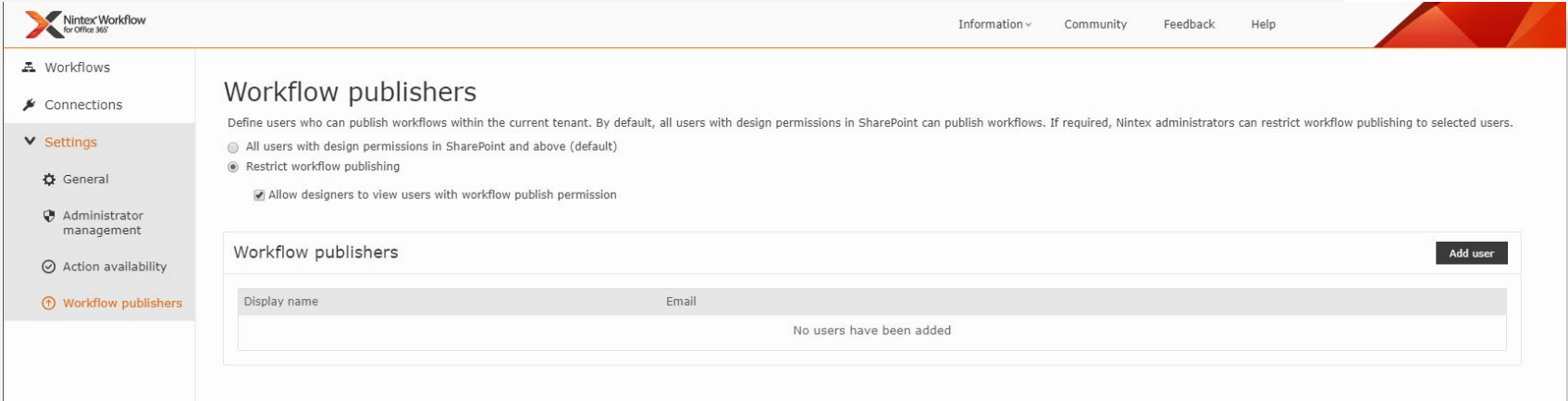
ACTION AVAILABILITY (ALLOWED ACTIONS)

Administrators also may limit access to certain actions within the Nintex Workflow for Office 365 designer by clicking the Action Availability link in the left-hand menu. This capability is similar to the Allowed Action capability in Nintex Workflow for SharePoint.

With the Action Availability feature, administrators may remove access to certain actions that either require additional training or may not comply with their organizational governance, such as Twitter / Facebook and other social media actions.

