



Smart
Internz



K.S.K COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science And Engineering

Completed the project named as

Optimizing User, Group, and Role Management with Access Control and Workflows

Team ID : NM2025TMID02732

Team Size : 4

Team Leader : Vishnupriya S [821022104059]

Team Member : Subiksha M [821022104051]

Team Member : Sivasri M [821022104048]

Team Member : Mahalakshmi P [821022104027]

ABSTRACT

This project aims to optimize user, group, and role management using ServiceNow by implementing Role-Based Access Control (RBAC) and automating workflows. The purpose of the project is to create a structured environment where user permissions are clearly defined, tasks are automatically assigned, and data security is maintained. Through ServiceNow's platform capabilities, the project demonstrates how automation, access control, and dashboards improve transparency and efficiency. The findings reveal that a well-configured RBAC system can significantly reduce manual work, prevent unauthorized actions, and improve collaboration among users.

INTRODUCTION

In organizations that handle multiple users, roles, and departments, maintaining a clear structure of responsibilities and permissions is essential for productivity and security. Without a centralized management system, users may face confusion about task ownership, leading to redundant work and data inconsistencies. ServiceNow provides a low-code platform that simplifies the creation of workflows, role-based access control, and process automation. This project focuses on using these capabilities to create a streamlined environment where each role has specific access and where workflows automatically update task statuses.

The implementation of this system benefits both managers and employees by ensuring that only authorized users perform certain operations. For instance, project managers can create and assign tasks, while team members can only view or update tasks assigned to them. This separation of duties not only enhances security but also improves accountability. The integration of dashboards and reports provides real-time insights into task completion and performance trends, ensuring that teams stay aligned with project objectives.

PROBLEM STATEMENT

Organizations often face challenges when managing users and roles manually. Without automated access control and workflows, there is a high risk of unauthorized actions, duplicated efforts, and poor visibility into project progress. Traditional management

systems require manual updates, which can lead to errors and wasted time. Furthermore, without role-based restrictions, sensitive data can be exposed to unintended users. The absence of workflow automation also affects team coordination. For instance, when a project manager assigns a task to a team member, the lack of an automated system means that the manager has to manually track progress. This can delay project execution. To overcome these limitations, this project proposes a solution built on ServiceNow that combines role-based access control with automated workflows to provide a transparent, efficient, and secure environment.

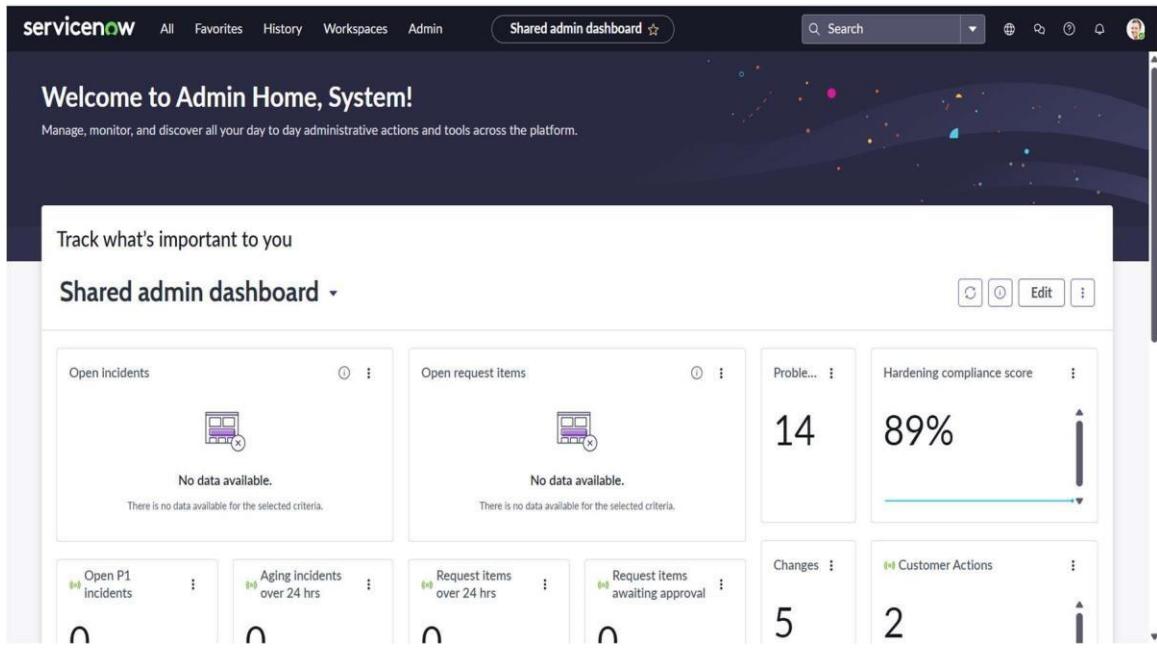
METHODOLOGY / SYSTEM DESIGN

The project follows a structured design and implementation approach using ServiceNow Studio, Flow Designer, and Platform Analytics. The methodology includes user creation, role definition, group setup, workflow automation, and dashboard reporting. Each step is integrated to form a comprehensive role-based system that automates task management.

