

VMware Workspace ONE mobile flows

OCT 2020

VMware Workspace ONE UEM

You can find the most up-to-date technical documentation on the VMware website at:

<https://docs.vmware.com/>

VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com

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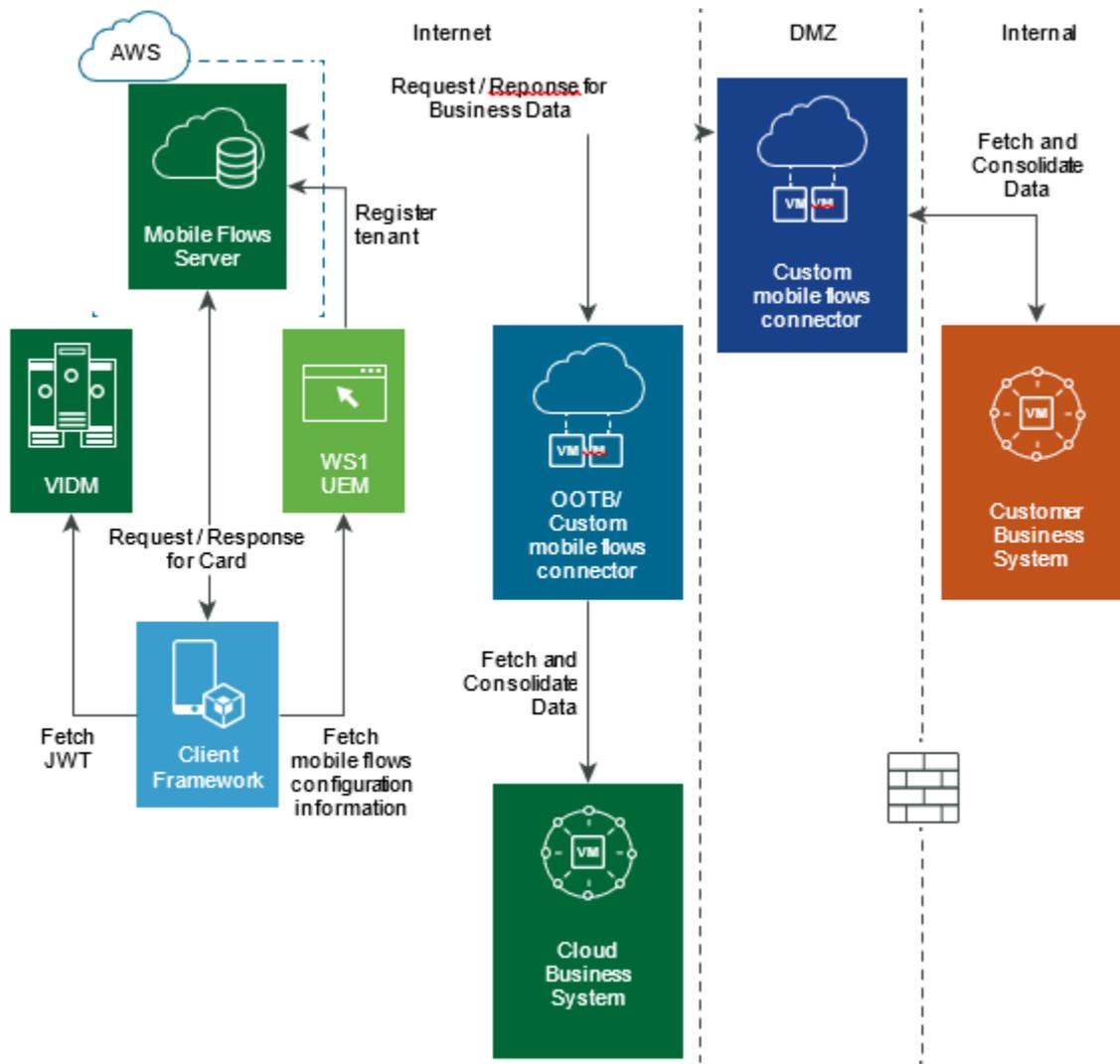
Workspace ONE mobile flows

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VMware Workspace ONE mobile flows is a framework designed for enterprise companies to bring the micro applications on their employee's devices to surface contextual information and perform actions on various business systems. It helps the device users to perform tasks across multiple business backend systems within VMware applications enabling users to be more productive while maintaining enterprise security and organization compliance regulations on the cloud and on the edge.

Workspace ONE mobile flows eliminates the need to visit multiple websites to perform different business tasks. Provides user-specific micro applications that streamline the data flow such as quick data entry, data retrieval, approvals, and making business decisions.

Figure 1-1. Workspace ONE mobile flows Architecture



Workspace ONE mobile flows architecture design includes three primary components.

- The mobile flows server which is the heart of the entire system. The mobile flows server is responsible for logic, connector discovery, and returning data to the requesting client.
- The connector is used to connect to the business system, request the data, perform the interactions as requested by the client. The connector contains the logic for how the card appears on the client. For example, a Salesforce card might be displayed in the Workspace ONE Intelligent Hub app where users can see important information and take required action on Salesforce right from the mobile flow card. You can create your own connectors or customize the open source pre-built connectors. You can also use the out-of-the-box (OOTB) connectors such as Salesforce and ServiceNow which are hosted on the VMware's servers.
- The client-side framework which is responsible for rendering the card on the client to display the contextual information, along with the input to take the required action.