Unchecking an action in the Action Availability section makes it unavailable to use in new workflows. If an existing workflow is imported or republished that contains that action, a warning message will be generated.
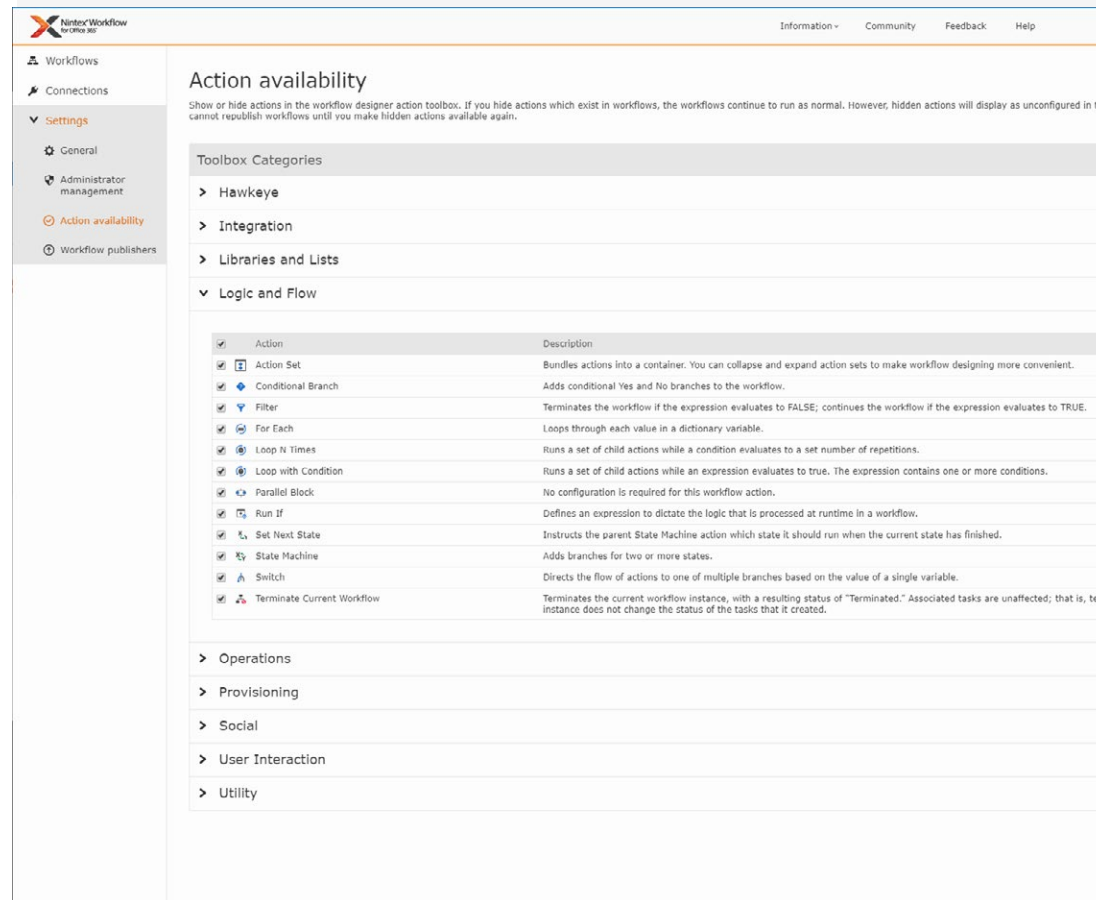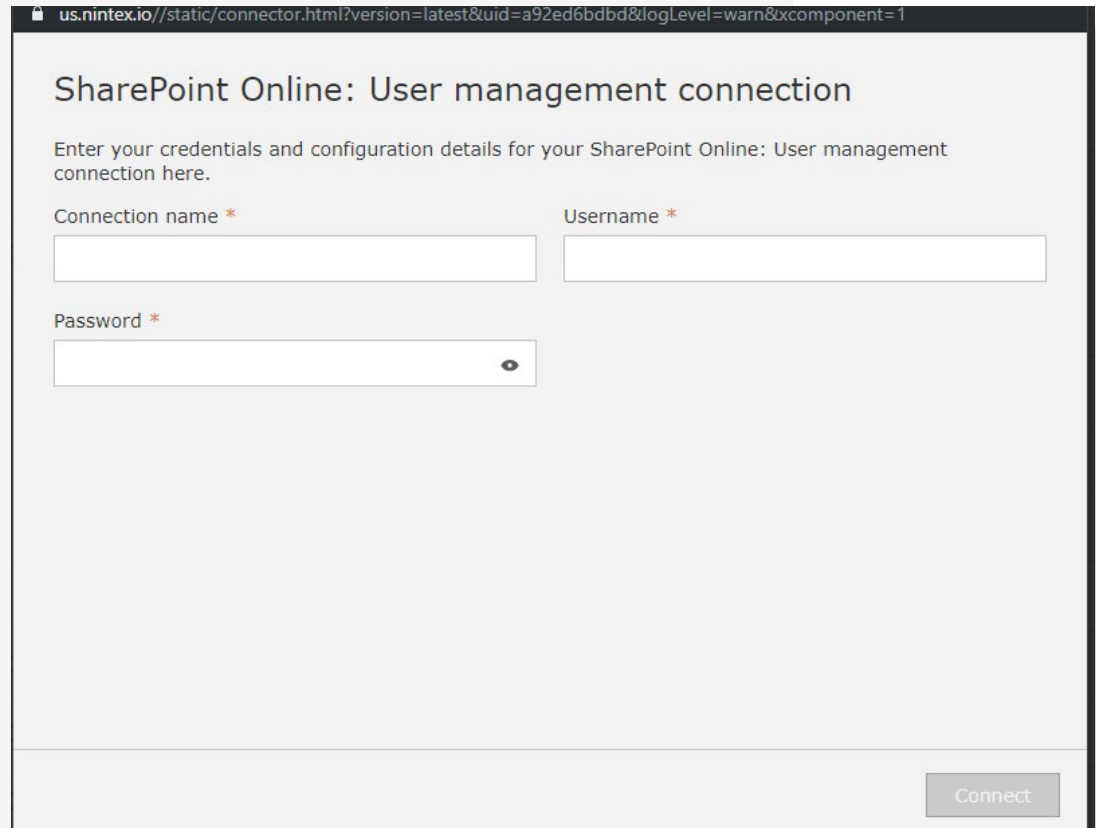
CONNECTION MANAGER FOR CREDENTIAL MANAGEMENT

