Microsoft Dynamics AX

Workflow approval via email

This document highlights the functionality in Microsoft Dynamics AX 2012 that enables the configuration of workflows that let users take approval actions directly from email messages.

White paper

November 2013

Updated: September 2018

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Contents

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This document highlights the functionality in Microsoft Dynamics AX 2012 that enables the configuration of workflows that let users can take approval action directly from email messages.

What's new

The Approval via email feature has been updated with the following functionality:

- Add comments when you approve or reject a workflow by using the new **Approve** and **Reject** links.

- Add attachments to a workflow item to provide additional details.

To use these new features, you must install the following hotfix: KB 2954087. If you're using cumulative update 8 for Microsoft Dynamics AX 2012 R3, you don't have to apply the hotfix, because it's included in that release.

You must also have the updated version of the Microsoft Dynamics AX Connector for Mobile Applications (the connector).

Set up the new functionality

1. To use the new **Approve** and **Reject** links, replace the existing link strings in the work item instructions with the following strings. (For an example of work item instructions that use the existing link strings, see step 9 in the Configuring workflow to allow approval from email section of this document.)

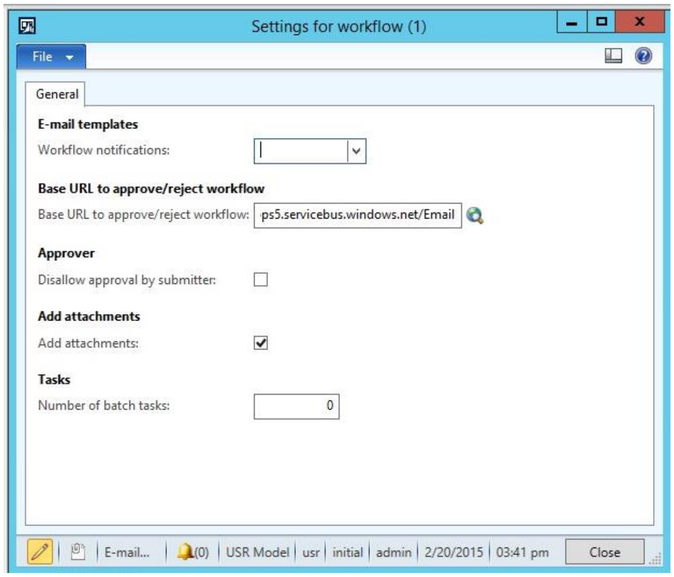
   Old link strings:

   - Approve: %Workflow.Link to approve%
   - Reject: %Workflow.Link to reject%

   New link strings:

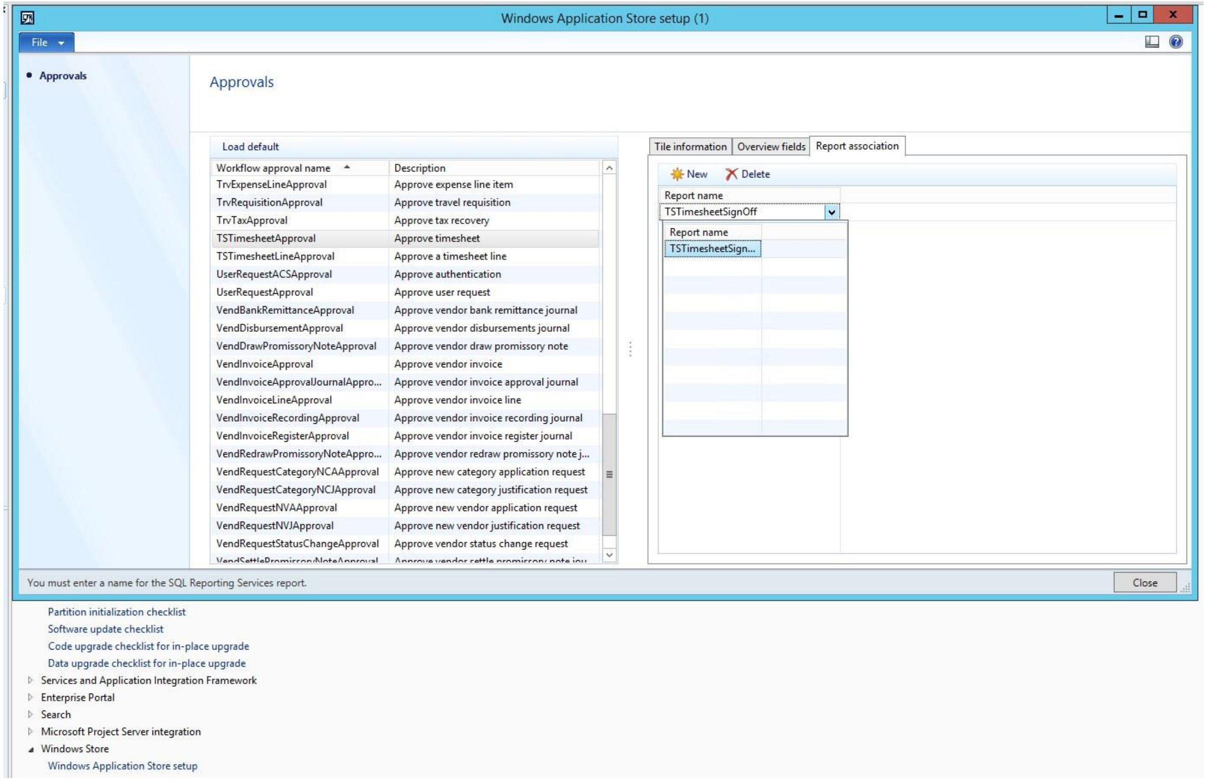
   - Approve: %Workflow.Link to approve with comment%
   - Reject: %Workflow.Link to reject with comment%

2 The **Settings for workflow** form has a new setting that enables attachments to be added. Select the **Add attachments** check box, and then close the form.



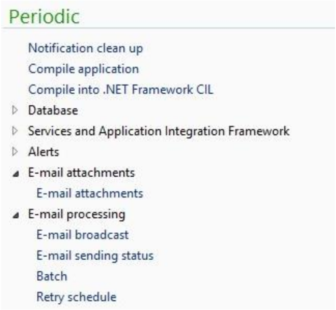
3 Click **System administration** > **Setup** > **Windows Store**.

4 In the **Windows Application Store setup** form, select the type of workflow to add a report to. In the following illustration, a **Timesheet document level** workflow (**TSTimesheetApproval**) is selected. When you select **TSTimesheetSignOff** on the **Report association** tab, the **Timesheet** workflow associates the timesheet sign-off report with that workflow type.



5 After the report is associated, close the form.

6 Click **System administration** > **Periodic** > **Email attachments**, and create an E-mail attachments batch job. This step is required only if you're attaching reports to the email approval. If you aren't using attachments, you can continue to use an E-mail processing batch job.



Overview

The Microsoft Dynamics AX workflow infrastructure lets users configure workflows in application modules, with a specific focus on tasks and approvals. As one of the workflow features, email messages can be configured and sent that contain links to documents that require action. For example, an employee enters a timesheet, and then submits it to his or her manager for approval. The manager receives an email message that requests approval. The email message contains a link to the timesheet that the user entered. One of the most frequently requested capabilities for this functionality has been for the manager or approver to be able to approve or reject from the email message itself.