This chapter includes the following topics:

- [Requirements for Workspace ONE mobile flows](#)
- [Workspace ONE mobile flows Use Cases](#)

Requirements for Workspace ONE mobile flows

You must meet the hardware and network requirements described in this topic before you configure Workspace ONE mobile flows with Workspace ONE Intelligent Hub or VMware Workspace ONE Boxer.

Software Requirements

The following list describes the software requirements for configuring VMware Workspace ONE mobile flows with Workspace ONE Intelligent Hub:

- Workspace ONE Intelligent Hub version 1810 or later
- Workspace ONE UEM console version 1904 or later
- Workspace ONE Access cloud services
- Workspace ONE Enterprise bundle or Workspace ONE Intelligence add-on licenses
- Workspace ONE mobile flows enabled in the Hub services console to display notifications in Workspace ONE Intelligent Hub app.

The following list describes the software requirements for configuring VMware Workspace ONE mobile flows with VMware Workspace ONE Boxer:

- VMware Boxer version 4.12 or later
- Workspace ONE UEM console version 1904 or later
- Workspace ONE Access cloud services
- Workspace ONE Enterprise bundle or Workspace ONE Intelligence add-on licenses

Hardware Sizing Requirements

If you want to use custom connectors that customers can build and deploy on their infrastructure or cloud, ensure that the server meets the following hardware requirements.

Number of Devices	Number of Servers	CPU Cores	RAM (GB)	Hard Disk Space
Up to 40,000	2	4 CPU cores	8	<ul style="list-style-type: none"> ■ 10 GB for Linux Distribution ■ 400 MB for installer ■ 10 GB for log files
40,000–80,000	3	4 CPU cores each	8	

Number of Devices	Number of Servers	CPU Cores	RAM (GB)	Hard Disk Space
80,000–120,000	4	4 CPU cores each	8	
120,000–160,000	5	4 CPU cores each	8	

Network Requirements

The following table lists the networking requirements for Workspace ONE mobile flows.

Source	Destination	Port
mobile flows server - https://prod.hero.vmwservices.com	mobile flows Connector	443 (inbound)
mobile flows Connector	Backend business systems	443
Workspace ONE UEM console	mobile flows - server - https://prod.hero.vmwservices.com	443

Workspace ONE mobile flows Use Cases

You can use Workspace ONE mobile flows to build actionable notifications, conversational workflows, and contextual cards.

Using Hub Notifications

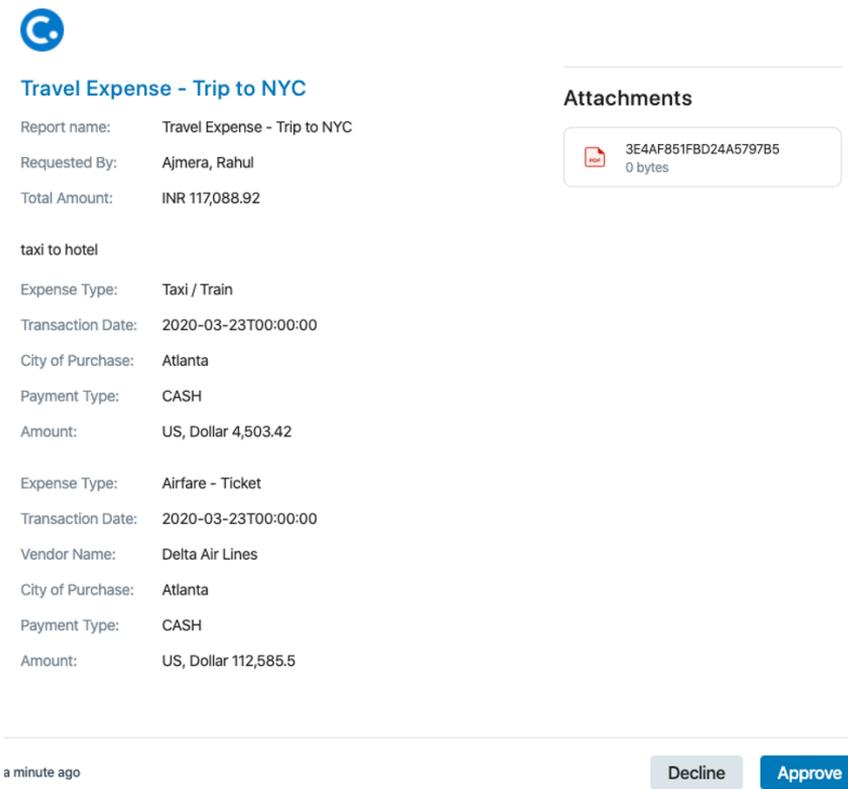
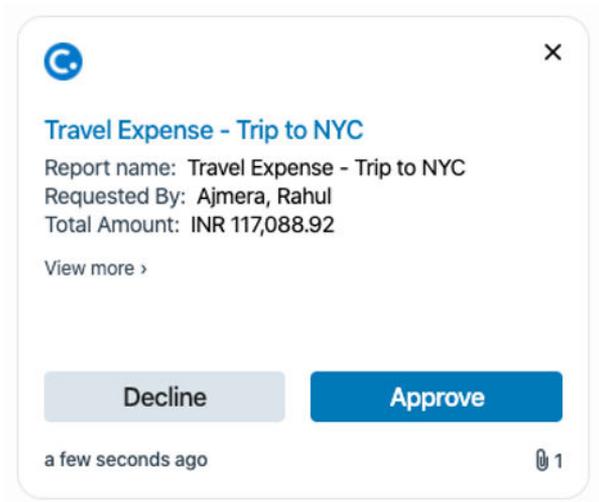
Notifications received in Workspace ONE Intelligent Hub help users stay up to date with the new and relevant activities happening within their organization. Users can be notified of the tasks or jobs that might require their immediate action. Users do not need to be in the Workspace ONE Intelligent Hub app to receive notifications. Users can view open and pending approval requests directly on the notification that is being viewed. When users are logged in to Intelligent Hub, they can view their notifications from the For You tab.

