



Phase – 2: Backend Development & Configurations

Data Architecture

Description

The Data Architecture phase focuses on defining and validating how data flows across standard ServiceNow tables during the lifecycle of a **Software Installation Request**. This activity ensures that the solution leverages **out-of-the-box ServiceNow tables** to maintain data integrity, scalability, and compliance with ITSM best practices.

A data-driven approach is adopted where each stage of the request lifecycle—from submission to approval and fulfillment—is mapped to its corresponding backend table. This structured data model enables accurate tracking, auditing, and automation without the need for custom tables.

Data Flow Architecture

The Software Installation Request follows the standard ServiceNow Service Catalog lifecycle as outlined below:

Service Catalog Item (sc_cat_item)

↓

Request (sc_request) → REQ

↓

Requested Item (sc_req_item) → RITM

↓

Approval (sysapproval_approver)

↓

Catalog Task (sc_task) → SCTASK

Each component plays a specific role in ensuring seamless request processing and fulfillment.

Key Data Components and Responsibilities

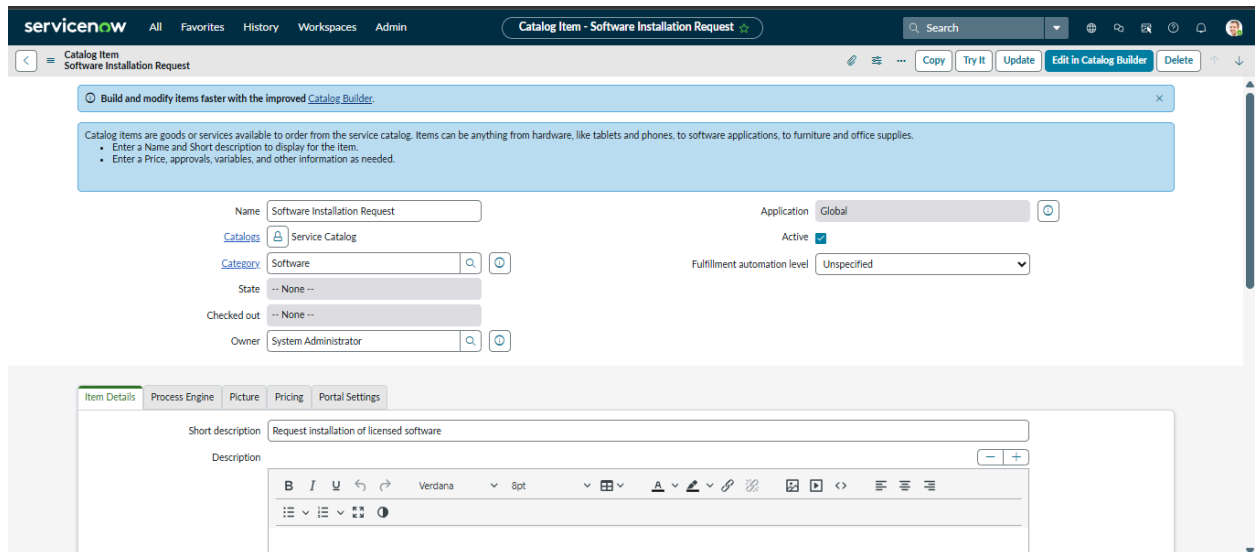
1. Service Catalog Item (**sc_cat_item**)

The **Software Installation Request** catalog item serves as the entry point for employees to request licensed software through the Service Portal. It captures user input via catalog variables such as software name, version, license type, and justification.

Upon submission, this catalog item automatically initiates the creation of backend request records without manual intervention.

Screenshot Evidence:

Screenshot showing the Software Installation Request catalog item in ServiceNow.



