stonebranch

Universal Task Documentation

Universal Automation Center support for Microsoft Teams Notifications

ut-ms-teams-integration

Associated Activities:

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Author: Ioanna Kyriazidou, Karthik Mohan

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CONFIDENTIALITY INFORMATION

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00	20200109	Ioanna Kyriazidou	First draft
01	20200303	Karthik Mohan	Added approval notification functionality

Abstract:

The here described Universal Tasks allow to send messages to an existing channel of Microsoft Teams. As a result, you can integrate this solution in UAC to notify users for UAC result on Microsoft Teams.

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1 Disclaimer

No support and no warranty are provided by Stonebranch GmbH for this document and the related Universal Task. The use of this document and the related Universal Task is on your own risk.

Before using this task in a production system, please perform extensive testing.

Stonebranch GmbH assumes no liability for damage caused by the performance of the Universal Tasks

2 Scope

This document provides a documentation how to install and use the Universal Tasks for Microsoft Teams Notifications Forwarding. If more Task will be created in the future this document will be updated accordingly.

3 Introduction

3.1 Incoming Webhooks in MS Teams

Incoming webhooks are special type of Connectors in MS Teams that provide a simple way for an external app to share content in team channels and are often used as tracking and notification tools. MS Teams provides a unique URL to which you send a JSON payload with the message that you want to POST, typically in a card format. Cards are user-interface (UI) containers that contain content and actions related to a single topic and are a way to present message data in a consistent way. Teams uses cards within three capabilities:

- Bots
- Messaging extensions
- Connectors

3.2 Adding an incoming webhook to a MS Teams channel

Note: If your MS Team's Settings => Member permissions => Allow members to create, update, and remove connectors is selected, any team member can add, modify, or delete a connector.[1]

1. Navigate to the channel where you want to add the webhook and select (•••) More Options from the top navigation bar.
2. Choose Connectors from the drop-down menu and search for Incoming Webhook.
3. Select the Configure button, provide a name, and, optionally, upload an image avatar for your webhook.
4. The dialog window will present a unique URL that will map to the channel. Make sure that you copy and save the URL you will need to provide it to the outside service.
5. Select the Done button. The webhook will be available in the team channel.

3.3 Incoming Webhooks key features

Feature	Description
Scoped Configuration	Incoming webhooks are scoped and configured at the channel level (e.g., outgoing webhooks are scoped and configured at the team level).
Secure resource definitions	Messages are formatted as JSON payloads. This declarative messaging structure prevents the injection of malicious code as there is no code execution on the client.
Actionable messaging support	If you choose to send messages via cards, you must use the actionable message card format. Actionable message cards are supported in all Office 365 groups including Teams.
Independent HTTPS messaging support	Cards are a great way to present information in a clear and consistent way. Any tool or framework that can send HTTPS POST requests can send messages to Teams via an incoming webhook.
Markdown support	All text fields in actionable messaging cards support basic Markdown. Don't use HTML markup in your cards. HTML is ignored and treated as plain text.

3.4 Python Integration

requests [2] is a Python Library to send http requests to Microsoft Teams Webhooks. Microsoft refers to these messages as Connector Cards. A message can be sent with only the main Connector Card, or additional sections can be included into the message. This library uses Webhook Connectors for Microsoft Teams.

3.5 Implementation Details

Some details about the universal tasks for MS Teams:

- Uses requests python library
- Accepts input parameters like Teams Function, Job Name, Job Status, Execution User, Job Type, an Microsoft Teams incoming channel webhook, a message title and a text of the message
- Set up the connection from UAC to MS Teams channel using incoming webhooks
- Set up the message is about to send and forwards it to the channel
- No authentication is supported
- The Universal Task supports both Universal Agent for Linux/Unix and Windows and has been tested in both systems

4 Installation

4.1 Software Requirements for Linux Agent

Universal Task name: ut-ms-*teams-integration*

Requirements:

- Python 3.6
- For Python the following modules are required:
  - *sys, for system-specific parameters and functions*
  - *requests, to interact with a Microsoft Teams channel*

  Note: Please check requests python library is available already, if not then it needs to be added via python installer
  - ⇨ *pip install requests*

- Universal Controller V6.4.7.0 or higher
- Universal Agent V6.5.0.0 or higher installed on a Linux/Windows Server

4.2 Installation Steps

The following describes the installation steps:

1. **Check the current Python Version**

   python -V (Note: Capital "V")

   If your Version is Python 3.6 or later all is fine. If a no python or a lower Version has been installed upgrade your python Version or install the Universal Agent with the Python binding option (--python yes). This option will install python 3.6. along with your universal agent.

   e.g.

