Configure dynamic approval process using NITRO components

Applies to:

Crow Canyon NITRO activated sites in: SharePoint Online and On-Premises 2013/2016/2019

Description

Dynamic approval process means creating approval levels dynamically at the time of submission of a request where approvers are defined within the submitted request. That is, each request has its own approval levels and approver tasks are created for these levels accordingly.

In this example, we have considered Purchase Request and the flow is defined as below.

1. Approvers will be specified by the user while submitting the request for approval. All the below approver columns will be available in Request form.

Approver columns:

- a. Manager
- b. Department Head
- c. HR Manager
- d. CEO
- e. President
- f. HR VP
- 2. Approval tasks will be created only for the approvers defined in above approver columns. If approvers are not defined, then that approver level will be skipped.
- 3. For this we have used custom action to verify the approver column is empty or not in the request. If approver is blank, then that level will be skipped otherwise it will create a level in 'Approval Levels' list.
- 4. Next, when request is submitting, we will invoke a workflow that will create tasks for the levels created in 'Approval Levels' list in ascending order.
- 5. Based on approval decision, request will be approved/denied or will go for next level.

Summary of steps

1. List schema

- Create 'Purchase Requests' list
- Create 'Approval Levels' list
- Create 'Approver Tasks' list

2. Configure workflows for approval process

- Approval process for normal flow
- Approval process for send back flow
- Update request decision on approval decision

3. Configure custom actions for approval process

• Purchase Requests list

- i. Create approval levels
- ii. Submit for approval
- Approver Tasks list
 - i. Approve
 - ii. Deny
 - iii. Send back
 - iv. Reassign

4. Configure NITRO forms for the lists

- 'Purchase Requests' list
- 'Approval Levels' list
- 'Approver Tasks' list

Detailed steps

In dynamic approval process, there are no pre-defined approval levels. The approval levels and their approvers are defined by the requester at the time of submission of request. When a request is submitted for approval, approval levels are created for the approvers specified in submitted request. The levels are not created for those approval level columns that are empty.

1. List schema

Purchase Requests list

Create a list with custom list template and name it as 'Purchase Requests'. Create below required fields in this list.

Column internal name	Column display name	Column type	Purpose
Title	'Short Description' (Change display name of existing 'Title' column)	Single line of text	For short description about the request
ApprovalStatus	Status	Choice Choice options: Pending Submission Approval Not Required Pending Approval Sent Back Approved Denied	Indicates current approval status of the request
SubmittedFor	Submitted For	Person or Group	Contains requester of the purchase request
Comments	Comments	Multiple lines of plain text with 'Append Changes to Existing Text'	To capture approver comments in the purchase request
Level	Level	Number	To capture the current approval level

ApprovalLevel	Approval Level	Single line of text	Indicates the current approval level name
ApprovalTasks	Approval Tasks	Multiple lines of enhanced rich text	To show approval tasks in the request
ApprovalWorklog	Approval Worklog	Multiple lines of plain text with 'Append Changes to Existing Text'	To capture approval process worklog
ApprovedDate	Approved Date	Date and Time	To capture the request approval date
Manager	Manager	Person or group (single selection enabled, people only)	To specify Manager level approver
DepartmentHead	Department Head	Person or group (single selection enabled, people only)	To specify Department Head level approver
HRManager	HR Manager	Person or group (single selection enabled, people only)	To specify HR Manager level approver
CEO	CEO	Person or group (single selection enabled, people only)	To specify CEO level approver
President	President	Person or group (single selection enabled, people only)	To specify President level approver
HRVP	HR VP	Person or group (single selection enabled, people only)	To specify HR VP level approver

Approval Levels list

Create a list with custom list template and name it as 'Approval Levels'. Create below required fields in this list.

Column internal name	Column display name	Column type	Purpose
ApprovalLevelName	Approval Level Name	Single line of text	To capture the approval level name
Level	Level	Number	To capture the approval level number
Approver	Approver	Person or Group	To capture the approver for approval level
RelatedRequest	Related Request	Lookup pointing to 'Purchase Requests' list showing ID	Indicates approval levels for related purchase request

Approver Tasks list

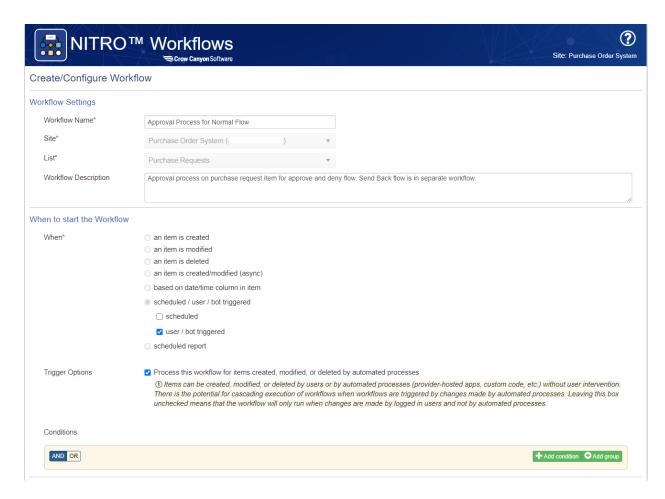
Create a list with 'Tasks' list template and name it as 'Approver Tasks'. Create below required columns in this list.

Column internal	Column display	Column type	Purpose
name	name		
ApprovalLevel	Approval Level	Single line of text	To capture the approval level name
ApprovalDecision	Approval Decision	Choice Choice options: Approved Sent Back Denied	To capture approver's decision
RelatedRequest	Related Purchase Request	Lookup pointing to 'Purchase Requests' list showing 'Short Description'	Indicates approval tasks for related purchase request
Comments	Comments	Multiple lines of plain text	To capture approver comments
Level	Level	Number	To capture the approval level number

2. Configure workflows for approval process

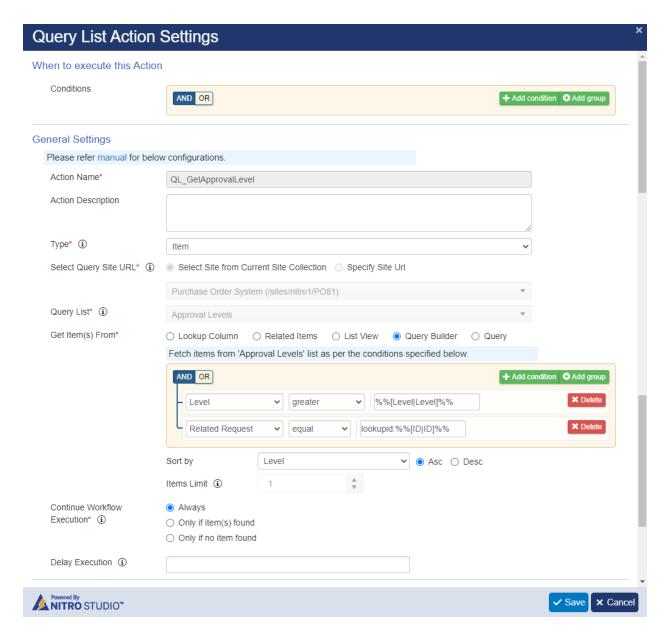
Workflow 1: Approval Process for Normal Flow

Create a user triggered workflow on 'Purchase Requests' list.



Action1: QL_GetApprovalLevel

Configure a query list action for querying 'Approval Levels' list. This action will fetch next approval level.

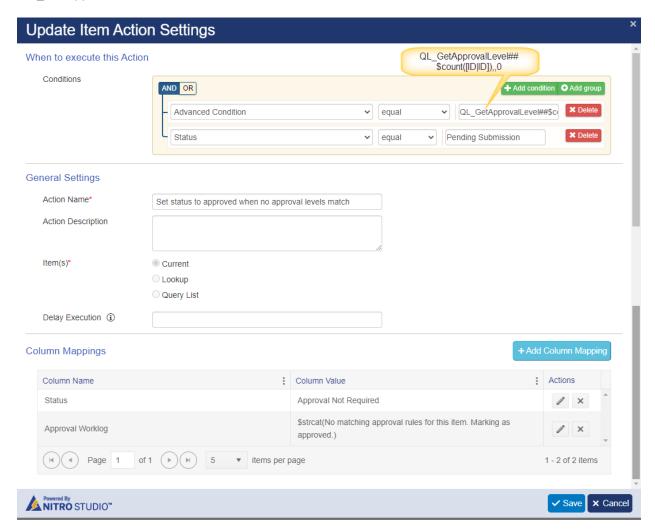


Action2: Set status to approved when no approval levels match

Configure update item action. This action will update the request status to 'Approval Not Required' when a purchase request is submitted for approval, but no approval level is found for the request (no approvers defined in the request).

Column	Evaluation type	Expression
Advanced Condition	equal	QL_GetApprovalLevel##\$count([ID ID]),,0
Status	equal	Pending Submission

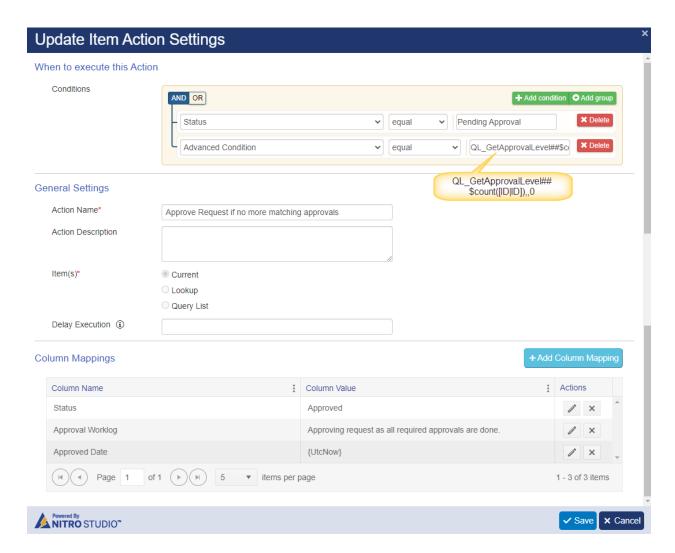
'QL_GetApprovalLevel##\$count([ID|ID]),,0' is to check whether approval levels found for the query list 'QL_GetApprovalLevel' action or not.



Action3: Approve Request if no more matching approvals

Configure an update item action. This action will update the request status to 'Approved' when all the required approval levels are complete, and request is approved at all levels.

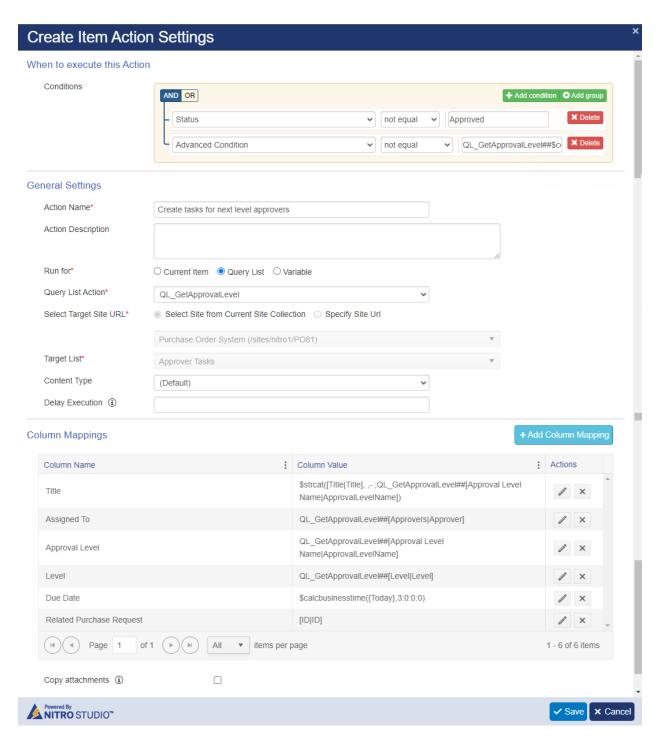
Column	Evaluation type	Expression
Status	equal	Pending Approval
Advanced Condition	equal	QL_GetApprovalLevel##\$count([ID ID]),,0



Action4: Create tasks for next level approvers

Configure add list item action. This action will create a task in 'Approver Tasks' list for item (approval level) fetched by query list action.