- **Design Approach:** The system uses ServiceNow's modular structure, where each function—user creation, access control, workflow automation, and analytics—is handled separately. ServiceNow Studio is used to build a custom scoped application called Project Task Tracker, which serves as the main workspace for managing project tasks.
- **System Architecture:** The architecture is divided into three layers: User Layer, Application Layer, and Workflow Layer. The User Layer handles roles and permissions, the Application Layer manages task data using custom tables, and the Workflow Layer automates updates and notifications. Together, these layers ensure secure and smooth operations.
- **User Interface (UI) and User Experience (UX):** The application's forms and list layouts are designed for simplicity. The Project Manager view includes all tasks, while team members see only their assigned tasks. The interface includes dashboards that summarize ongoing work, pending tasks, and completed items using visual charts.

IMPLEMENTATION DETAILS

- **Platform Setup:** A ServiceNow instance is initialized, and users are created.



User - alice p

User ID: alice

First name: alice

Last name: p

Title:

Department:

Password:

Email: alice@gmail.com

Language: --None--

Calendar integration: Outlook

Time zone: System (Etc/UTC)

Date format: System (yyyy-MM-dd)

Business phone:

Mobile phone:

Photo: Click to add...

Password needs reset:

Locked out:

Active:

Web service access only:

Internal Integration User:

Buttons: Update, Set Password, Delete

User ID: bob

First name: bob

Last name: p

Title:

Department:

Email: bob@gmail.com

Language: -- None --

Calendar integration: Outlook

Time zone: System (Etc/UTC)

Date format: System (yyyy-MM-dd)

Business phone:

Mobile phone:

Photo: Click to add...

Active:

Web service access only:

Internal Integration User:

[Update](#) [Set Password](#) [Delete](#)

Alice acts as the Project Member and Bob as the Team Member. Custom groups Project Members and Team Members are formed, and roles are assigned. This establishes the foundation for RBAC.

Name: project team

Manager:

Description:

Group email:

Parent:

[Update](#) [Delete](#)

Roles	Group Members (2)	Groups
≡	User	Search
Group - project team		
<input type="checkbox"/>	bob p	
	alice p	

Actions on selected rows... New Edit...

1 to 2 of 2

The screenshot shows the ServiceNow user profile for 'User - alice p'. The top navigation bar includes 'All', 'Favorites', 'History', 'Workspaces', and a search bar. The main content area displays the user's name, role ('Internal Integration User'), and a list of related links: 'View linked accounts', 'View Subscriptions', and 'Reset a password'. Below these are tabs for 'Entitled Custom Tables' (selected), 'Roles (3)', 'Groups (1)', 'Delegates', 'Subscriptions', and 'User Client Certificates'. A table lists three roles: 'u_project_table_user' (Active, Inherited false), 'u_task_table_user' (Active, Inherited false), and 'project member' (Active, Inherited false). The bottom of the table shows a page number '1 to 3 of 3'.

The screenshot shows the ServiceNow user profile for 'User - bob p'. The top navigation bar includes 'All', 'Favorites', 'History', 'Workspaces', and a search bar. The main content area displays the user's name, role ('Web service access only'), and a list of related links: 'View linked accounts', 'View Subscriptions', and 'Reset a password'. Below these are tabs for 'Entitled Custom Tables' (selected), 'Roles (2)', 'Groups (1)', 'Delegates', 'Subscriptions', and 'User Client Certificates'. A table lists two roles: 'team member' (Active, Inherited false) and 'u_task_table_user' (Active, Inherited false). The bottom of the table shows a page number '1 to 2 of 2'.

- Development and Customization: In ServiceNow Studio, the Project Task Tracker application is created to manage and monitor project tasks efficiently. A custom table

named Project Table is designed with fields such as Task Name, Description, Status, Assigned To, Due Date, and Created By to store main project details.

The screenshot shows the ServiceNow interface for creating a new table. At the top, the title bar says "Table - project table". The header includes a search bar, a "Delete" button, an "Update" button, and a "Delete All Records" button. Below the header, there are two input fields: one for "Label" containing "project table" and another for "Name" containing "u_project_table". The "Application" dropdown is set to "Global".