   sudo sh ./unvinst --network_provider oms --oms_servers 7878@192.168.88.12 --oms_port 7878 --oms_autostart no --ac_netname OPSAUTOCONF --opscli yes --python yes

2. **Add the required python modules**

   In a command shell run as sudo or root:

   - For Python the following modules are required:
     - *pip install requests*
       or in case of universal Agent with python binding:
       /opt/universal/python3.6/bin/python3 -m pip install requests

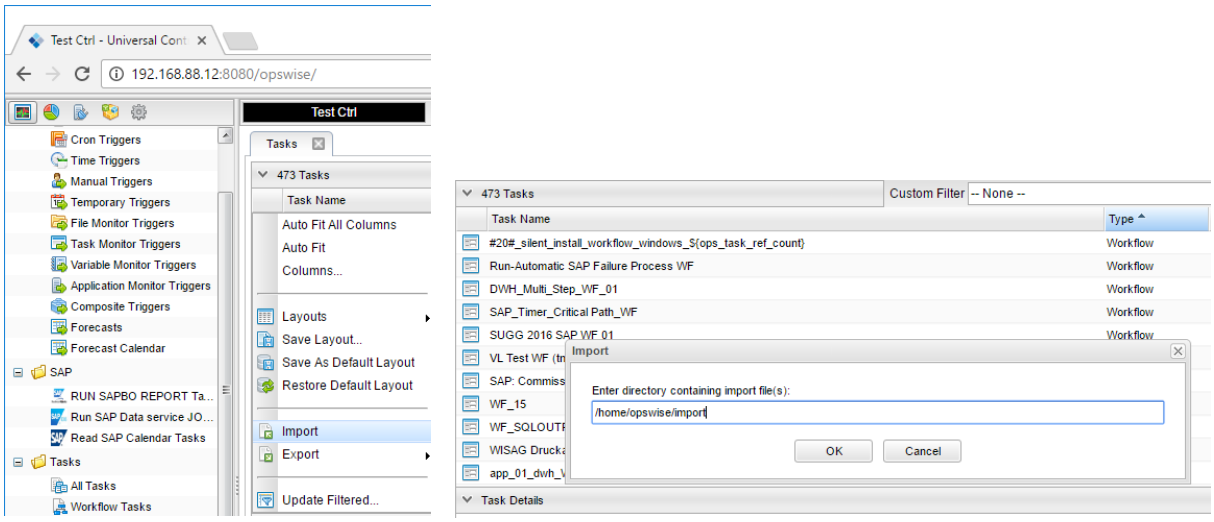
     Only run these if not available already:
     - *pip install sys*

   Note:

   It is assumed that the modules logging, sys, datetime, os are already available. If not install them via pip. Only the module *requests* is not part of your installation.

3. Import MS Teams Universal Task including the Universal Template to your Controller

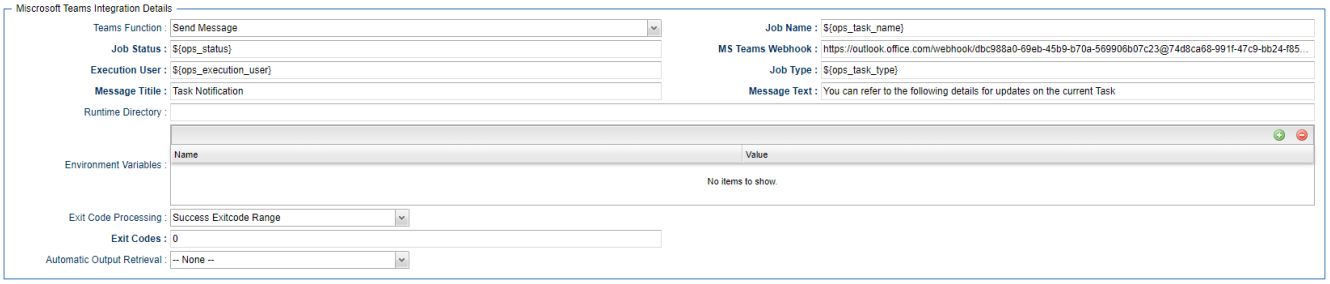
Go to “All Tasks” and load via the Import functionality the Universal Tasks configuration into the Controller.