Column	Evaluation type	Expression
Status	not equal	Approved
Advanced Condition	not equal	QL_GetApprovalLevel##\$count([ID ID]),,0

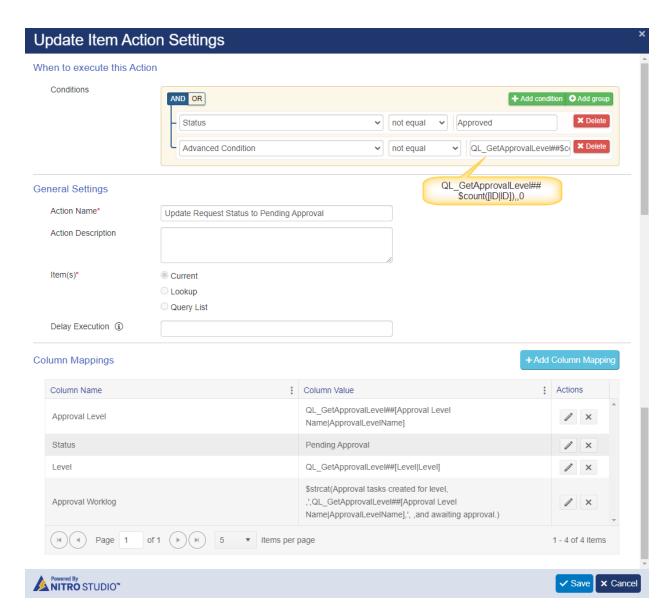


Note: Configure column mappings as required.

Action5: Update Request Status to Pending Approval

Configure update list item action. This action will update current request when all the approval levels are not yet complete.

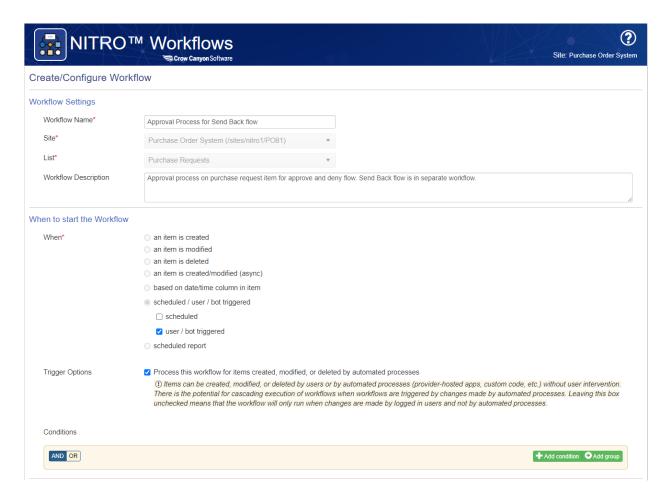
Column	Evaluation type	Expression
Status	not equal	Approved
Advanced Condition	not equal	QL_GetApprovalLevel##\$count([ID ID]),,0



Workflow 2: Approval Process for Send Back flow

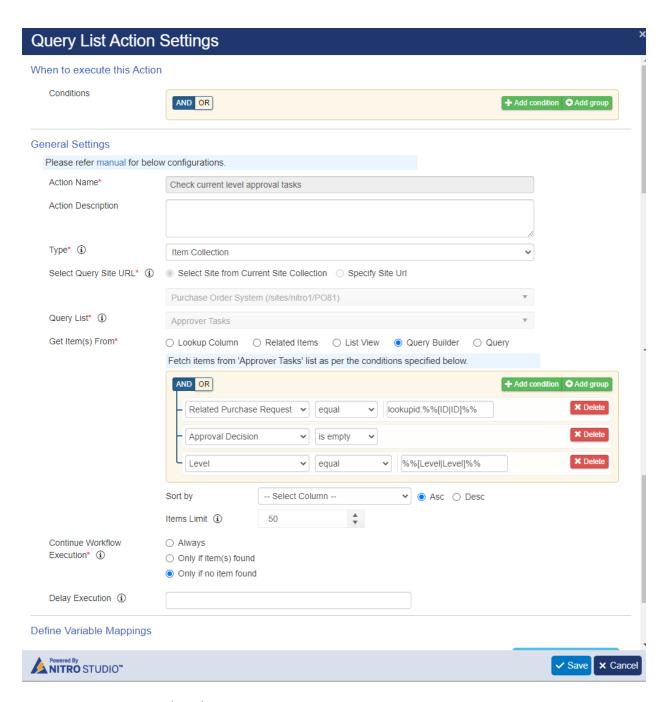
Create a user triggered workflow on 'Purchase Requests' list. This workflow gets triggered while submitting a sent back request. In send back flow, approval level is resumed from where the request was sent back.

Note: We can skip this workflow if "Send Back" is not required.



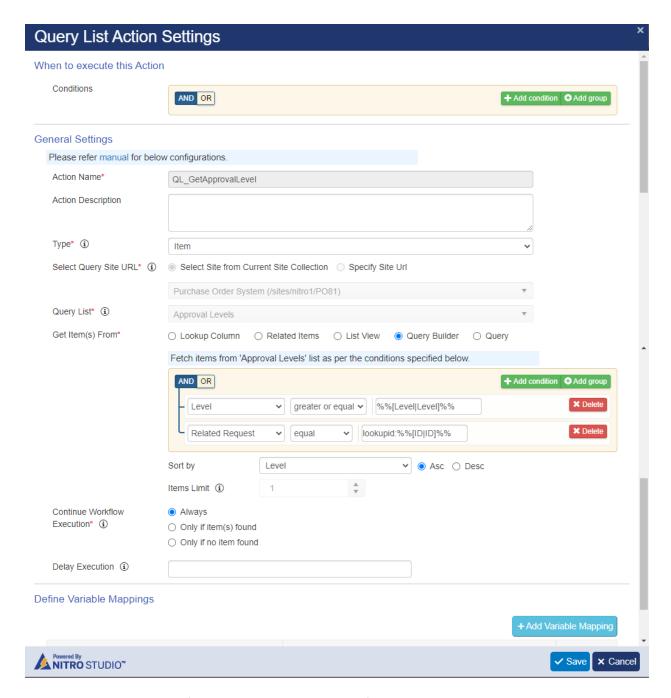
Action1: Check current level approval tasks

Configure a query list action for querying 'Approver Tasks' list. This action will fetch current level approval tasks for which no decision has been taken. Next action will be executed only if no tasks are found from this action.



Action2: QL_GetApprovalLevel

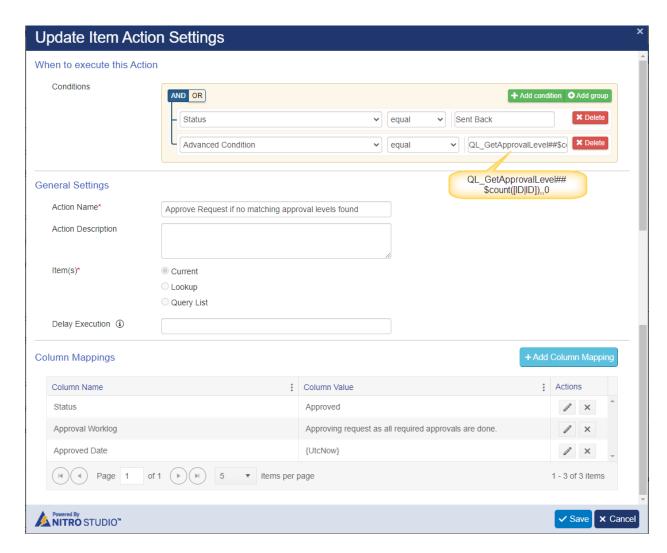
Configure a query list action for querying 'Approval Levels' list. This action will fetch current approval level.



Action3: Approve Request if no matching approval levels found

Configure an update item action. This action will update the request status to 'Approved' when all the required approval levels are complete, and request is approved at all levels.

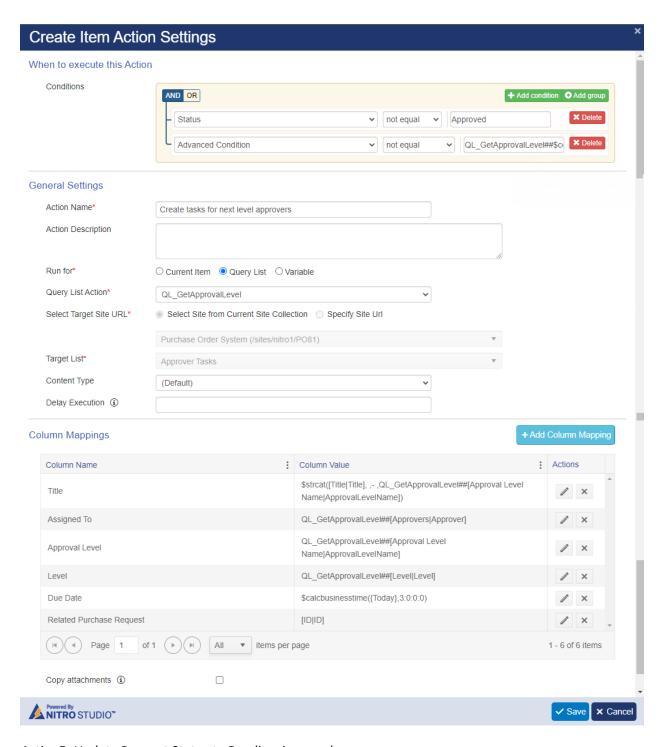
Column	Evaluation type	Expression
Status	equal	Sent Back
Advanced Condition	equal	QL_GetApprovalLevel##\$count([ID ID]),,0



Action4: Create tasks for next level approvers

Configure add list item action. This action will create a task in 'Approver Tasks' list for item (approval level) fetched by query list action.

Column	Evaluation type	Expression
Status	not equal	Approved
Advanced Condition	not equal	QL_GetApprovalLevel##\$count([ID ID]),,0

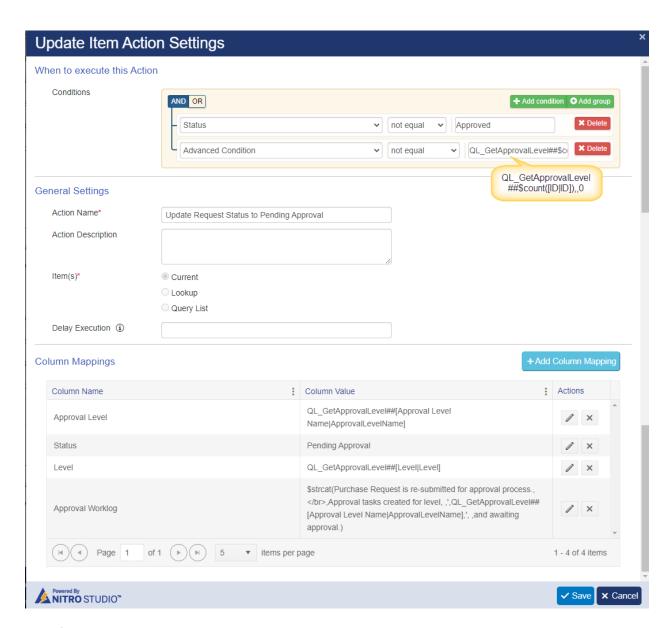


Action5: Update Request Status to Pending Approval

Configure update list item action. This action will update current request when all the approval levels are not yet complete.

