Anjalai Ammal Mahalingam Engineering College

Department of Computer Science And Engineering

Completed the project named as

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

Team ID : NM2025TMID08203

Team Size : 4

Team Leader : Sakthivel K

Team member 1 : Sri Niketan U K

Team member 2 : Yogeshwaran C

Team member 3 : Sakthivel S

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.

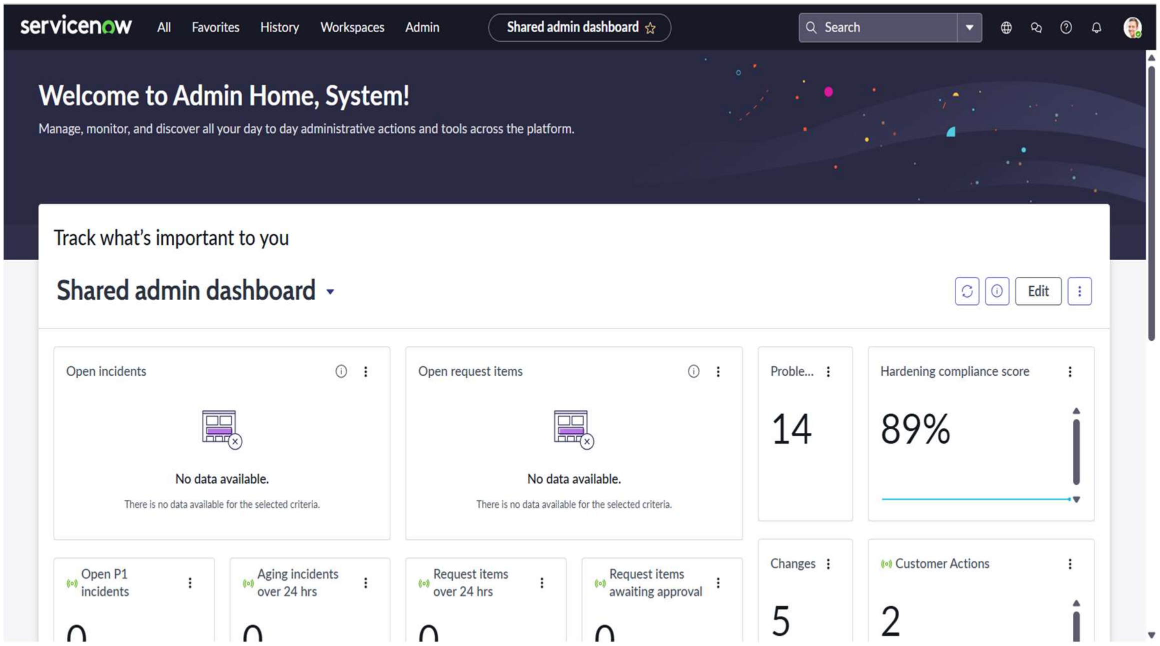
METHODOLOGY / SYSTEM DESIGN

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.



Welcome to Admin Home, System!

Manage, monitor, and discover all your day to day administrative actions and tools across the platform.

Track what's important to you

Shared admin dashboard

Open incidents

No data available.

There is no data available for the selected criteria.

Open request items

No data available.

There is no data available for the selected criteria.

Proble... 14

Hardening compliance score 89%

Open P1 incidents 0

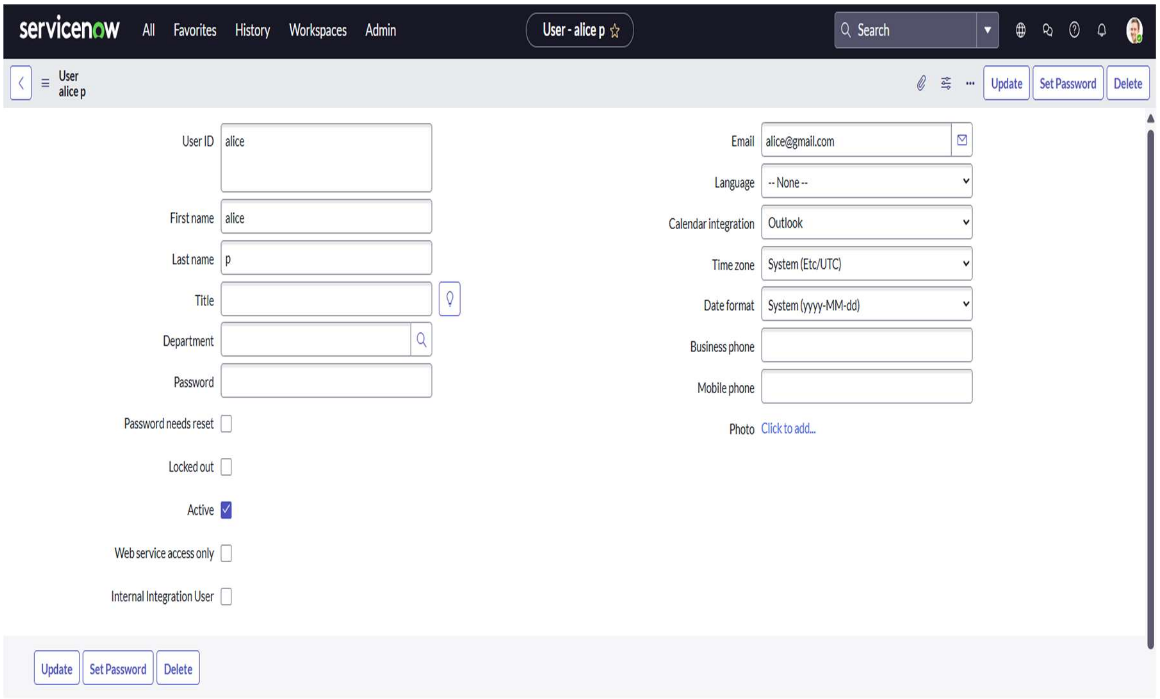
Aging incidents over 24 hrs 0

Request items over 24 hrs 0

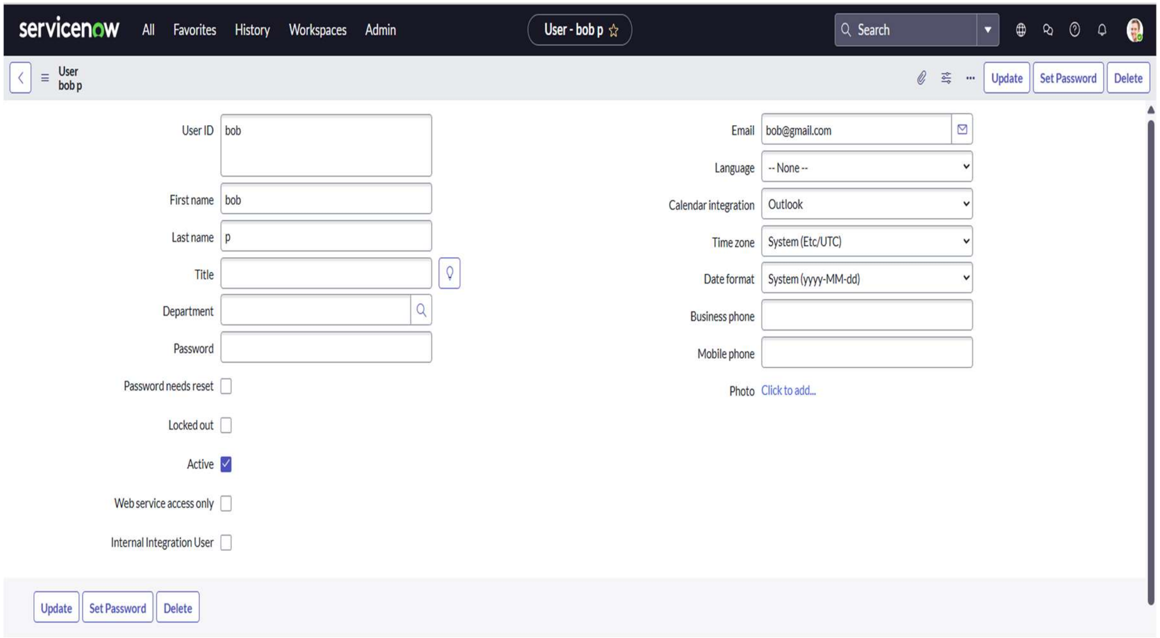
Request items awaiting approval 0

Changes 5

Customer Actions 2



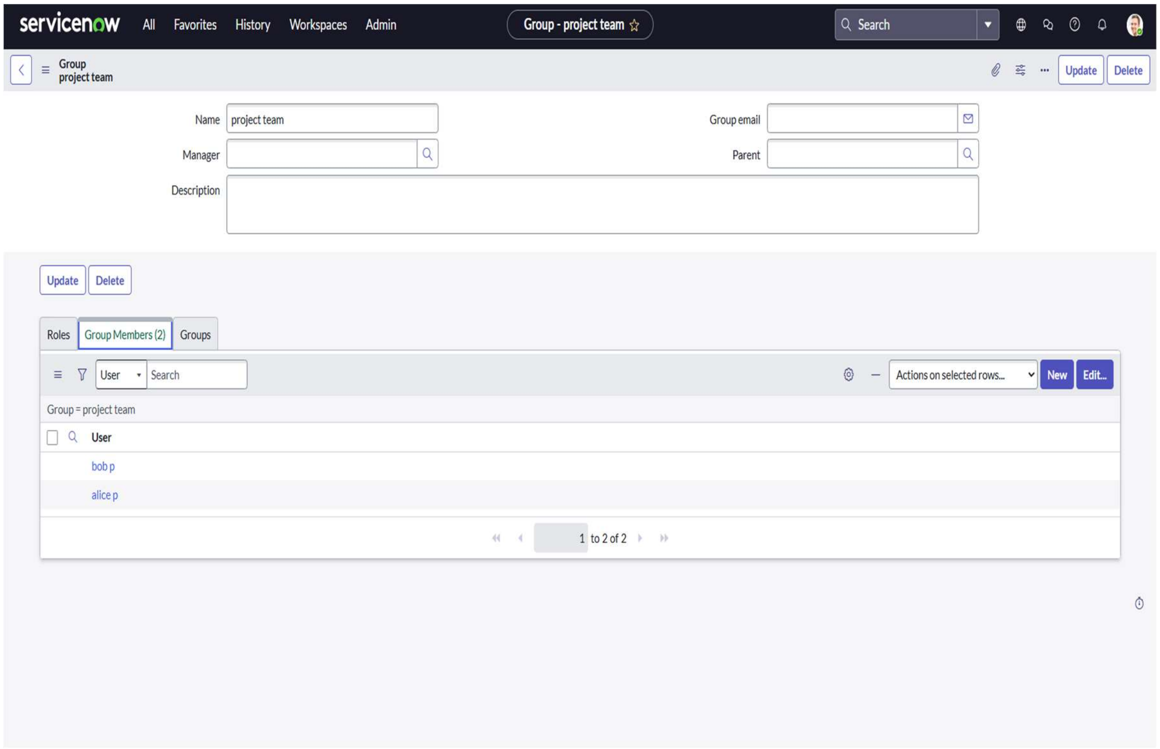
User ID	alice	Email	alice@gmail.com
First name	alice	Language	-- None --
Last name	p	Calendar integration	Outlook
Title		Time zone	System (Etc/UTC)
Department		Date format	System (yyyy-MM-dd)
Password		Business phone	
Password needs reset	□	Mobile phone	
Locked out	□	Photo	Click to add...
Active	☑		
Web service access only	□		
Internal Integration User	□		



User
bob p

User ID	bob
First name	bob
Last name	p
Title	
Department	
Password	
Password needs reset	□
Locked out	□
Active	☑
Web service access only	□
Internal Integration User	□
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...