In AX 2012, this functionality can now be enabled by applying a hotfix download and then installing the connector.

Note: This hotfix isn't required if you're using cumulative update 6 for Microsoft Dynamics AX 2012 R2 or a later version.

This document explains the setup that is required to enable the feature. It also provides an example that shows how to define a workflow that uses the new functionality.

Setup and system configuration

This feature builds on the existing workflow capability to send email workflow instructions to approvers who have been assigned by a workflow. You enable the Approve via email feature by providing **Approve** and **Reject** links in the email message that is sent to approvers. The **Approve** and **Reject** links in the message are action URLs that trigger an approve or reject workflow action when the approver that the message was sent to clicks the corresponding link.

The action URLs are designed to work in any email client, regardless of whether the email client is on the corporate network (for example, on a desktop computer in the office) or off the corporate network (for example, on a mobile phone or tablet). Therefore, the action URL is based on the capabilities of Microsoft Azure Service Bus. The Service Bus relays the action from the client to the connector. The connector receives the action and then makes a call to Microsoft Dynamics AX to record the action in the workflow. At that point, the action is completed in the workflow, just as if the user were using the Microsoft Dynamics AX client or Enterprise Portal for Microsoft Dynamics AX.

For more information about how Service Bus and the connector are used, see the following configuration document: Configure the Microsoft Dynamics AX environment for Companion Apps.

To enable the feature, you must follow these steps.

1 Set up a Service Bus namespace, as explained in Appendix A: Create a new Service Bus namespace. If the connector has already been installed so that it can be used with mobile applications, this step isn't required.
2 If you're using a version of AX 2012 R2 that is earlier than cumulative update 6, apply the hotfix that is provided with the KB article, "Approver cannot approve or reject workflow workitems from email notifications directly in Microsoft Dynamics AX 2012 R2."

   You can find this KB article on PartnerSource by searching for **kb2827196**.

   The hotfix isn't required if you're using cumulative update 6 or a later version.

3 Enable the inbound port and system account, as explained in Appendix D: Configure the on-premises server with Microsoft Dynamics AX 2012 and the Microsoft Dynamics AX Connector for Mobile Applications service.
4 Provide the Service Bus namespace in the appropriate workflow parameter field, as explained in Appendix E: Configure Service Bus namespace details in the workflow parameters.
5 Install the connector, which is available at https://mbs.microsoft.com/customersource/northamerica/AX/news-events/news/MSDYN_MobileAppsAX, as explained in the Set up the Microsoft Dynamics AX Connector for Mobile Applications service section. If the connector has already been installed so that it can be used with mobile applications, this step isn't required.
6 Make sure that the workflow is set up to send workflow instructions via email. For more information about email functionality and workflows, see the following TechNet articles: Configure email functionality in Microsoft Dynamics AX and Configure email settings for the workflow system.

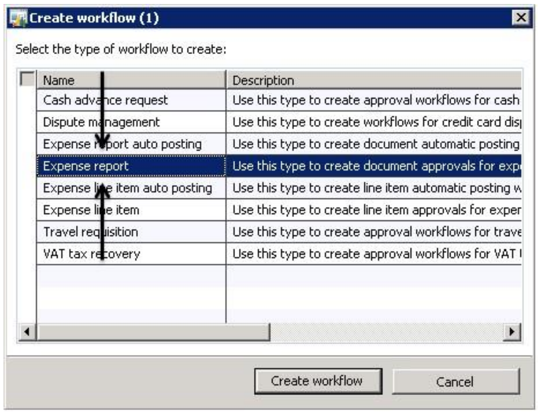
   Important: Step 6 is required for Microsoft Dynamics AX to send email notifications. If step 6 isn't completed, email won't be sent.

Configure a workflow to enable approvals from email messages

The following steps assume that the user who defines the workflow configuration has **Administrator** rights. This example walks you through the process of defining the workflow for an expense report. However, the Approval via email feature can be used for any workflow type.

1 Sign in to your legal entity, and then click **Travel and expense** > **Setup** > **Travel and expense workflows**.
2 On the **Travel and expense workflows** list page, on the Action Pane, click **New**.