The main area is titled "Columns" and contains a table with the following data:

Column label	Type	Reference	Max length	Default value	Display
Updates	Integer	(empty)	40		false
Updated by	String	(empty)	40		false
Updated	Date/Time	(empty)	40		false
Created by	String	(empty)	40		false
Sys ID	Sys ID (GUID)	(empty)	32		false
Created	Date/Time	(empty)	40		false

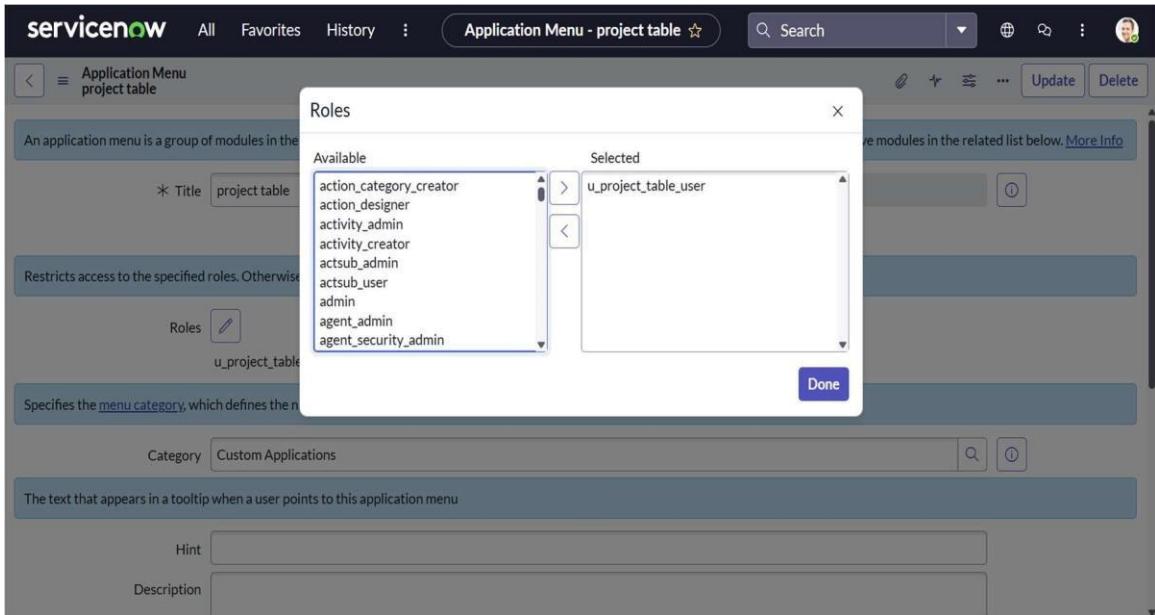
At the bottom of the table, there is a link "Insert a new row..." and a row of buttons: "Delete", "Update", and "Delete All Records".

Another custom table named Task Table is also created to handle individual tasks related to each project. It includes fields like Task ID, Task Name, Project Name (reference to Project Table), Assigned To, Priority, Start Date, End Date, and Task Status. These tables help in organizing project data and tracking task progress effectively within the application.