You can enable Workspace ONE mobile flows integration with Hub Services to receive notifications from business apps that are configured in mobile flows.

Two types of notifications are sent.

- Informational notification is a notification that does not require the reader to take action on the notification. For example, notifications about possible business opportunities or follow-up on contacts.
- Actionable notification is a notification that requires a user to take an action on the notification. Based on the content of the notification, users can take appropriate actions based on the business system configuration with mobile flows.

The following image shows the screenshot of the end-user travel expense report:



The following example adds an actionable card to the Workspace ONE Intelligent Hub about an expense report:

```
{
  "id": "bbe38f0b-d21b-4486-9b24-726a77e9f35f",
  "name": "Concur",
  "creation_date": "2020-06-24T11:44:45.039Z",
  "header": {
    "title": "Travel Expense - Trip to NYC",
    "links": {
      "title": "https://www.google.com"
    }
  }
}
```

```

},
"body": {
  "fields": [
    {
      "type": "GENERAL",
      "title": "Report name",
      "description": "Travel Expense - Trip to NYC"
    },
    {
      "type": "GENERAL",
      "title": "Requested By",
      "description": "Ajmera, Rahul"
    },
    {
      "type": "GENERAL",
      "title": "Total Amount",
      "description": "INR 117,088.92"
    },
    {
      "type": "SECTION",
      "title": "taxi to hotel",
      "items": [
        {
          "type": "GENERAL",
          "title": "Expense Type",
          "description": "Taxi / Train"
        },
        {
          "type": "GENERAL",
          "title": "Transaction Date",
          "description": "2020-06-24T11:44:45.039Z"
        },
        {
          "type": "GENERAL",
          "title": "City of Purchase",
          "description": "Atlanta"
        },
        {
          "type": "GENERAL",
          "title": "Payment Type",
          "description": "CASH"
        },
        {
          "type": "GENERAL",
          "title": "Amount",
          "description": "India, Rupee 7,000.92"
        }
      ]
    },
    {
      "type": "SECTION",
      "title": "",
      "items": [
        {
          "type": "GENERAL",

```

```

        "title": "Expense Type",
        "description": "Airfare - Ticket"
    },
    {
        "type": "GENERAL",
        "title": "Transaction Date",
        "description": "2020-06-24T11:44:45.039Z"
    },
    {
        "type": "GENERAL",
        "title": "Vendor Name",
        "description": "Delta Air Lines"
    },
    {
        "type": "GENERAL",
        "title": "City of Purchase",
        "description": "Atlanta"
    },
    {
        "type": "GENERAL",
        "title": "Payment Type",
        "description": "CASH"
    },
    {
        "type": "GENERAL",
        "title": "Amount",
        "description": "India, Rupee 110,088.00"
    }
]
},
{
    "type": "SECTION",
    "title": "Attachment",
    "items": [
        {
            "type": "ATTACHMENT_URL",
            "attachment_name": "1D3BD2E14D144508B05F",
            "title": "Click here to download the attachment",
            "attachment_content_type": "application/pdf",
            "attachment_url": "/attachments/sample-expense-report.pdf",
            "attachment_method": "GET"
        }
    ]
}
],
"image": {
    "href": "https://vmw-mf-assets.s3.amazonaws.com/connector-images/hub-concur.png"
},
"hash": "f1d2d2f924e986ac86fdf7b36c94bcd32beec15",
"actions": [
    {
        "action_key": "USER_INPUT",
        "allow_repeated": false,
        "completed_label": "Approved",
    }
]

```

```

    "id": "722533c4-5ccc-45e5-8fe2-b20b075ed2a8",
    "label": "Approve",
    "mutually_exclusive_set_id": "approval-actions",
    "primary": true,
    "request": {},
    "type": "POST",
    "url": {
      "href": "https://httpbin.org/status/204"
    },
    "user_input": [
      {
        "format": "textarea",
        "id": "comment",
        "label": "Comment"
      }
    ]
  },
  {
    "action_key": "USER_INPUT",
    "allow_repeated": false,
    "completed_label": "Declined",
    "id": "d7de06a0-b50c-4d1f-9ed5-4861699cc7a3",
    "label": "Decline",
    "mutually_exclusive_set_id": "approval-actions",
    "request": {},
    "type": "POST",
    "url": {
      "href": "https://httpbin.org/status/204"
    },
    "user_input": [
      {
        "format": "textarea",
        "id": "reason",
        "label": "Reason"
      }
    ]
  }
]
}

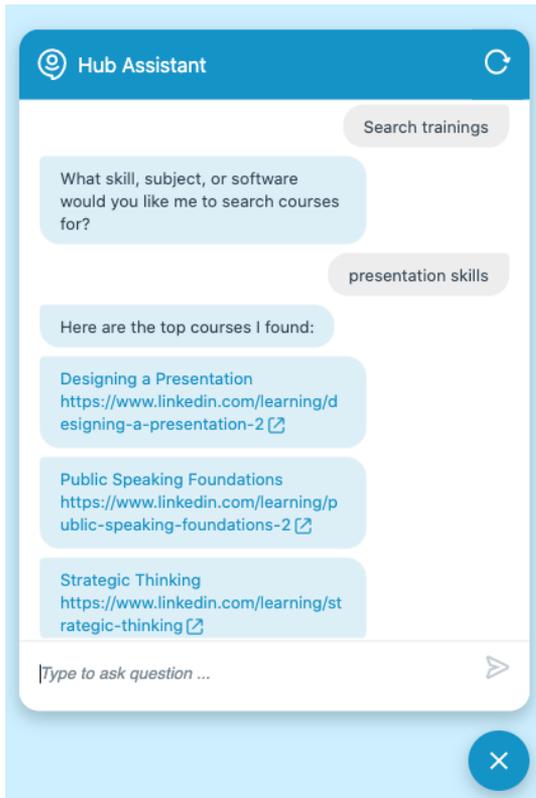
```

Note The approve and decline action links provided in the example are for your reference only.