3 In the **Create workflow** form, select **Expense report**, and then click **Create workflow**.

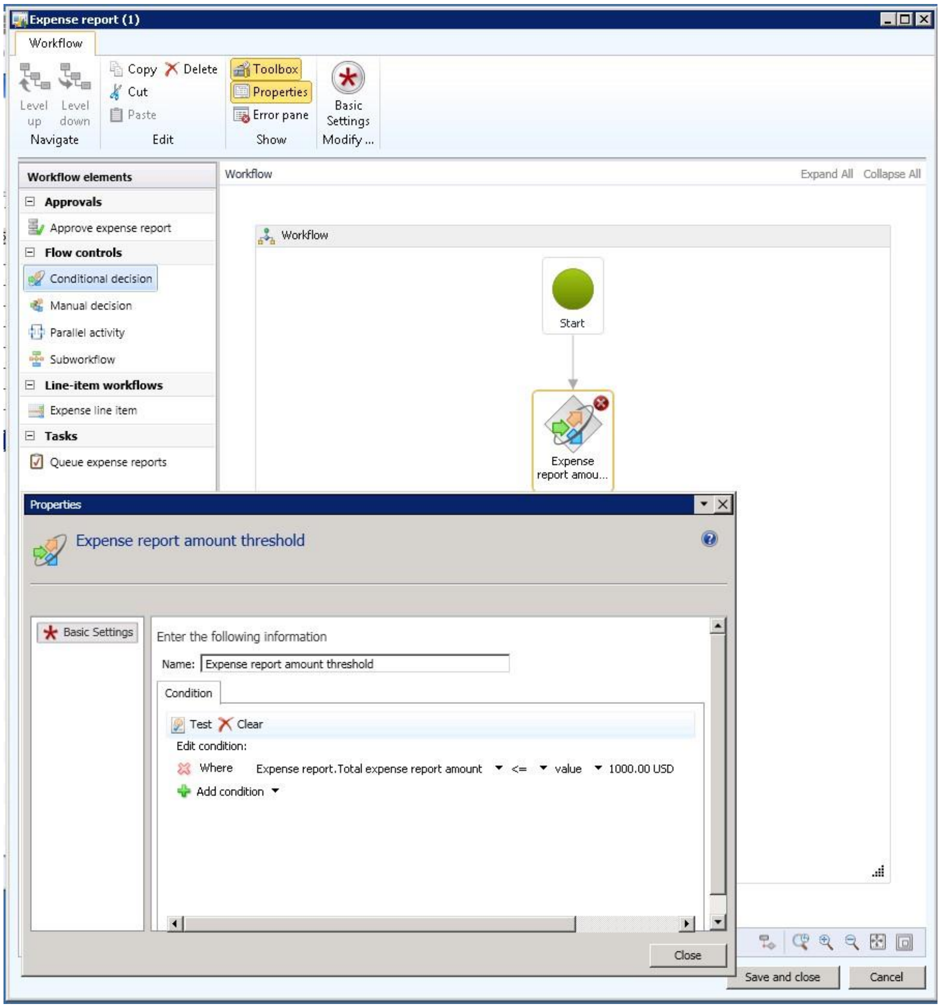


4 In the **Expense report** workflow configuration form, add a conditional decision to the workflow.

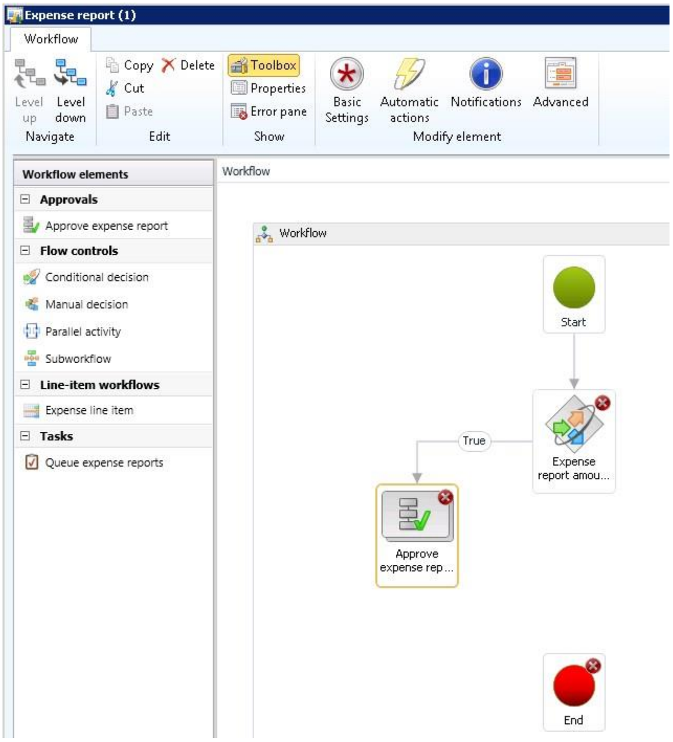
a Select the **Conditional decision** control, and then, on the Action Pane, click **Properties**.

b Enter a name and condition. In this example, the workflow will let approvers approve or reject expense reports from email messages if the total amount is less than or equal to 1,000.00 U.S. dollars (USD).

c When you've finished, close the **Properties** form.

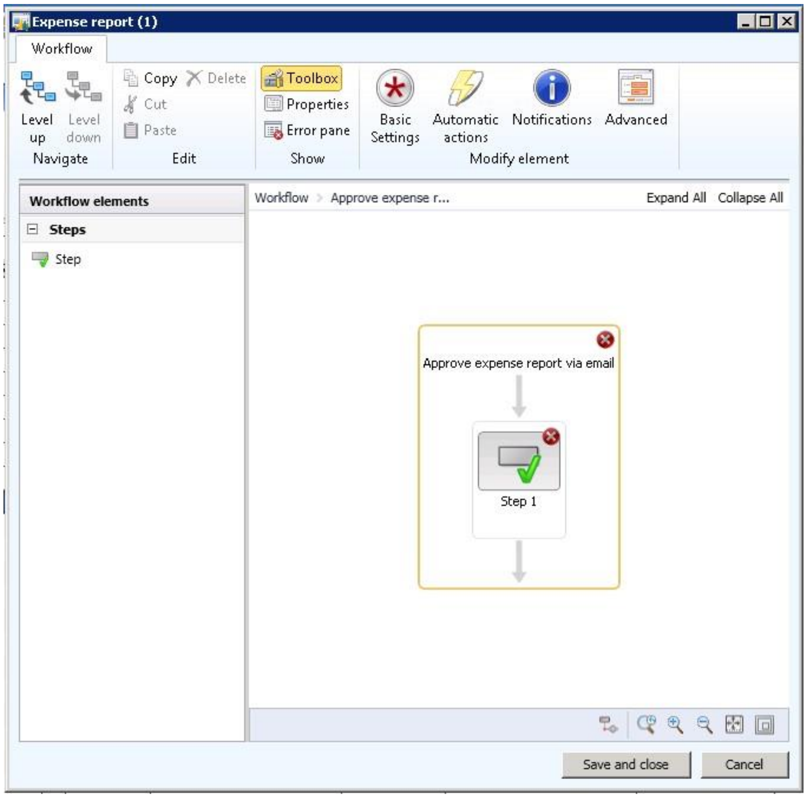


5 Add an **Approve expense report** element to the workspace. Connect it to the **True** condition of the Conditional decision control that you added in the last step. In this scenario, the organization wants approvers to be able to approve or reject expense reports from email messages if the total amount of the expense report is less than 1,000.00 USD.



6 Select the element that you just added, and then, on the Action Pane, click **Properties**. Enter a name, and then close the **Properties** form. No changes are required on the **Automatic actions**, **Notifications**, and **Advanced settings** tabs.

7 On the Action Pane, click **Level down**, or double-click the workflow element.



8 In the left pane, select the **Step** element, and then, on the Action Pane, click **Properties**.

9 In the **Properties** form, enter the instruction information.

Based on the condition that you defined earlier, if the total amount of the expense report is less than 1,000.00 USD, the approver will receive the instructions that you define in this step. In this scenario, the organization wants approvers to be able to accept or reject expense reports from email messages.

The following instruction text is a recommendation. Substitute specific content that is approved by your organization.

Work item subject:

Please approve this expense report: %Expense report.ExpNumber% from %Expense report.CreatingWorker%

Work item instructions:

Please review and approve or reject the following expense report. You can use the approve or reject links in the email or follow the more details link to approve it on the expense management website.