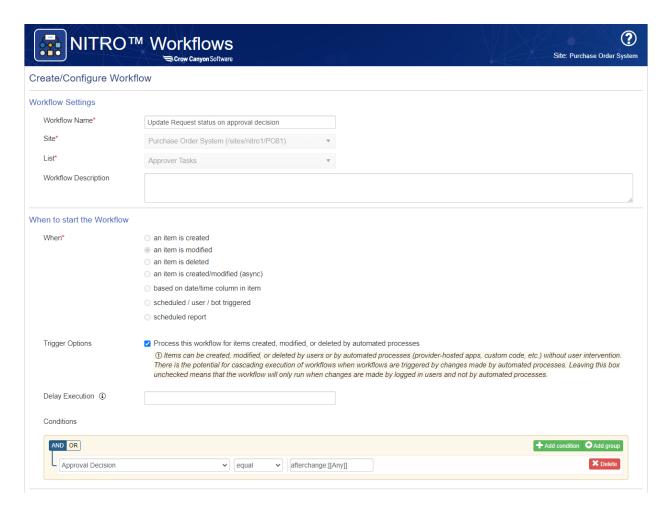
		I
Column	Evaluation type	Expression

Status	not equal	Approved
Advanced Condition	not equal	QL_GetApprovalLevel##\$count([ID ID]),,0



Workflow3: Update Request status on approval decision

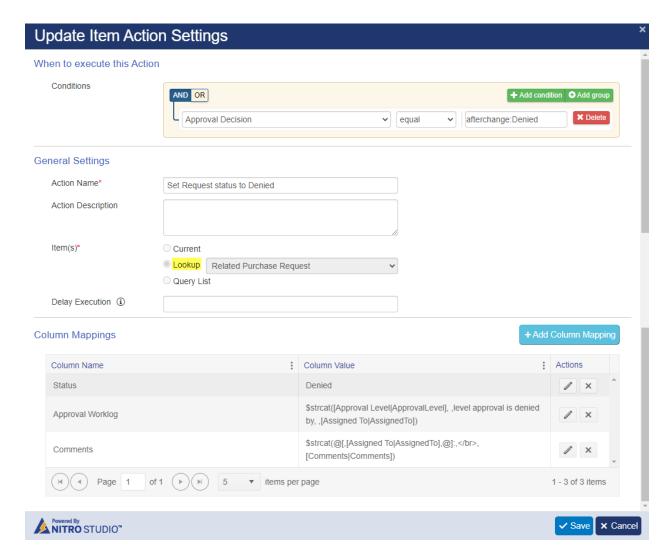
Create a workflow on item modified event on 'Approver Tasks' list. This workflow sets the request status in 'Purchase Requests' list when approver takes decision for a task.



Action1: Set Request status to Denied

Configure an update item action to update lookup list item. Set request status as 'Denied' when an approver denies a task.

Column	Evaluation type	Expression
Approval Decision	equal	afterchange:Denied

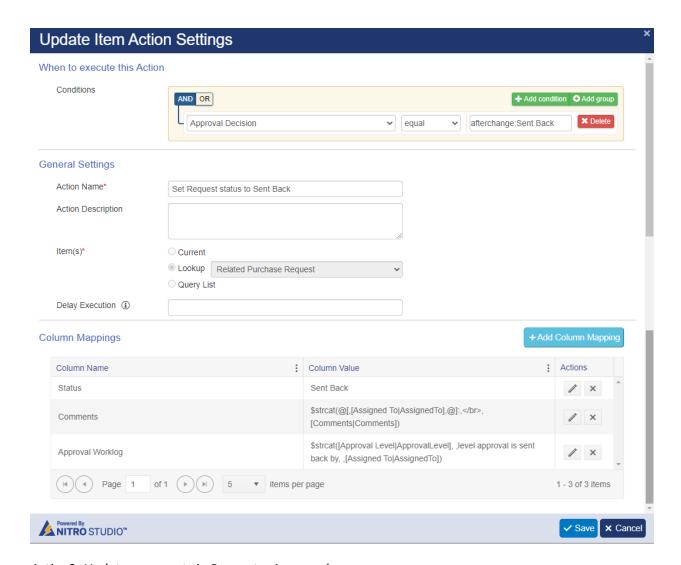


Action2: Set Request status to Sent Back

Configure an update item action to update lookup list item. Set request status as 'Sent Back' when an approver sends back the purchase request.

Note: Ignore this action if 'Sent Back' is not required

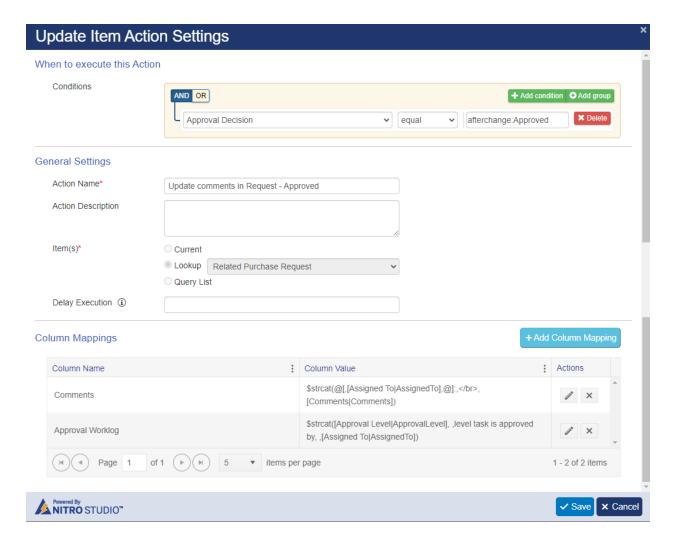
Column	Evaluation type	Expression
Approval Decision	equal	afterchange:Sent Back



Action3: Update comments in Request – Approved

Configure an update item action and update required columns in 'Purchase Requests' list when a task is approved.

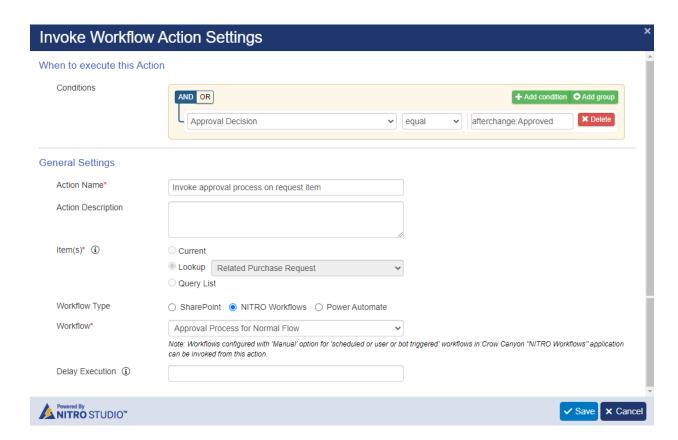
Column	Evaluation type	Expression
Approval Decision	equal	afterchange:Approved



Action4: Invoke approval process on request item

Configure invoke workflow action to invoke 'Approval Process for Normal Flow' NITRO workflow.

Column	Evaluation type	Expression
Approval Decision	equal	afterchange:Approved



Note: Configure workflows to send notifications on request status and approval tasks updates.

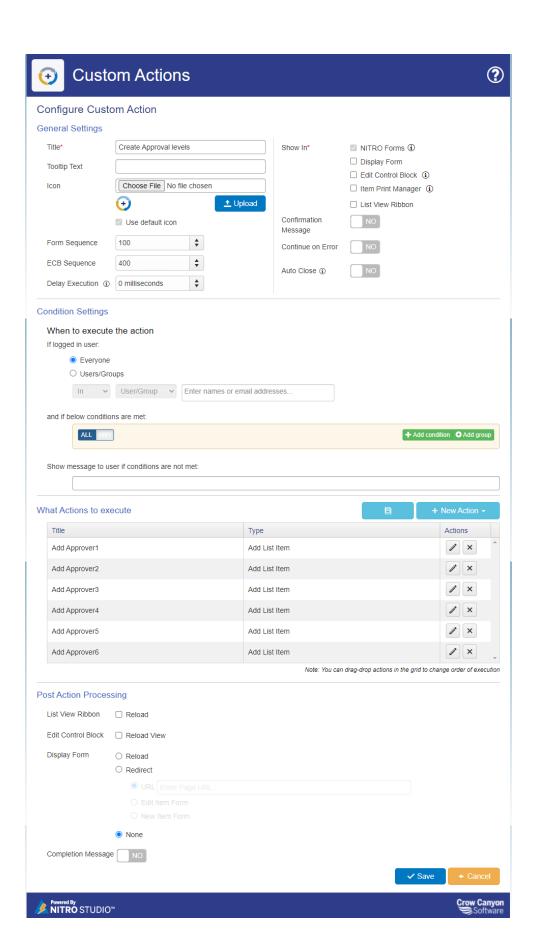
3. Custom Actions

Configure custom actions in 'Purchase Requests' list

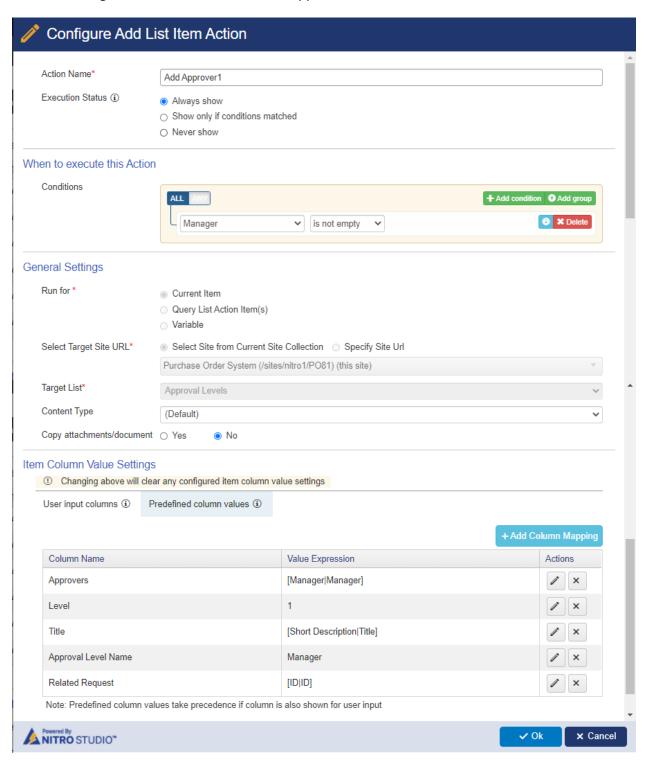
Navigate to 'Purchase Requests' list -> 'Custom Actions' from 'LIST' ribbon -> configure new custom action.

Custom Action1: Create Approval levels

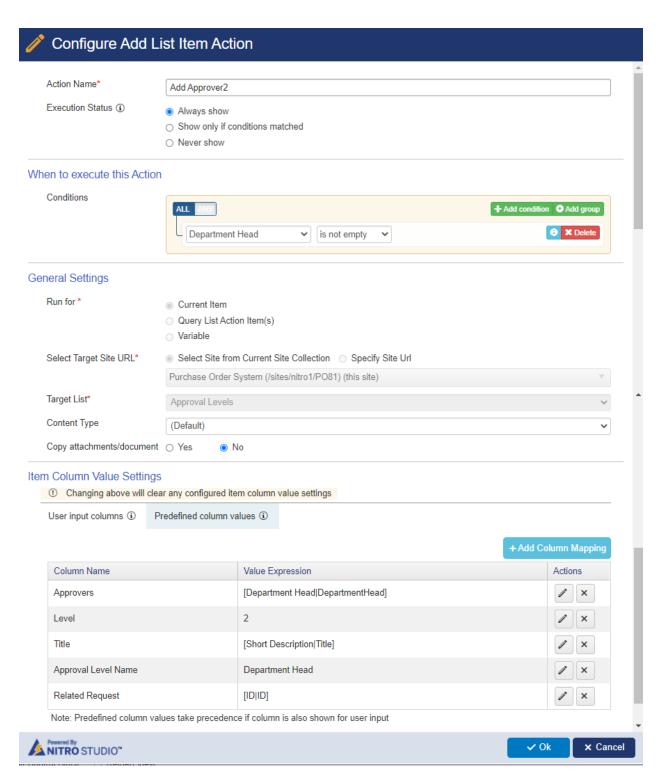
This action is for creating dynamic approval levels. It will check for the approval level columns that are not empty and create approval levels.