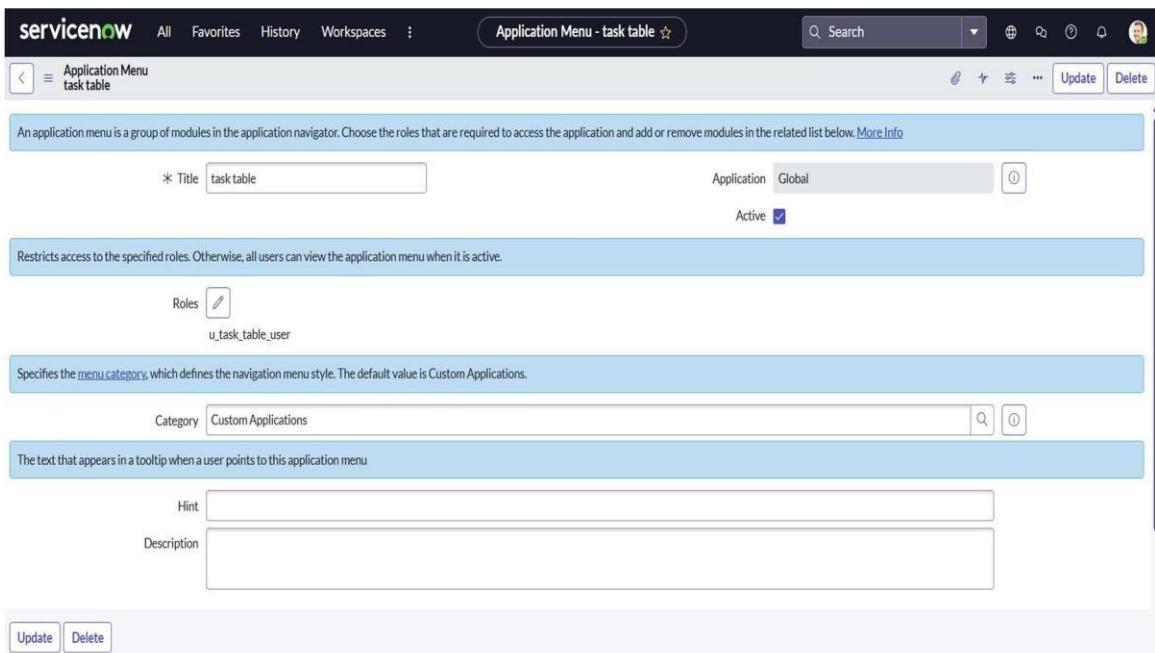
The screenshot shows the ServiceNow interface for configuring a table named 'task table'. At the top, there are fields for 'Label' (set to 'task table') and 'Name' (set to 'u_task_table'). Below this, a table titled 'Dictionary Entries' lists various columns with their types and properties. The columns include Sys ID, Created, Status, Comments, Updated by, Due Date, Updates, Updated, Task Name, Assigned To, Created by, and Task ID. Each row provides details such as Type (e.g., Sys ID (GUID), Date/Time, String, Integer), Reference (e.g., (empty)), Max length (e.g., 32, 40), Default value (e.g., false), and Display (e.g., false). A 'New' button is visible at the top right of the table view.

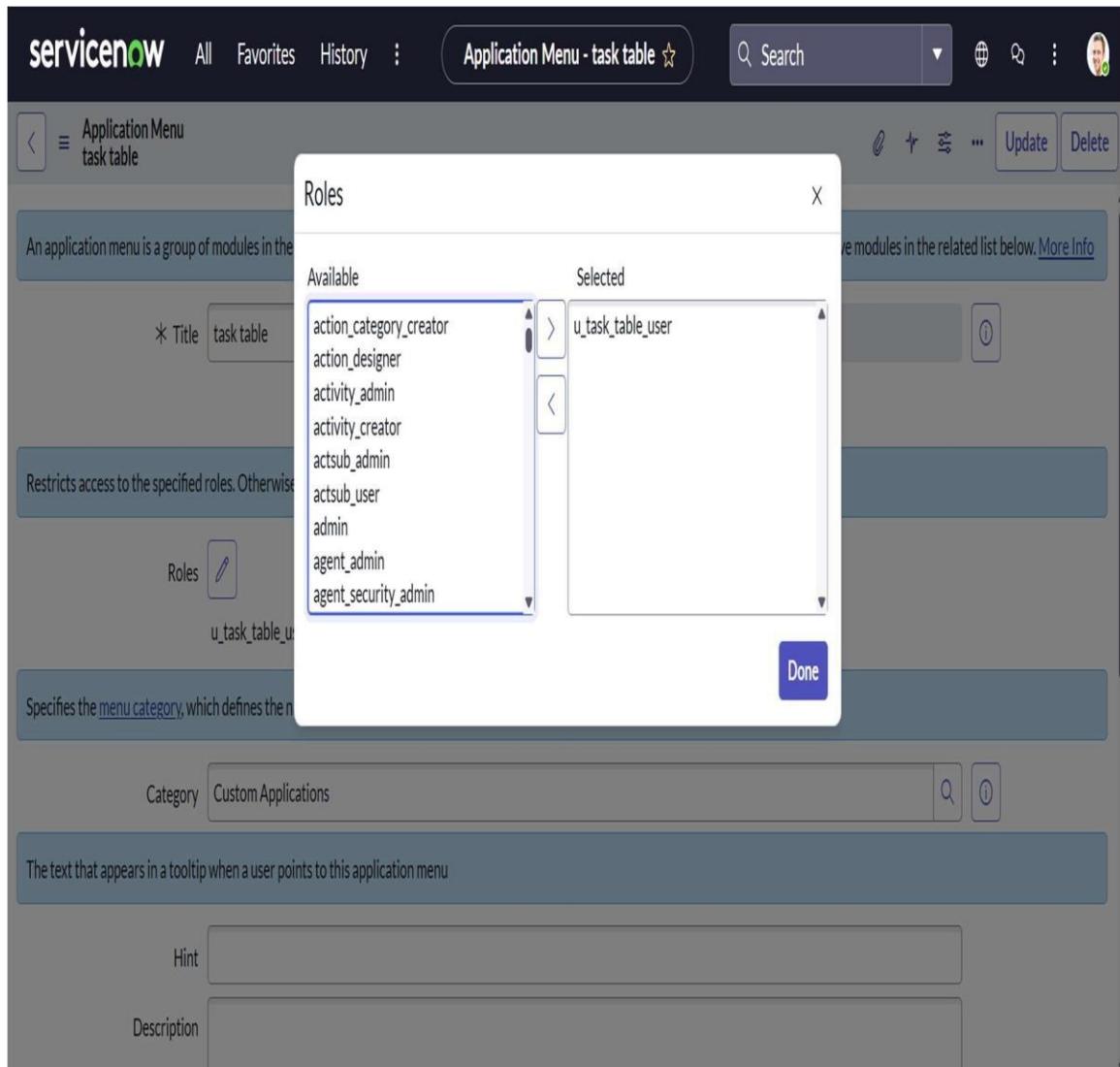
In the Project Task Tracker application, table access was assigned to control user permissions. When a new table is created in ServiceNow, an application and module are automatically generated for that table. The Project Table application was configured by editing its module and assigning the Project Member role to ensure only authorized members can access and manage project-related information.

