

Building Flows to Manage Content and Approvals



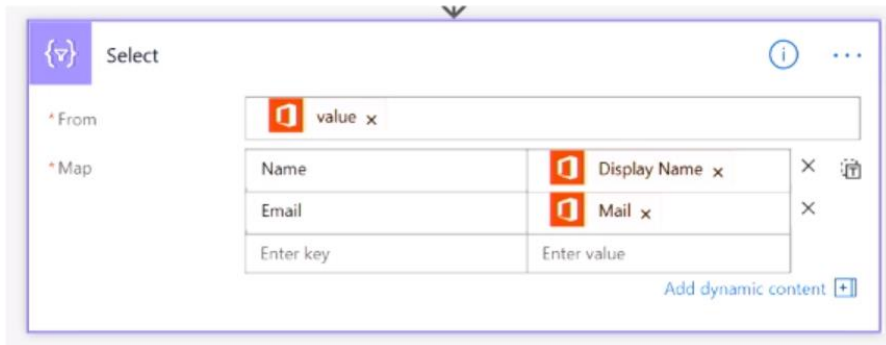
Agenda

- Processing Documents and Images
- Using Flow to Generate Word and PDF Files
- Integrating Flow with Microsoft Forms
- Using Flow to Automate Approval Processes
- Managing Approvals using Approvals Center



Transforming Arrays

- Use Select action
 - Two input modes: fill key-value pairs or typing directly
- Create array object objects
 - Useful for passing array to another action



- Create a simple array of strings, numbers, Booleans, etc
 - Useful for creating simple list (e.g. email addresses)



Converting an Array using Select

The screenshot displays a Power Automate flow with the following steps:

- Manually trigger a flow**: The starting trigger.
- Get items**: An action to retrieve data from a source.
- Email Array**: A variable of type Array, containing:
 - *From**: A dynamic content field with the value `value`.
 - *Map**: A dynamic content field with the value `Email Address`.
- Get Parsed Email Addresses**: An action with the following configuration:
 - *Inputs**: A dynamic content field with the expression `join(...)`.

Below the flow steps, a panel titled "Add an expression to do basic things like access, convert, and compare values. [Learn more](#)" is visible. It has a "Hide" button and two tabs: "Dynamic content" and "Expression". The "Expression" tab is active, showing the formula:

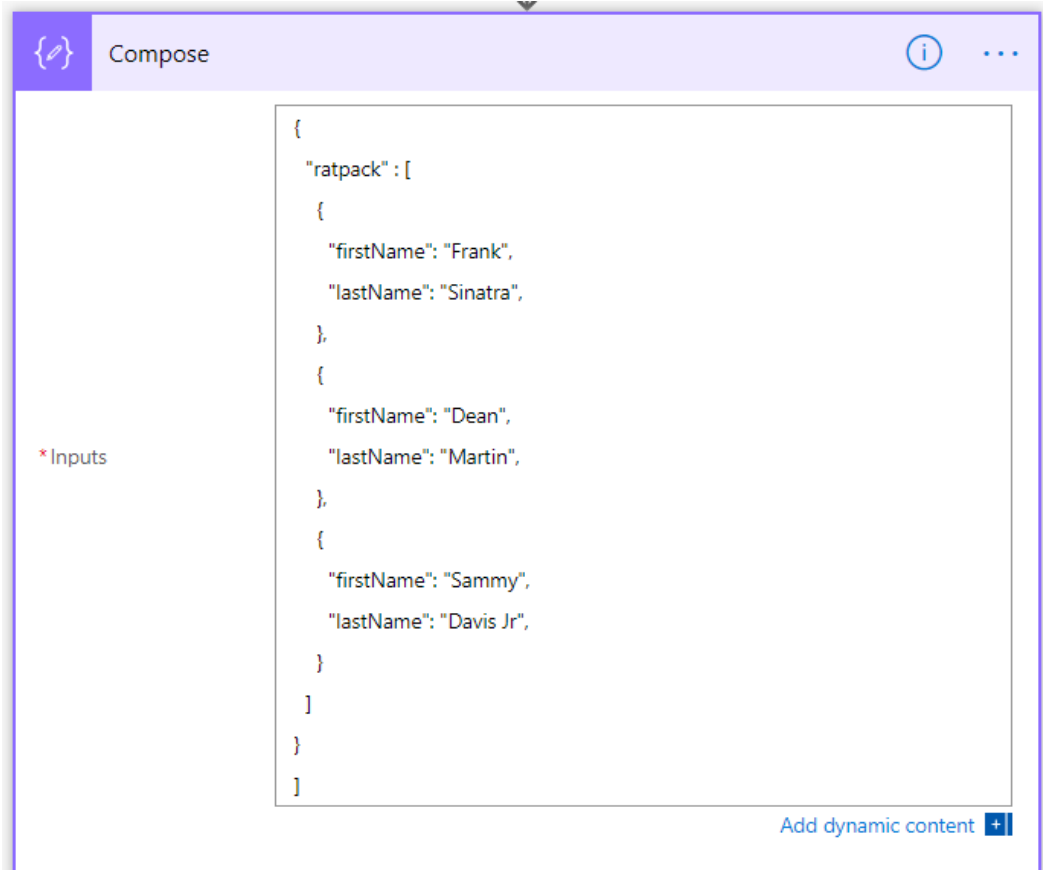
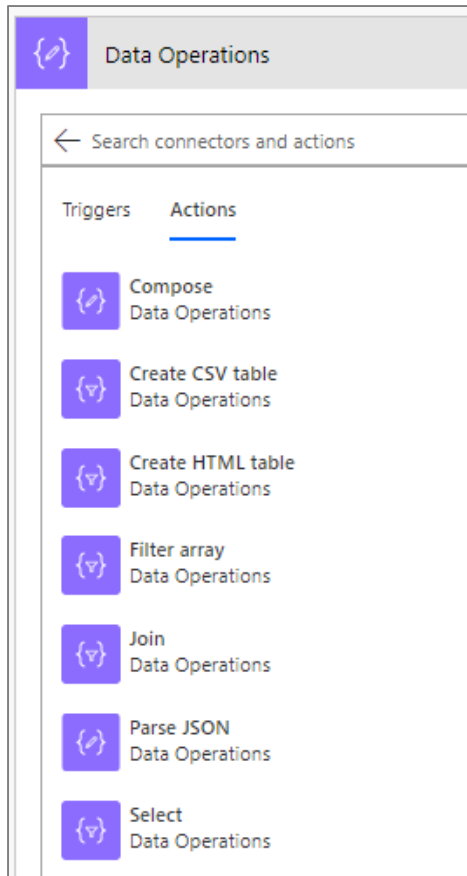
```
fx join(body('Email_Array'),';')
```

Below the expression field is an "Update" button.