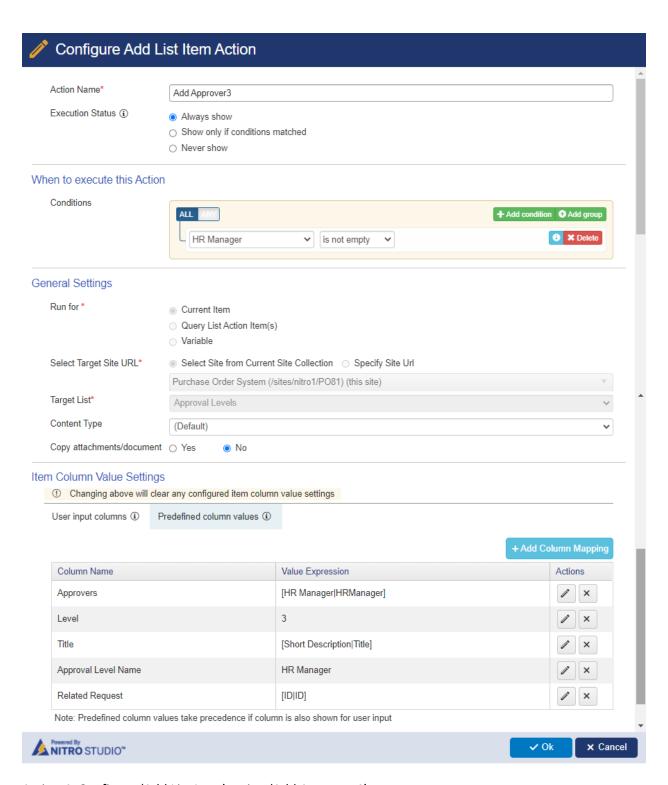
Action 1: Configure 'Add List Item' action 'Add Approver1'.



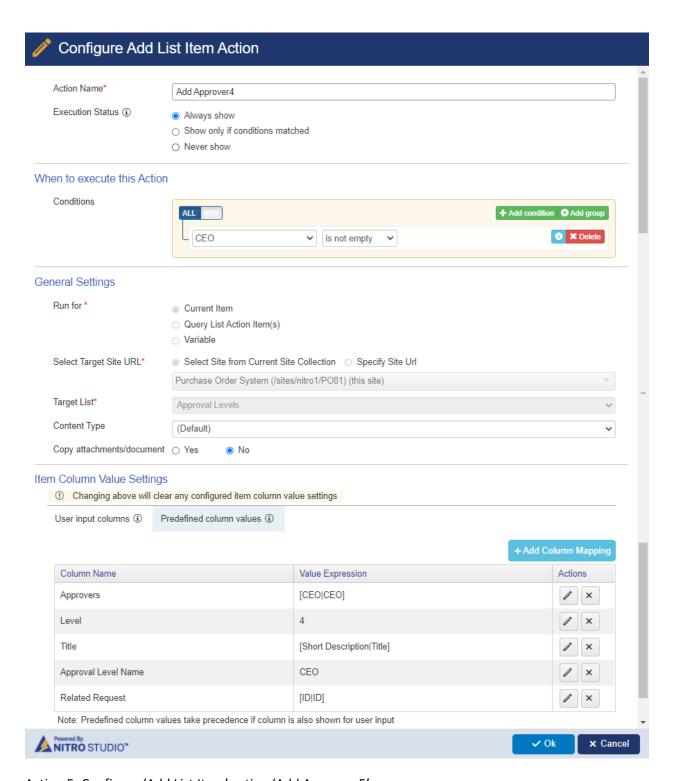
Action 2: Configure 'Add List Item' action 'Add Approver2'.



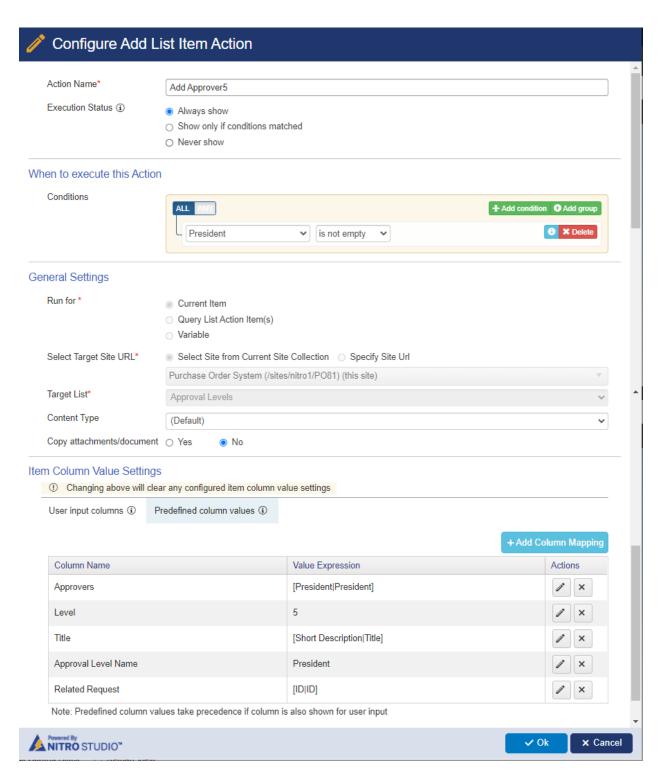
Action 3: Configure 'Add List Item' action 'Add Approver3'.



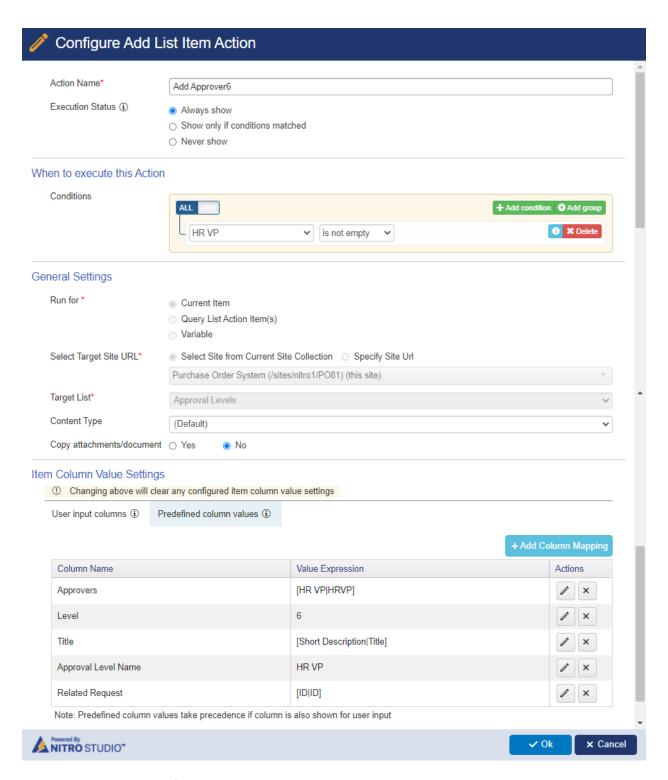
Action 4: Configure 'Add List Item' action 'Add Approver4'.



Action 5: Configure 'Add List Item' action 'Add Approver5'.



Action 6: Configure 'Add List Item' action 'Add Approver6'.



Custom Action 2: Submit for approval

This action will submit the purchase request for approval.

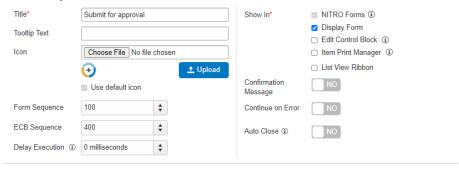
Note: This action we will invoke from Purchase Request form.





Configure Custom Action

General Settings



Condition Settings

When to execute the action

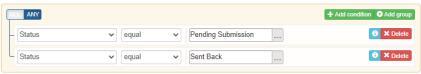
If logged in user:

Everyone



and if below conditions are met:

O Users/Groups

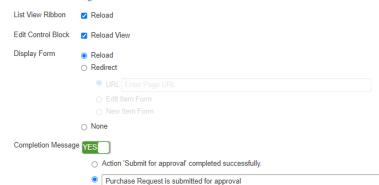


Show message to user if conditions are not met:



Note: You can drag-drop actions in the grid to change order of execution

Post Action Processing



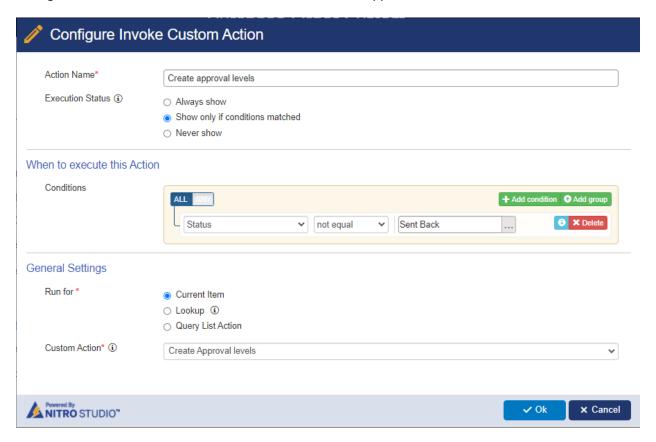
✓ Save





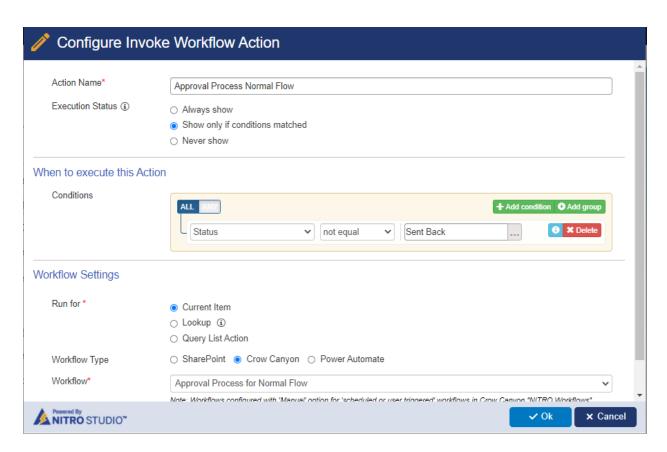
Action1: Create approval levels

Configure 'Invoke Custom Action' action to invoke 'Create Approval levels' custom action.



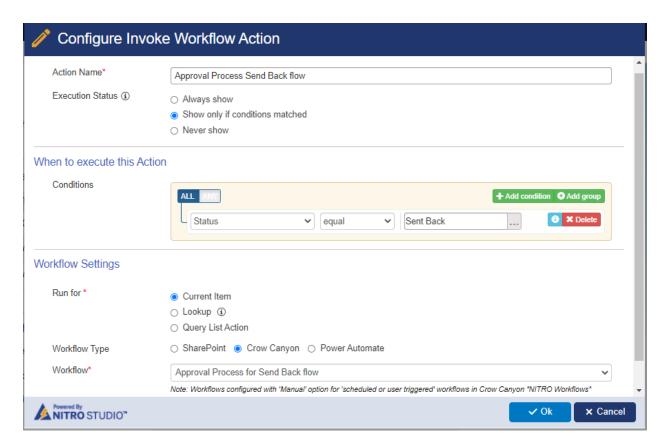
Action2: Approval Process Normal Flow

Configure 'Invoke Workflow' action to invoke 'Approval Process for Normal Flow' workflow.