Using Hub Virtual Assistant Chatbot with Workspace ONE mobile flows

Hub Assistant uses Workspace ONE mobile flows so users can perform actions across multiple business back-end systems. In Workspace ONE Intelligent Hub, users can submit an inquiry to the virtual assistant and mobile flows can retrieve data from a business system so that the user can view and take appropriate actions. For example, when mobile flows is enabled and configure with the ServiceNow chatbot connector, you can manage the Help ticket work flow through mobile flows. The Virtual Assistant sends user requests to ServiceNow and relays the response from Service Now back to the user.

The following screenshot displays the available training courses based on the keyword search in the Workspace ONE Intelligent Hub Assistant.



The following example retrieves a list of available e-learning courses based on a keyword search to a user interacting with Workspace ONE Intelligent Hub Assistant.

```
{
  "id": "1a0892af-b8f7-437c-adba-155c070f61ae",
  "name": "LinkedIn Learning",
  "creation_date": "2020-06-25T12:40:58.461Z",
  "backend_id": "urn:li:lyndaCourse:2822136",
  "hash": "7b9dbde859de01311efb9aeef8a75c663aaf9a11",
  "header": {
    "title": "LinkedIn Learning: New course available",
    "subtitle": [
      "View course"
    ],
  },
  "links": {
    "title": "https://www.linkedin.com/learning/photoshop-2020-one-on-one-fundamentals",
    "subtitle": [
      "https://www.linkedin.com/learning/photoshop-2020-one-on-one-fundamentals"
    ]
  },
},
"image": {
  "href": "https://vmw-mf-assets.s3.amazonaws.com/connector-images/hub-linkedin-learning.png"
},
}
```

```

"body": {
  "fields": [
    {
      "type": "GENERAL",
      "title": "Title",
      "description": "Photoshop 2020 One-on-One: Fundamentals"
    },
    {
      "type": "GENERAL",
      "title": "Instructor",
      "description": "Deke McClelland"
    },
    {
      "type": "GENERAL",
      "title": "Duration",
      "description": "12h 50m"
    },
    {
      "type": "SECTION",
      "title": "About Course",
      "items": [
        {
          "type": "GENERAL",
          "title": "Description",
          "description": "Go one-on-one with world-renowned Photoshop expert Deke McClelland. The first of a three-part series, this course is your chance to master the fundamentals of Photoshop as you've never seen them before. It's everything you need to know, in the order you need to know it, complete with eye-popping imagery and practical advice. Best of all, it's been completely updated for Photoshop 2020, the 30th anniversary edition of the program. Deke shows how to crop and straighten photographs, adjust brightness and contrast, correct color cast, and retouch portraits. You can also learn such skills as editing nondestructively with layers, making complex selections, developing photos in Camera Raw, and preparing photos for print. Come with questions, leave with answers—and a real sense of accomplishment."
        },
        {
          "type": "GENERAL",
          "title": "Category",
          "description": "Image Editing, Adobe Photoshop, Photo Compositing, Photography, Creative, Layout and Composition, Graphic Design"
        },
        {
          "type": "GENERAL",
          "title": "Released",
          "description": "2019-12-13T00:00:00.000Z"
        },
        {
          "type": "GENERAL",
          "title": "Updated at",
          "description": "2020-06-25T04:43:16.304Z"
        },
        {
          "type": "GENERAL",
          "title": "Difficulty",
          "description": "BEGINNER"
        }
      ]
    }
  ]
}

```

```

    }
  ]
}
]
}
}

```

Using Contextual Cards in Workspace ONE Boxer

Contextual cards can be informational cards or action cards that can be surfaced within the Workspace ONE Boxer application to help users learn about additional relevant and important information and help increase employee engagement.

Contextual cards can or cannot have actions depending on the context. For example, when an email is received, based on the context of the email content, a card request is triggered.

The following declaration adds an actionable card to the Workspace ONE Boxer application about an expense report:

```

{ "objects": [
  {
    "actions":
    [
      {
        "action_key": "USER_INPUT",
        "allow_repeated": false,
        "completed_label": "Approved",
        "id": "00000000-0000-0000-0000-000000000000",
        "label": "Approve",
        "mutually_exclusive_set_id": "approval-actions",
        "primary": true,
        "request": {},
        "type": "POST",
        "url": {
          "href": "//hero/connectors/concur/api/expense/1D3BD2E14D144508B05F/approve"
        },
        "user_input": [
          {
            "format": "textarea",
            "id": "comment",
            "label": "Comment"
          }
        ]
      },
      {
        "action_key": "USER_INPUT",
        "allow_repeated": false,
        "completed_label": "Declined",
        "id": "00000000-0000-0000-0000-000000000000",
        "label": "Decline",
        "mutually_exclusive_set_id": "approval-actions",
        "request": {},
        "type": "POST",
        "url": {
          "href": "//hero/connectors/concur/api/expense/1D3BD2E14D144508B05F/