Expense report: %Expense report.ExpNumber%

Employee: %Expense report.CreatingWorker%

Purpose: %Expense report.Txt2%

Amount: %Expense report.Total expense report amount% %Expense report.Currency%

Approve: %Workflow.Link to approve%

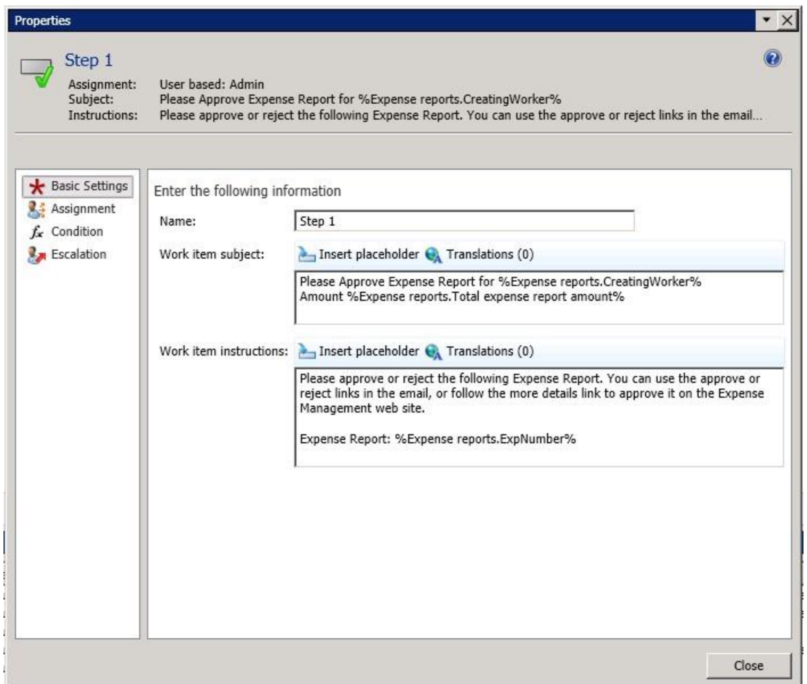
Reject: %Workflow.Link to reject%

For more details see: %Workflow.Link to web%

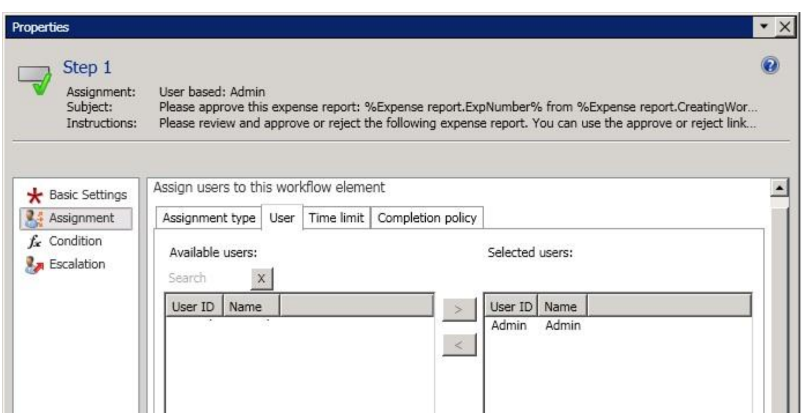
Please note there will not be a confirmation upon selecting approve or reject.

Do not forward

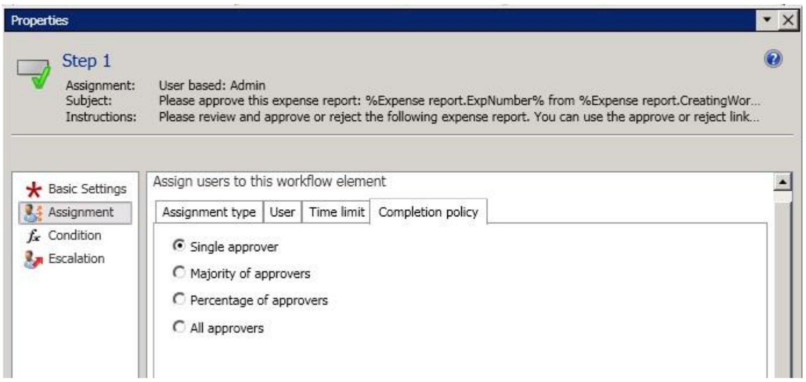
The following illustration shows an example of the **Properties** form, where work item approval information and instructions have been added.



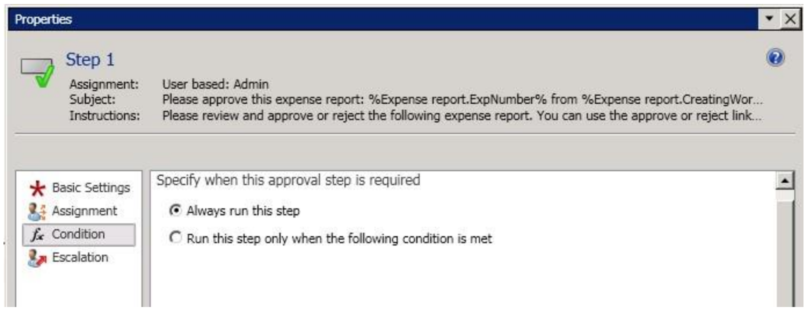
10 In the left pane, click **Assignment**, and assign users to the workflow step.



11 On the **Completion policy** tab, select whether approval from one approver, multiple approvers, or all approvers is required.