The screenshot shows the ServiceNow interface for configuring an application menu titled 'project table'. The 'Title' field is set to 'project table' and the 'Active' checkbox is checked. Under the 'Roles' section, 'u_project_table_user' is listed. The 'Category' is set to 'Custom Applications'. The 'Hint' and 'Description' fields are empty. At the bottom, there is a table titled 'Application menu = project table' showing one record: 'project tables' (Table) with 'u_project_table' (Title), 'true' (Active), 'List of Records' (Link type), 'u_project_table_user' (Roles), and '2025-10-24 16:41:09' (Updated).



Similarly, the Task Table application was customized by editing its application settings and assigning both Project Member and Team Member roles. This allows project members and team members to access, update, and track task details efficiently, ensuring proper rolebased access within the application.





Custom forms were created for task entry, and Access Control Lists (ACLs) were configured to ensure secure and role-based access to data. The Task Table was assigned the Team Member role, allowing members to view and update only their assigned tasks, while the Project Manager role was given full access to create, modify, and delete tasks. Four ACLs were created for key fields such as Task Name, Due Date, Assigned To, Status, and Comments to control edit permissions. This configuration ensures that only authorized users can make changes, maintaining data integrity and proper access control within the Project Task Tracker application.

servicenow All Favorites History : Access Controls ⚡ Search Actions on selected rows...

All

<input type="checkbox"/>	Name	Decision Type	Operation	Type	Active	Updated by	Updated
	u_task_table.u_assigned_to	Allow If	write	record	true	admin	2025-10-25 06:09:05
	u_task_table.u_task_name	Allow If	write	record	true	admin	2025-10-25 06:08:51
	u_task_table.u_task_id	Allow If	write	record	true	admin	2025-10-25 06:08:15
	u_task_table.u_due_date	Allow If	write	record	true	admin	2025-10-25 06:05:43
	u_task_table.u_status	Allow If	write	record	true	admin	2025-10-25 05:53:15
	u_task_table	Allow If	delete	record	true	admin	2025-10-24 16:41:46
	u_task_table	Allow If	write	record	true	admin	2025-10-24 16:41:46
	u_task_table	Allow If	read	record	true	admin	2025-10-24 16:41:46
	u_task_table	Allow If	create	record	true	admin	2025-10-24 16:41:45
	u_project_table	Allow If	write	record	true	admin	2025-10-24 16:41:11
	u_project_table	Allow If	read	record	true	admin	2025-10-24 16:41:11
	u_project_table	Allow If	delete	record	true	admin	2025-10-24 16:41:11

servicenow All Favorites History Workspaces Admin Access Control - u_task_table.u_task_name ⚡ Search Actions on selected rows...

Access Control - u_task_table.u_task_name

Type	record	Application	Global
Operation	write	Active	<input checked="" type="checkbox"/>
Decision Type	Allow If	Advanced	<input type="checkbox"/>
Admin overrides	<input checked="" type="checkbox"/>		
Protection policy	-- None --		
Name	u_task_table.u_task_name		
Description	Allow write for u_task_name in u_task_table, for users with roles (team member, task table).		
Applies To	No of records matching the condition: 1 (empty)		

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.