Data Operations

- Used to process data and prepare content



Handling Type Conversion

- Some conversion is automatic
 - Sometimes conversions are performed for you
 - In other cases, you must explicitly convert between types



string(value)

Convert the parameter to a string



float(value)

Convert the parameter argument to a floating-point number



bool(value)

Convert the parameter to a Boolean



base64(value)

Returns the base 64 representation of the input string



base64ToBinary(value)

Returns a binary representation of a base 64 encoded string



base64ToString(value)

Returns a string representation of a base 64 encoded string



binary(value)

Returns a binary representation of a value



dataUriToBinary(value)

Returns a binary representation of a data URI



dataUriToString(value)

Returns a string representation of a data URI



dataUri(value)

Returns a data URI of a value



uriComponent(value)

Returns a URI encoded representation of a value



uriComponentToBinary(value)

Returns a binary representation of a URI encoded string



uriComponentToString(value)

Returns a string representation of a URI encoded string



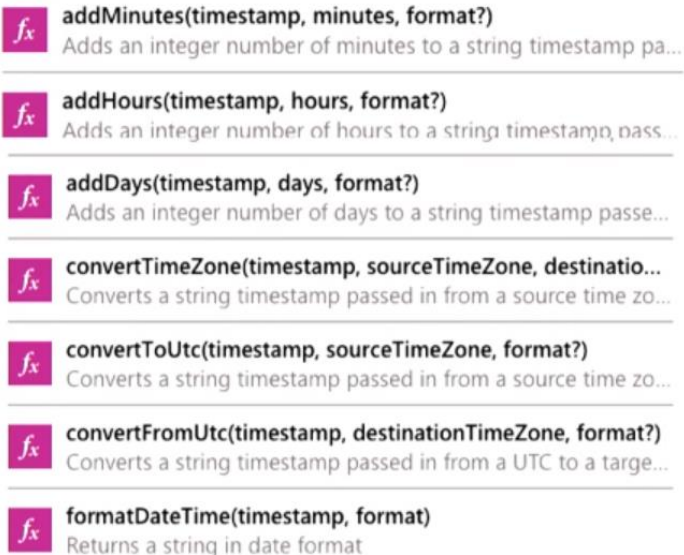
Flow Type Conversion Matrix

To From	UI adds automatically					Floating-point	Integer	Bool.	Array	JSON Object	XML content
	String	Base 64	Binary content	Data URI	URI comp.						
String	Yes	base64()	binary()	dataUri()	uriComponent()	float()	int()	bool()	split() json()	json()	xml()
Base 64	base64ToString()	Yes	base64ToBinary()	*	*	*	*	*	*	*	*
Binary content	string()	base64()	Yes	dataUri()	uriComponent()	*	*	*	*	*	*
Data URI	dataUriToString()	*	dataUriToBinary()	Yes	*	*	*	*	*	*	*
URI comp.	uriComponentToString()	*	uriComponentToBinary()	*	Yes	*	*	*	*	*	*
Floating-point	Yes	base64()	binary()	dataUri()	uriComponent()	Yes	No	No	No	No	No
Integer	Yes	base64()	binary()	dataUri()	uriComponent()	Yes	Yes	No	No	No	No
Bool.	Yes	base64()	binary()	dataUri()	uriComponent()	No	No	Yes	No	No	No
Array	join() string()	*	*	*	*	No	No	No	Select Action	Select or Compose	xml()
JSON object	string()	*	*	*	*	No	No	No	Select or Compose	Compose Action	xml()
XML content	string()	*	*	*	*	No	No	No	xpath()	xpath()	Logic apps only



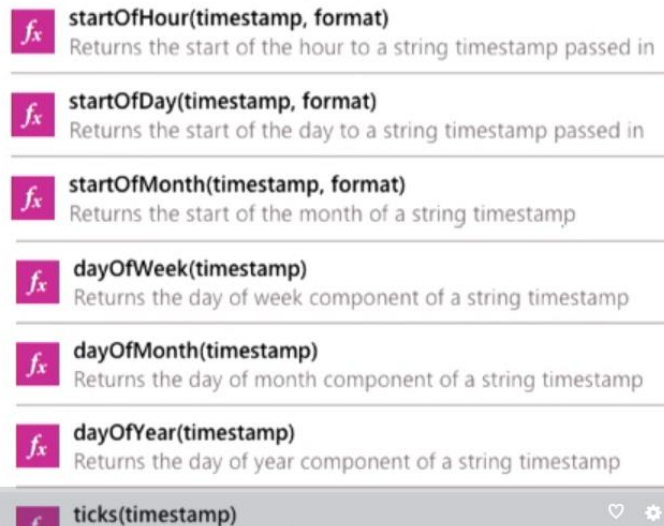
Working with Dates and Time

- Get Greenwich Meantime using **utcnow()**
- Use **add*()** functions to move time back/forward
- **convertTimeZone()** used to handle local times
- **formatDateTime()** used to format



A screenshot of a code editor window displaying a list of date and time functions. Each function is preceded by a small icon of a pink square with a white 'fx' symbol. The functions listed are:

- addMinutes(timestamp, minutes, format?)**
Adds an integer number of minutes to a string timestamp passed in
- addHours(timestamp, hours, format?)**
Adds an integer number of hours to a string timestamp passed in
- addDays(timestamp, days, format?)**
Adds an integer number of days to a string timestamp passed in
- convertTimeZone(timestamp, sourceTimeZone, destinationTimeZone, format?)**
Converts a string timestamp passed in from a source time zone to a destination time zone
- convertToUtc(timestamp, sourceTimeZone, format?)**
Converts a string timestamp passed in from a source time zone to UTC
- convertFromUtc(timestamp, destinationTimeZone, format?)**
Converts a string timestamp passed in from a UTC to a target time zone
- formatDateTime(timestamp, format)**
Returns a string in date format



A screenshot of a code editor window displaying a list of date and time functions. Each function is preceded by a small icon of a pink square with a white 'fx' symbol. The functions listed are:

- startOfHour(timestamp, format)**
Returns the start of the hour to a string timestamp passed in
- startOfDay(timestamp, format)**
Returns the start of the day to a string timestamp passed in
- startOfMonth(timestamp, format)**
Returns the start of the month of a string timestamp
- dayOfWeek(timestamp)**
Returns the day of week component of a string timestamp
- dayOfMonth(timestamp)**
Returns the day of month component of a string timestamp
- dayOfYear(timestamp)**
Returns the day of year component of a string timestamp
- ticks(timestamp)**



dataUriToBinary()

- PowerApps photos require conversion
 - Allows you to upload photos to SharePoint
 - Accomplished using **dataUriToBinary()** function

```
dataUriToBinary(triggerBody()['Createfile_FileContent'])
```

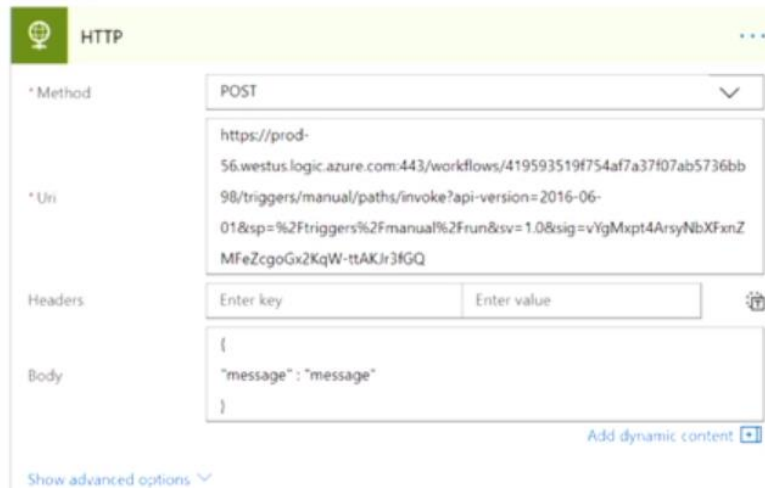
The screenshot displays a PowerApps flow interface. The first step is 'Get File Name', which uses the 'concat(...)' function. The second step is 'Create file', which is configured with the following fields:

- Site Address:** Critical Path Training Labs Team Site - <https://msd0910.sharepoint.com/>
- Folder Path:** /My Photos
- File Name:** Output
- File Content:** dataUriToBinary(...)

Below the 'Create file' step, there is a 'Dynamic content' pane showing the 'Expression' tab. The expression entered is `dataUriToBinary(triggerBody()['Createfile_`. Below this, there is a list of 'String functions' including `concat(text_1, text_2?, ...)` with a description: 'Combines any number of strings together.'

Calling Flows using the HTTP action

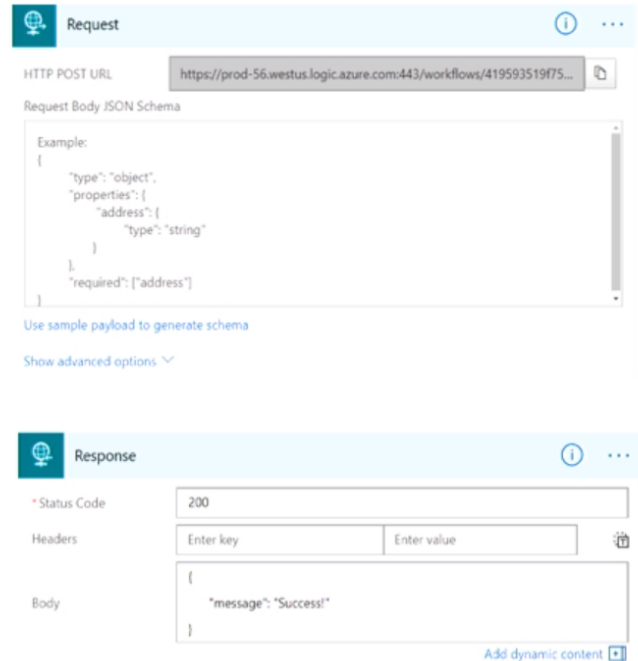
In the parent workflow:



The screenshot shows the configuration for an HTTP action in a parent workflow. The action is named "HTTP". The method is set to "POST". The URI is a long URL starting with "https://prod-56.westus.logic.azure.com:443/workflows/419593519f754af7a37f07ab5736bb98/triggers/manual/paths/invoke?api-version=2016-06-01&sp=%2Ftriggers%2Fmanual%2Frun&sv=1.0&sig=vYgMxpt4ArsyNbXfanZMFeZcgoGx2KqW-ttAKJr3fGQ". The headers section is empty, with input fields for "Enter key" and "Enter value". The body is a JSON object: {"message": "message"}. There is a link "Add dynamic content" and a "Show advanced options" dropdown.