```

```

decline"      },
      "user_input":
    [
      {
        "format": "textarea",
        "id": "reason",
        "label": "Reason"
      }
    ]
  },
  "body": {
    "fields": [
      {
        "description": "1970-01-01T00:00:00Z",
        "title": "Submitted On",
        "type": "GENERAL"
      },
      {
        "description": "Totla, Gaurav",
        "title": "Requested By",
        "type": "GENERAL"
      },
      {
        "description": "(IN1019722)IT - Apps Cloud-1021",
        "title": "Cost Center",
        "type": "GENERAL"
      },
      {
        "description": "$23,340.21",
        "title": "Amount",
        "type": "GENERAL"
      }
    ]
  },
  "creation_date": "1970-01-01T00:00:00Z",
  "hash": "test-hash",
  "header": {
    "title": "Meals & Entertainment"
  },
  "id": "00000000-0000-0000-0000-000000000000",
  "image": {
    "href": "https://s3.amazonaws.com/vmw-mf-assets/connector-images/hub-concur.png"
  }
}
]
}

```

Note The approve and decline action links provided in the example are for your reference only.

Workspace ONE mobile flows Connectors

2

Workspace ONE mobile flows connectors are services or components that work with the mobile flows server. Connectors can be configured to fetch user-specific information that enables Workspace ONE mobile flows to work with the configured user devices.

The connector is used to connect to the business system, request the data, and perform the interactions as requested by the client. The connector contains the logic for how the card must appear on the client. For example, a Salesforce card might be displayed in the Workspace ONE Boxer application where users can see important information and also take required action on Salesforce from the mobile flow card.

Types of Connectors

You can create your own connectors or customize the open-source sample connectors. You can also use the out-of-the-box (OOTB) connectors such as Salesforce and ServiceNow which are hosted on the VMware's servers. :

- Out-of-the-box-connector (OOTB) - VMware develops and configures or enables the OOTB connectors in the Workspace ONE UEM console. You can readily use the OOTB connector as no development or infrastructure is required.
- Sample connector - VMware develops sample connectors. The connector is open-sourced so that the customer can deploy the default configuration or modify the connector to their use case requirements. Sample connectors require infrastructure to host the connectors.
- Custom connector - You can use the mobile flows framework to build custom connectors. You can develop the connector and infrastructure is required to host the connector.

This chapter includes the following topics:

- [Workspace ONE mobile flows Out-of-the-box Connectors](#)
- [Workspace ONE mobile flows Sample Connectors](#)
- [Create Custom Workspace ONE mobile flows Connectors](#)

Workspace ONE mobile flows Out-of-the-box Connectors

The Workspace ONE mobile flows Out-of-the-box (OOTB) connectors help surface contextual information and actions in Workspace ONE Intelligent Hub and are available in the mobile flows catalog.

The OOTB connectors provide the following advantages over the sample connectors.

- The configuration information is already added to the connector.
- VMware hosts the connectors. You need not host the connectors on your servers.

The following table lists all the available OOTB notification connectors.

Sample Business System Connector Name	Account Type	Authentication	Open-sourced on Gtihub	Use Case Addressed - Description of the Use Case
Salesforce	User account	OAuth 2.0 - Authorization code	Yes	Discount request approval - Approve or deny discount requests and add comments.
ServiceNow	User account	OAuth 2.0 - Authorization code	Yes	IT ticket approval - Approve or deny IT ticket requests and add comments.
Concur	Service account	OAuth 2.0 - Password	Yes	Expense request approval - Approve or deny expense requests and add comments.
Coupa	Service account	Service Account	Yes	Requisition request approval - Approve or deny a requisition request and add comments.
Jira Service Desk	User account	OAuth 2.0 - Authorization code	Yes	Service request approval - Approve or deny service requests and add comments.
Workday	User account	OAuth 2.0 - Authorization code	Yes	Absence request approval - Approve or deny a time-off request and add comments. Employee data change approval. - Notifications to approve employee data changes.
Microsoft OneDrive	User account	OAuth 2.0 - Authorization code	Yes	File or folder request approval - Approve a file or folder access request with read-only or editing rights.
Microsoft Teams	User account	OAuth 2.0 - Authorization code	Yes	Team @ mention - Notification for any @ mention in public or private team channels. Reply to messages.
Microsoft Planner	User account	OAuth 2.0 - Authorization code	Yes	Tasks due today - Notification for all upcoming tasks that are due for the day. Complete or comment on the task.
LinkedIn Learning	Service account	OAuth 2.0 - Authorization code	Yes	New training available - Notification for new trainings added.
Saba	User Account	OAuth2.0 Authorization code	Yes	New learning assigned. - Notification for new learning is added.