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.



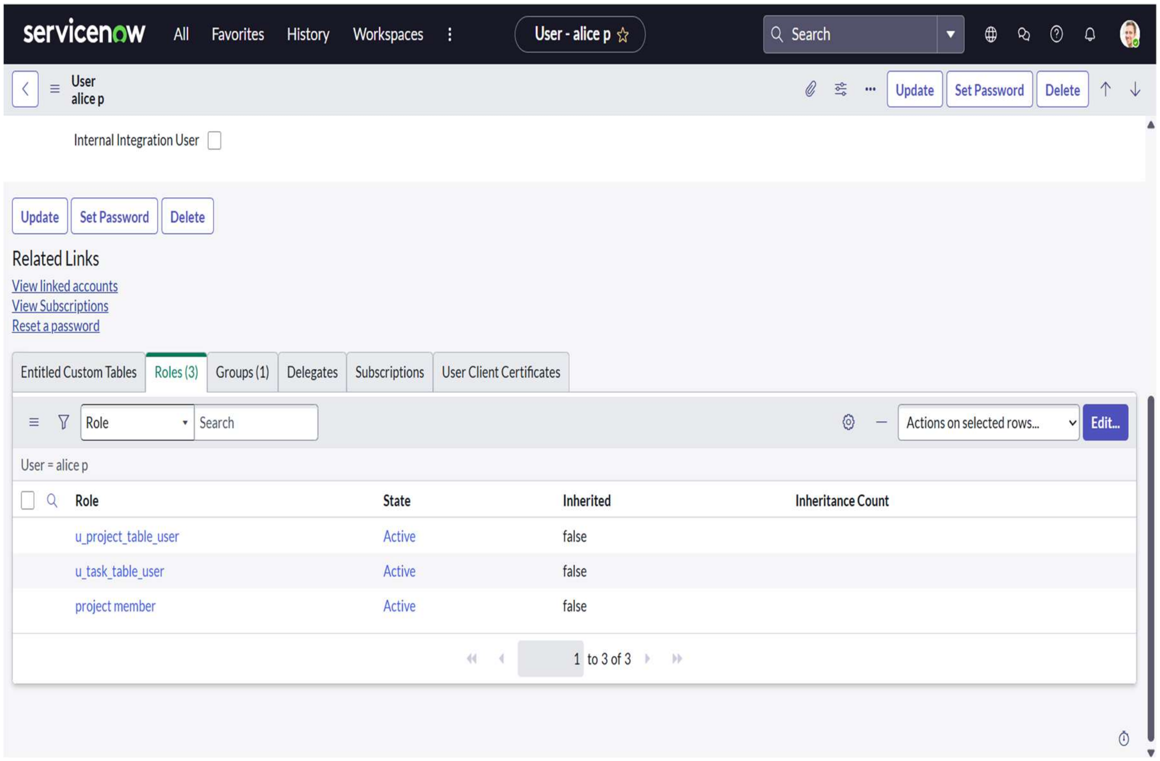
Group
project team

Name	project team
Manager	
Description	
Group email	
Parent	

Group = project team

User
bob p
alice p

1 to 2 of 2



Internal Integration User □

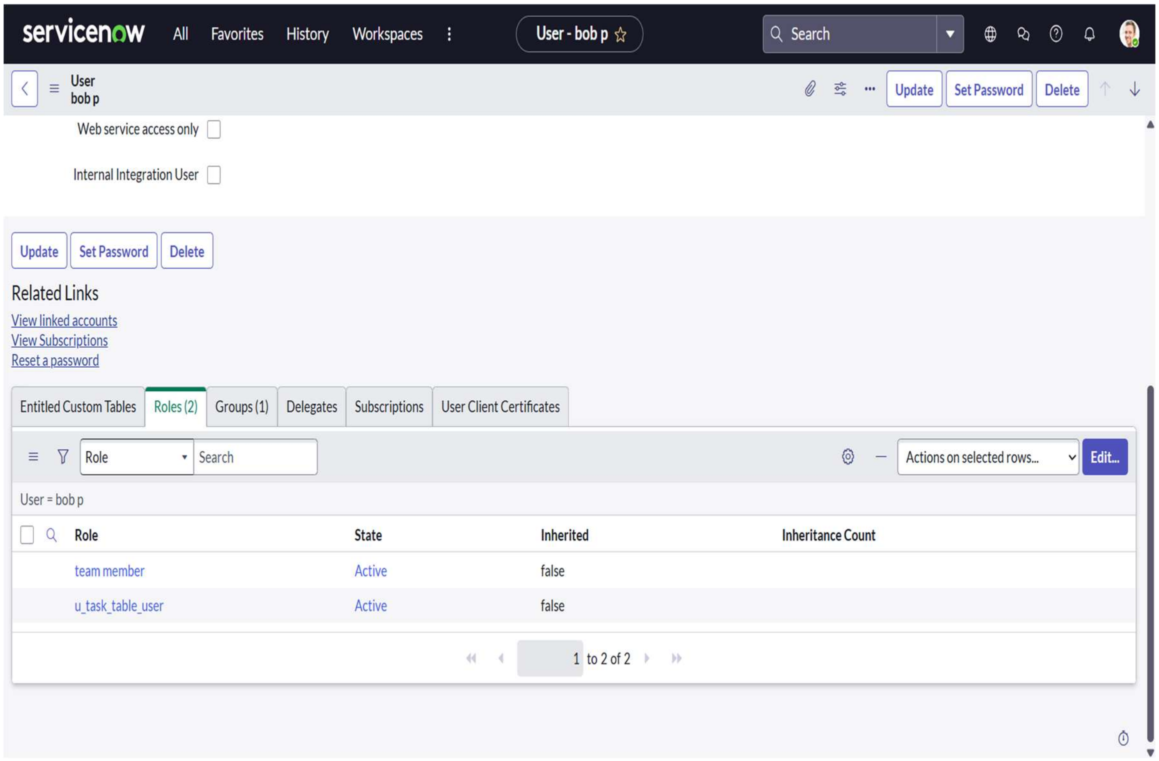
Related Links

View linked accounts
View Subscriptions
Reset a password

User = alice p

Role	State	Inherited	Inheritance Count
u_project_table_user	Active	false	
u_task_table_user	Active	false	
project member	Active	false	

1 to 3 of 3



Web service access only □

Internal Integration User □

Related Links

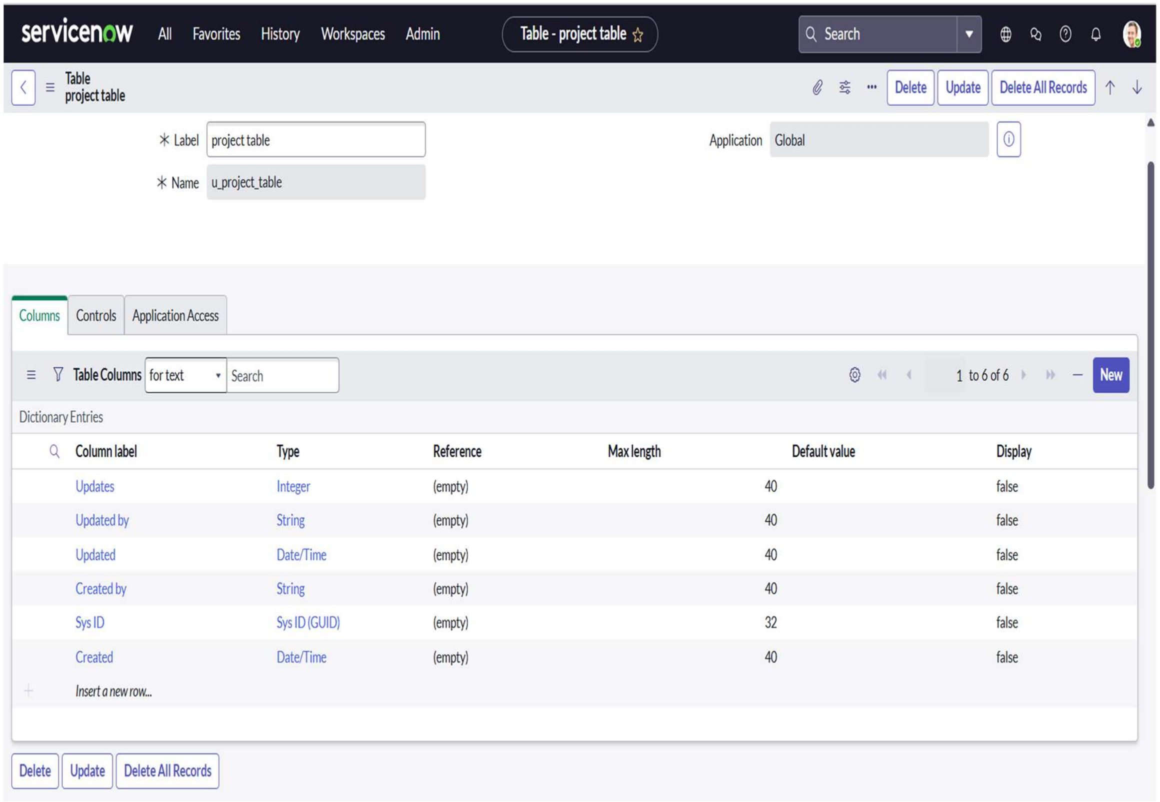
View linked accounts
View Subscriptions
Reset a password

User = bob p

Role	State	Inherited	Inheritance Count
team member	Active	false	
u_task_table_user	Active	false	

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.



✱ Label	project table
✱ Name	u_project_table
Application	Global

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

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.