Action3: Approval Process Send Back flow

Configure 'Invoke Workflow' action to invoke 'Approval Process for Send Back flow' workflow.



Configure custom actions in 'Approver Tasks' list

Navigate to 'Approver Tasks' list -> 'Custom Actions' from 'LIST' ribbon -> configure new custom action.

Custom Action1: Approve

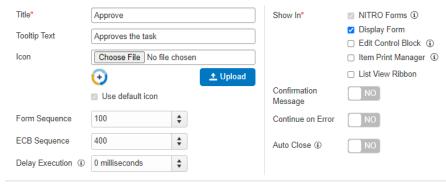
This action is for approving the assigned task.





Configure Custom Action





Condition Settings

If logged in user:

When to execute the action

EveryoneUsers/Groups



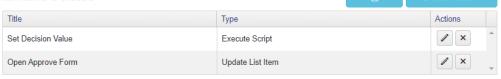
and if below conditions are met:



Show message to user if conditions are not met:

The Task is already completed or is not assigned to you.





Note: You can drag-drop actions in the grid to change order of execution

Post Action Processing

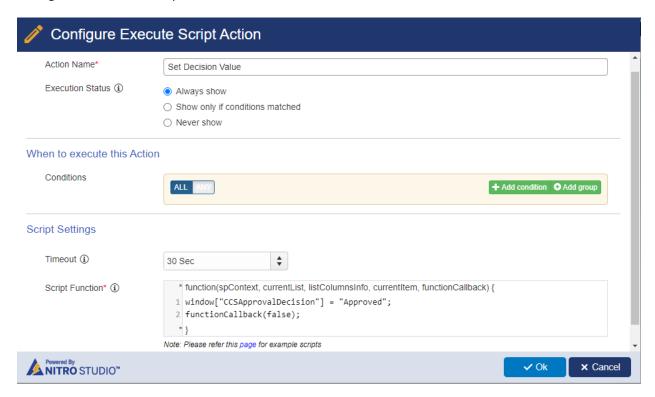






Action1: Set Decision Value

Configure an 'Execute Script' action.



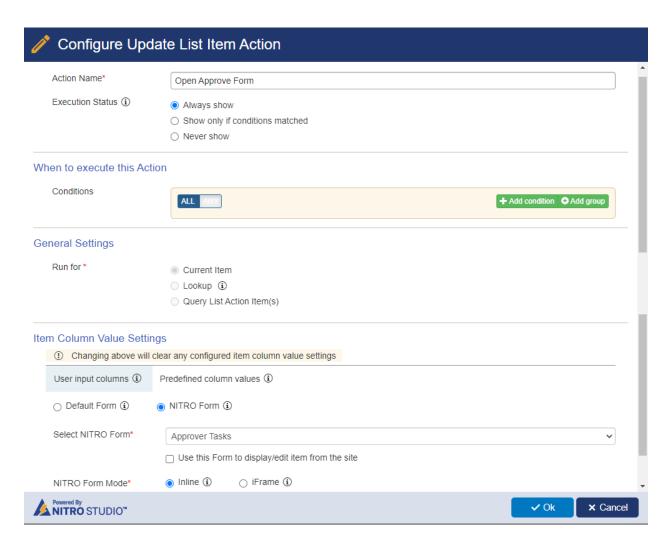
Script:

window["CCSApprovalDecision"] = "Approved";

functionCallback(false);

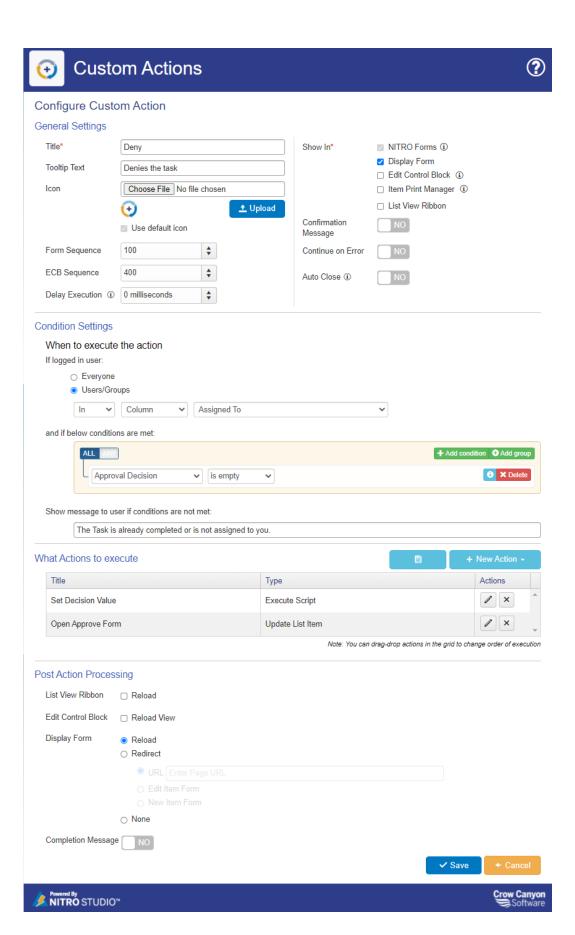
Action2: Open Approve Form

Configure 'Update List Item' action.



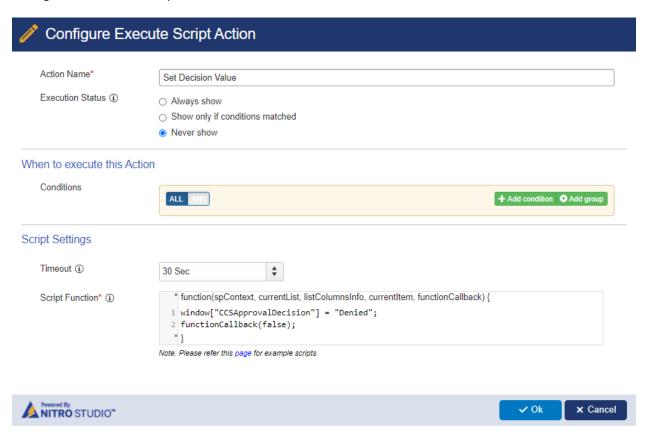
Custom Action 2: Deny

This action is for denying the assigned task.



Action1: Set Decision Value

Configure an 'Execute Script' action.



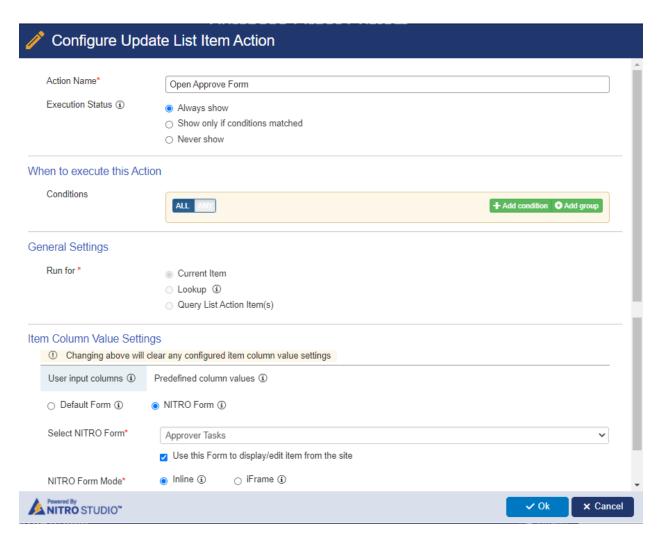
Script:

window["CCSApprovalDecision"] = "Denied";

functionCallback(false);

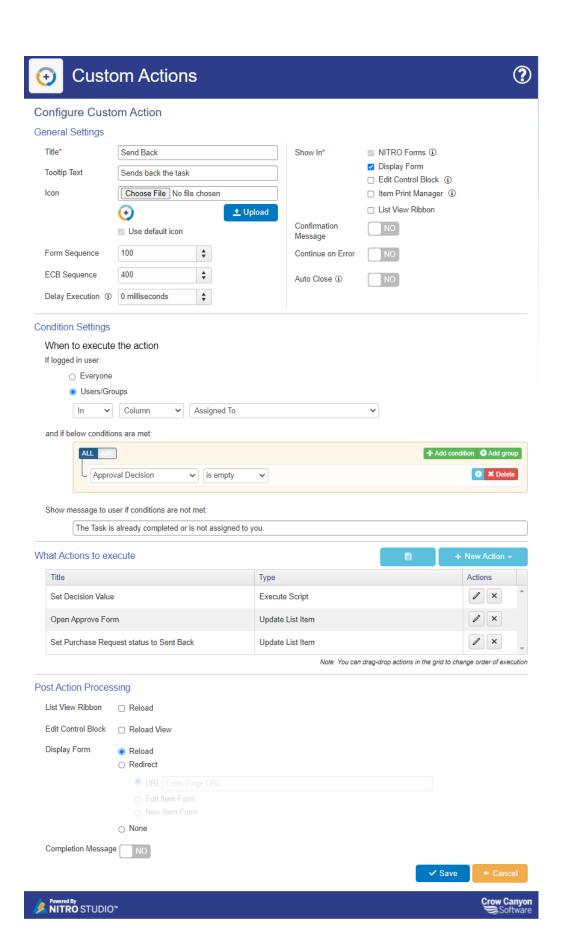
Action2: Open Approve Form

Configure 'Update List Item' action.



Custom Action 2: Send Back

This action sends back the assigned task.



Action1: Set Decision Value

Configure an 'Execute Script' action.

Configure Execute Script Action		
Action Name* Execution Status ①	Set Decision Value Always show Show only if conditions matched Never show	
When to execute this Actio	n	
Conditions	ALL ANY	+ Add condition • Add group
Script Settings		
Timeout (i)	30 Sec	
Script Function* ①	<pre>* function(spContext, currentList, listColumnsInfo, currentItem, functionCallback) {</pre>	
NITRO STUDIO™		✓ Ok X Cancel

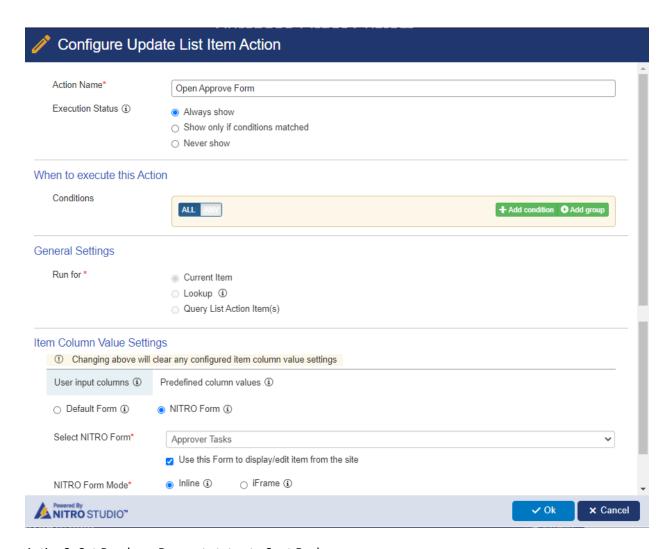
Script:

window["CCSApprovalDecision"] = "Sent Back";

functionCallback(false);

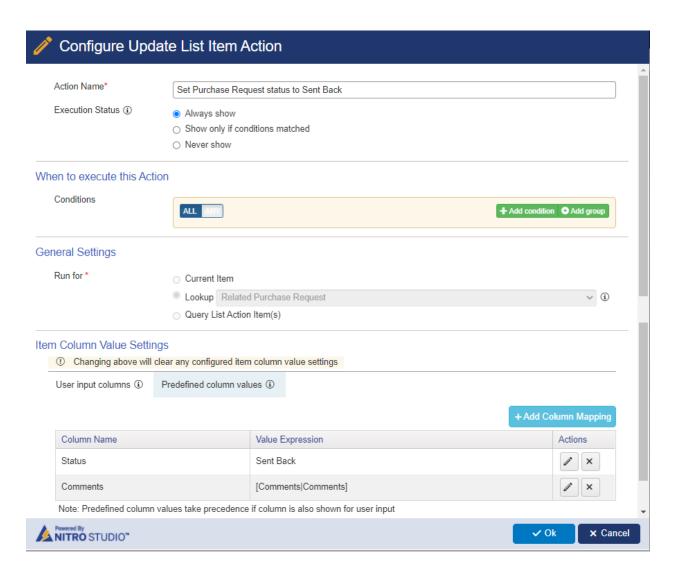
Action2: Open Approve Form

Configure 'Update List Item' action.