In the child workflow:

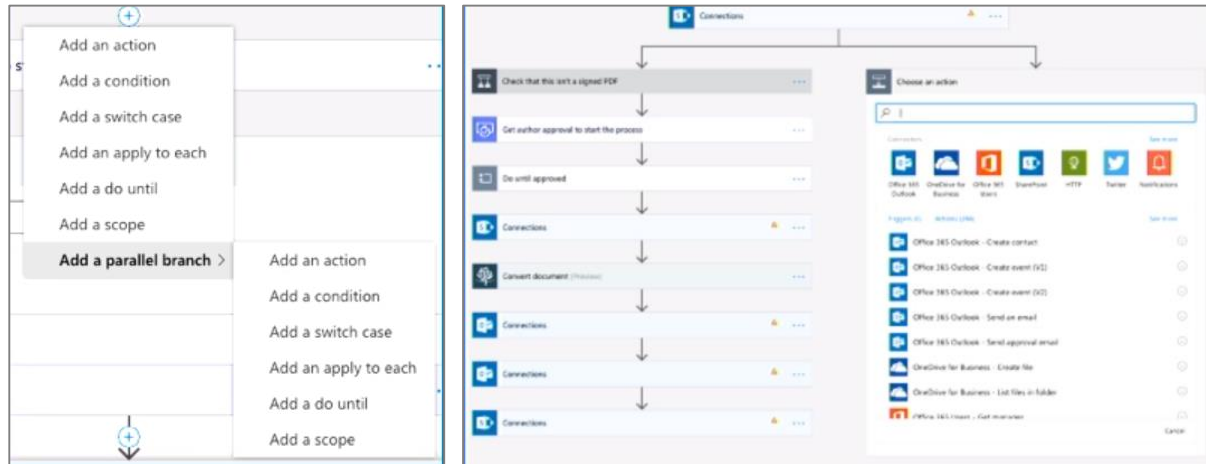


The screenshot shows the configuration for an HTTP action in a child workflow. The action is named "Request". The HTTP POST URL is "https://prod-56.westus.logic.azure.com:443/workflows/419593519f75...". The Request Body JSON Schema is shown with an example: {"type": "object", "properties": {"address": {"type": "string"}}, "required": ["address"]}. There are links "Use sample payload to generate schema" and "Show advanced options". Below this is the "Response" section, which shows a status code of "200". The headers section is empty, with input fields for "Enter key" and "Enter value". The body is a JSON object: {"message": "Success!"}. There is a link "Add dynamic content".

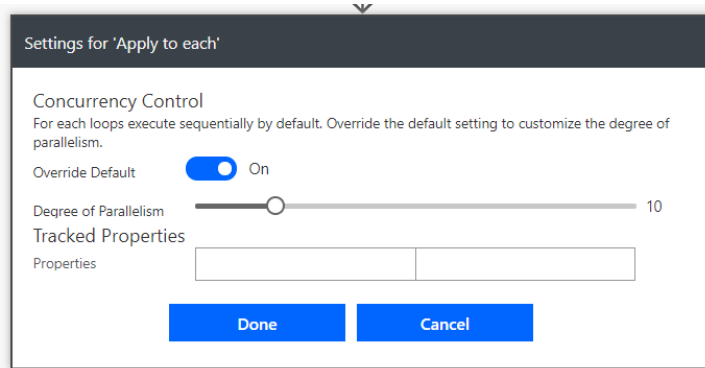


Parallel Execution

- Add parallel branch from above using ⊕



- Apply to each is sequential by default
 - Adding parallel execute to Apply to each



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DEMO

Generating PDF Files with the Word Online Connector

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DEMO

Creating a Flow to Process Forms Created using Microsoft Forms

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- ✓ Processing Documents and Images
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Creating a Flow for Device Request Approval