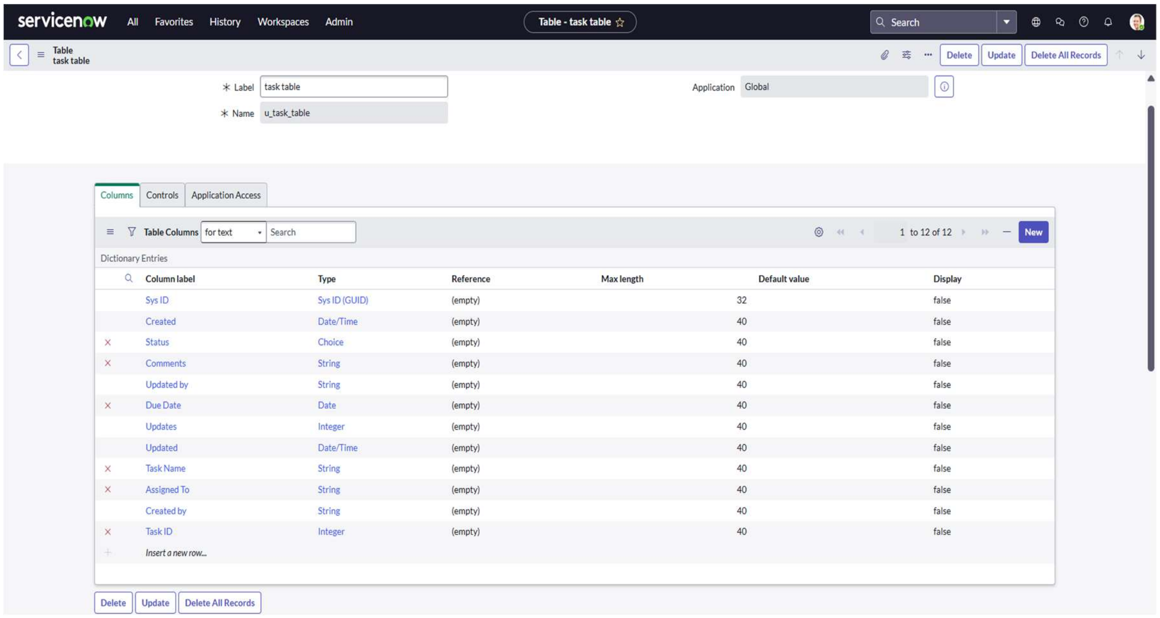


Table
task table

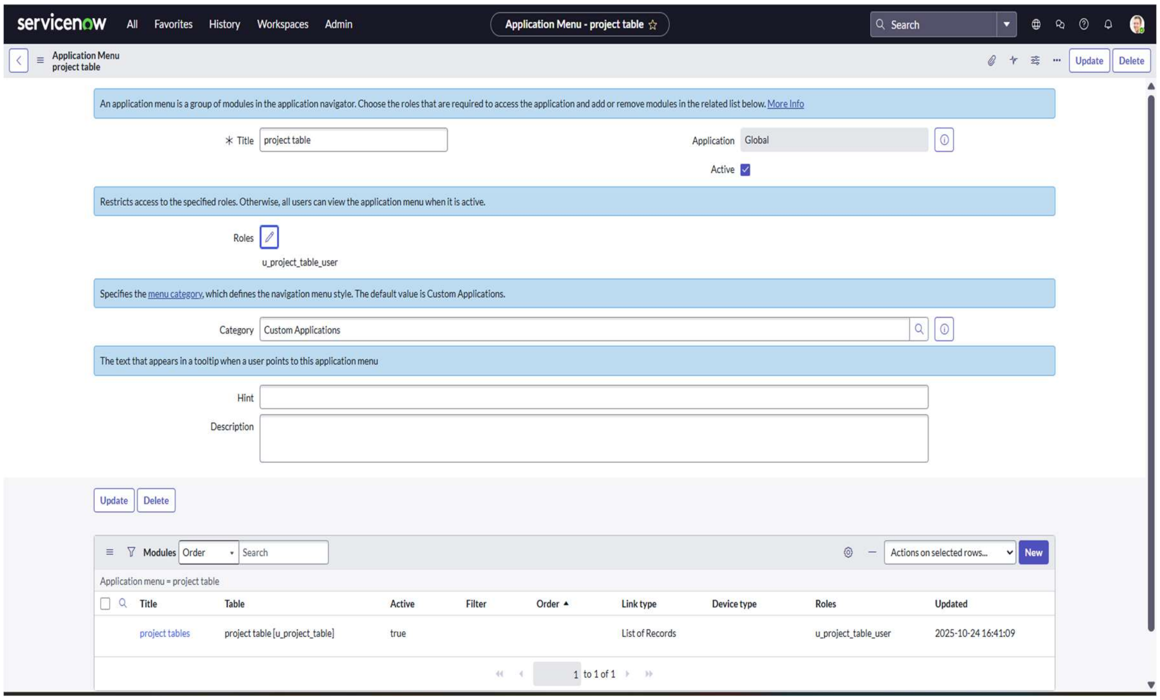
✱ Label	task table	Application	Global
✱ Name	u_task_table		

1 to 12 of 12

Dictionary Entries

	Column label	Type	Reference	Max length	Default value	Display
	Sys ID	Sys ID (GUID)	(empty)	32		false
	Created	Date/Time	(empty)	40		false
×	Status	Choice	(empty)	40		false
×	Comments	String	(empty)	40		false
	Updated by	String	(empty)	40		false
×	Due Date	Date	(empty)	40		false
	Updates	Integer	(empty)	40		false
	Updated	Date/Time	(empty)	40		false
×	Task Name	String	(empty)	40		false
×	Assigned To	String	(empty)	40		false
	Created by	String	(empty)	40		false
×	Task ID	Integer	(empty)	40		false
+	*Insert a new row...*					

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.



Application Menu
project table

An application menu is a group of modules in the application navigator. Choose the roles that are required to access the application and add or remove modules in the related list below. More Info

✱ Title	project table	Application	Global
		Active	☑

Restricts access to the specified roles. Otherwise, all users can view the application menu when it is active.

Roles
u_project_table_user

Specifies the menu category, which defines the navigation menu style. The default value is Custom Applications.

Category: Custom Applications

The text that appears in a tooltip when a user points to this application menu

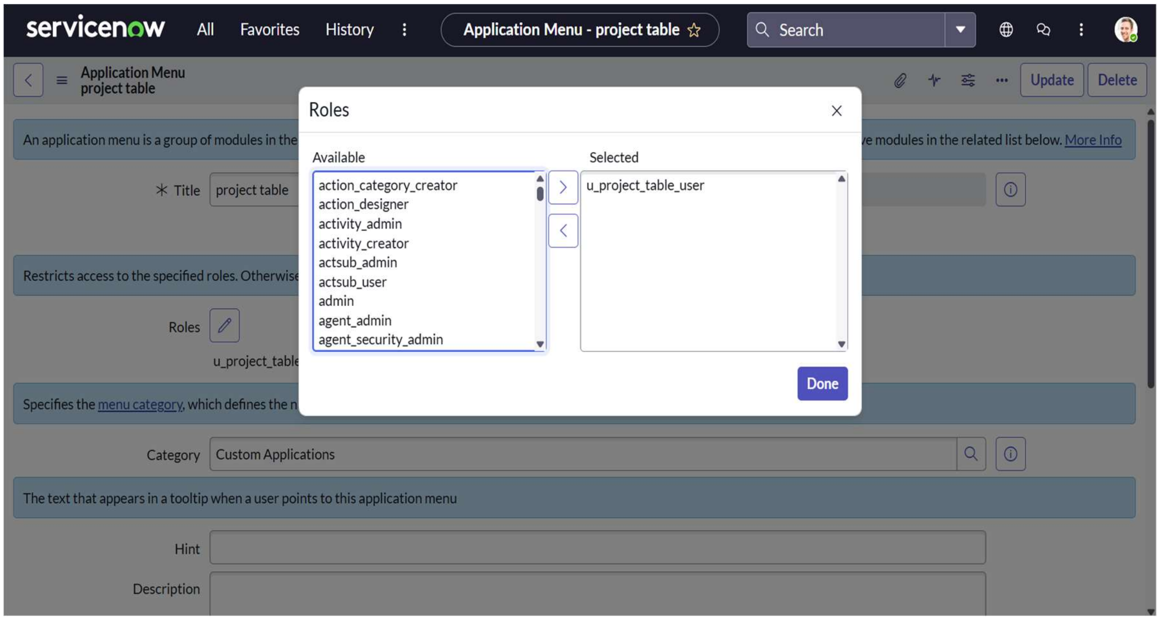
Hint:

Description:

Application menu = project table

☐	Title	Table	Active	Filter	Order ▲	Link type	Device type	Roles	Updated
	project tables	project table [u_project_table]	true			List of Records		u_project_table_user	2025-10-24 16:41:09

1 to 1 of 1



Application Menu
project table

An application menu is a group of modules in the … ve modules in the related list below. More Info

✱ Title project table

Restricts access to the specified roles. Otherwise …

Roles

u_project_table

Specifies the menu category, which defines the n…

Category Custom Applications

The text that appears in a tooltip when a user points to this application menu

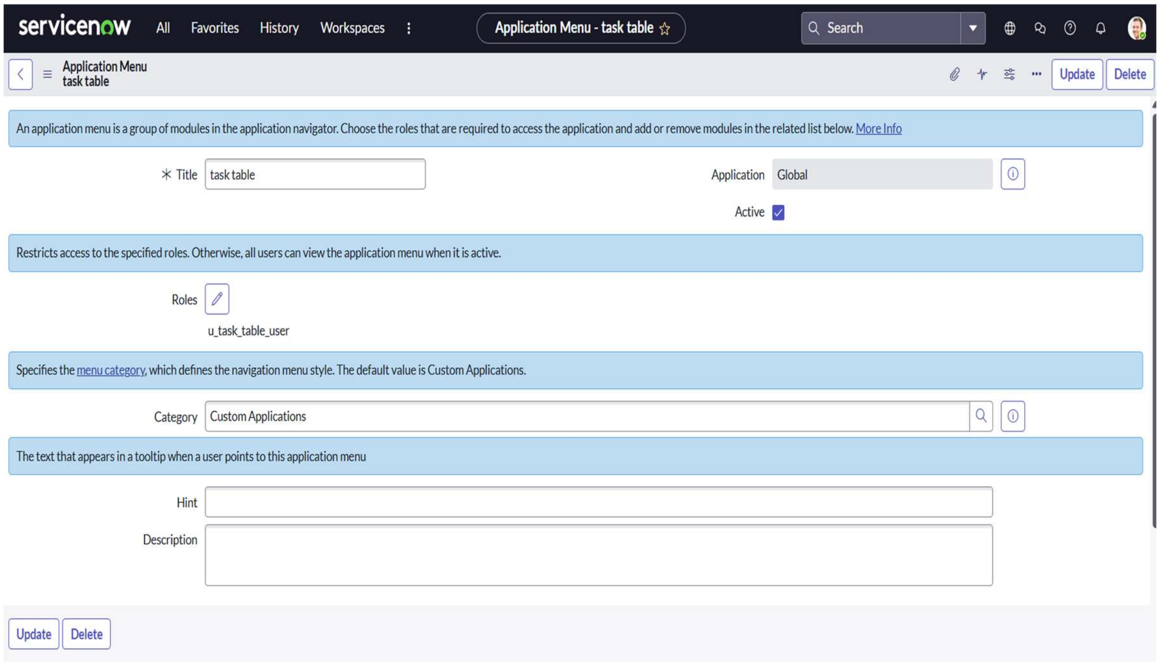
Hint

Description

Roles

Available	Selected
action_category_creator action_designer activity_admin activity_creator actsub_admin actsub_user admin agent_admin agent_security_admin	u_project_table_user

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 role-based access within the application.



Application Menu
task table

An application menu is a group of modules in the application navigator. Choose the roles that are required to access the application and add or remove modules in the related list below. More Info

✱ Title task table

Application Global

Active ☑

Restricts access to the specified roles. Otherwise, all users can view the application menu when it is active.