The screenshot displays the 'Catalog Item - Software Installation Request' form in ServiceNow. The form is titled 'Catalog Item - Software Installation Request' and includes a search bar and navigation links. A blue banner at the top states: 'Build and modify items faster with the improved Catalog Builder. Catalog items are goods or services available to order from the service catalog. Items can be anything from hardware, like tablets and phones, to software applications, to furniture and office supplies. Enter a Name and Short description to display for the item. Enter a Price, approvals, variables, and other information as needed.'

The form fields include:

- Name: Software Installation Request
- Application: Global
- Category: Service Catalog
- State: -- None --
- Checked out: -- None --
- Owner: System Administrator
- Fulfillment automation level: Unspecified

The 'Short description' field contains the text 'Request installation of licensed software'. The 'Description' field is a rich text editor with a toolbar and a text area.

servicenow

AllFavoritesHistoryWorkspacesAdmin

Catalog Item - Software Installation Request

Search

CopyTry ItUpdateEdit in Catalog BuilderDelete

Catalog Item

Software Installation Request

Press Alt+0 for help

Add relevant tags to the Meta field using comma-separated list of tags. These tags will be used while searching the item. Not applicable if AI Search is configured.

Meta

CopyTry ItUpdateEdit in Catalog BuilderDelete

Related Links

[Item Diagnostic](#)[Run Point Scan](#)

Variables (3)Variable SetsCatalog UI PoliciesCatalog Client ScriptsAvailable ForNot Available ForCategories (1)Catalogs (1)Catalog Data Lookup DefinitionsRelated ArticlesRelated Catalog ItemsAssigned Topics

OrderSearch

Actions on selected rows...New

Catalog Item - Software Installation Request

Type	Read only	Mandatory	Question	Name	Order	Tooltip	Created
Single Line Text	false	true	Software Name	software_name	100	Enter the name of the software	2025-12-31 21:56:30
Single Line Text	false	true	Software Version	software_version	200	Enter required version	2025-12-31 21:58:13
Multiple Choice	false	false	License Type	license_type	300	Select the license type	2025-12-31 22:01:48

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HomeService CatalogSoftware

Software Installation

Request installation of licensed software

* Software Name

Excel

* Software Version

2021, 17.08

License Type

☒ Free☐ Paid☐ Trial

Choose a file or drag it here.

Copy and paste clipboard files here.

Order Confirmation

Request for

System Administrator

☐ Delivery Information (Optional)

☐ Special Instructions (Optional)

CancelCheckout

Quantity: 1

Delivery Time: 2 Days

Add to Cart

Save as Draft

Order Now

Submitting...

servicenow

KnowledgeCatalogRequestsSystem StatusCartToursSystem Administrator

HomeRequest Summary - REQ0010010Search Catalog

Submitted: 2025-12-31 23:26:28
Request Number: REQ0010010
Estimated Delivery: 2026-01-02

Item	Delivery Date	Stage	Price (each)	Quantity	Total
Software Installation Request	2026-01-02	Request Approval	---	1	---
					Total: \$0.00

2. Request (sc_request) – REQ

The Request record represents the overall service request raised by the user. It stores high-level request details such as the requester, requested for user, and overall request state.

Each submission of the Software Installation Request generates a unique REQ number, allowing centralized tracking of the request.

 **Screenshot Evidence:**
Screenshot showing the generated Request (REQ) record.

servicenowAll Favorites History Workspaces AdminRequest - REQ0010010

Search

DiscussFollowUpdateCancel RequestCopyDelete

NumberREQ0010010

Requested forSystem Administrator

Location

Due date2026-01-02 23:26:28

Price\$0.00

Description

Short description

Special instructions

Opened2025-12-31 23:26:28

Opened bySystem Administrator

ApprovalApproved

Request stateApproved

UpdateCancel RequestCopyDelete

Requested Items (1)Approvers

Number

Search

Actions on selected rows...