Action3: Set Purchase Request status to Sent Back

Configure 'Update List Item' action.



Custom Action 4: Reassign

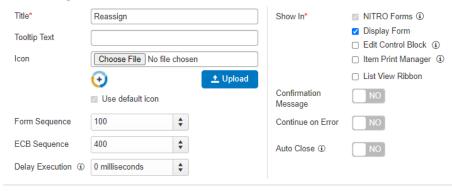
This action is for reassigning the approver task to some other user. Specify who can perform this action. In this example, site administrator group members can perform this action.





Configure Custom Action

General Settings



Condition Settings

When to execute the action

Everyone

If logged in user:



and if below conditions are met:



Show message to user if conditions are not met:

Only administrator users can reassign the tasks. And task should not be already completed.



Update List Item

Note: You can drag-drop actions in the grid to change order of execution

Post Action Processing

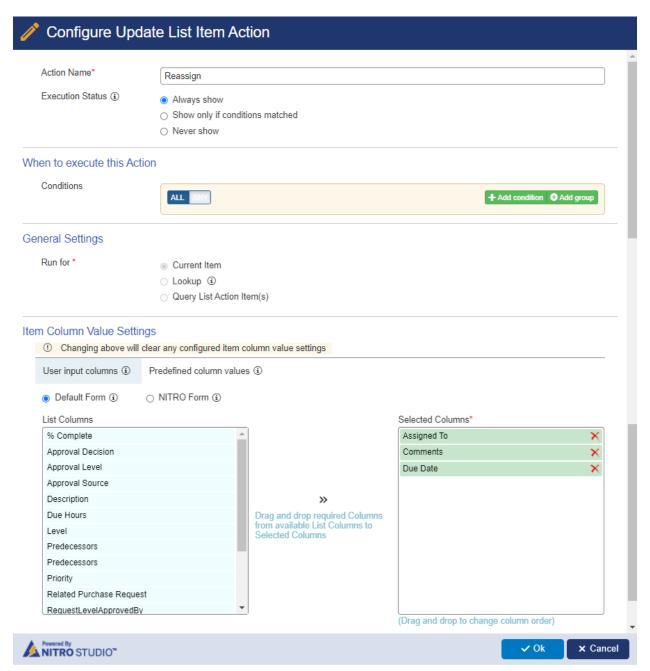
Reassign





Action1: Reassign

Configure 'Update List Item' action.

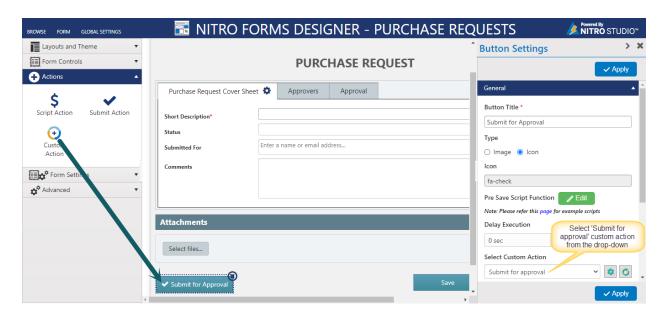


4. Configure NITRO forms for the lists

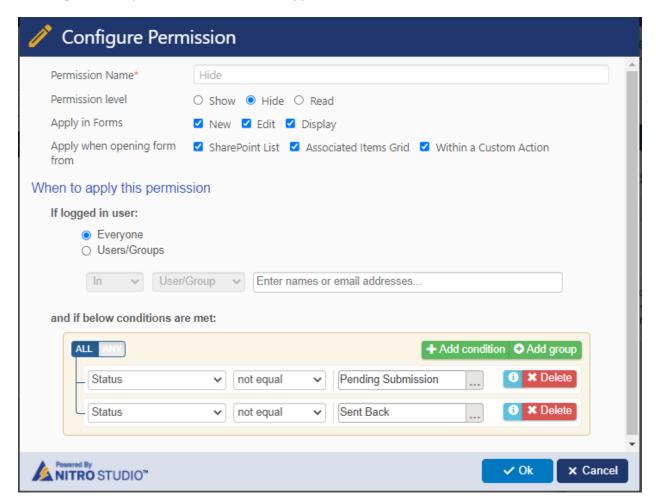
a. 'Purchase Requests' list

Navigate to 'Purchase Requests' list -> 'NITRO Forms' from 'LIST' ribbon -> configure forms.

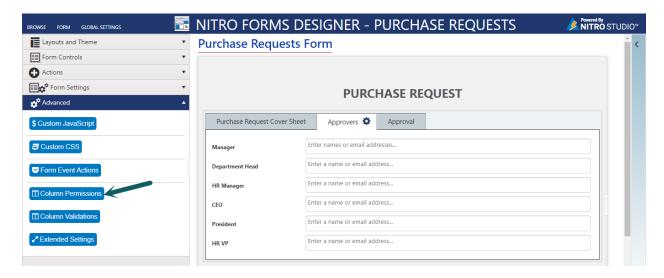
1. Configure a new form. Use same form for New / Edit / Display.



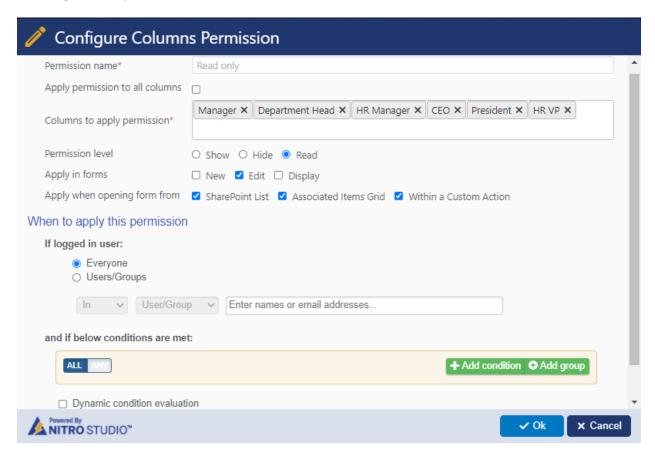
2. Configure 'Hide' permission in 'Submit for Approval' button.



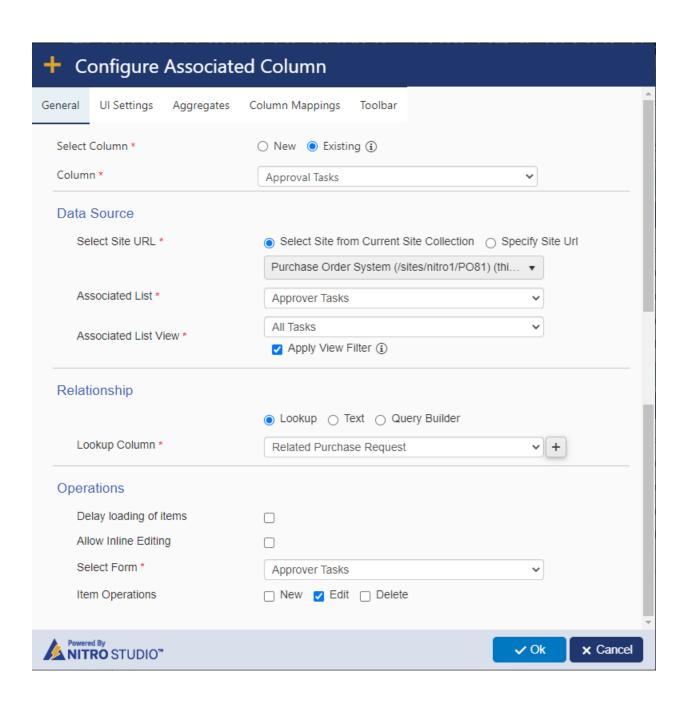
3. Add all the approval level columns in 'Approvers' tab.

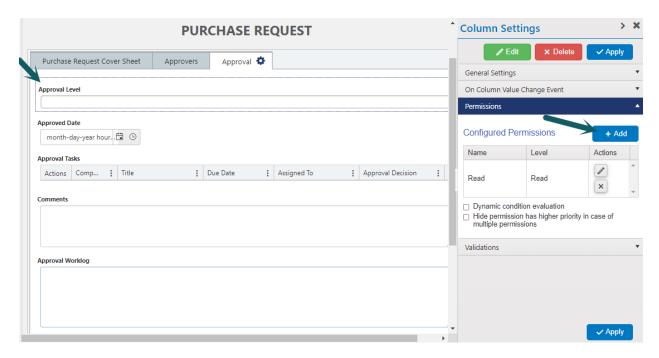


4. Configure read permissions as shown below:

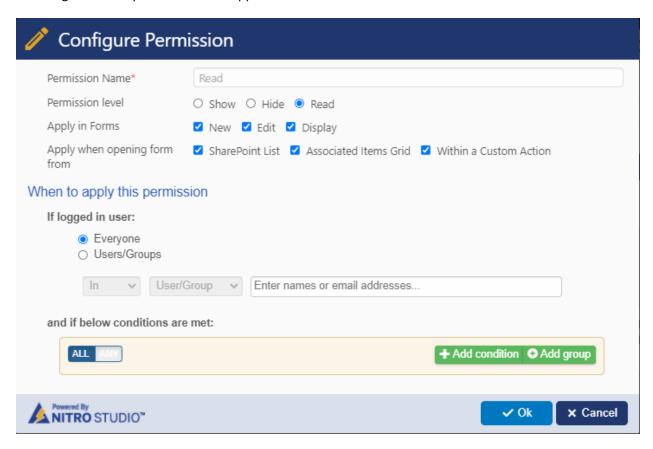


5. Click 'Create Column' from 'FORM' ribbon -> 'NITRO Associated Items Column'. Configure 'Associated' column for 'Approval Tasks' column.