Roles

u_task_table_user

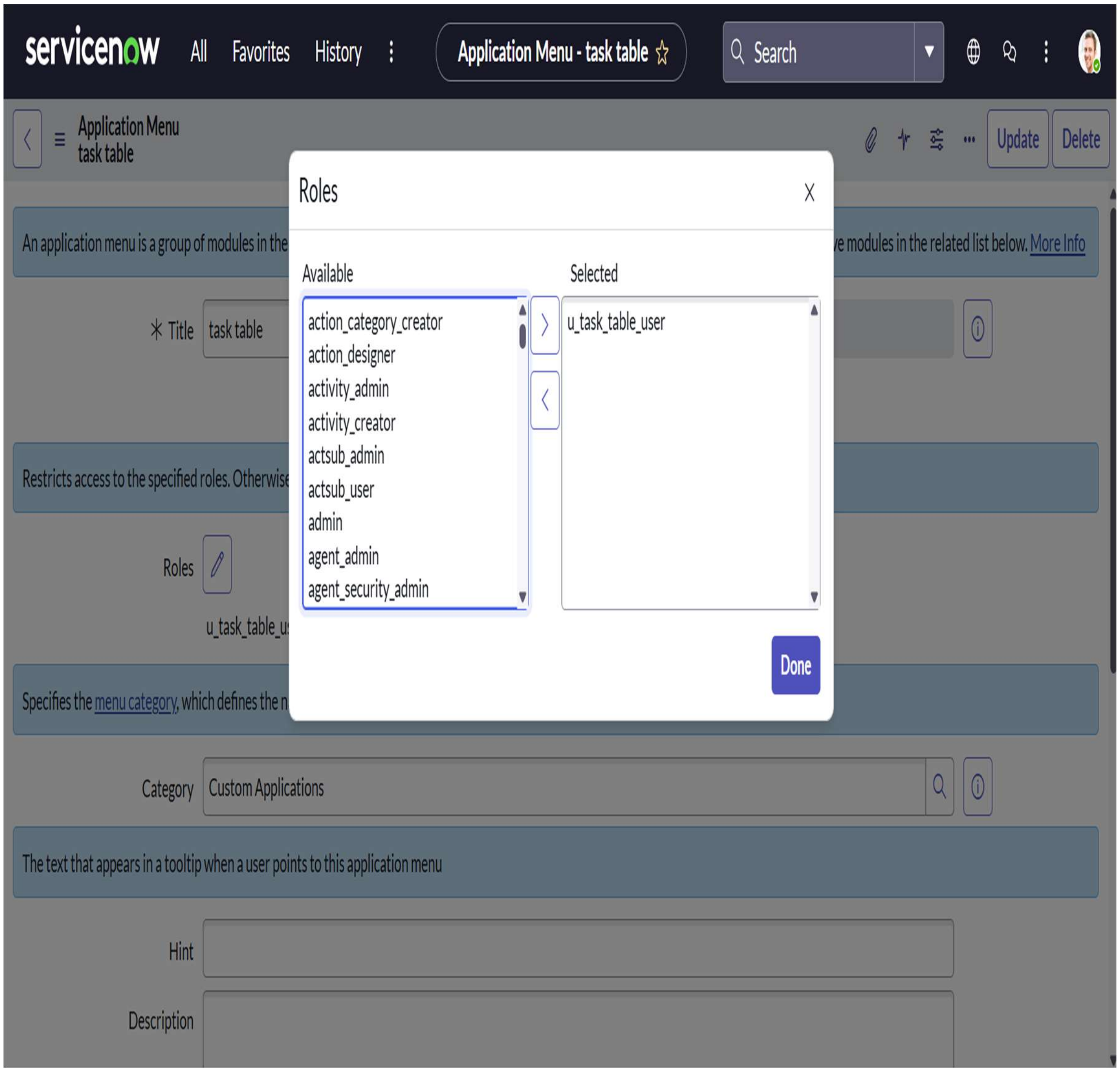
Specifies the menu category, which defines the navigation menu style. The default value is Custom Applications.

Category Custom Applications

The text that appears in a tooltip when a user points to this application menu

Hint

Description



Application Menu
task table

An application menu is a group of modules in the … e modules in the related list below. More Info

Title: task table

Restricts access to the specified roles. Otherwis…

Roles: u_task_table_u…

Roles

Available:
action_category_creator
action_designer
activity_admin
activity_creator
actsub_admin
actsub_user
admin
agent_admin
agent_security_admin

Selected:
u_task_table_user

Specifies the menu category, which defines the n…

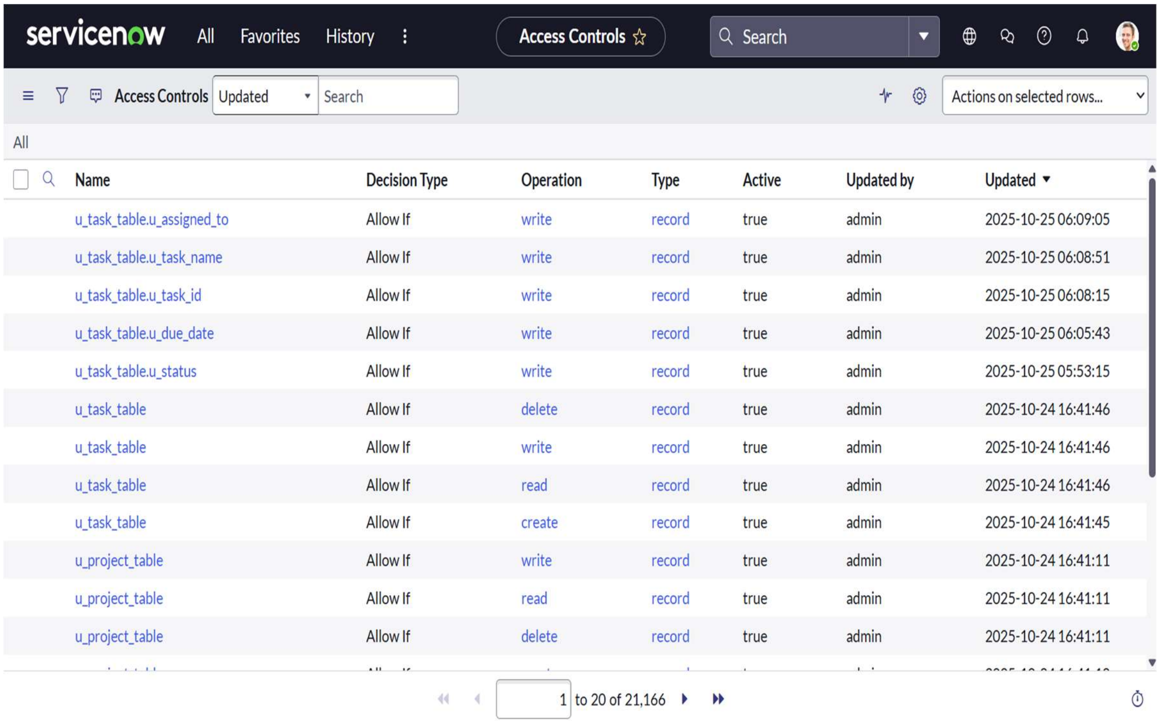
Category: Custom Applications

The text that appears in a tooltip when a user points to this application menu

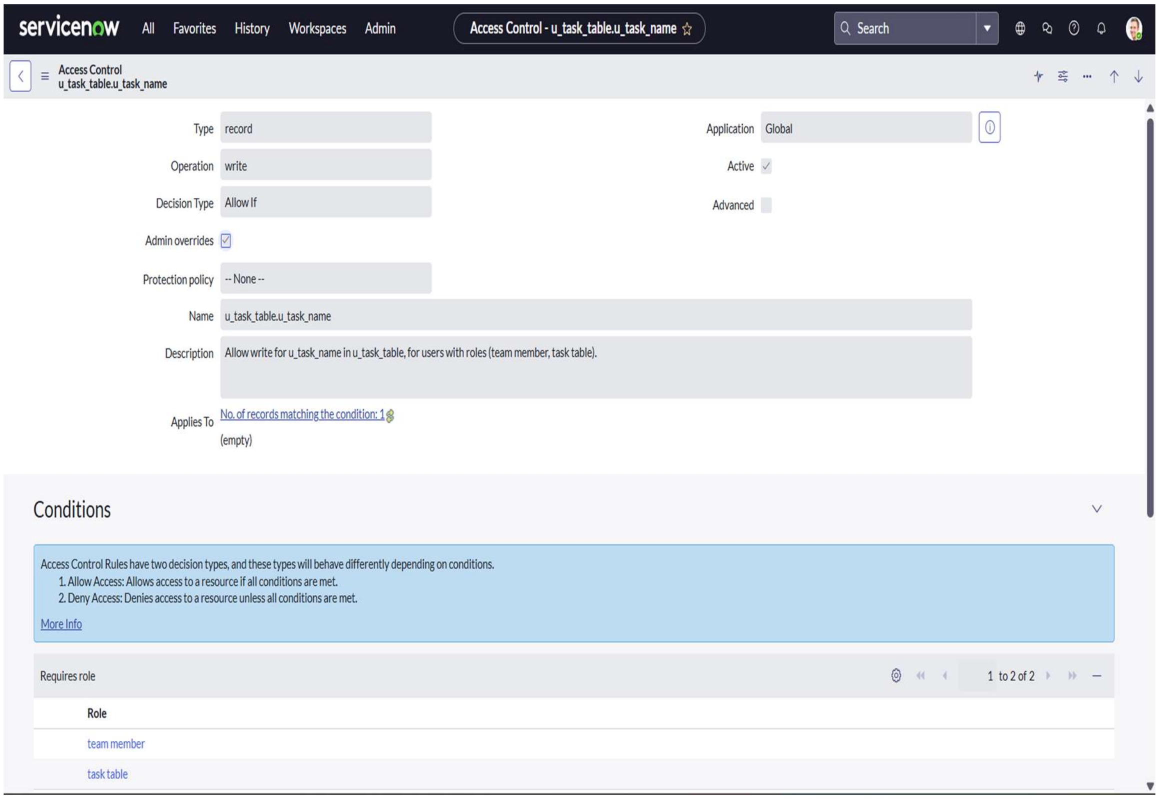
Hint

Description

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.