Request = REQ0010010

Number	Quantity	Catalog	Item	Due date	Price	Assigned to	Stage
RITM0010010	1	(empty)	Software Installation Request	2026-01-02 23:26:28	\$0.00	(empty)	<div></div>

1 to 1 of 1

3. Requested Item (**sc_req_item**) – RITM

For each catalog item submitted, a corresponding Requested Item (RITM) record is created. The RITM contains detailed request data, including catalog variables entered by the user and the workflow context.

The RITM acts as the primary record for approvals and fulfillment processing in the software installation lifecycle.



Snapshot Evidence:

Snapshot showing the Requested Item (RITM) with populated catalog variables.

The screenshot shows the ServiceNow interface for a Requested Item (RITM) record with ID RITM0010010. The form is titled "Requested Item - RITM0010010" and includes a search bar and navigation links (Discuss, Follow, Update, Delete). The form is divided into two main sections: "Requested Item" and "Variables".

Requested Item Fields:

- Number: RITM0010010
- Item: Software Installation Request
- Request: REQ0010010
- Requested for: System Administrator
- Due date: 2026-01-02 23:26:28
- Configuration item:
- Watch list:
- Opened: 2025-12-31 23:26:28
- Opened by: System Administrator
- Stage: Assess or Scope Task
- State: Open
- Quantity: 1
- Estimated delivery:
- Backordered: ☐
- Order Guide:

Variables Section:

- Software Name: Excel
- Software Version: 2021.17.08
- License Type: ☒ Free, ☐ Paid, ☐ Trial

4. Catalog Variables Storage (**sc_item_option** / **sc_item_option_mtom**)

Catalog variable values entered by the requester are stored using ServiceNow's standard variable tables. The **sc_item_option_mtom** table links variable values to the corresponding RITM, ensuring structured and relational data storage.

This confirms that no custom tables are required to manage request inputs.



Snapshot Evidence:

*Snapshot from **sc_item_option_mtom.list** showing variable values linked to the RITM.*

The screenshot shows the 'Variable Ownership' page in ServiceNow. The table lists 'Parent Item' and 'Dependent Item' with their respective IDs. The 'Parent Item' column includes RITM0010006, RITM0010009, RITM0010006, RITM0010010, RITM0010007, RITM0010007, RITM0010004, RITM0010004, RITM0010007, RITM0010002, RITM0010003, RITM0010003, RITM0010002, RITM0010002, RITM0010008, RITM0010001, RITM0010005, RITM0010008, and RITM0010001. The 'Dependent Item' column contains various GUIDs. The row for RITM0010010 is highlighted.

Parent Item	Dependent Item
RITM0010006	8b98495e8382b610a67095d0deead313
RITM0010009	f77559af83823210a67095d0deead3c0
RITM0010006	4398495e8382b610a67095d0deead313
RITM0010010	84f4256f83463210a67095d0deead3fb
RITM0010007	dc13d1e683823a10a67095d0deead31c
RITM0010007	9013d1e683823a10a67095d0deead31d
RITM0010004	908c5d4683863610a67095d0deead3ca
RITM0010004	1c8c5d4683863610a67095d0deead3c9
RITM0010007	1013d1e683823a10a67095d0deead31c
RITM0010002	a6f0598e83063610a67095d0deead3b7
RITM0010003	eb19d1ce83463610a67095d0deead30f
RITM0010003	6719d1ce83463610a67095d0deead30f
RITM0010002	22f0598e83063610a67095d0deead3b7
RITM0010002	eef0598e83063610a67095d0deead3b7
RITM0010008	64ffdda683063a10a67095d0deead327
RITM0010001	b221b44283423610a67095d0deead396
RITM0010005	77250a4683ca3610a67095d0deead31c
RITM0010008	e8ffdda683063a10a67095d0deead327
RITM0010001	fe21b44283423610a67095d0deead395

The screenshot shows the 'Requested Item - RITM0010010' form in ServiceNow. The form includes fields for Number, Item, Request, Requested for, Due date, Configuration item, Watch list, Opened, Opened by, Stage, State, Quantity, Estimated delivery, Backordered, and Order Guide. The 'Variables' section shows Software Name (Excel), Software Version (2021.17.08), and License Type (Free).