- Allow Access: Allows access to a resource if all conditions are met.
- Deny Access: Denies access to a resource unless all conditions are met.

[More Info](#)

Requires role

Role	team member
	task table

servicenow All Favorites History Workspaces Admin Access Control - u_task_table.u_task_id ⚡

Access Control u_task_table.u_task_id

Type record Application Global

Operation write Active

Decision Type Allow If Advanced

Admin overrides

Protection policy -- None --

Name u_task_table.u_task_id

Description

Applies To No. of records matching the condition: 1 (empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.

1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.

More Info

Requires role

Role
team member
task table

1 to 2 of 2

servicenow All Favorites History Workspaces Admin Access Control - u_task_table.u_due_date ⚡

Access Control u_task_table.u_due_date

Type record Application Global

Operation write Active

Decision Type Allow If Advanced

Admin overrides

Protection policy -- None --

Name u_task_table.u_due_date

Description

Applies To No. of records matching the condition: 1 (empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.

1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.

More Info

Requires role

Role
task table
team member

1 to 2 of 2

servicenow All Favorites History Workspaces Admin Access Control - u_task_table.u_assigned_to Search

Type: record Operation: write Decision Type: Allow If Application: Global Active: Advanced:

Admin overrides: Protection policy: --None-- Name: u_task_table.u_assigned_to Description: Allow write for u_assigned_to in u_task_table, for users with roles (task table, team member). Applies To: No. of records matching the condition: 1 (empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.

1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.

More Info

Requires role:

Role
task table
team member

1 to 2 of 2

nowlearning-nlinst03409483-1h6hj-0001.lab.service-now.com/now/nav/ui/classic/params/target/sys_security.adl.do%3Fsys_id%3D46d632ad453032107f44ebddeda21339%26sysparm_record... Search

servicenow All Favorites History Workspaces Admin Access Control - u_task_table.u_status Search

Type: record Operation: write Decision Type: Allow If Application: Global Active: Advanced:

Admin overrides: Protection policy: --None-- Name: u_task_table.u_status Description: Allow write for u_status in u_task_table, for users with roles (team member, task table). Applies To: No. of records matching the condition: 1 (empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.

1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.

More Info

Requires role:

Role
team member
task table

1 to 2 of 2

The screenshot shows the ServiceNow Access Control interface for a rule named "Access Control - u_task_table.u_status".

Rule Details:

- Type: record
- Operation: write
- Decision Type: Allow If
- Active: checked
- Admin overrides: checked
- Protection policy: --None--
- Name: u_task_table.u_status
- Description: Allow write for u_status in u_task_table, for users with roles (team member, task table).
- Applies To: No. of records matching the condition: 1 (empty)

Conditions:

Access Control Rules have two decision types, and these types will behave differently depending on conditions.

1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.

[More Info](#)

Requires role:

Role
team member
task table

flow designer implementation:

Flow Designer in ServiceNow is used to automate processes and enhance workflow efficiency without the need for coding. In the Project Task Tracker application, Flow Designer was utilized to automate task updates and approvals. A new flow was created with the Task Table as the trigger, which activates whenever a task is assigned or updated.

The screenshot shows the ServiceNow Workflow Studio interface. The top navigation bar includes the 'task table' flow name and a '+' button. Below the navigation are tabs for 'Homepage', 'Operations', and 'Integrations'. The main area displays a list of flows with columns for Name, Application, Status, Active, Updated, and Up. A sidebar on the right shows recent items: 'task table' (last updated 2 days ago), 'Create Flow Data' (last updated a year ago), and 'Steps' (last updated a year ago). The 'Latest updates' section shows activity from a System Administrator: modifying 'task table' 2 days ago, 'Create Flow Data' a year ago, 'Steps' a year ago, and 'Steps' again a year ago.

Name	Application	Status	Active	Updated	Up
Inbound Email Flow Example: logging a problem	Global	Draft	false	2019-02-19 18:17:24	adm
Inbound Email Flow Example: handling email replies	Global	Draft	false	2019-02-22 17:51:54	adm
Service Catalog item request	Global	Published	true	2020-01-31 04:12:14	adm
SLA notification and escalation flow	Global	Published	true	2020-04-23 12:42:08	adm
Default SLA flow	Global	Published	true	2020-04-23 12:42:24	adm
Register Business Application	Global	Published	true	2020-06-15 02:47:35	adm
KPI Signals Configuration Update Flow	Global	Published	true	2020-09-18 13:13:51	adm
Change - Normal - Implement	Global	Published	true	2020-09-23 11:23:59	adm
Change - Emergency - Implement	Global	Published	true	2020-09-23 12:06:26	adm
Change - Standard	Global	Published	true	2020-09-23 12:09:01	adm

Workflow Studio task table Flow

task table Active

TRIGGER

task table Created where (Status is In Progress, and Comments is feedback, and Assigned To is bob)

ACTIONS Select multiple

- 1 Update u_task_table Record
- 2 Ask For Approval

+ Add an Action, Flow Logic, or Subflow

ERROR HANDLER

If an error occurs in your flow, the actions you add here will run.