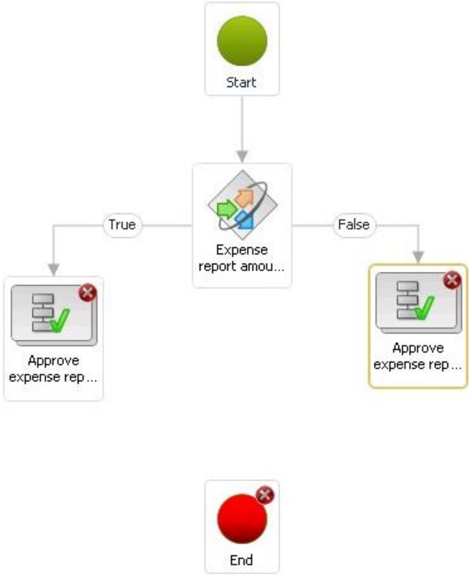


12 In the left pane, click **Condition**, and specify when the approval is required.

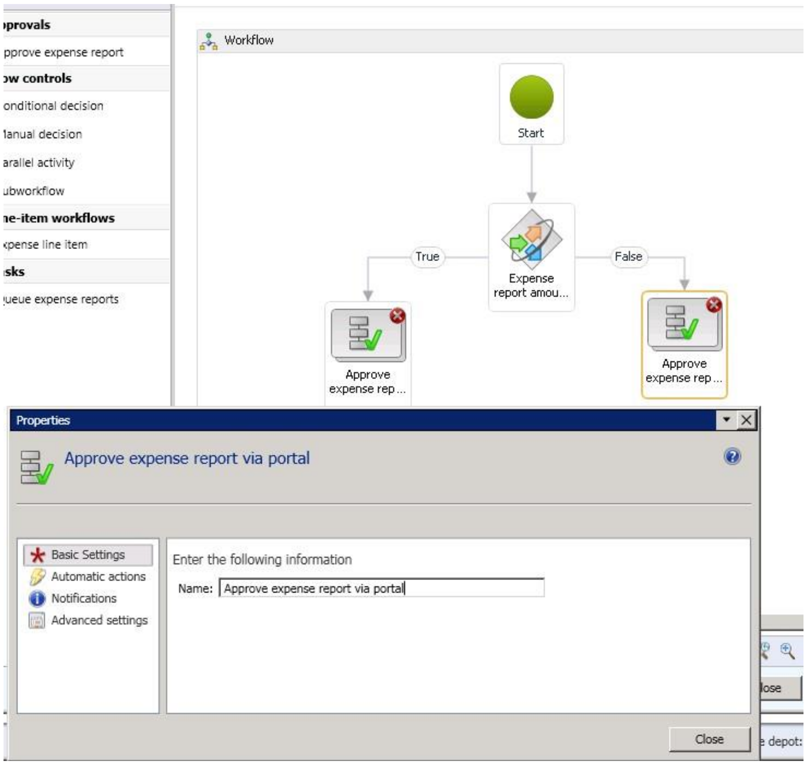


13 Close the **Properties** form.

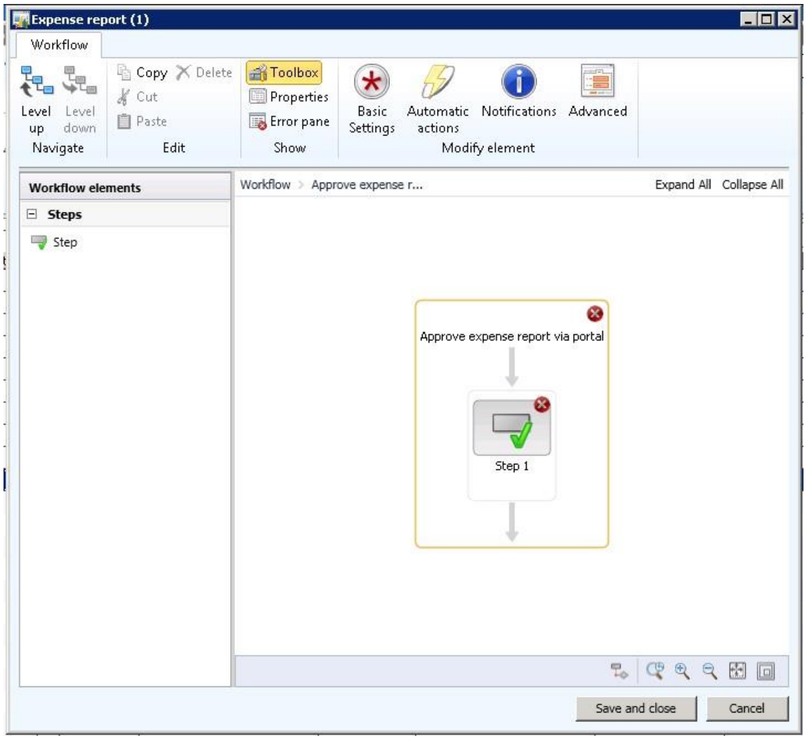
14 Add another **Approve expense report** element, and link it to the **False** condition of the Conditional decision control that you added earlier.



15 Select the element that you just added, and then, on the Action Pane, click **Properties**. Enter a name, and then close the **Properties** form.



16 On the Action Pane, click **Level down**, or double-click the workflow element.



17 In the left pane, select the **Step** element, and then, on the Action Pane, click **Properties**.

18 In the **Properties** form, enter the instruction information.

Based on the condition that you defined earlier, if the total amount of the expense report is more than 1,000.00 USD, the approver will receive the instructions that you define in this step. Because of the expense report total, the organization has decided that approvers should review the expense reports before they take action. Approvers are directed to the portal where they can review the expense reports and then take action.

The following instruction text is a recommendation. Substitute specific content that is approved by your organization.

Work item subject:

Please review and approve this expense report: %Expense report.ExpNumber% from %Expense report.CreatingWorker%

Work item instructions:

Please review the following expense report. Use the link to the portal which will provide you specifics for this expense report. You can accept or reject the expense report from the portal.

Expense report: %Expense report.ExpNumber%

Employee: %Expense report.CreatingWorker%

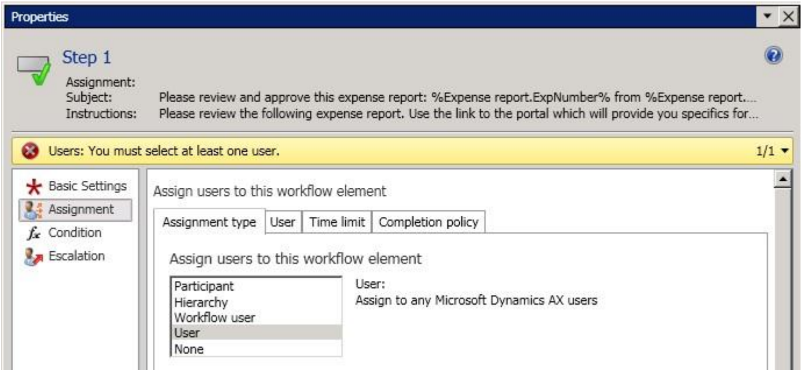
Purpose: %Expense report.Txt2%

Amount: %Expense report.Total expense report amount% %Expense report.Currency%

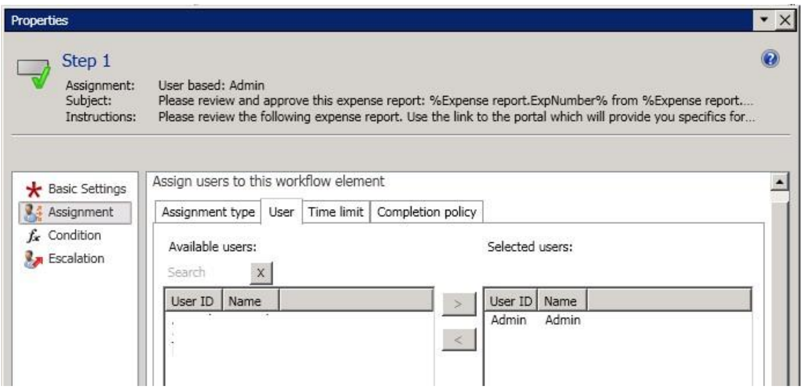
For more details and to approve: %Workflow.Link to web%

Do not forward

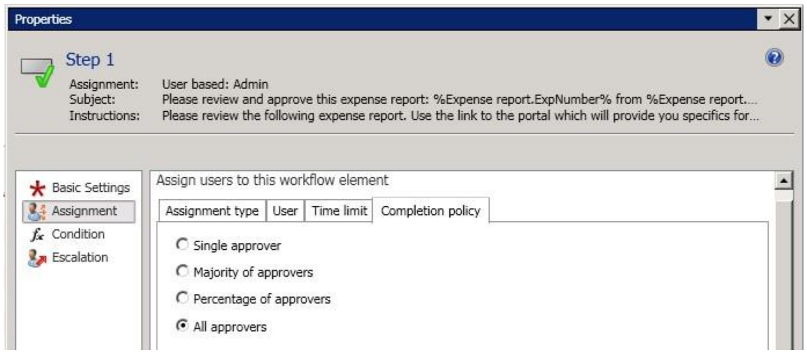
19 In the left pane, click **Assignment**, and then, on the **Assignment type** tab, select **User**.