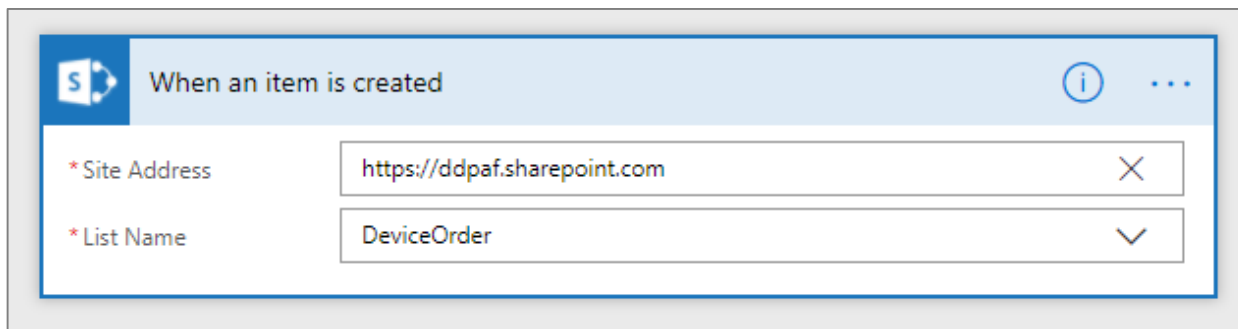
- Create a flow from blank



- Select a SharePoint trigger for **When an item is created**

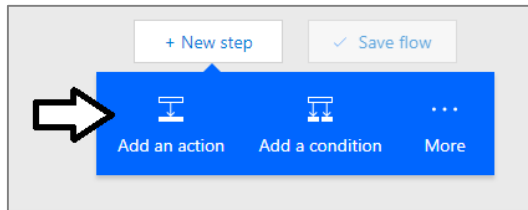


- Configure the trigger to use the **DeviceOrder** list

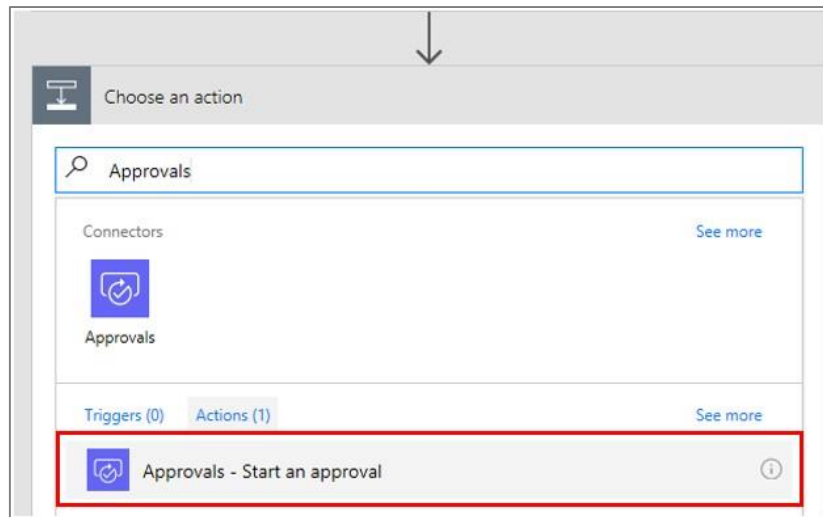


Add the Start an Approval Action

- An **Approval** process is added as an action

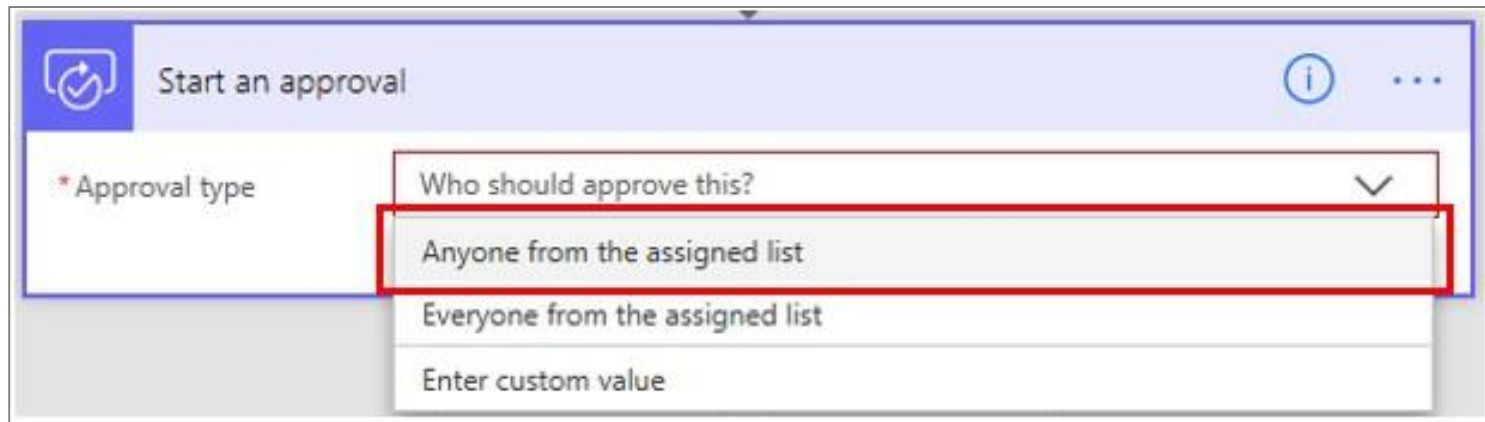


- Select the Approvals action named **Start an approval**



Approval Types

- There are two types of approvals
 - Determine behavior when there are two or more approvers
 - "Anyone" allows single approver to complete approval process
 - "Everyone" requires all approver to approve the request



The screenshot shows a 'Start an approval' dialog box. The title bar is light blue with a circular arrow icon on the left and an information icon and three dots on the right. Below the title bar, there is a label '* Approval type' followed by a dropdown menu. The dropdown menu is open, showing four options: 'Who should approve this?' (with a downward arrow), 'Anyone from the assigned list' (highlighted with a red border), 'Everyone from the assigned list', and 'Enter custom value'.



Building Out The Start an Approval Action

- You provide data which is sent to approver

Start an approval

* Approval type: Anyone from the assigned list

* Title: New device request for Title x

* Assigned to: Approver x ;

Details: A new device has been requested
Title x
\$ Price x
Comments: Comments x

Item link: Link to item x

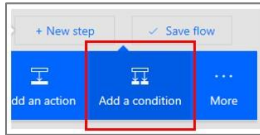
Item link description: This is the requested device