Field	Value
Number	RITM0010010
Item	Software Installation Request
Request	REQ0010010
Requested for	System Administrator
Due date	2026-01-02 23:26:28
Configuration item	
Watch list	
Opened	2025-12-31 23:26:28
Opened by	System Administrator
Stage	Assess or Scope Task
State	Open
Quantity	1
Estimated delivery	
Backordered	<input checked="" type="checkbox"/>
Order Guide	

5. Approval (sysapproval_approver)

Approvals for the Software Installation Request are managed using the `sysapproval_approver` table. Approval records are dynamically generated through workflow or Flow Designer and are linked to the Requested Item (RITM).

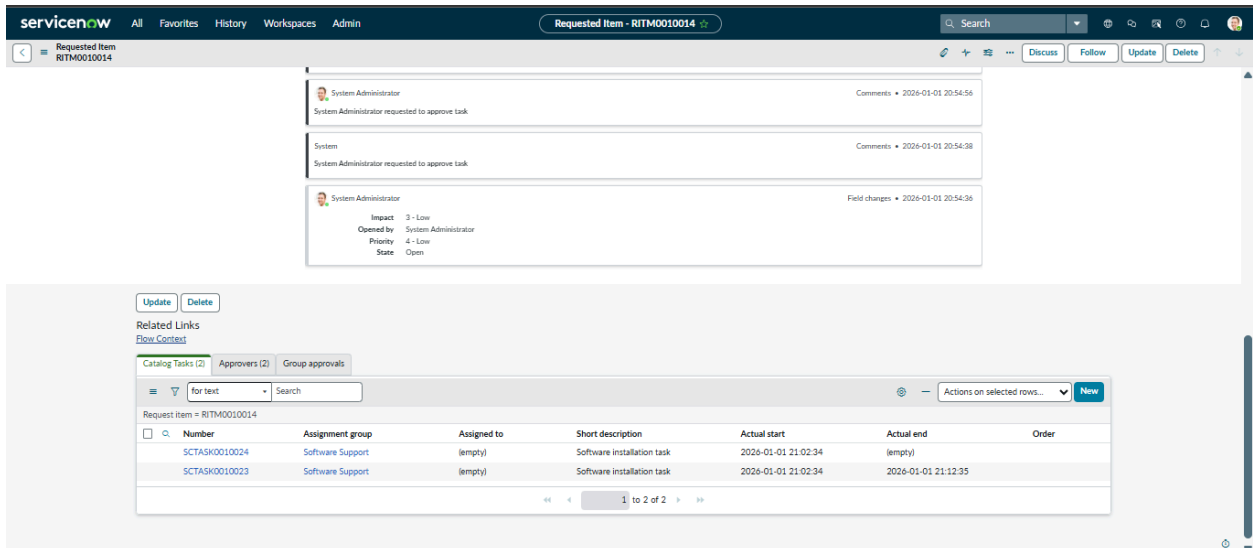
This ensures proper authorization, auditability, and compliance with organizational policies.

Screenshot Evidence:

Screenshot showing approval records in the sysapproval_approver table linked to the RITM.