20 On the **User** tab, assign users to the workflow step.



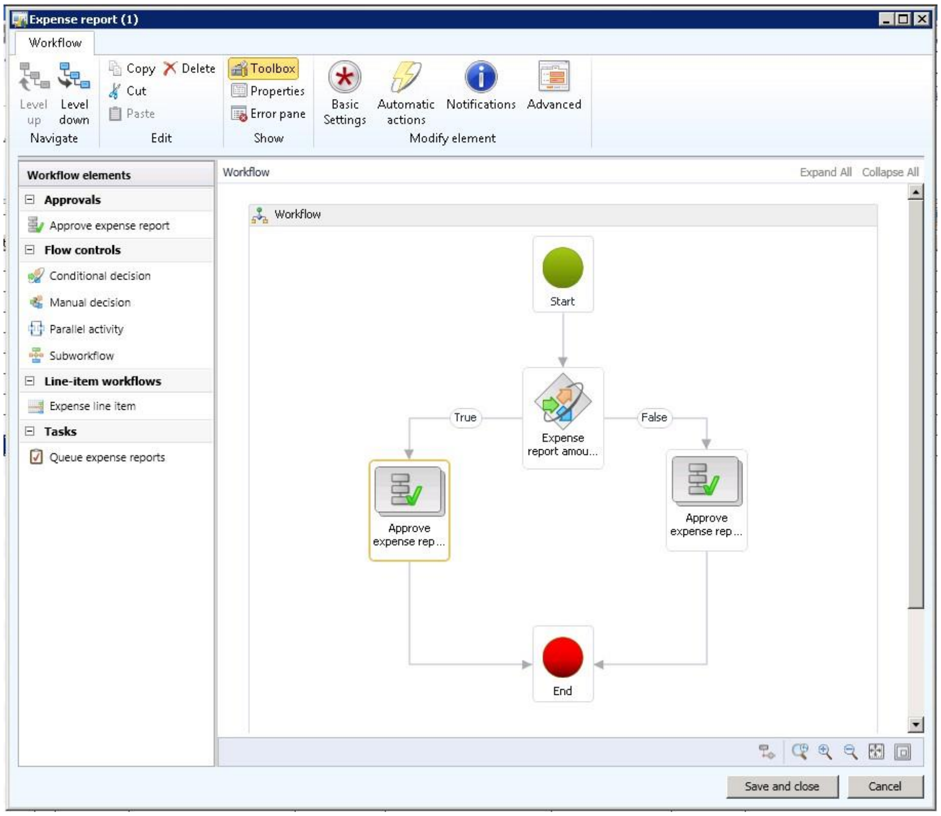
21 On the **Completion policy** tab, select whether approval from one approver, multiple approvals, or all approvers is required.



22 In the left pane, click **Condition**, and specify when the approval step is required.

23 Close the **Properties** form.

24 Link the two **Approve expense report** elements to the **End** element.



25 Click **Save and close** to close the form and activate the workflow.

Appendix A: Create a new Service Bus namespace

The connector deploys a listening endpoint that services the message that comes from the Microsoft Dynamics AX companion apps and email approval links. This endpoint address is structured around the Azure namespace that you create.

To create a new Service Bus namespace, follow these steps.

1 Start Azure PowerShell. For more information, see [Overview of Azure PowerShell].

2 At the command prompt, enter the following command to connect Azure PowerShell to your Azure subscription.

```
Login-AzureRmAccount
```

3 Enter the following commands to learn the subscriptions that are available and then select one of them.

```
Get-AzureRmSubscription
Select-AzureRmSubscription -SubscriptionId <"subscriptionId">
```

4 Enter the following command to create a new Service Bus namespace that has the appropriate Azure region.

```
New-AzureRmServiceBusNamespace -ResourceGroupName <-resourceGroupName-> -NamespaceName <-
serviceBusName-> -Location <-WestUS->
```

The Service Bus namespace that you create here will be entered as the **Azure Service namespace** value in the connector parameters.

Property	Description
-namespaceName	Enter the name of the service namespace.
-serviceBusName	Enter the name of the Service Bus
-location	Enter your region.

If there were no errors, the following information is shown.

```
Name:                       [Name]
Region:                     [Region]
DefaultKey:                 2pRUX4K5EhE5XKvDsaS+816/Neezztkgur/CKsib40w=
Status:                     Active
CreatedAt:                  8/26/2014 7:24:31 PM
ServiceBusEndpoint:         https://name.servicebus.windows.net/
ConnectionString:           Endpoint=sb://SBName.servicebus.windows.net/;SharedSecretIssuer=own
er;SharedSecretValue=2pRUX4K5EhE5XKvDsaS+816/Nrqzztkgur/CKsib40w=
```

For more information about configuring Microsoft Dynamics AX rapid start connector, see Configure the Microsoft Dynamics AX environment for Companion Apps..

Appendix B: Configure shared access policies

1 Sign into the Azure portal, and click the **Service Bus** menu.

2 Find and select the Service Bus that you created in Appendix A: Create a new Service Bus namespace.

3 Under **Settings**, select **Shared access policies**. Then click **Add**.

4 In the **Add SAS policy** blade, enter a new policy name, such as **SendListen**, and select the **Send** and **Listen** check boxes. Then click **Create**.

The SAS policy name that you create here will be entered as the **Azure service identity name** value in the connector parameters.

5 Select the new shared access policy (**SendListen**), and copy the primary key that should be used as the **Azure service identity password** value in the connector parameters.

Appendix C: Configure Active Directory Federation Services

Complete the setup of Active Directory Federation Services (AD FS) as described in the Configure the Microsoft Dynamics AX environment for Companion Apps white paper.

1 Skip the steps to create a new Service Bus namespace, because you completed those steps in Appendix A: Create a new Service Bus namespace.
2 Complete the steps to configure AD FS for authentication.
3 Complete the steps to update the relying party federation metadata.

Appendix D: Configure the on-premises server with Microsoft Dynamics AX 2012 and the Microsoft Dynamics AX Connector for Mobile Applications service

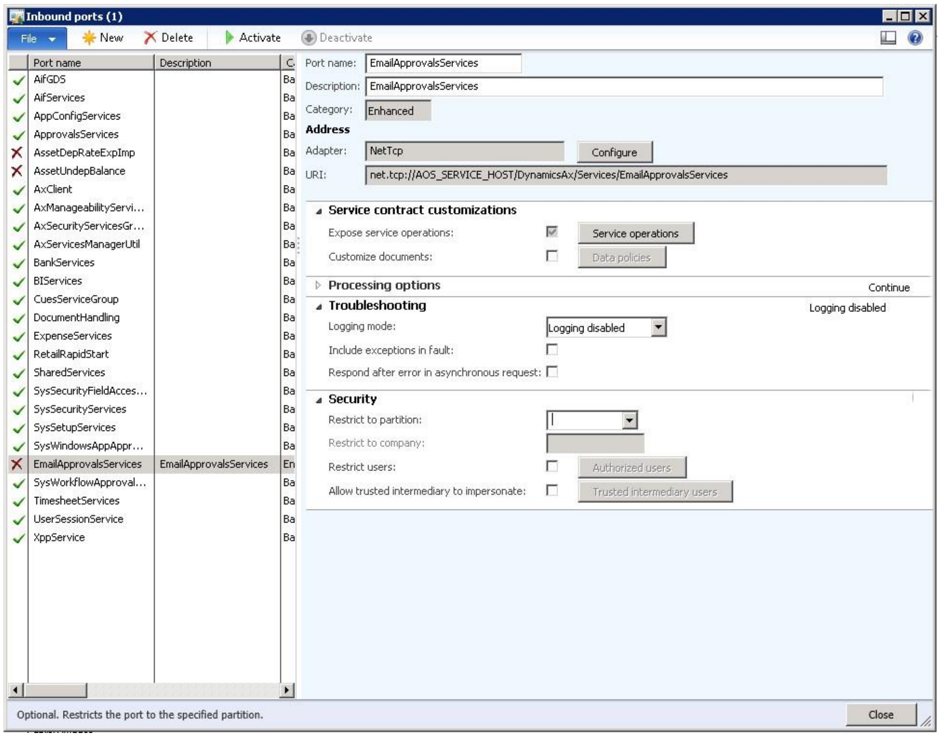
Set up Microsoft Dynamics AX

This section applies to AX 2012 R2 and AX 2012 R3.