	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



Type	record
Operation	write
Decision Type	Allow If
Admin overrides	☑
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)
Application	Global
Active	✓
Advanced	□

Conditions

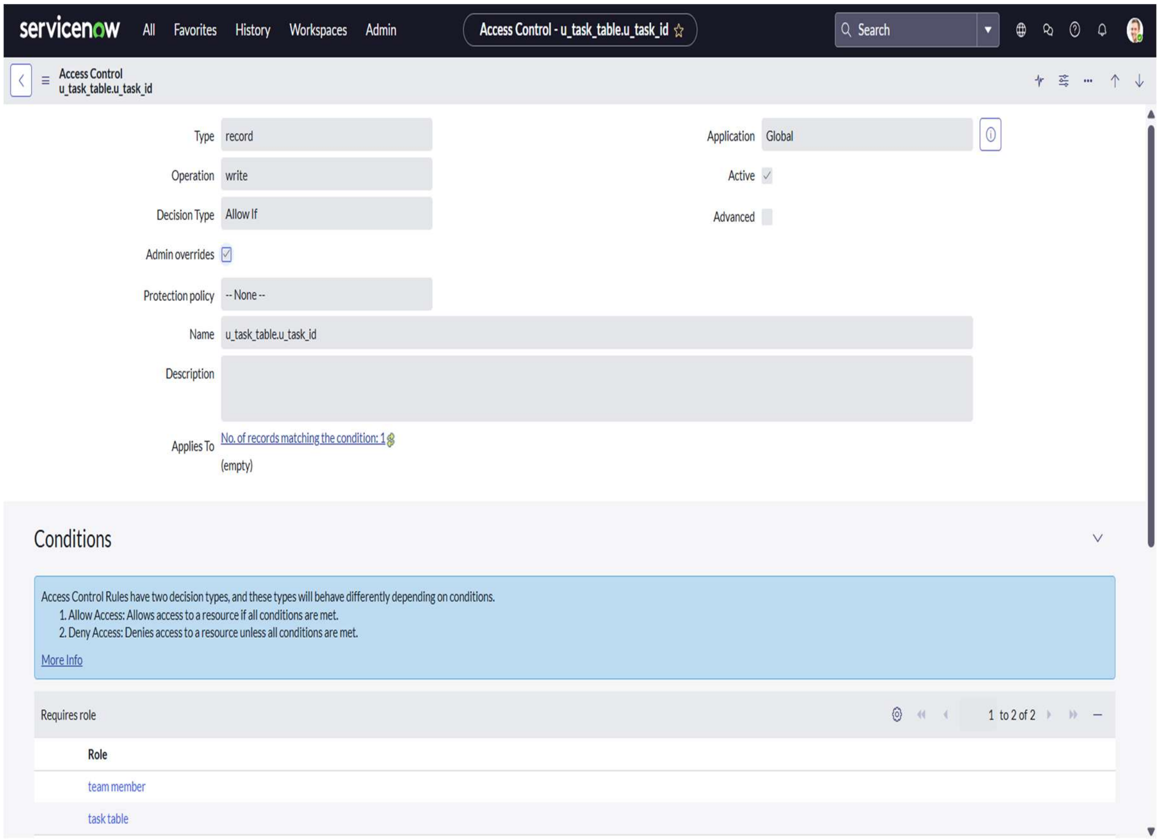
Access Control Rules have two decision types, and these types will behave differently depending on conditions.

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



Type: record

Operation: write

Decision Type: Allow If

Admin overrides ☑

Protection policy: -- None --

Name: u_task_table.u_task_id

Description:

Applies To: No. of records matching the condition: 1

(empty)

Application: Global

Active ✓

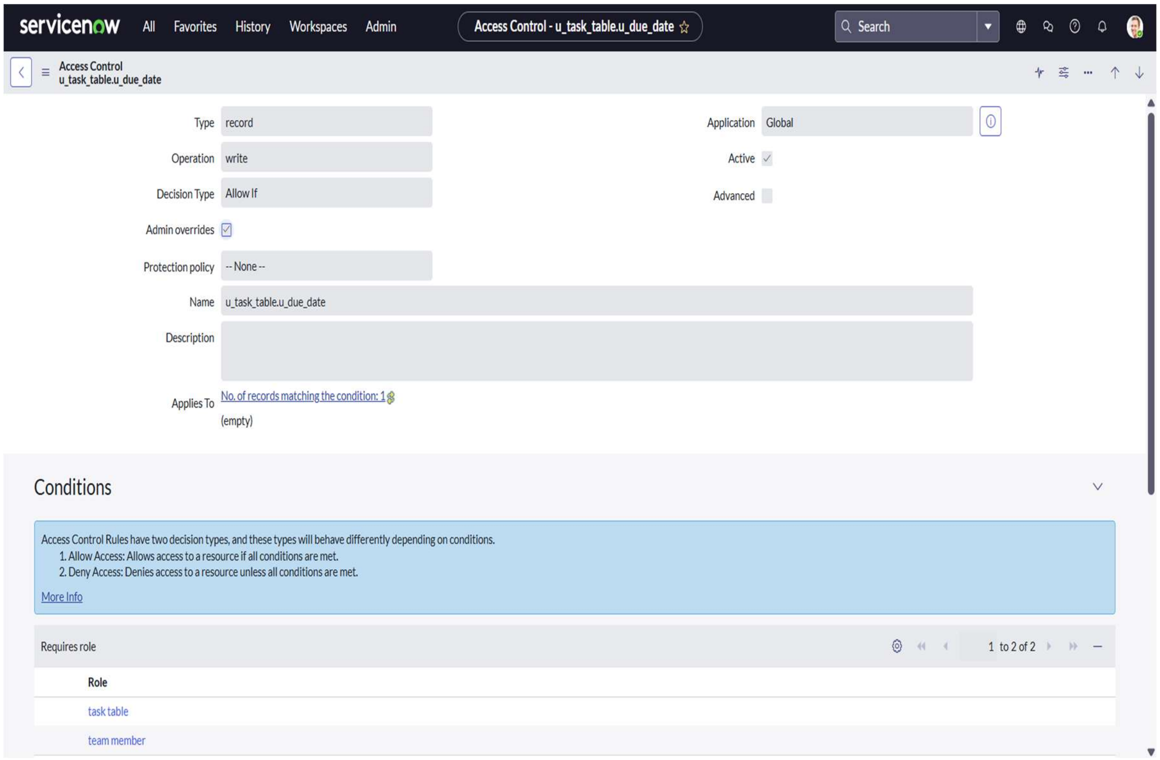
Advanced □

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 — 1 to 2 of 2

Role
team member
task table



Type: record

Operation: write

Decision Type: Allow If

Admin overrides ☑

Protection policy: -- None --

Name: u_task_table.u_due_date

Description:

Applies To: No. of records matching the condition: 1

(empty)

Application: Global

Active ✓

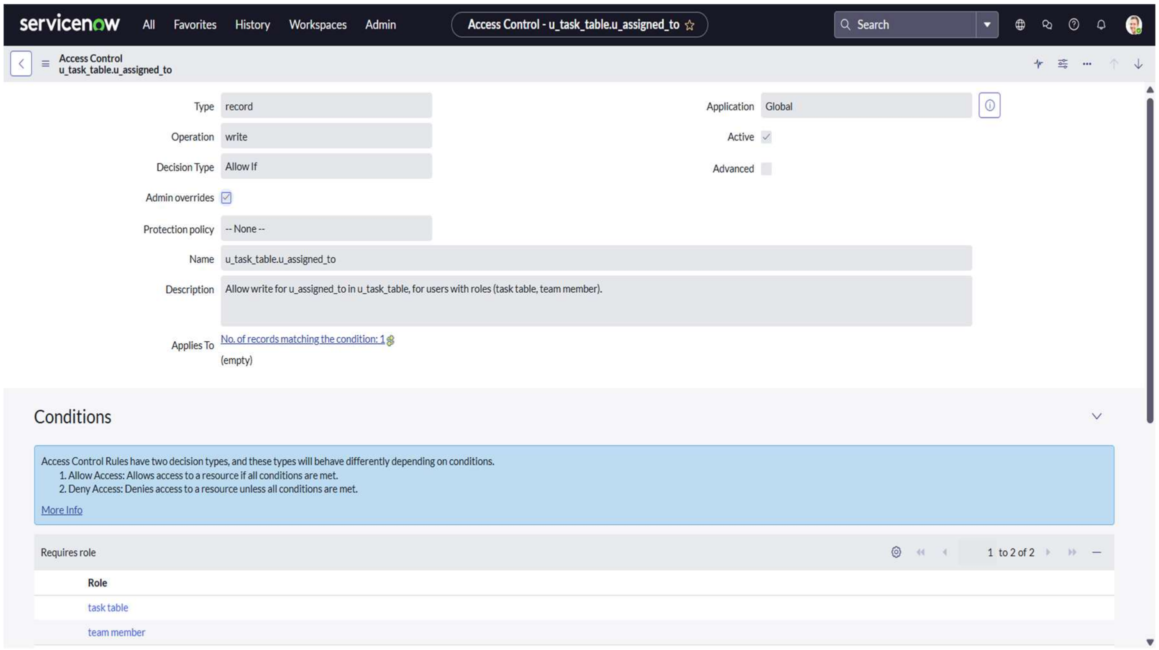
Advanced □

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 — 1 to 2 of 2

Role
task table
team member



Access Control
u_task_table.u_assigned_to

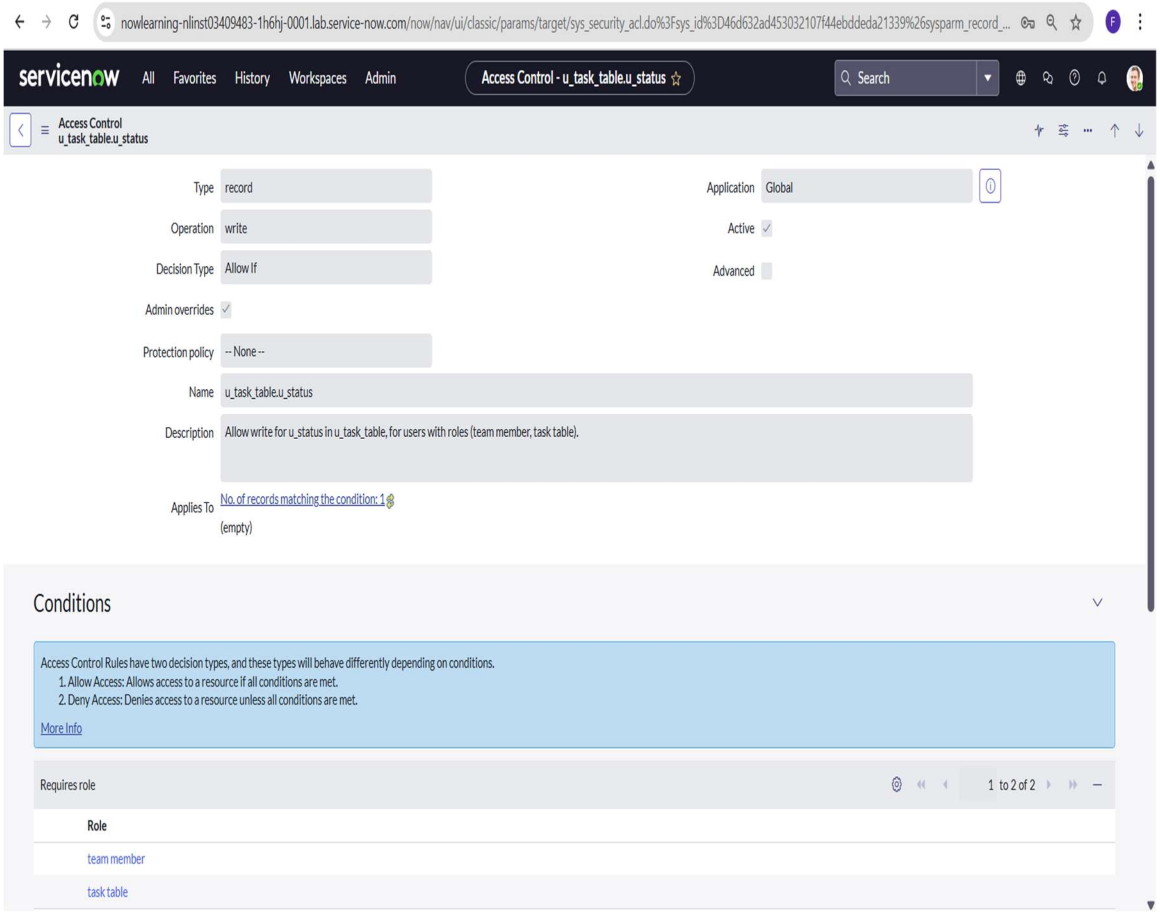
Type	record	Application	Global
Operation	write	Active	✓
Decision Type	Allow If	Advanced	□
Admin overrides	☑		
Protection policy	-- None --		
Name	u_task_table.u_assigned_to		
Description	Allow write for u_assigned_to in u_task_table, for users with roles (task table, team member).		
Applies To	No. of 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 — 1 to 2 of 2