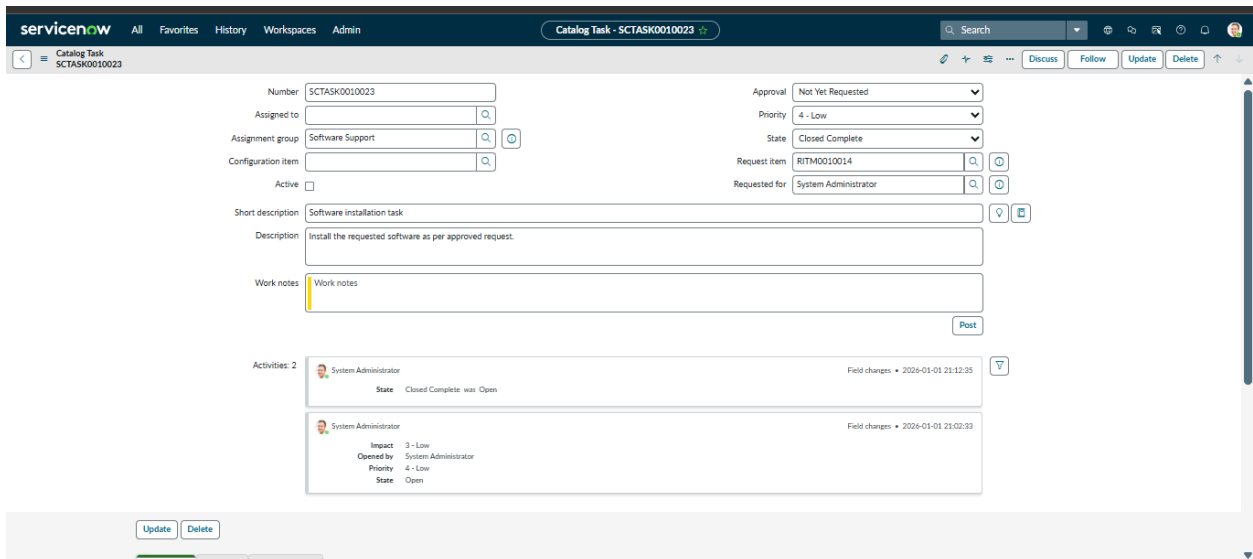
Screenshot Evidence:

Screenshot showing the Catalog Task (SCTASK) linked to the Requested Item.



This screenshot shows the 'Requested Item - RITM0010014' page in ServiceNow. The top navigation bar includes 'All', 'Favorites', 'History', 'Workspaces', and 'Admin'. The main content area displays a list of comments and field changes. Below this, the 'Related Links' section shows 'Catalog Tasks (2)', 'Approvers (2)', and 'Group approvals'. A table lists the catalog tasks linked to this request item.

Number	Assignment group	Assigned to	Short description	Actual start	Actual end	Order
SCTASK0010024	Software Support	(empty)	Software installation task	2026-01-01 21:02:34	(empty)	
SCTASK0010023	Software Support	(empty)	Software installation task	2026-01-01 21:02:34	2026-01-01 21:12:35	



This screenshot shows the 'Catalog Task - SCTASK0010023' page in ServiceNow. The top navigation bar includes 'All', 'Favorites', 'History', 'Workspaces', and 'Admin'. The main content area displays a form for the catalog task, including fields for Number, Assigned to, Assignment group, Configuration item, Active, Short description, Description, Work notes, and Activities. The 'Activities' section shows a list of activities performed on the task.

Number	Assigned to	Assignment group	Configuration item	Active	Short description	Description	Work notes	Activities
SCTASK0010023		Software Support		<input type="checkbox"/>	Software installation task	Install the requested software as per approved request.		<ul style="list-style-type: none">System Administrator: State Closed Complete was OpenSystem Administrator: Impact 3 - Low, Opened by System Administrator, Priority 4 - Low, State Open

Validation and Observations

The end-to-end data flow was validated by submitting test requests through the Service Portal. The following were confirmed:

- Automatic creation of REQ and RITM records upon catalog submission
- Proper storage of catalog variables linked to the RITM
- Approval records generated in the sysapproval_approver table
- Fulfillment tasks created and linked correctly to the RITM

This confirms that the data architecture follows standard ServiceNow design principles and supports scalable automation.

Outcome

The data-driven workflow approach establishes a robust backend architecture for managing software installation requests. By leveraging standard ServiceNow tables and relationships, the solution ensures data consistency, traceability, and compliance while avoiding unnecessary customization. This architecture provides a strong foundation for workflow automation, reporting, and future enhancements within the ServiceNow platform.