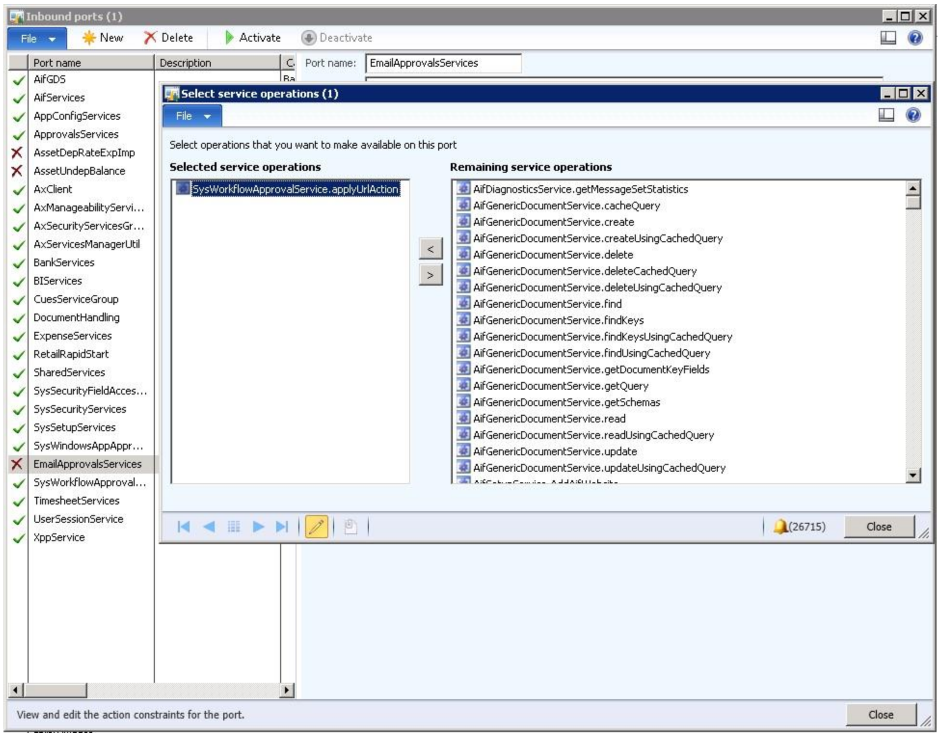
Set up inbound ports

1 In Microsoft Dynamics AX, click **System Administration** > **Services and Application integration framework** > **Inbound ports**.
2 In the **Inbound ports** form, click **New**, and enter a name and description for the new inbound port.

3 On the **Service contract customizations** FastTab, click **Service operations**. The WSDL URI is automatically entered.



4 In the **Select service operations** form, in the **Remaining service operations** list on the right, select **SysWorkflowApprovalService.applyUrlAction**. Then click the left arrow button (**<**) to add the operation to the **Selected service operations** list on the left.



5 Close the **Select service operations** form, and then, in the **Inbound ports** form, click **Activate**.

Create and configure a user account

1. Create a new service account user in Microsoft Dynamics AX. Before you deploy the connector, make sure that this service account user is present in the computer's **Administrator** group. This user will run the connector service.
2. Make sure that the new service account user has a record in Microsoft Dynamics AX, and that it has **System administrator** privileges.

Set up the Microsoft Dynamics AX Connector for Mobile Applications service

The installer can be found at the following link.

https://mbs.microsoft.com/customersource/northamerica/AX/news-events/news/MSDYN_MobileAppsAX.

Version 8.2.384 (August 2018) is required for any installations after August 2018 that use shared access signatures (SAS) instead of the Azure Access Control service (ACS).

Use the following procedure to install and configure the connector.

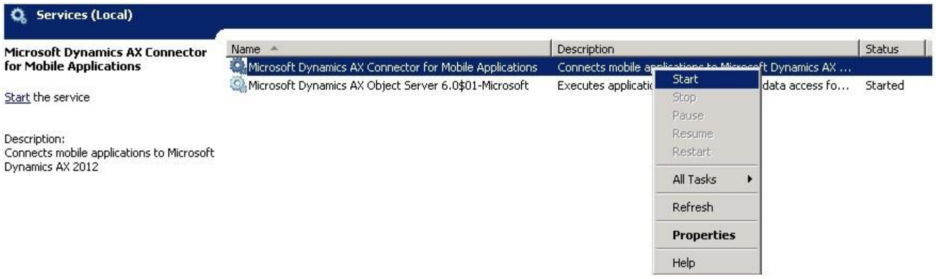
Prerequisites

- Make sure that the service account user that you created in the Create and configure a user account section is an administrator or part of the **Administrator** group on the computer where the connector is running.
- Only one instance of the connector can be deployed to run on a computer.

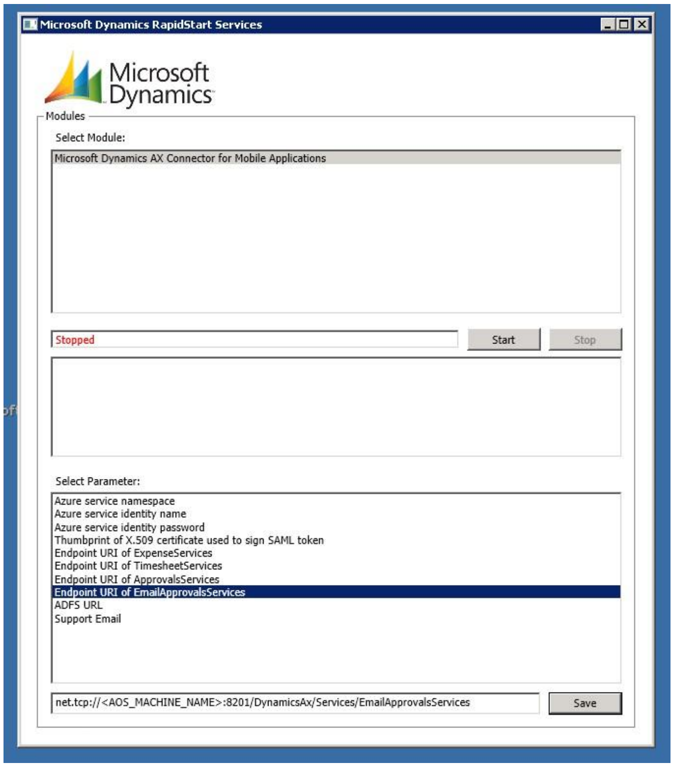
Installation

1. Click **Start** > **All Programs** > **Microsoft Dynamics AX Connector for Mobile Applications**, and start the Microsoft Dynamics AX Connector for Mobile Applications Setup Wizard.
2. Select the **I accept the terms in the License Agreement** check box, and then click **Next**.
3. On the **Destination Folder** page, accept the default folder location for the connector, or click **Change** to select another location. Then click **Next**.
4. On the **Service account** page, in the **Account name** and **Password** fields, enter the name and password for the user account that you previously created, and then click **Next**.
5. Click **Install**.
6. Click **Finish**.
7. Click **Start** > **Administrative Tools** > **Service** to open the **Services** list.