Sample Business System Connector Name	Account Type	Authentication	Open-sourced on Gtithub	Use Case Addressed - Description of the Use Case
Zoom	User account	OAuth 2.0 - Authorization code	Yes	New recording available - Notification when a Zoom recording is available. Launch recording to view.
Workday	User account	OAuth 2.0 - Authorization code	Yes	Employee Data Change Approval - Approve or deny manager, cost center, job profile, promotion, business title change requests and add comments
Box	User account	OAuth 2.0 - Authorization code	Yes	New @mention - Notiification when there is an @mention on a document. Reply to message or add user to collaborate
Google Docs	User account	OAuth 2.0 - Authorization code	Yes	New @mention - Notiification when there is an @mention on a document. Reply to message or add user to collaborate
Microsoft Dynamics	User account	OAuth 2.0 - Authorization code	Yes	New leads - Notification when a new lead is assigned to the user. Create a task or log a call
Microsoft Dynamics	User account	OAuth 2.0 - Authorization code	Yes	Case resolution - Notification when a new case is assigned to the user. Resolve or cancel the case
Microsoft Dynamics	User account	OAuth 2.0 - Authorization code	Yes	New task - Notification when a new task is assigned to the user. Complete or cancel the task
Salesforce	User account	OAuth 2.0 - Authorization code	Yes	New leads - Notification when a new lead is assigned to the user. Create a task or log a call
Salesforce	User account	OAuth 2.0 - Authorization code	Yes	Case resolution - Notification when a new case is assigned to the user. Add comments or close the case
Salesforce	User account	OAuth 2.0 - Authorization code	Yes	New task - Notification when a new task is assigned to the user. Complete the task or mark in-progress
Saba	User account	Service Account	Yes	New training assigned - Notification when a required training is assigned. Launch training to complete
Zendesk	User account	OAuth 2.0 - Authorization code	Yes	Ticket resolution - Notification when a new ticket is assigned to the user. Solve ticket or mark as pending
Zendesk	User account	OAuth 2.0 - Authorization code	Yes	Task approval - Approve or deny task requests and add comments
Hubspot	User account	OAuth 2.0 - Authorization code	Yes	New deals - Notification when a new deal is assigned to the user. Add a note or or log a call

Sample Business System Connector Name	Account Type	Authentication	Open-sourced on Github	Use Case Addressed - Description of the Use Case
Hubspot	User account	OAuth 2.0 - Authorization code	Yes	New tickets - Notification when a new ticket is assigned to the user. Add a note or log a call
Adobe Sign	User Account	OAuth 2.0 - Authorization code	Yes	E-signature required - Notification for pending documents requiring an e-signature. Launch document to sign.

The following table lists all the available OOTB chatbot connectors:

Sample Business System Connector Name	Account Type	Authentication	Open-sourced on Github	Use Case Addressed - Description of the Use Case
ServiceNow	User account	OAuth2 - Authorization code	No	<ul style="list-style-type: none"> ■ Order devices - Show devices available in the catalog by category. Add devices to the cart and checkout. File a ticket for the user. ■ Create a ticket - File an IT ticket for a user. ■ View my tickets - Show the most recent and open tickets.
Workspace ONE UEM	User account	Workspace ONE Auth	No	Synchronize UEM device - Show enrolled devices and synchronize devices to remediate an issue.
LinkedIn Learning	Service account	OAuth 2.0 - Client credentials	No	View courses - Show courses based on a keyword search.

Add Out-of-the-Box (OOTB) Connectors

Out-of-the-box (OOTB) connectors are connectors to the business systems that are developed and hosted by VMware for specific use cases. You can add and configure the connectors to take advantage of the workflows.

Prerequisites

You must have Workspace ONE UEM console version 1905 or later to use OOTB connectors.

Workspace ONE mobile flows must be enabled in Hub Services.

Procedure

- 1 Log in to the UEM console and navigate to **Content > Mobile Flows**.
- 2 Click the **Catalog** tab to see the list of available OOTB connectors.
- 3 Select the connector you want to add and click **Add**.

- 4 Enter the following details in the **Basic Information** tab and click **Next**.
 - **Name** - Enter a name to identify your connector.
 - **Base URL** (Optional) - Enter the URL of the backend service of the mobile flows connector.
 - **Activate** - You can enable or disable this option. Disable the connector if you want to prevent all users from accessing the mobile flows information on their devices for this connector.
- 5 (Optional) Select the **Categories** for the **Use Case, Apps, Type** and click **Next**.
- 6 Select the **Authentication Type** and enter the **Grant Type** parameters.
 - a (Optional) Click the **Show Advanced Options** to enter the **Token Server Hints** and **Token URI Body Parameters**.
 - b Click **Next**.
- 7 Select the **Notification Method** type to **Poll** or **Push** the notifications from the business systems.
 - **Poll** - The Workspace ONE mobile flows server polls the business systems every 1 hour to check for new notifications.
 - **Push** - If a business system supports a push mechanism, the mobile flows can generate an endpoint for the service to call when the notifications are ready.
 - a Select **Poll** and click **Next** to review the connector information added or select **Push** and select the **Authentication Type** from the drop-down. The **Authentication Header** and **Client Secret** information is auto-populated.
 - b Click **Next**.
- 8 Review the connector information populated in the **Review** tab and click **Submit** to add the connector.

Results

To check if your connector is added, in the UEM console, navigate to **Content > Mobile Flows > My Flows**. Modifications you make to the mobile flows connectors might take approximately 15 minutes to appear in the Hub Services console.

When the OOTB connector is enabled and configured, navigate to the Hub Services console and enable the mobile flows notifications. For more information, see the *Enable Workspace ONE mobile flows Notification in Hub Services* topic in the *VMware Workspace ONE Hub Services* guide. You must enable mobile flows in the Hub console to display notifications from mobile flows-configured business systems within the Intelligent Hub.

Workspace ONE mobile flows Sample Connectors

Sample connectors in Workspace ONE mobile flows are open-sourced connectors, developed by VMware and published on GitHub.

Sample connectors can be deployed in any environment without any changes or the connector can be modified to fit your business workflows. Using a sample connector offers more flexibility and customization than the out-of-the-box (OOTB) connectors. The source code for the sample connectors is available at: [Sample Connectors](#).