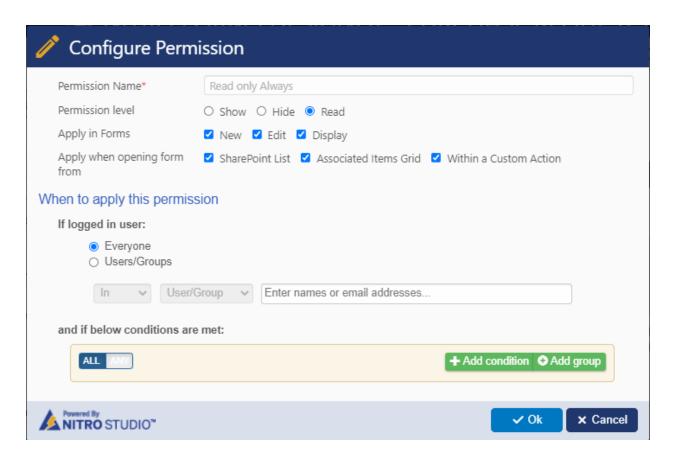




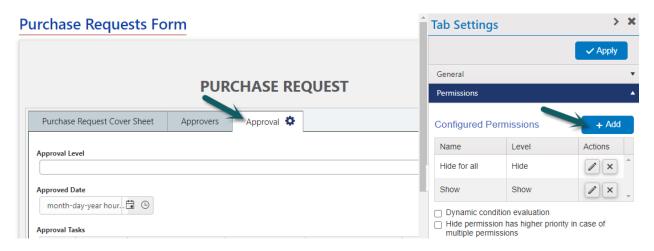
6. Configure 'Read' permissions on 'Approval Level' column as shown below:

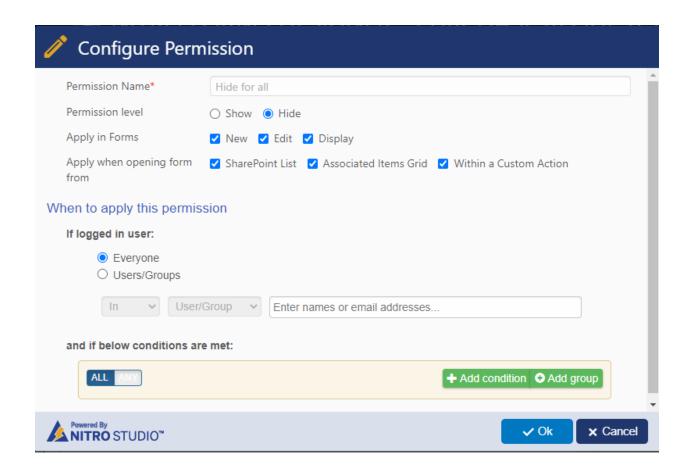


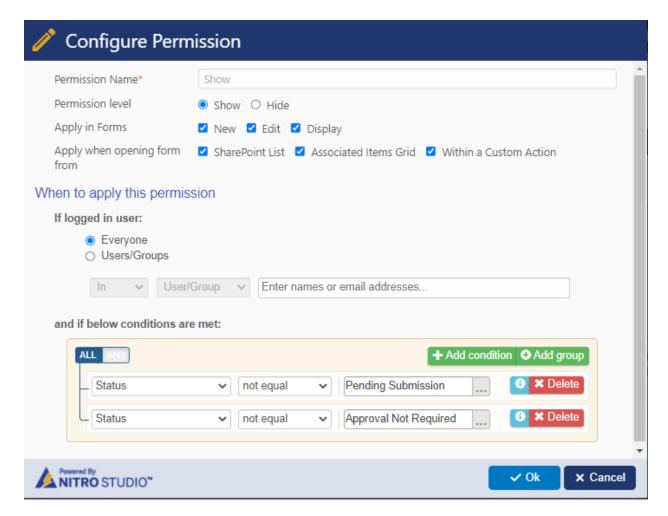
7. Similarly, configure 'Read' permissions on 'Approval Worklog' column.



8. Configure permissions on 'Approval' tab.





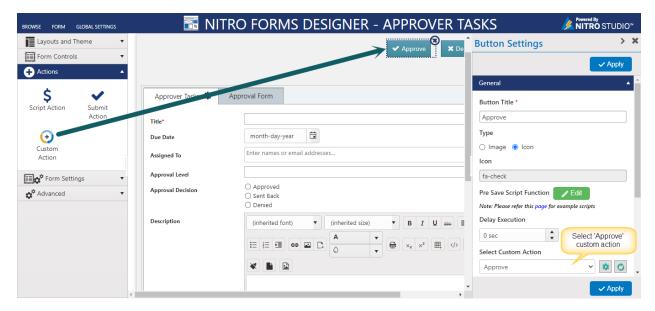


9. Publish the NITRO forms.

b. 'Approval Tasks' list

Navigate to 'Approval Levels' list -> 'NITRO Forms' from 'LIST' ribbon -> configure forms.

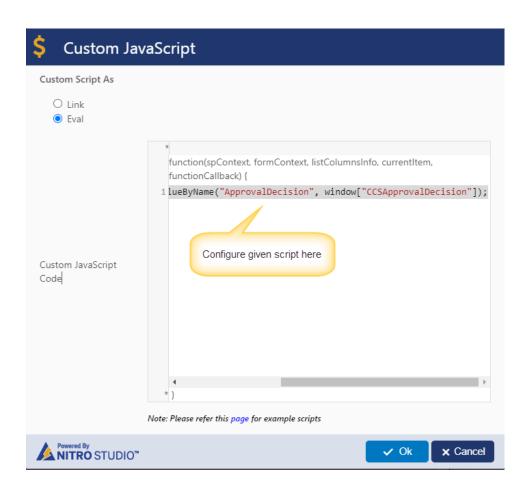
1. Configure a new form. Use same form for New / Edit / Display.



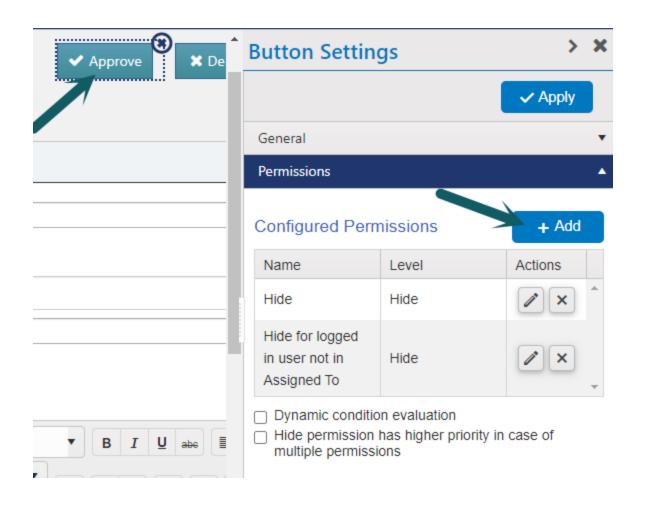
2. Configure below script in 'Custom JavaScript' in advanced section in NITRO Forms designer section formContext.setColumnControlValueByName("ApprovalDecision", window["CCSApprovalDecision"]);

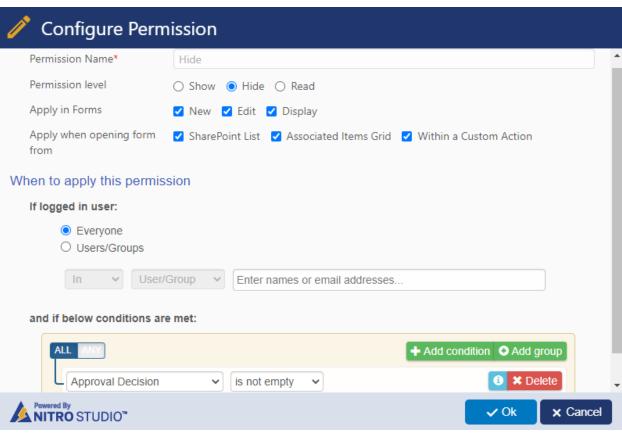
Note: In above script replace 'ApprovalDecision' with approval task status column as per your

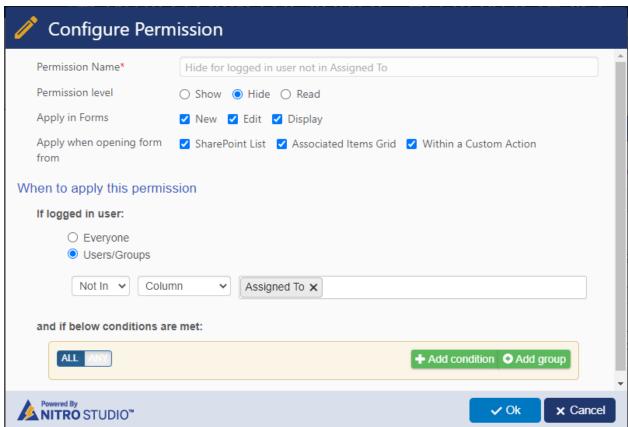
requirement.



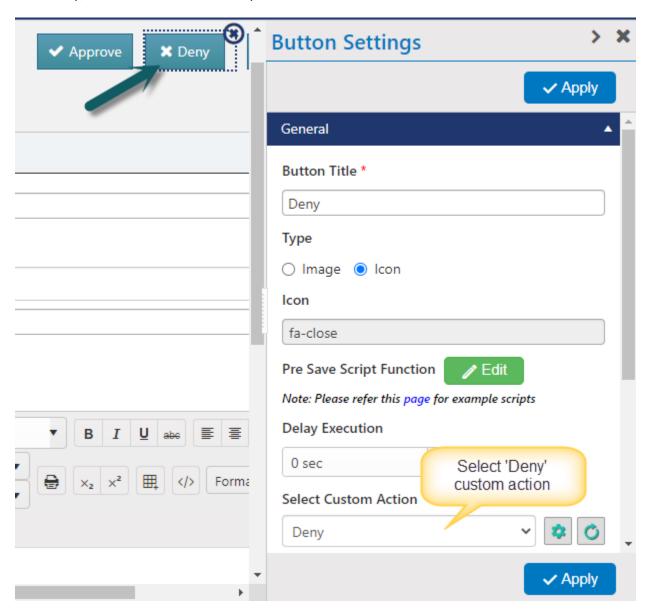
2. Configure permissions for 'Approve' button.