Data Collapse All

- ▶ Flow Variables
- ▼ Trigger - Record Created
 - ▶ task table Record Record
 - task table Table Table
 - Run Start Time UTC Date/Time
 - Run Start Date/Time Date/Time
- ▼ 1 - Update Record
 - ▶ u_task_table Record Record
 - u_task_table Table Table
 - ▶ Action Status Object
- ▼ 2 - Ask For Approval
 - Approval State Choice
 - ▶ Action Status Object

Workflow Studio task table Flow

task table Active

TRIGGER

task table Created where (Status is In Progress, and Comments is feedback, and Assigned To is bob)

Trigger **Created**

* Table **task table [u_task_table]**

Condition All of these conditions must be met

Status	is	In Progress	OR	AND	
AND	Comments	is	feedback	OR	AND
	Assigned To	is	bob	OR	AND

or

New Criteria

Data Collapse All

- ▶ Flow Variables
- ▼ Trigger - Record Created
 - ▶ task table Record Record
 - task table Table Table
 - Run Start Time UTC Date/Time
 - Run Start Date/Time Date/Time
- ▼ 1 - Update Record
 - ▶ u_task_table Record Record
 - u_task_table Table Table
 - ▶ Action Status Object
- ▼ 2 - Ask For Approval
 - Approval State Choice
 - ▶ Action Status Object

Advanced Options

Delete Cancel Done

The flow includes several actions to define the automation steps. The first action checks if the Assigned To field is not empty. If true, the next Update Record action automatically changes the Status field to In Progress. Following this, an Ask for Approval action is added to request approval from the Project Manager once the task reaches completion. This ensures that every task is reviewed and approved before being marked as completed.

The screenshot displays two separate flows for the 'task table' object in Zoho Workflow Studio.

Flow 1 (Top):

- Action 1:** Update u_task_table Record
 - Action: Update Record
 - * Record: Trigger - Rec... ▶ task table Rec...
 - * Table: task table [u_task_table]
 - * Fields: Status → Completed
- Action 2:** Ask For Approval

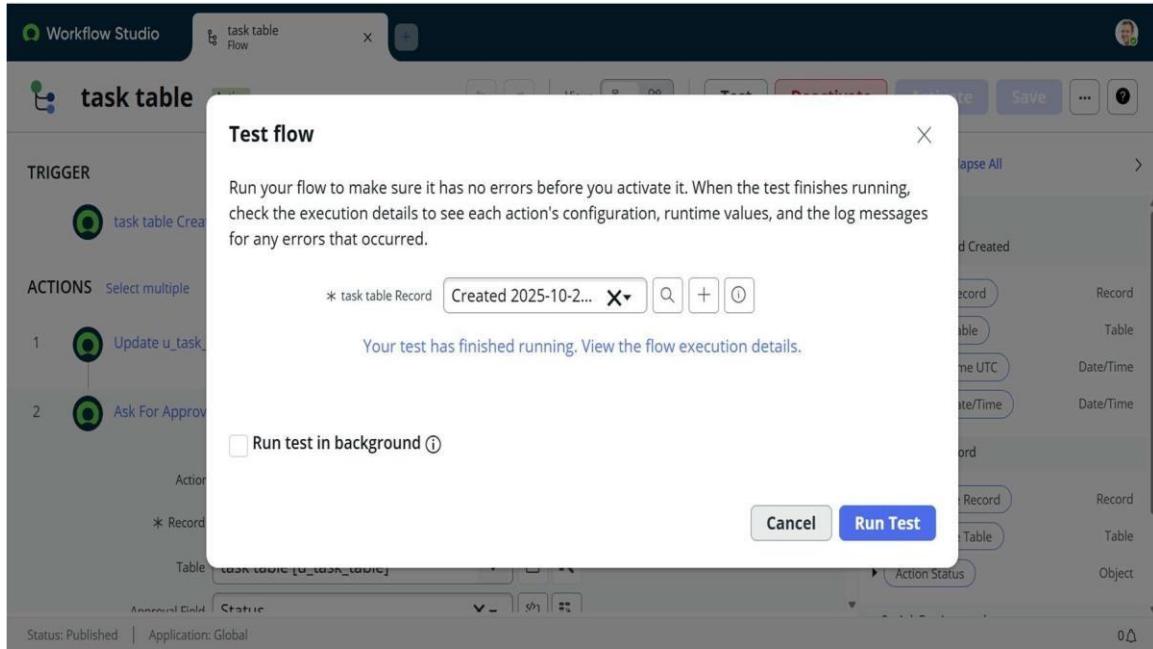
Flow 2 (Bottom):