Role
task table
team member


nowlearning-nlinst03409483-1h6hj-0001.lab.service-now.com/now/nav/ui/classic/params/target/sys_security_acl.do%3Fsys_id%3D46d632ad453032107f44ebddeda21339%26sysparm_record_...
servicenow
All
Favorites
History
Workspaces
Admin
Access Control - u_task_table.u_status ☆
Search

Access Control
u_task_table.u_status

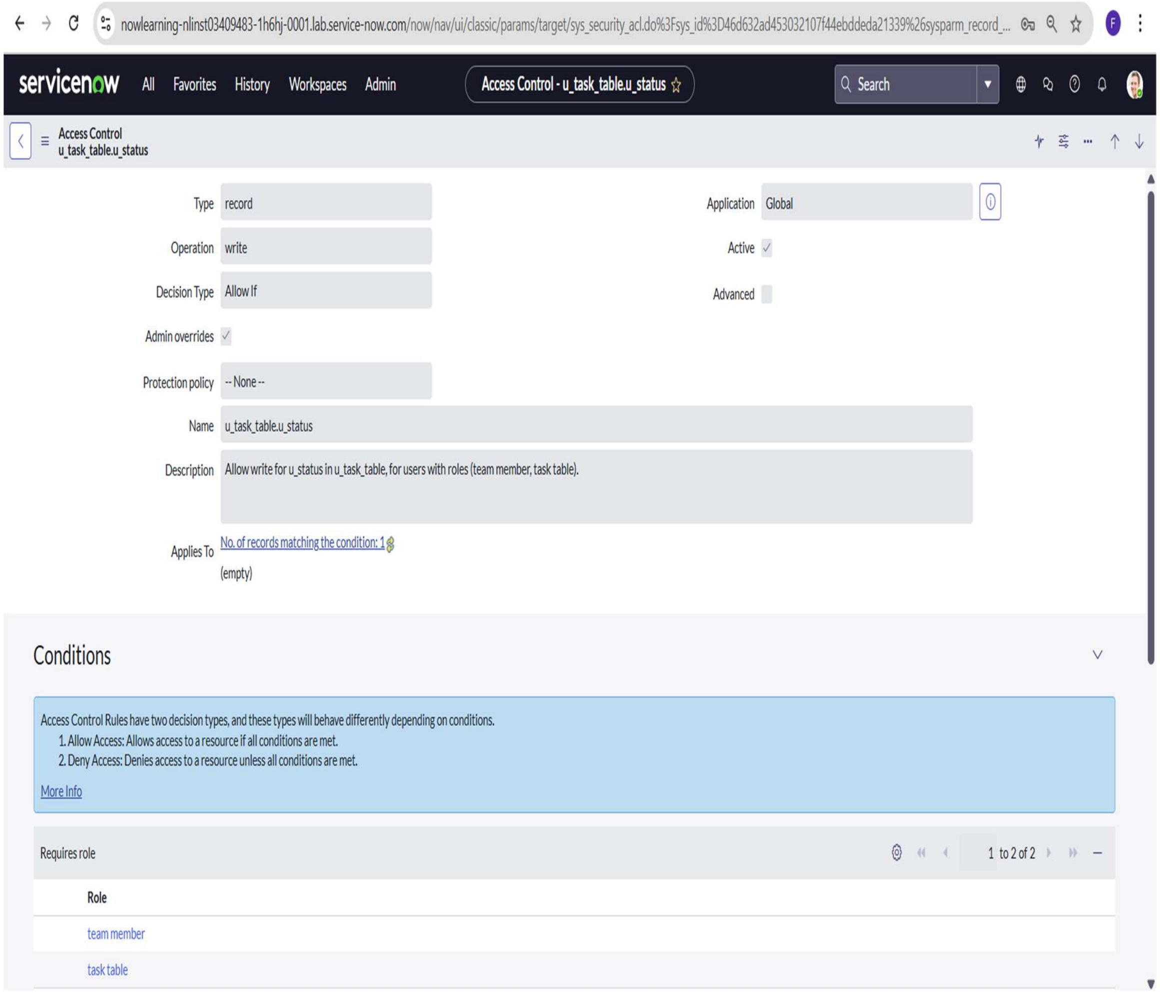
Type	record	Application	Global
Operation	write	Active	✓
Decision Type	Allow If	Advanced	□
Admin overrides	✓		
Protection policy	-- None --		
Name	u_task_table.u_status		
Description	Allow write for u_status in u_task_table, for users with roles (team member, task table).		
Applies To	No. of records matching 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 — 1 to 2 of 2

Role
team member
task table


nowlearning-nlinst03409483-1h6hj-0001.lab.service-now.com/now/nav/ui/classic/params/target/sys_security_acl.do%3Fsys_id%3D46d632ad453032107f44ebddeda21339%26sysparm_record_...
servicenow
All
Favorites
History
Workspaces
Admin
Access Control - u_task_table.u_status ☆
Search
Access Control
u_task_table.u_status

Type	record
Operation	write
Decision Type	Allow If
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)
Application	Global
Active	✓
Advanced	□

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.

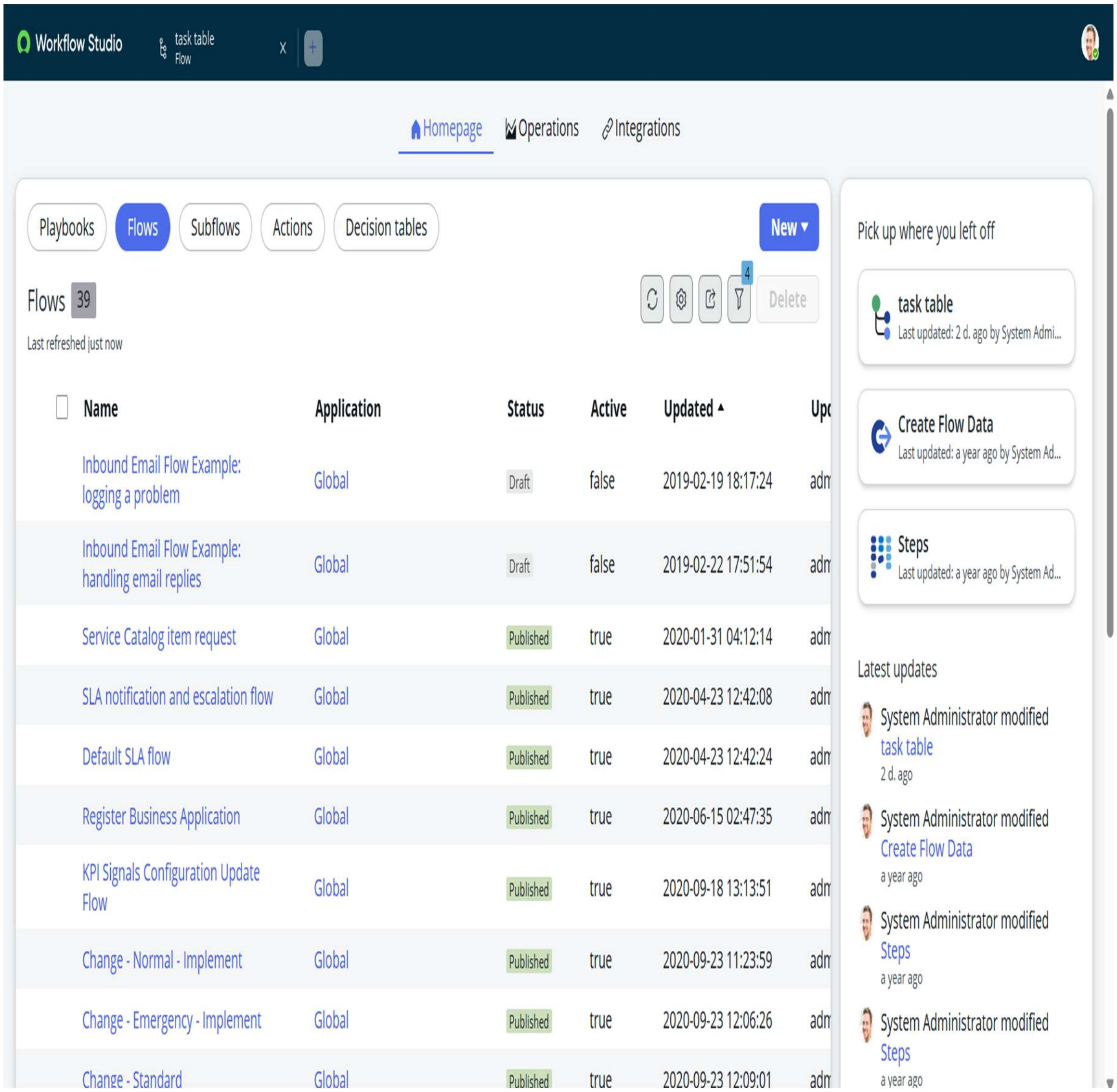
More Info

Requires role — 1 to 2 of 2

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.



Flows 39

Last refreshed just now

Name	Application	Status	Active	Updated ▲	Upc
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

Pick up where you left off

task table
Last updated: 2 d. ago by System Admi...

Create Flow Data
Last updated: a year ago by System Ad...

Steps
Last updated: a year ago by System Ad...