To view the list of available sample connectors, see the [GitHub repository](#) or see the 'open-sourced on GitHub' column in OOTB connector list.

Create Custom Workspace ONE mobile flows Connectors

Workspace ONE mobile flows connectors can be customized to your requirement.

Building a Connector

You can use the available OOTB connectors or build your own connector. All communication with a connector is over HTTPS. A connector can be written in any language that allows the developer to create HTTP endpoints.

The instructions below provide an overview of the steps you must follow to build a connector. For information on configuring the connectors from the console, see [Configure Workspace ONE mobile flows Connectors from the Workspace ONE UEM Console](#).

- 1 Add a Discovery API - A connector is registered with the Mobile Flows Server by adding a discovery URL. This URL might point to the connector itself, or it might point to static web content (for example, Amazon S3). Discovery tells the Mobile Flows Server where to submit object requests. The content behind the discovery is JSON and its

```
Content-Type
```

must be set to

```
application/json
```

. Links in discovery served to the Mobile Flows Server must be externally accessible (the Mobile Flows Server must be able to call into the links returned when calling discovery). A common pattern is to be behind a proxy that fills in X-Forwarded headers that enable you to construct an external URL.

Note Discovery resources must be available to unauthenticated clients.

- 2 Add a Card Request API to the connector - When a client requests a card, this API is called and a card is requested consists of one or more tokens. These tokens might be pulled from the text of an email (trigger-based card), or they might be from the client's environment, for example, the user's email address.
- 3 Return the card response to the client.
- 4 Add support for card actions to business systems.

Examples of OOTB connectors are available on Github at <https://github.com/vmware/connectors-workspace-one>.

Running Workspace ONE mobile flows Connector

Workspace ONE mobile flows connectors can be used as it is or they can also be used as a base from which you can develop your own connectors. These connectors can be built, installed, and run as Docker containers, RPM, or Fat Jars.

As a prerequisite, you must have the Docker container platform to build and run the connector.

This section provides the example of running a Jira connector as a Docker container.

```
docker run --name jira-connector \  
-p 8080:8080 \ -d \  
wslconnectors/jira-connector \  
--server.port=8080 \  
--security.oauth2.resource.jwt.key-uri="https://xxxx.xxxx.xxxxx.com/security/public-key"
```

For information about building and running a connector as RPM or Fat Jar, see <https://github.com/vmware/connectors-workspace-one#docker>.

Configuring VMware Workspace ONE mobile flows

3

You must first configure the Workspace ONE Access service before configuring the VMware Workspace ONE mobile flows server. You can then configure the out-of-the-box (OOTB) connectors or create and add custom connectors to your mobile flows console.

This chapter includes the following topics:

- [Configure the MobileFlows_Server_Template in Workspace ONE Access](#)
- [Register the Customer Tenant to the Workspace ONE mobile flows Cloud Service](#)
- [Configure Workspace ONE mobile flows Connectors from the Workspace ONE UEM Console](#)

Configure the MobileFlows_Server_Template in Workspace ONE Access

You must configure the `MobileFlows_Server_Template` to fetch the user-specific access tokens. This is the first step before configuring mobile flows.

When using connectors for client applications, Workspace ONE Access is used to authenticate the transfer of information. If your environment consists of Workspace ONE Access, you can create a `MobileFlows_Server_Template` template to fetch the user-specific access token. For more information on Workspace ONE Access, see the Workspace ONE Access Administration Guide.

Procedure

- 1 Log in to the Workspace ONE Access console and navigate to **Catalog > Settings > Remote App Access > Templates**.
- 2 Check if the `MobileFlows_Server_Template` exists. If the `MobileFlows_Server_Template` does not exist, then enter the following fields to create a template.

Field name	Value
Template ID	MobileFlows_Server_Template
Application	Workspace ONE Access
Scope	Select Email, Profile, User, and OpenID
Redirect URI	https://prod.hero.vmwservices.com/token-exchange/oauth2/callback
Token Type	Bearer

Field name	Value
Token Length	32
Issue Refresh Token	Selected
Access Token TTL	1 day
Refresh Token TTL	90 days
Idle Token TTL	10 days
User Grant	Do not select the check box

- 3 Click **Add** to create the template.

What to do next

From the Workspace ONE UEM console, register the tenant in the mobile flows server.

Register the Customer Tenant to the Workspace ONE mobile flows Cloud Service

After configuring the MobileFlows_Server_Template in Workspace ONE Access, you must register the tenant in the mobile flows server to connect to the mobile flows Cloud Service.

Navigate to **Mobile Flows** from the Workspace ONE UEM console and click **Begin** to register the tenant. After the tenant is registered, you can configure the connectors.

Configure Workspace ONE mobile flows Connectors from the Workspace ONE UEM Console

Configure the Workspace ONE mobile flows connector details from the console such as the connector name, public facing URI, and authentication type.

Prerequisites

Complete the following actions before you can configure the mobile flows connectors from the UEM console.

- 1 Purchase the VMware Workspace ONE mobile flows add-on. The **Mobile Flows** option is visible in the **Content** page only after you purchased the add-on.
- 2 Configure the MobileFlows_Server_Template in Workspace ONE Access. For more information, see the [Configure the MobileFlows_Server_Template in Workspace ONE Access](#).
- 3 Provision customer tenant to mobile flows Cloud service.
- 4 If you are configuring a connector with a service account authentication, you must know the service account credentials.

Procedure

- 1 Log in to the UEM console and navigate to **Content > Mobile Flows > My Flows** tab.