- Action 1:** Update u_task_table Record
- Action 2:** Ask For Approval
 - Action: Ask For Approval
 - * Record: Trigger - Rec... ▶ task table Rec...
 - Table: task table [u_task_table]
 - Approval Field: Status
 - Journal Field: Select a field
 - * Rules:
 - Approve When: All users approve ▶ alice p X
 - Due Date: None

Data Panel (Right):

- Flow Variables
- Trigger - Record Created
 - task table Record
 - task table Table
 - Run Start Time UTC
 - Run Start Date/Time
- 1 - Update Record
 - u_task_table Record
 - u_task_table Table
 - Action Status
- 2 - Ask For Approval
 - Approval State
 - Action Status

The Test feature in Flow Designer was used to validate the workflow. A sample record was selected from the Task Table to confirm that the flow triggered correctly, updated the record automatically, and sent the approval request as expected. This automation improves accuracy, ensures timely approvals, and reduces manual intervention in the task management process.



The screenshot shows the Microsoft Flow Designer interface with the "task table" flow execution details. The flow is currently in a "Waiting" state. The execution details include:

- SHOW ACTION DETAILS:** Shows the "task table Created" trigger and the "Open current record" action.
- FLOW STATISTICS:** Run as: System Administrator, Open flow logs, Waiting, 2025-10-28 15:55:36, 47ms.
- TRIGGER:** task table Created.
- ACTIONS:**
 - 1 Update Record: Core Action, Completed, 2025-10-28 15:55:36, 16ms.
 - 2 Ask For Approval: Core Action, Waiting, 2025-10-28 15:55:36, 31ms.
- ERROR HANDLER:** None listed.

- Dashboard and Reporting: The Platform Analytics module in ServiceNow provides visual dashboards showing project performance. Reports such as pie charts by task status, bar graphs of user workloads, and pivot tables for project distribution are created.

Managers use these insights to allocate resources efficiently and track progress.

The screenshot shows the ServiceNow Platform Analytics configuration interface for a "Task Management Dashboard". The main area displays a "Task Status Report" pivot table. The table has columns for "Task Name", "Assigned To", and "Status". The data shows one row for "bob" assigned to "requested". A tooltip indicates this is a "Total Count (task ...)" row. The configuration panel on the right shows the visualization type is set to "Pivot Table". The data source is "task table" and the metric is "COUNT task table".

Task Name	(empty)	
Assigned To	bob	Total Count (task ...)
Status	requested	
Task Name → Assigned To → Status		
(empty)	1	1
bob	1	1
requested	1	1
Total	1	1

The screenshot shows the ServiceNow report configuration and preview interface for a "Task Status Report". The left panel shows the configuration steps: Data, Type, Configure, and Style. The "Configure" step is active, showing settings like "General" (selected), "Title", "Edit coloring rules", and various display options. The "Style" step is visible below. The right panel shows the report title "Task Status Report" and a search bar. Below the title is a question input field: "What do you want to see?". The preview area shows the "Task Status Report" table with the same data as the configuration screen. The table includes columns for Task Name, Assigned To, and Status, with a "Count" column for totals.

Task Name	(empty)		
Assigned To	bob	Total Count (task ...)	
Status	requested		
Task Name	Assigned To	Status	Count
(empty)	bob	requested	1 1
Count			1 1

CONCLUSION AND FUTURE SCOPE

The ServiceNow-based role management system successfully demonstrates how access control and workflow automation can transform traditional project management practices. The system ensures that tasks are securely assigned, monitored, and updated without manual intervention. Managers benefit from real-time analytics and dashboards that provide visibility into project performance, while team members gain clarity in their assigned responsibilities.

In the future, this system can be expanded to include integrations with collaboration tools such as Microsoft Teams, Slack, and Jira. Machine learning features can be added to predict task delays and recommend workload balancing. The automation logic can be further improved to include escalations and approvals. By continuously refining the workflows, organizations can achieve even greater productivity and security through the ServiceNow platform.