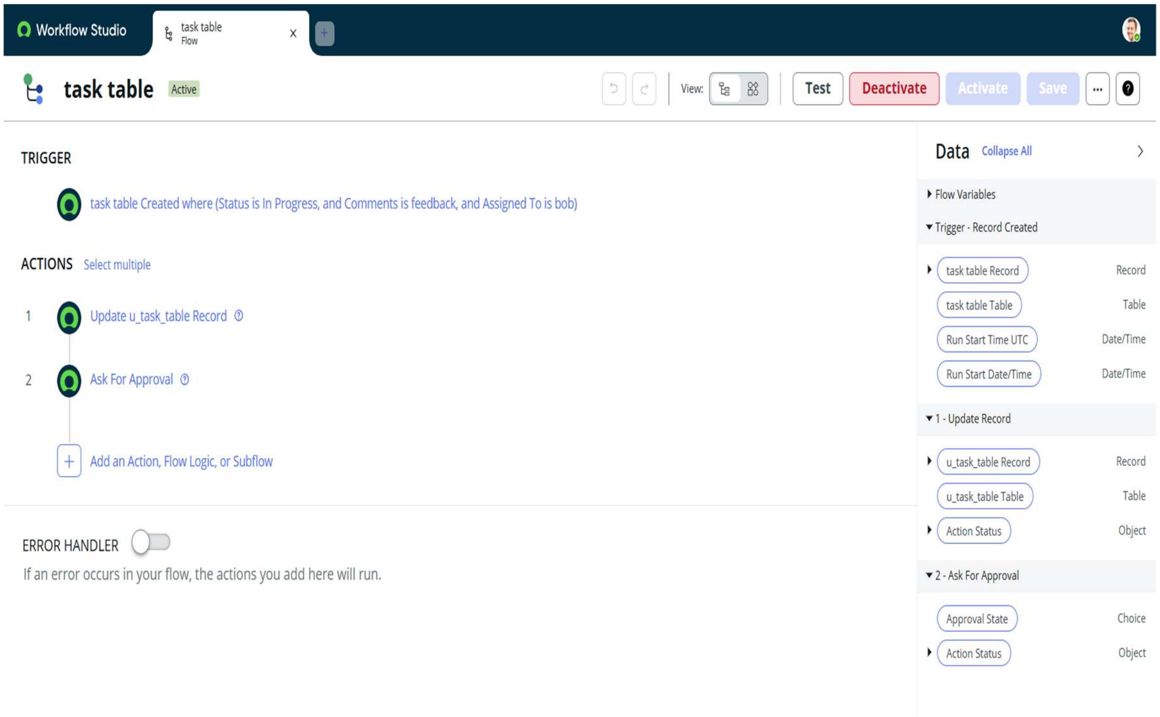
Latest updates

System Administrator modified task table
2 d. ago

System Administrator modified Create Flow Data
a year ago

System Administrator modified Steps
a year ago

System Administrator modified Steps
a year ago



task table Active

TRIGGER

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

ACTIONS

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

- Flow Variables
- Trigger - Record Created

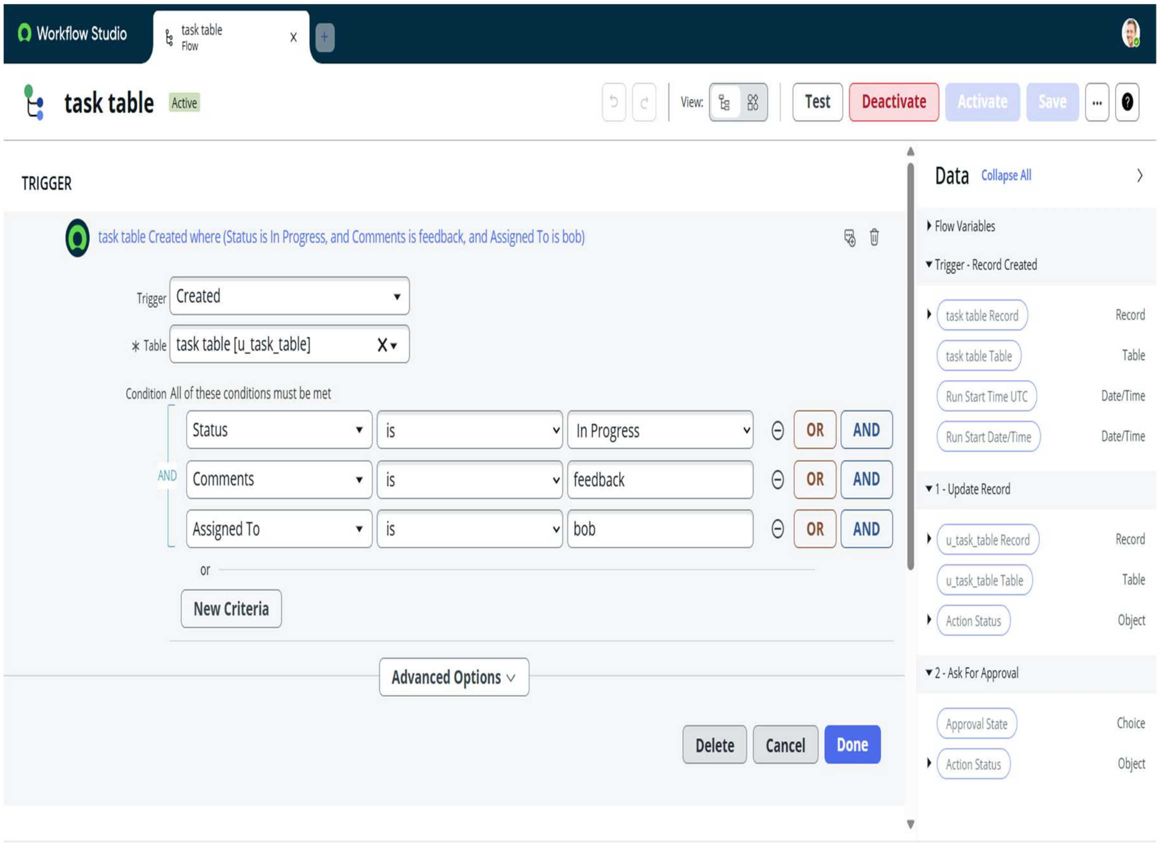
task table Record	Record
task table Table	Table
Run Start Time UTC	Date/Time
Run Start Date/Time	Date/Time

- 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



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
AND	Comments	is	feedback
	Assigned To	is	bob

or

Data

- 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

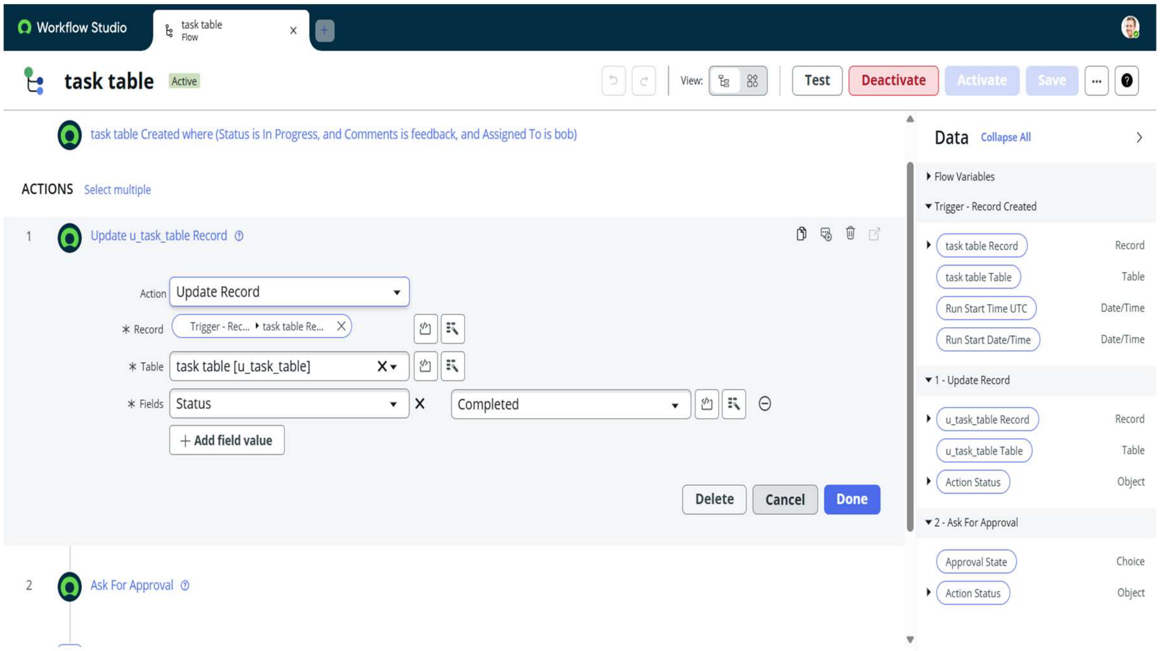
- 1 - Update Record

u_task_table Record	Record
u_task_table Table	Table
Action Status	Object

- 2 - Ask For Approval

Approval State	Choice
Action Status	Object

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.



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

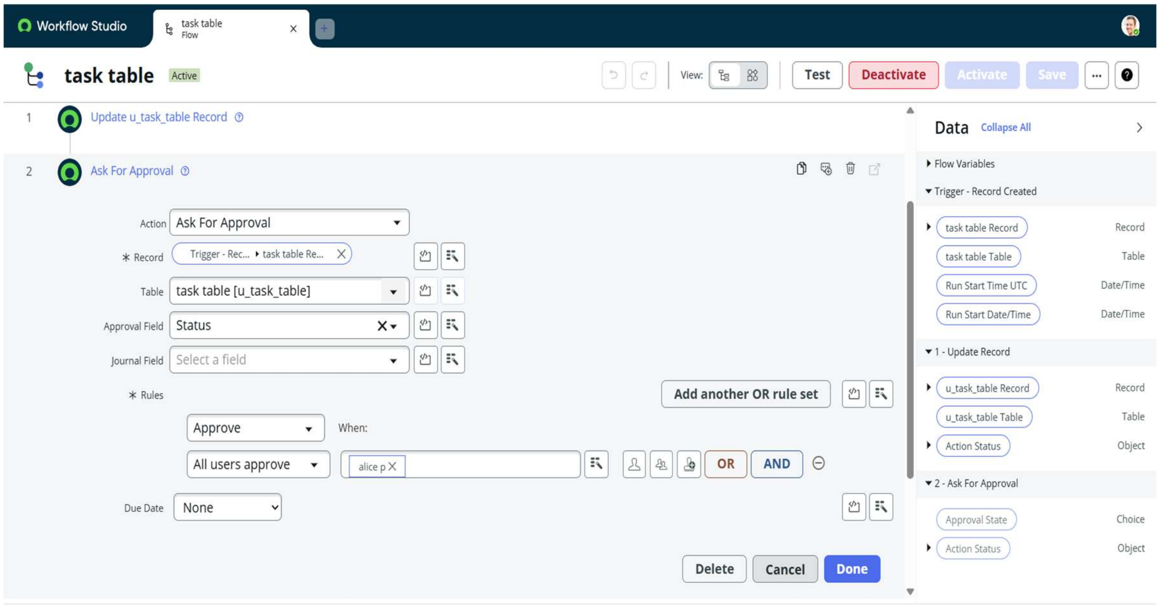
Action: Update Record

∗ Record: Trigger - Rec... ▸ task table Re...

∗ Table: task table [u_task_table]

∗ Fields: Status — Completed

2 Ask For Approval



1 Update u_task_table Record

2 Ask For Approval

Action: Ask For Approval

∗ Record: Trigger - Rec... ▸ task table Re...