- 2 Select **New** to create a new connector configuration.
- 3 Select the **Name** text box and enter the name of the connector that you want to be displayed on the console and on the user's device.
- 4 Select **Discovery URL** and enter the public facing URL for the connector that is deployed within your environment.

- 5 (Optional) Enter the **Base URL**.

The Base URL can be omitted depending on the connector being configured. For example, the base URL might be hard coded at the customer's connector itself.

- 6 Ensure that the **Activate** slider is set to On.
- 7 (Optional) Select a label from the list of available categories under **Category** to categorize the connector.

The label is used for informational purposes. For example, you can choose Workspace ONE Boxer to indicate that this connector can be made available for the Boxer app.

- 8 Select the authentication type from the **Authentication Type** drop-down menu.

The following different authentication types are available when the connector is enabled:

- Service Account - Enter the service account credentials that the backend service is expecting the client to use.
- Basic - User must enter their credentials.
- OAuth 2.0 - User grants access when prompted on-screen.
- Workspace ONE - No action required.

- 9 Select **Save**.

What to do next

Once the mobile application fetches the connector details, the device users are provided with an option to enable or disable the mobile flows connectors from within the application.

Configure Workspace ONE mobile flows with Workspace ONE Boxer

4

Configure mobile flows for supported client applications such as Workspace ONE Boxer.

Workspace ONE Boxer is the email client provided to you by VMware. Apart from numerous email management features, you can configure and deploy custom application configurations to the Boxer app from the Workspace ONE UEM console. Workspace ONE mobile flows can be configured with Workspace ONE Boxer using the application configuration keys.

Procedure

- 1 Log in to the Workspace ONE UEM console.
- 2 Navigate to **Apps & Books > Public**.
- 3 Select the Workspace ONE Boxer application in the **List View**, select **Assign**, and select **Add Assignment**.
- 4 Navigate to the **Optional** Application Configuration section of the Add Assignment page and add the configuration keys for enabling and configuring the mobile flows.

Table 4-1. Application Configuration Keys

Configuration Key	Value Type	Configuration Value	Description
AppMobileFlowsEnabled	Boolean	True - enabled False - disabled	Set to True to enable Mobile Flows for Boxer.
AppMobileFlowsHost	String	Provide <code>https://prod.hero.vmwservices.com</code> as the URL for the mobile flows host.	Define the URL for the mobile flows host.
AppMobileFlowsvIDM	String	Provide a valid URL for authenticating the device users through Workspace ONE Access. For example, <code>http://acme.WS1access.acme2.com</code>	Defines the URL for the device user to authenticate using the Workspace ONE Access instance.

Table 4-1. Application Configuration Keys (continued)

Configuration Key	Value Type	Configuration Value	Description
AppMobileFlowsSyncTimeHours	Integer	Provide a sync value in hours. For example, 24.	Mobile flow cards are not requested for emails sent before the entered value.
AppMobileFlowsAutoEnableConnectors	Boolean	False - Disabled (default) True - Enabled	If enabled, when turning on mobile flows, all connectors are activated in succession. Enable this option only when all connectors are configured with Workspace ONE Access.

- 5 Select **Add** and then select **Save**.

Provision Workspace ONE mobile flows

5

Depending on the type of user, you can provision Workspace ONE mobile flows in different ways.

- If you are a shared SaaS Workspace ONE UEM user, GEM service enables the mobile flows Admin UI in the Workspace ONE UEM console when you purchase the mobile flows solution or Workspace ONE Enterprise SKU.
- If you are a dedicated SaaS Workspace ONE UEM user, you can place an order and VMware Deployments or the SaaS Operations team enables the Admin UI on the Workspace ONE UEM console by executing a SQL script in your database.
- If you are an On-Premises Workspace ONE UEM user, you can download the SQL script to run on the Workspace ONE UEM database to enable the mobile flows Admin UI. You need the *locationgroupID* where the mobile flows admin UI is to be enabled and the flag value to run the SQL script. To download the script and for more information, see the [Workspace ONE Resources](#).

Frequently Asked Questions about Workspace ONE mobile flows

6

Frequently Asked Questions about Workspace ONE mobile flows.

- What are the components of mobile flows?
 - Cloud-hosted mobile flows service
 - Workspace ONE Access
 - Connectors
 - Workspace ONE UEM console
 - Workspace ONE Boxer
- Which are the mobile platforms that are supported?

Android and iOS.
- What are the minimum requirements to deploy mobile flows?

Though the authentication can be configured using any identity provider, to ensure an uninterrupted user-experience, you must use Workspace ONE Access to deploy mobile flows. Any backend services intended to be used by the mobile flows service must also be configured with Workspace ONE Access. The best user-experience is delivered when configured using OAuth2 flows.
- Can mobile flows be deployed on-premise?

Mobile flows is a cloud-only service available to both SaaS and on-premise Workspace ONE customers.
- How is mobile flows configured?

Customers can leverage mobile flows in three ways:

 - Use out-of-the box (OOTB) pre-built connectors.
 - Configure sample connectors to meet a specific requirements.
 - Build custom connectors referencing the mobile flows framework. For more information about developing custom connectors, see <https://github.com/vmware-samples/card-connectors-guide>.
- Is Workspace ONE Boxer a requirement to implement Workspace ONE mobile flows?

Yes, Workspace ONE Boxer is required to take advantage of the experience.

- How do I purchase Workspace ONE mobile flows?

Workspace ONE mobile flows is part of the new Workspace ONE Enterprise bundle that is provided along with Workspace ONE Intelligence. Workspace ONE mobile flows is also available in the Workspace ONE Intelligence add-on SKU.