8 Click **Start** to start the Microsoft Dynamics AX Connector for Mobile Applications service. The service will run under the context of the service user account.



9 On the **Start** menu, click the **Microsoft Dynamics AX Connector for Mobile Applications** shortcut. The graphical user interface (GUI) for configuring the connector parameters appears.



10 Use the information in the following table to configure the connector parameters.

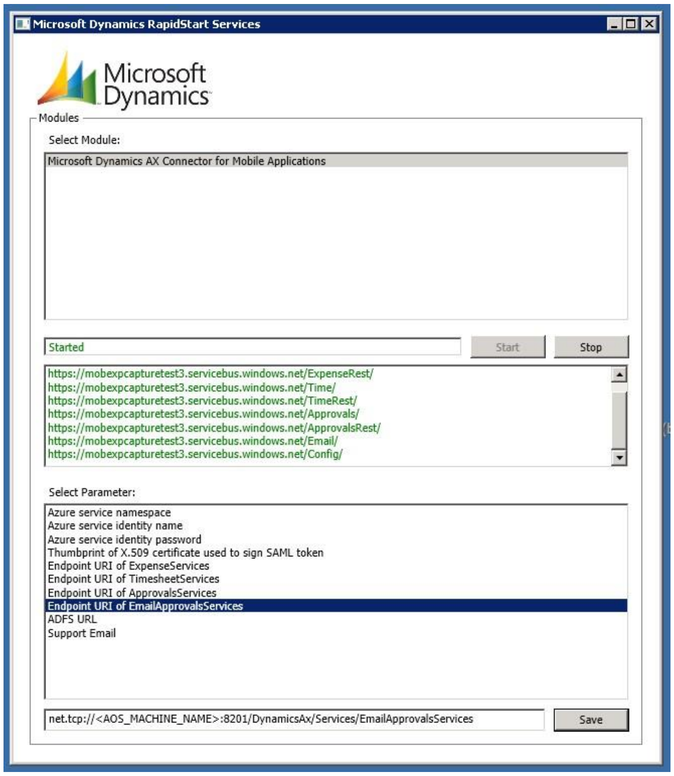
Parameter	Configuration
Azure service namespace	Enter the service namespace that you set up in Appendix A: Create a new Service Bus namespace, and then click **Save**.
Azure service identity name	Enter the service identity name that you set up in Appendix A: Create a new Service Bus namespace.

Parameter	Configuration
Azure service identity password	Enter the 256-bit symmetric key for the service identity that was generated in Appendix A: Create a new Service Bus namespace.
Endpoint URI of EmailApprovalsServices	The following text is preconfigured in this field: net.tcp://<AOS_MACHINE_NAME>:8201/DynamicsAx/Services/EmailApprovalsServices Replace **<AOS_MACHINE_NAME>** with the name of the computer that hosts Microsoft Dynamics AX Application Object Server (AOS). Replace the default AOS port number, 8201, if a different port is used. **Important:** Don't use the WSDL port, 8101, as the endpoint URI of **EmailApprovalsServices**. Port 8101 is used as the default inbound port for an instance of AOS.

Note: There might be additional fields that aren't required for ADFS workflow approvals. Leave those fields set to their default values.

11 When you've finished entering values for the parameters, click **Save**.

12 After the connector parameters are saved, click **Start** in the GUI. You can see that the status has changed to **Started**. You can also see that the Microsoft Dynamics AX Connector for Mobile Applications service is now running, and that it's listening on the Service Bus.



Appendix E: Configure Service Bus namespace details in the workflow parameters

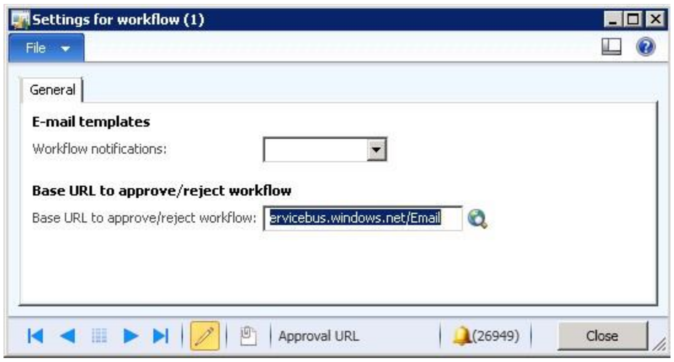
After you've set up and started the connector, you must provide the Service Bus details in the workflow parameters.

1 Click **System Administration** > **Setup** > **Workflow** > **Workflow parameters**.

2 In the **Settings for workflow** form, in the **Base URL to approve/reject workflow** field, enter the Service Bus details in the following format:

https://*namespace*.servicebus.windows.net/Email

Replace **namespace** with the namespace details that you set up in Appendix A: Create a new Service Bus namespace.



Appendix F: Apply the 2018 update to migrate from ACS to SAS

If you're an existing customer, just four steps are required to migrate to the new solution.

1 Follow the steps in Appendix A: Create a new Service Bus namespace to create a new SAS Service Bus.

2 Follow the steps in Appendix B: Configure shared access policies, so that you can provide the key as the Azure service identity password in the connector parameters.

3 Install the latest connector (8.2.384.0), and update the Azure service namespace, Azure service identity name, and identity password from the previous steps.

Note: The latest connector is not backwards compatible with ACS. Once the latest update is applied it will no longer work with ACS. The previous ACS solution is set to be deprecated on Nov 7, 2018.

4 In AX 2012, In the **Settings for workflow** form, update the **Base URL to approve/reject workflow** field with the details of the new Service Bus.

Appendix G: Considerations

When you choose to enable this feature, consider the following points:

- The action URL that is included in the email message isn't authenticated to the intended user. Any user who has access to the message can click the action link. For example, if a user forwards the message to another user, the new recipient of the message can complete the approve or reject action. We recommend that the email message include a reminder not to forward it. As a mitigation, each action URL can be used only one time. Therefore, if a message is inadvertently forwarded, only one action can be completed.
- The call to the Service Bus via the action URL isn't authenticated. However, the action URL includes a secret globally unique identifier (GUID). This secret GUID is of considerable length and is required to take the approve or reject action. The connector also applies throttling if it detects repeated failed attempts. The Application Integration Framework (AIF) service requires that a valid GUID (such as the GUID that is embedded in the action URL) be presented. This requirement helps protect the AIF service. If the GUID isn't valid, no action is taken.

Updates since initial publication

The following table lists the changes that have been made to this document since it was originally published in November 2013.

Date	Description
September 2014	• Corrected inconsistent use of parameter names in the instructions for installing the connector. All instances have been changed to **EmailApprovalsServices**. • Added content to indicate that the hotfix that is available from KB 2827196 isn't required for cumulative update 6 for AX 2012 R2 or later versions. • Added a note to indicate that the WSDL port, 8101, should not be used as the endpoint URI of **EmailApprovalsServices**, because it's used as the default inbound port for an instance of AOS.
September 2018	• Added support for SAS based service bus for workflow approval via email feature.

Send feedback.

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