[Add dynamic content](#) +

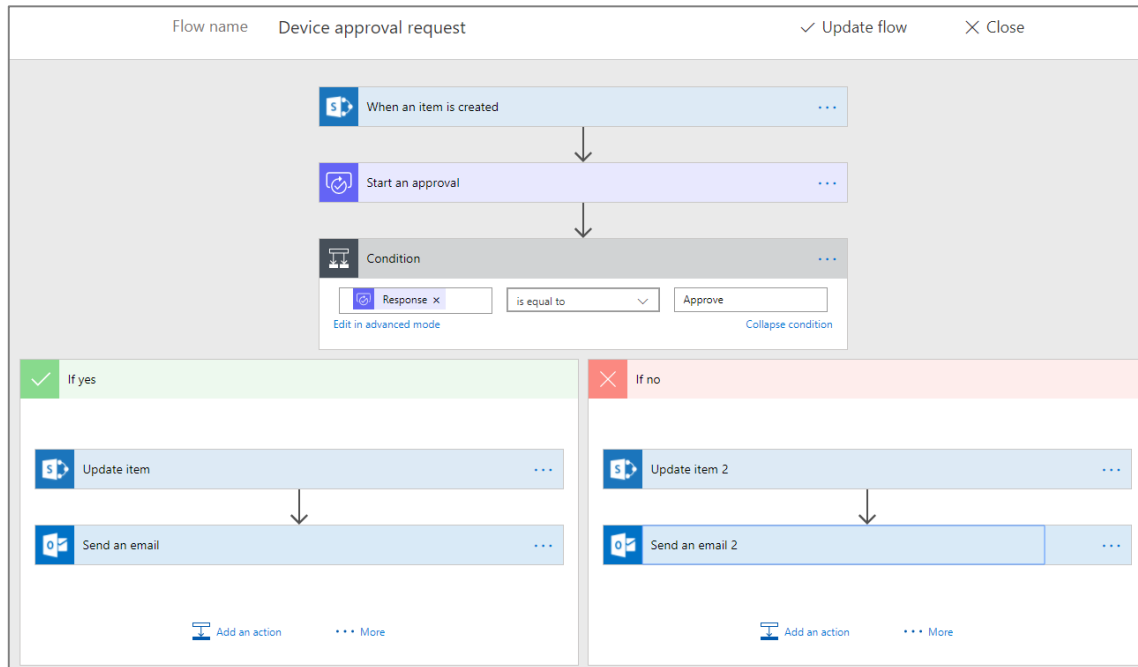


Responding to the Approval Response

- Start an Approval action followed by a condition
 - Allows flow to determine if approval was accepted or rejected



- Condition has If yes branch and If no branch for both outcomes



Implementing If yes Branch using Email

- If request is approved, send notification email to requestor

Send an email

*To: RequestBy x ;

*Subject: Your device order has been approved!

*Body: Your device order for Title x has been approved by Approver name x

Arrpover comments: Comments x

From (Send as): Email address to send mail from (requires "Send as" or "Send on behalf of" pe

CC: Specify email addresses separated by semicolons like someone@contoso.com

BCC: Specify email addresses separated by semicolons like someone@contoso.com

Attachments Name: Attachment name

Attachments Content: Attachment content

Importance: Importance

Is HTML: Yes

Hide advanced options ^



Testing the Approval Flow

- Start by creating a new device request

The screenshot shows the 'Device Ordering App' interface. It features three device cards: 'ProBook 4440s' (\$679.00), 'ProBook 4545s' (\$499.00), and 'Compaq Pro 4300' (\$859.00). The 'ProBook 4545s' card is highlighted. To the right, there is a form with fields for 'Title' (HP - ProBook 4545s), 'Price' (499), 'Approver' (student@DDPAF.onmicrosoft.com), and 'Comments' (I really need this laptop). A 'Submit device request' button is at the bottom right.

Device	Price	Specs
ProBook 4440s	\$679.00	HP Laptop, Intel Core i5-3210M (2.5 GHz), 4GB DDR3, 500GB
ProBook 4545s	\$499.00	HP Laptop, Intel Core i3-3110M (2.4 GHz), 4GB DDR3, 500GB
Compaq Pro 4300	\$859.00	HP All in one, Intel Core i5-3470S (2.9 GHz), 4GB DDR3, 500GB

- Adding item to SharePoint list triggers approval process to start

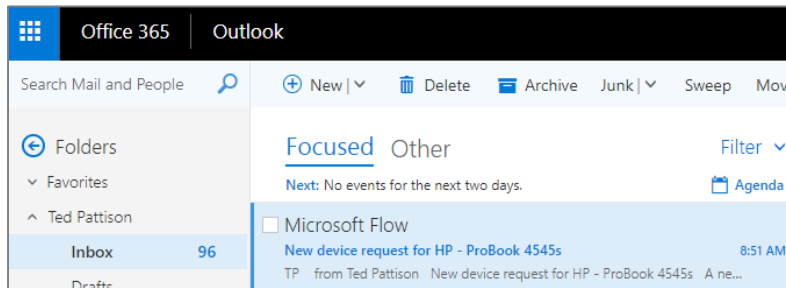
The screenshot shows a SharePoint list titled 'DeviceOrder' on the 'Critical Path Labs Team Site'. The list has columns for Title, DeviceID, Price, RequestBy, Approver, ApprovalStatus, and Comments. A single entry is visible for the 'HP - ProBook 4545s' with a price of \$499.00, request by 'Student@DDPAF.onmicrosoft.com', and approval status 'InReview'.

Title	DeviceID	Price	RequestBy	Approver	ApprovalStatus	Comments
HP - ProBook 4545s	45	\$499.00	Student@DDPAF.onmicrosoft.com	student@DDPAF.onmicrosoft.com	InReview	I really need this laptop

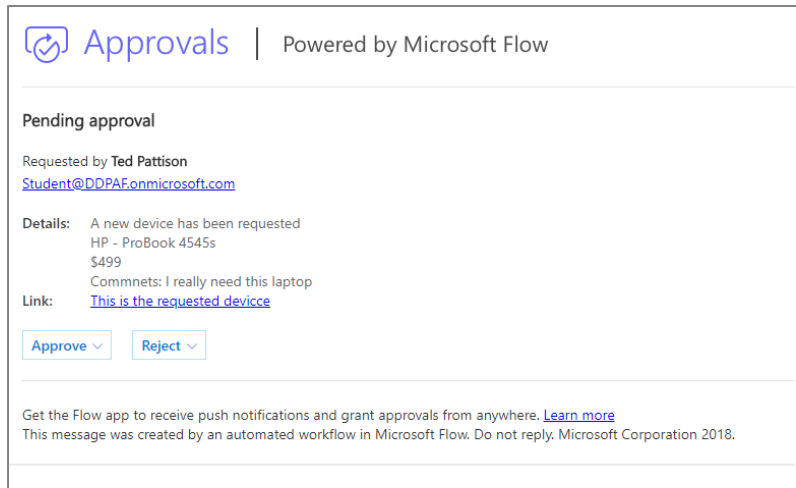


Sending Email Notification to an Approver

- The flow sends notification email to the approver
 - Flow execution currently paused inside **Start an Approval** action