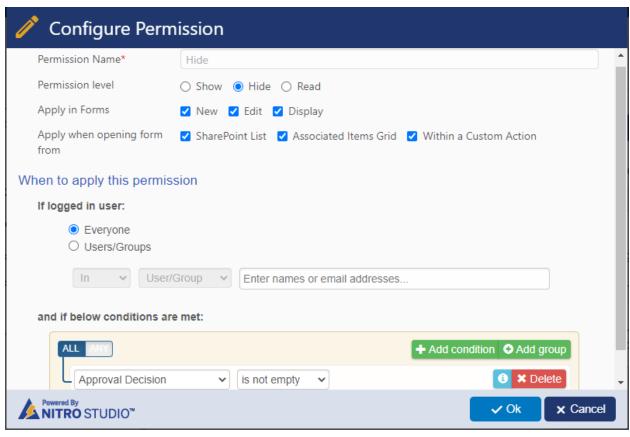


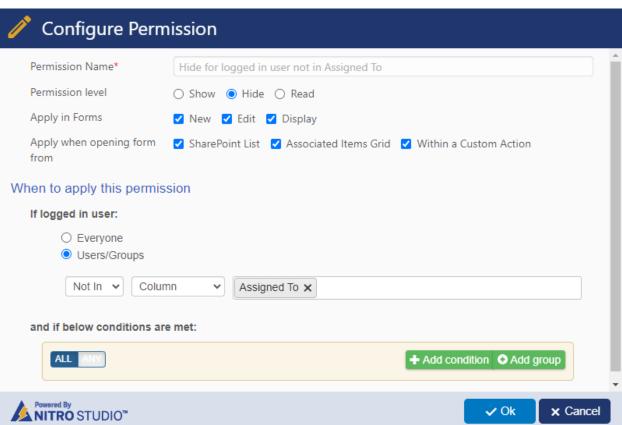


3. Similarly, add custom action for 'Deny'.

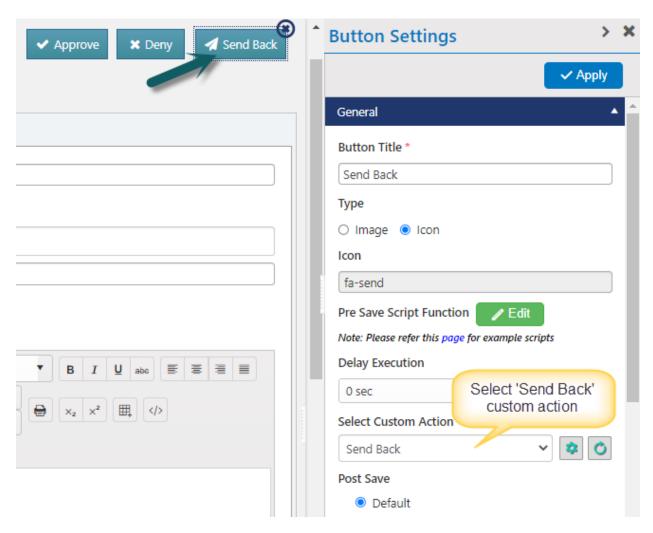


3. Configure permissions on 'Deny' button.

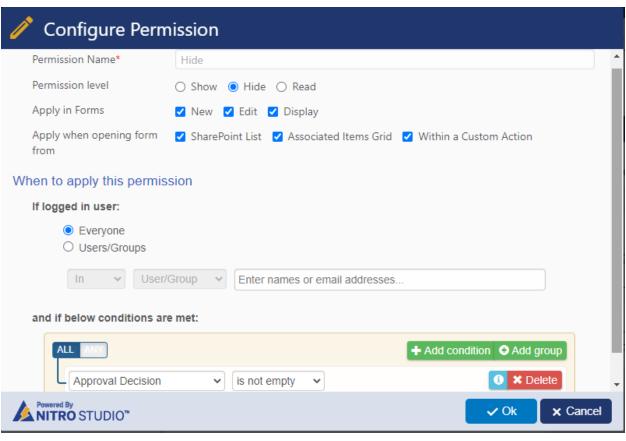


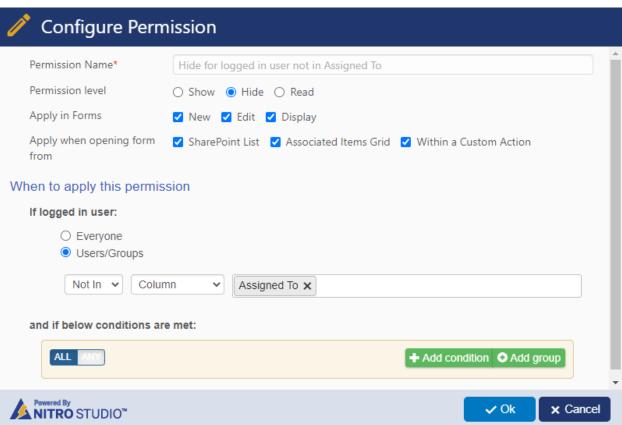


4. Add custom action for 'Send Back'

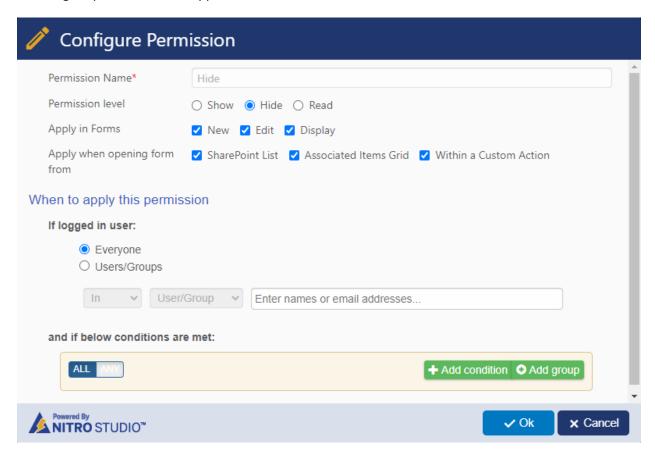


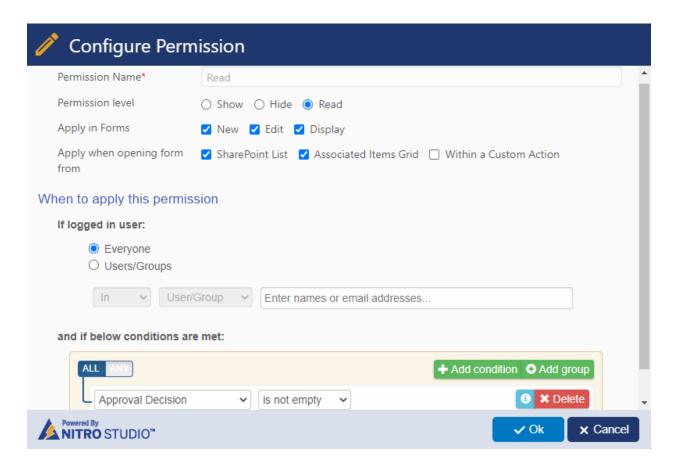
5. Configure permissions for 'Send Back' button.



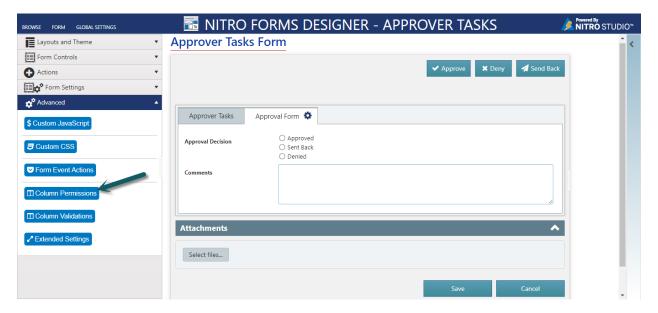


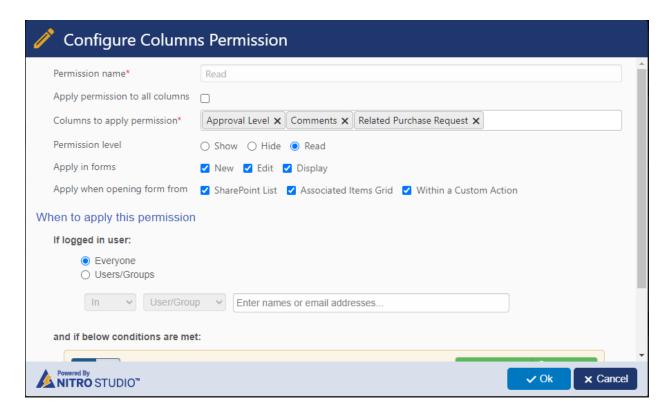
6. Configure permissions on 'Approval Decision' column.



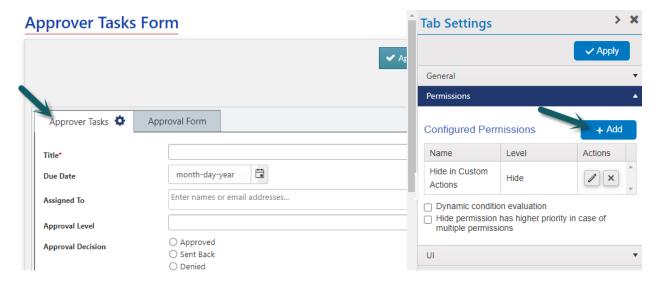


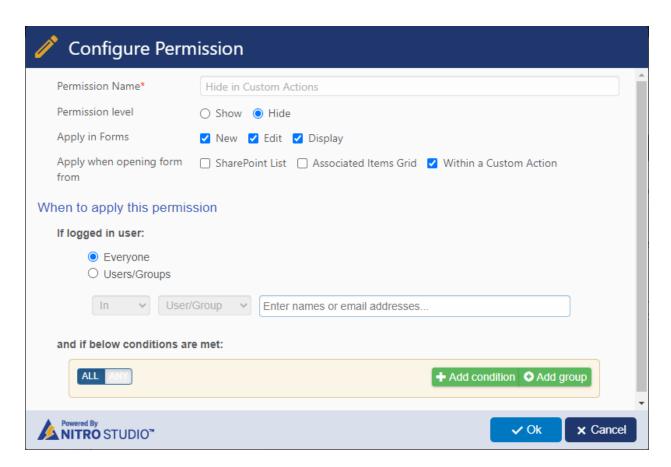
7. Configure 'Read' permission for multiple columns as shown below:



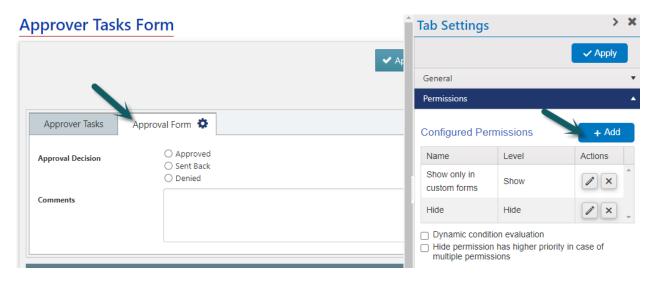


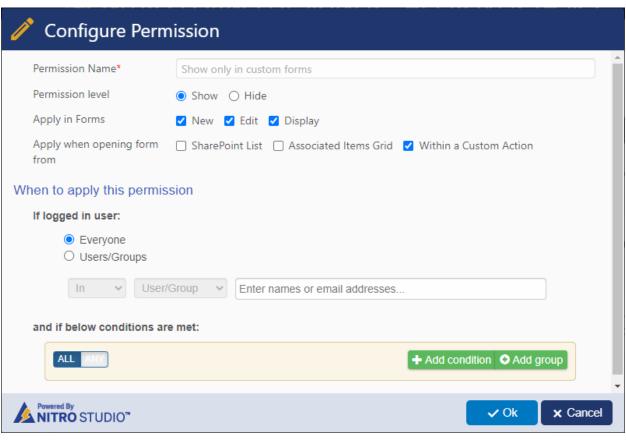
8. Configure permissions on 'Approver Tasks' tab.

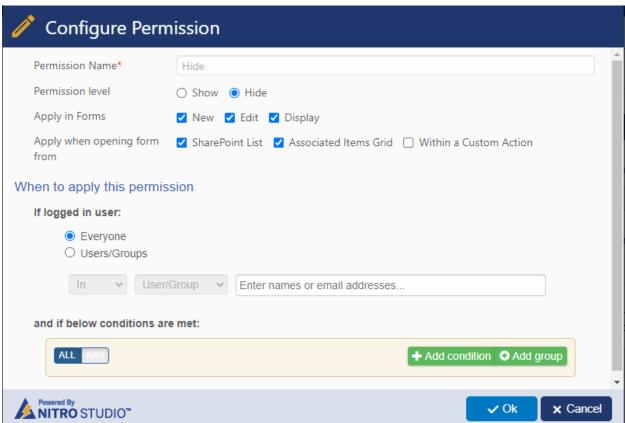




9. Configure permissions on 'Approval Form' tab.





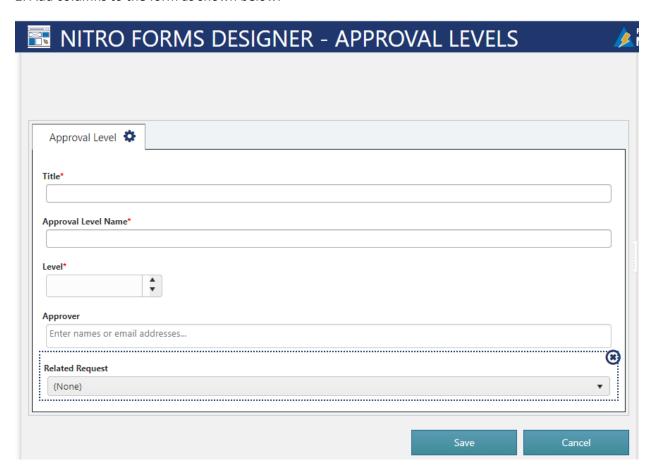


10. Publish the NITRO Forms.

c. 'Approval Levels' list

Navigate to 'Approval Levels' list -> 'NITRO Forms' from 'LIST' ribbon -> configure forms.

- 1. Configure a new form. Use same form for New / Edit / Display.
- 2. Add columns to the form as shown below:



3. Publish the NITRO forms.