Table: task table [u_task_table]

Approval Field: Status

Journal Field: Select a field

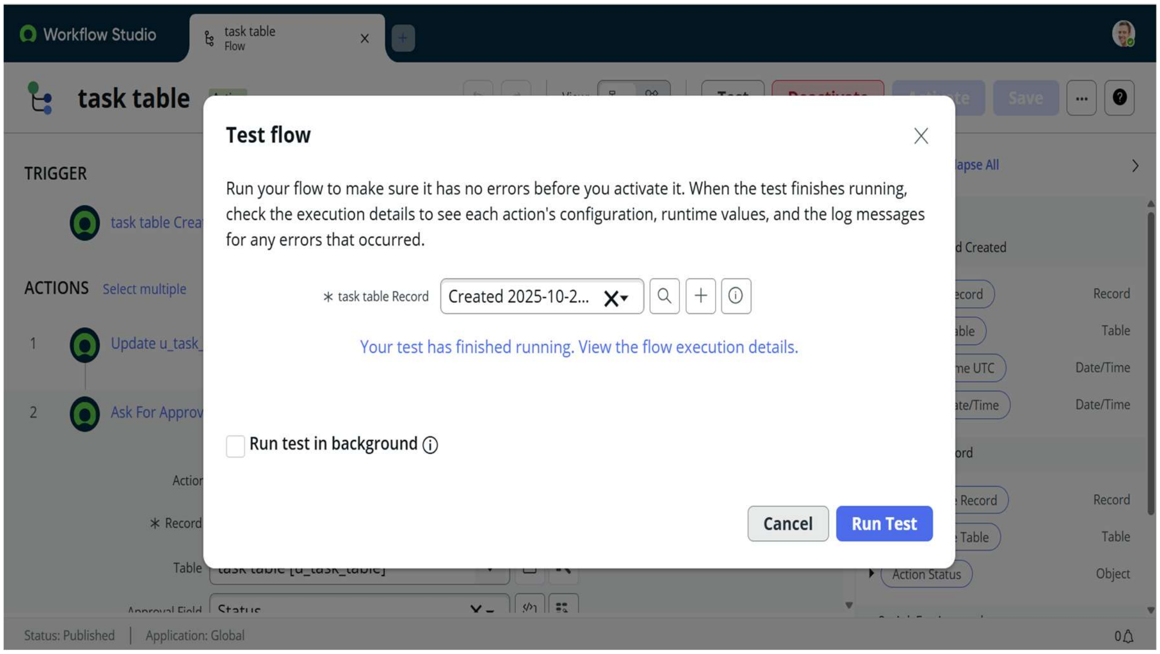
∗ Rules

Approve When:

All users approve — alice p

Due Date: None

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.



Test flow

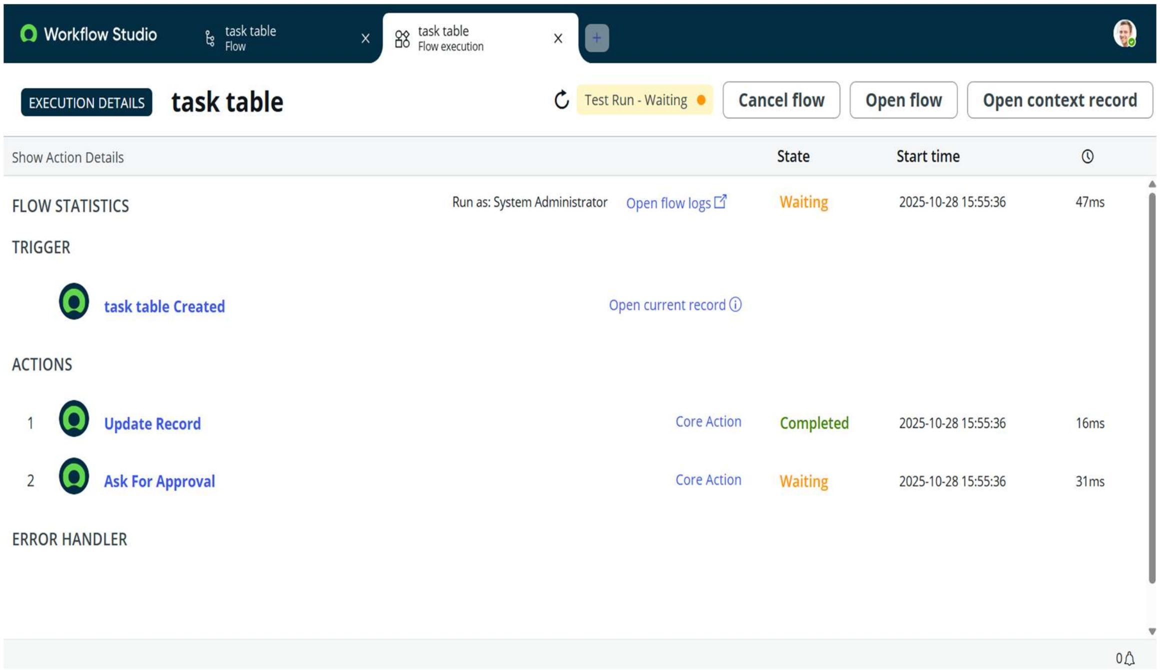
Run your flow to make sure it has no errors before you activate it. When the test finishes running, check the execution details to see each action's configuration, runtime values, and the log messages for any errors that occurred.

* task table Record: Created 2025-10-2...

Your test has finished running. View the flow execution details.

□ Run test in background

Cancel | Run Test

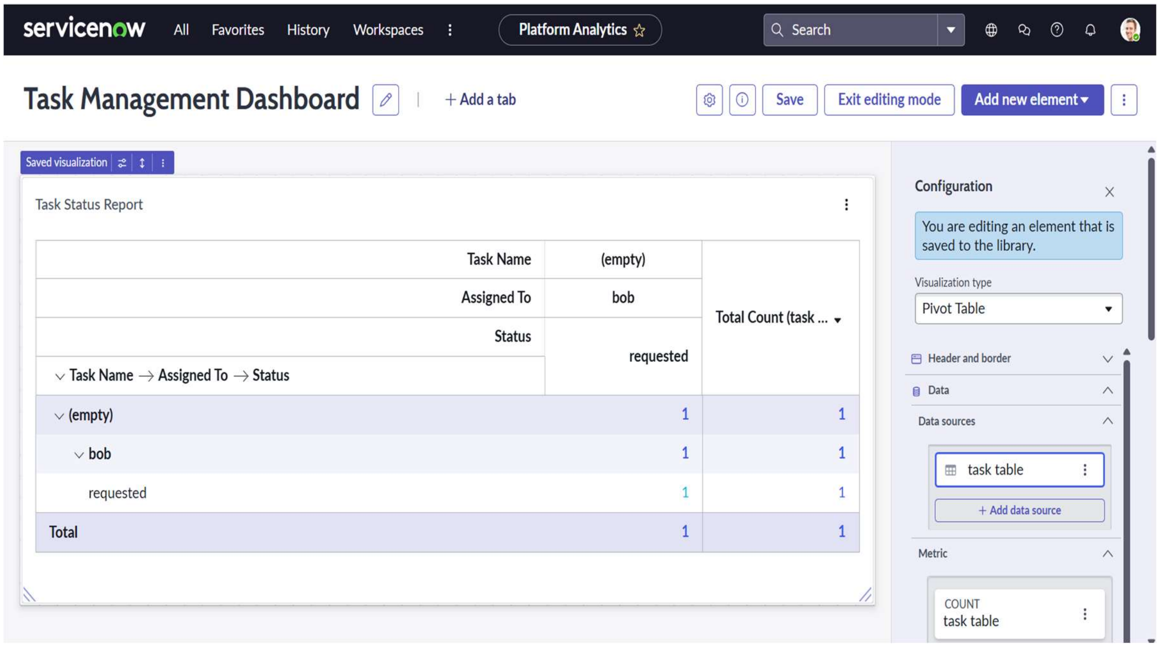


EXECUTION DETAILS **task table**

Test Run - Waiting ● | Cancel flow | Open flow | Open context record

Show Action Details			State	Start time	⏱
FLOW STATISTICS	Run as: System Administrator	Open flow logs	Waiting	2025-10-28 15:55:36	47ms
TRIGGER					
task table Created	Open current record				
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					

• 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.



Task Management Dashboard

Task Status Report

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

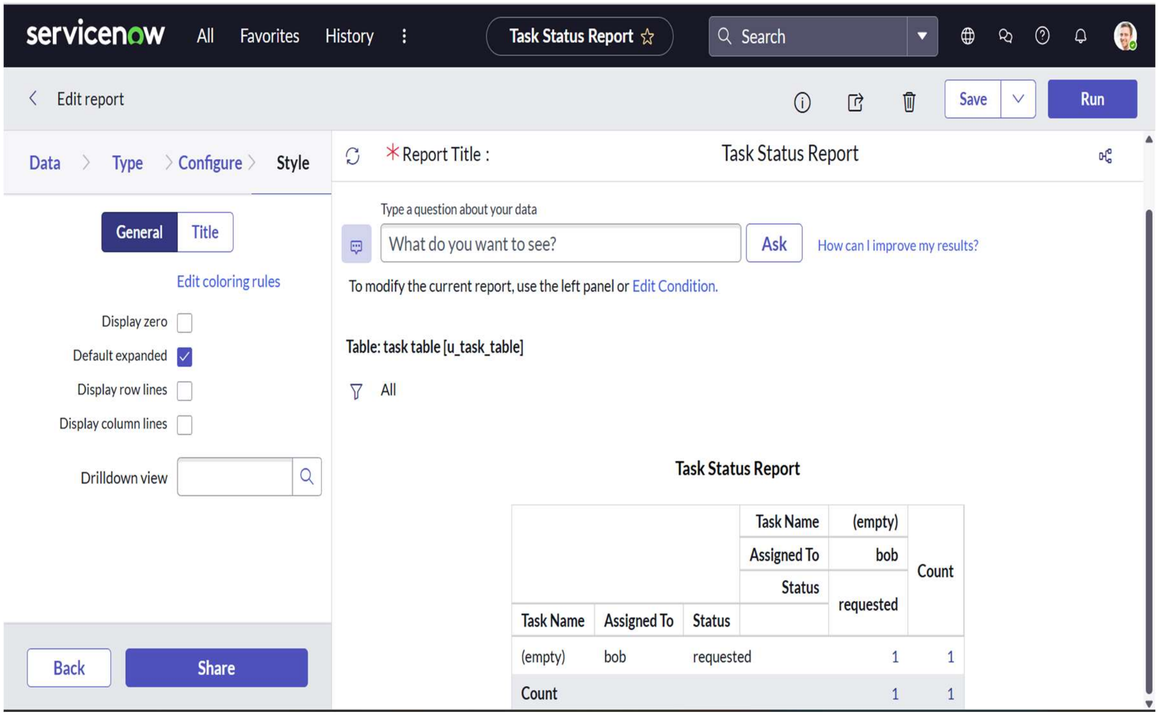
Configuration

You are editing an element that is saved to the library.

Visualization type: Pivot Table

Data sources: task table

Metric: COUNT task table



*Report Title : Task Status Report

Type a question about your data

What do you want to see?

To modify the current report, use the left panel or Edit Condition.

Table: task table [u_task_table]

All

Display zero □

Default expanded ☑

Display row lines □

Display column lines □

Drilldown view

Task Status Report

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