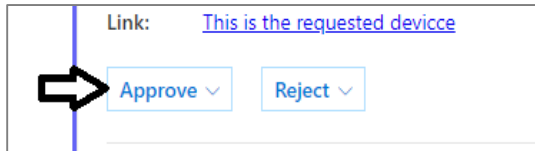


- Email allows approver to approve or reject approval request

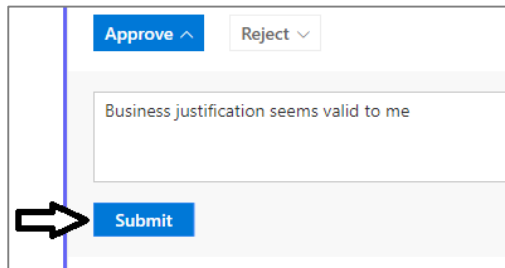


Approving an Approval Request

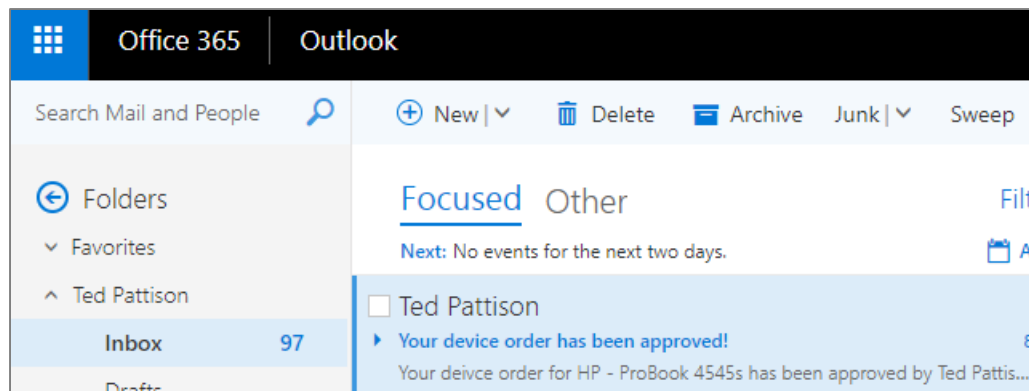
- Notification email provides button to approve or reject request



- Approver can enter comment and submit approval (or rejection)



- Approval or rejection unblocks flow which continue down appropriate branch
 - Approval response determines whether to send approval email or rejection email




Rejecting an Approval Request


- In the case of a rejected request...

Details: A new device has been requested
Toshiba - Portege Z935-ST4N02
\$979.99
Comments: I already have a great laptop but I want another one for no good reason.

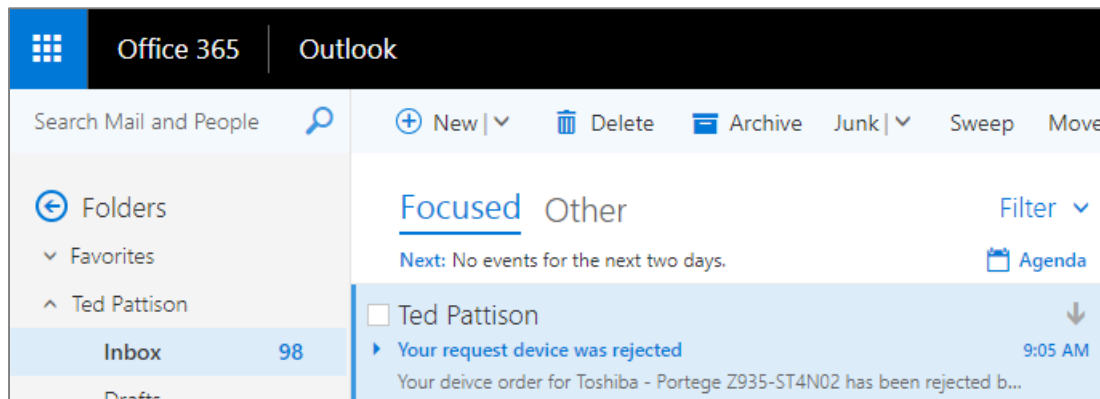
Link: [This is the requested device](#)

Approve  Reject ^

You only need one laptop!

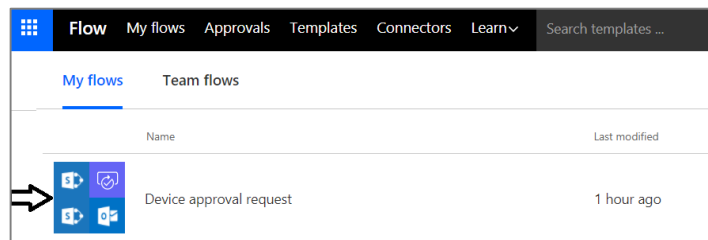
 Submit

- Approval flow sends a notification about rejection

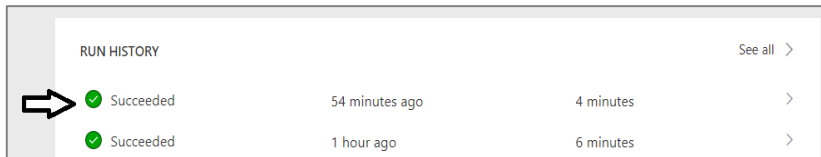


Run History

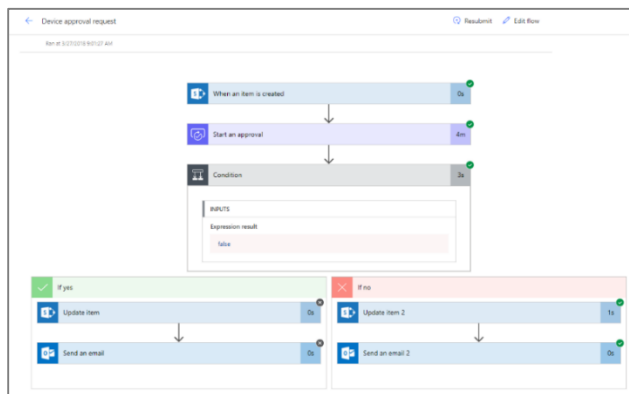
- Flow tracks run history of flow that have started
 - Click on a flow to see its RUN HISTORY list



- RUN HISTORY list has entry for each flow that has started



- Drilling into flow run history shows execution path and data



Updating a SharePoint List Item

- Approval flow can update SharePoint list items
 - Used to show SharePoint users the outcome of approval process

Home

CP Critical Path Labs Team Site

+ New Quick edit Export to Excel Flow PowerApps ...