Nintex Workflow for Office 365 and Nintex Workflow Cloud introduce a new concept of Connections that enable a set of credentials to be created, stored, and shared across action configurations and even users. This allows an administrator to set up and maintain a set of credentials centrally.

In Nintex Workflow Cloud, all connectors that use credentials support Connections that can either be set up centrally, or directly within the action configuration. Nintex Workflow for Office 365, on the other hand, only supports Connections for approximately 30 actions, though this number is increasing steadily.

Connections in Nintex Workflow for Office 365 can be associated with scopes, allowing them to be used only at the Site, Site Collection, or Tenant levels (the latter available only to Nintex Administrators). This allows organizations to align access to shared credentials to their governance policies.

us.nintex.io//static/connector.html?version=latest&uid=a92ed6bdbd&logLevel=warn&xcomponent=1

SharePoint Online: User management connection

Enter your credentials and configuration details for your SharePoint Online: User management connection here.

Connection name *

Username *

Password *

Connect

You can learn more about the Connection Manager at **O365Workflow-ConnectionsUpdate.**

WHAT'S NEXT?

You now have a foundational understanding of migrating from Nintex for SharePoint (on-premises) to Nintex for Office 365. We're here to help with any questions you may have.

Remember to complete your **Nintex Migration Plan** so that we can provide you with a customized guide to strategy and content related to your migration.

Nintex provides extensive migration-related resources within our Community site (**https://community.nintex.com/**). We encourage you to head there and review the articles and guides created by Nintex and our migration partners. This content will give you a deeper look at specific components of migrating to Office 365 with Nintex and answer your technical questions.

The Nintex Community also is a place where you can engage with others engaged in cloud migration. You can meet new peers, discuss the experience, and learn how much more you can do with Nintex once you've arrived in the cloud.

About Nintex

Nintex, the trusted global standard for process management and automation, enables both IT and BDMs to more quickly and easily create and manage simple to sophisticated business processes from back to front-office. More than 8,000 customers in 90 countries turn to Nintex's workflow automation platform to drive productivity and accelerate business results. We have the fastest way to build applications, lowest total cost of ownership, and the highest overall satisfaction among our peers.

In 2018, Microsoft awarded Nintex Workflow for Office 365 with Best Overall App and Nintex Forms for Office 365 with Most Business Value. Nintex also won Microsoft Office and SharePoint Application Partner of the Year award.

We welcome the opportunity to discuss your business needs and demonstrate our unique approach to workflow automation. We are happy to offer the following services:

- A business requirements discussion with one of our workflow experts and our partners

- Solution demos and proof of concepts tailored to your requirements

- A comprehensive response to your RFI/RFP

- Customer testimonials

Learn more about **Contract Lifecycle Automation for Salesforce >**
Discover the industry's most powerful and easy-to-use platform, visit **nintex.com**