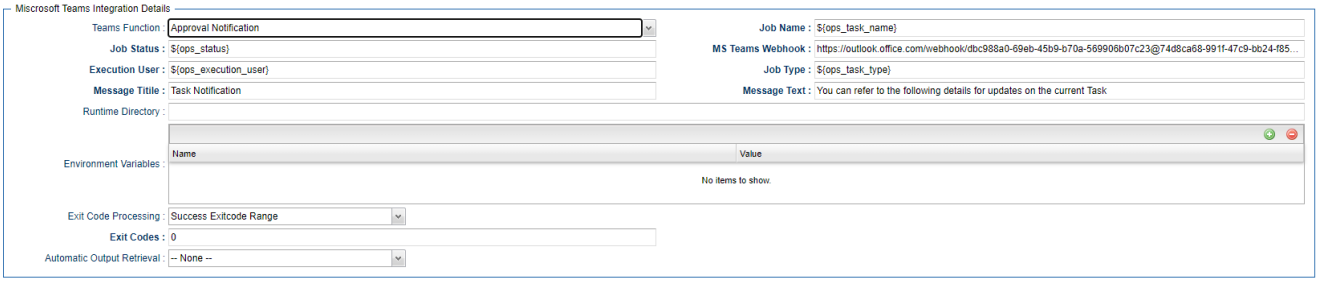
5 Universal Task Configuration

Fill Out MS Teams Universal Task:

5.1 Sending a notification to Microsoft Teams Incoming webhook



5.2 Sending an Approval notification to Microsoft Teams Incoming webhook



6 Universal Tasks for MS Teams Notifications Forwarding

The following chapter describes the provided MS Teams Notifications Forwarding Universal Tasks.

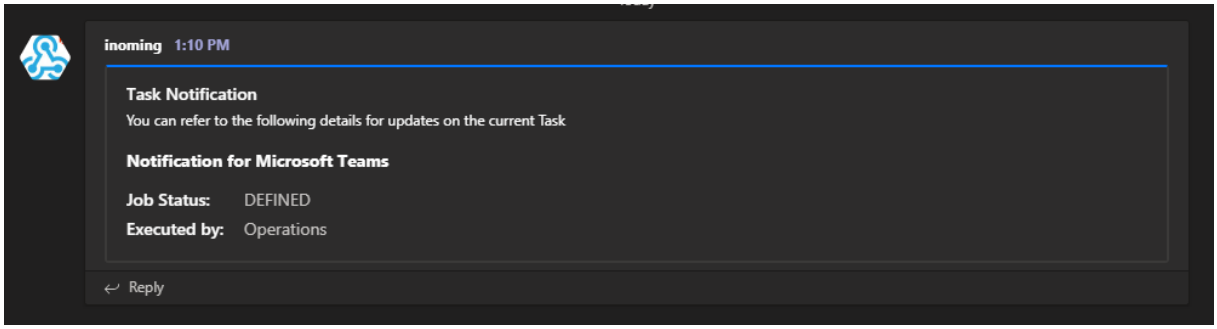
UT Name	Description
ut-ms-teams-integration	Send notification to Microsoft teams incoming webhook channel.

6.1 Send message

With Send Message function we can send a notification message to the Microsoft Teams channel with the current task instance details.

Field Description:

Field	Description
Agent	The Agent that runs the Python script assigned to the Universal Task
Teams Function	Send Message
Job Name	Name of the job, by default it takes the current job name ${ops_task_name}
Job Status	Status of the job, by default it takes the current job name ${ops_status}
MS Teams Webhook	The incoming web hook of Microsoft Teams channel
Execution User	Details of the execution user, by default takes the current user name ${ops_execution_user}
Job type	Task type of task instance, by default takes the current task instance type ${ops_task_type}
Message Title	The title of the message sent to Microsoft Teams channel
Message Text	The text of the message sent to Microsoft Teams channel



6.2 Approval Notification

Manual tasks are typically used when there is a need for manual intervention of user in a workflow process. Traditionally the Manual Task is completed successfully in the Universal controller by clicking “Set Completed” command.

With this universal task for Microsoft teams we can provide you with a notification in the Microsoft team incoming webhook channel, when the workflow reaches the manual task with status “Action Required”.

Upon receiving the notification on the teams channel the Users can click on on the “Approve” Button in the interactive message for the workflow to proceed further. This interactive message is sent from the Universal controller.

When the “Approve” or “Reject” button is clicked in the interactive message an API call is made to a function where it can handle the event from the Microsoft Teams. For example we use python function in AWS lambda + API gateway or Azure functions or any custom URL where the Teams messaging platform can make an API POST call to handle the user action in the message as a payload and based on the posted payload data from the Teams , Universal controller API call will be made to set the manual task either to set complete status or No action in the function. Please refer to the handler.py file in the serverless function folder for a sample serverless function implementation using AWS lambda.