DeviceOrder

Title ▾	DeviceID ▾	Price ▾	RequestBy ▾	Approver ▾	ApprovalStatus ▾
HP - ProBook 4545s	45	\$499.00	Student@DDPAF.onmicrosoft.com	student@DDPAF.onmicrosoft.com	Approved
Toshiba - Portege Z935-ST4N02	98	\$979.99	Student@DDPAF.onmicrosoft.com	student@DDPAF.onmicrosoft.com	Rejected



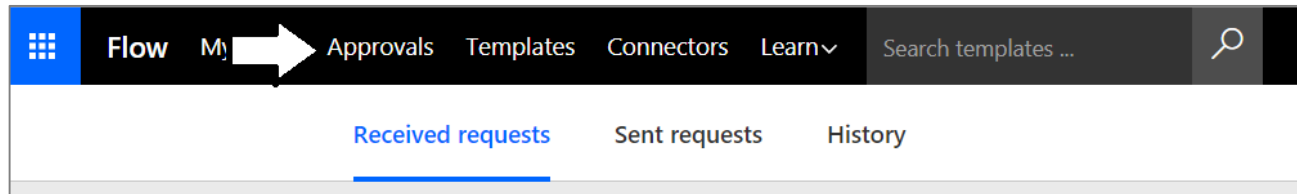
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Approvals Center

- Microsoft Flow provides Approvals Center
 - Provides alternative to email for approve/reject processing
 - Accessible through browser



- Provides monitoring of completed approvals and pending approvals

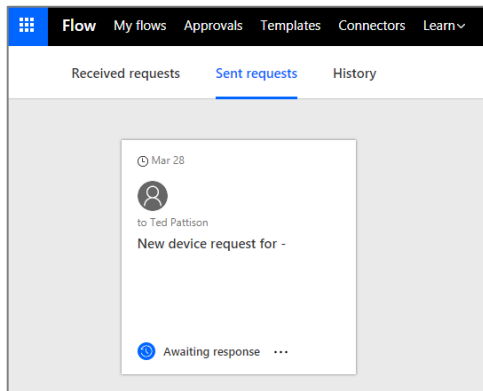
This screenshot shows the 'History' tab of the Microsoft Flow Approvals Center. It features a search bar labeled 'Filter by title' and a dropdown menu set to 'Received'. Below the search bar is a table with four columns: REQUESTER, TITLE, DATE, and OUTCOME. The table contains two rows of data.

REQUESTER	TITLE	DATE	OUTCOME
TP Ted Pattison	New device request for Toshiba - Portege Z935-S...	52 minutes ago	Rejected
TP Ted Pattison	New device request for HP - ProBook 4545s	1 hour ago	Approved

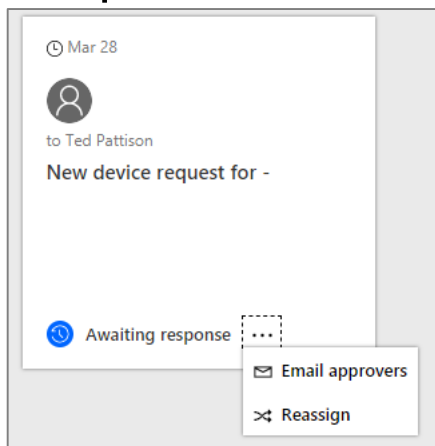


Examining Sent Request

- Requester can view requests he/she has submitted

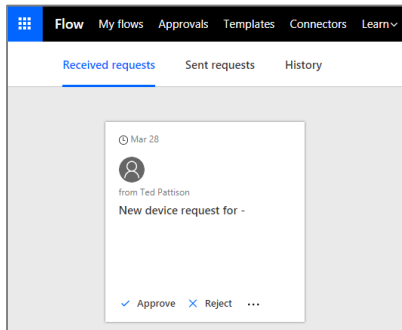


- Requester can email approver(s) or resign to different approver

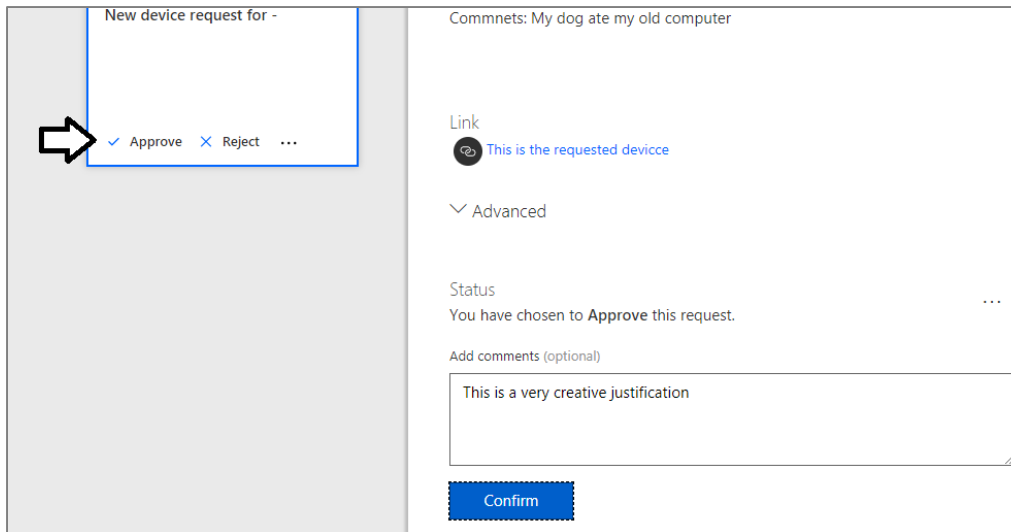


Examining Received Requests

- Approvers can see list of all their approval requests



- Approver can approve or reject approval request



Summary

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