The parameters that would be need for this API function module would be as below :

- Teams event payload data
- Universal controller URL
- Universal controller User name and Password (for making the API call)

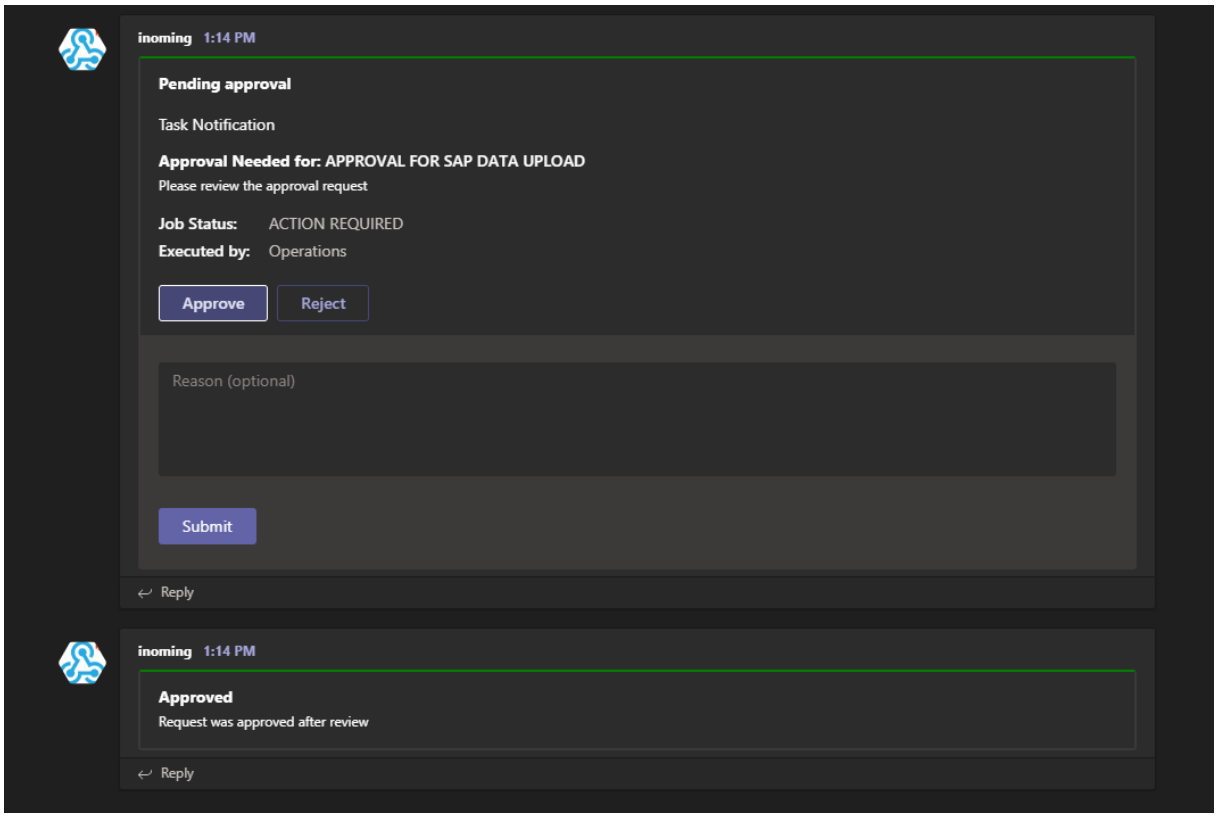
Field Description:

Field	Description
Agent	The Agent that runs the Python script assigned to the Universal Task
Teams Function	Approval Notification
Job Name	Name of the job, by default it takes the current job name ${ops_task_name}
Job Status	Status of the job, by default it takes the current job name ${ops_status}
MS Teams Webhook	The incoming web hook of Microsoft Teams channel
Execution User	Details of the execution user, by default takes the current user name ${ops_execution_user}
Job type	Task type of task instance, by default takes the current task instance type

	${ops_task_type}
Message Title	The title of the message sent to Microsoft Teams channel
Message Text	The text of the message sent to Microsoft Teams channel

Changes to be made on the serverless function(handler.py) :

1. Change the API gateway endpoint in Universal Task
2. Change the incoming webhook in the serverless function
3. Change the Universal Controller endpoint in the serverless function
4. Change the Universal Controller user credentials in the serverless function



7 Test Cases

The following basic test cases has been performed:

Case#	Assumed behavior	Result
Set as Incoming Webhook an invalid uri	1. The application should stop and exit with message UAC failed to forward a message in this MS Teams channel. 2. No message should be sent.	Correct

Set as Incoming Webhook a valid uri	1. A message should be sent.	Correct

8 Document References

This document references the following documents:

Ref#	Description
[1] Microsoft Teams Webhooks	https://docs.microsoft.com/en-us/microsoftteams/platform/webhooks-and-connectors/how-to/add-incoming-webhook
[2] requests	https://pypi.org/project/requests/#description