

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 shows the ServiceNow interface for editing a catalog item. The top navigation bar includes 'All', 'Favorites', 'History', 'Workspaces', and 'Admin'. The title bar says 'Catalog Item - Software Installation Request'. The main content area has a header 'Build and modify items faster with the improved Catalog Builder.' Below this, there's a note about catalog items being goods or services available to order from the service catalog, with instructions to enter a name and short description, and a price if applicable. The form fields include:

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

Below the form, there are tabs for 'Item Details', 'Process Engine', 'Picture', 'Pricing', and 'Portal Settings'. The 'Item Details' tab is active, showing a 'Short description' field containing 'Request installation of licensed software' and a rich text editor below it.

servicenow All Favorites History Workspaces Admin Catalog Item - Software Installation Request

Catalog Item Software Installation Request

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

Press Alt+0 for help

Copy Try It Update Edit in Catalog Builder Delete

Related Links

Item Diagnostic Run Point Scan

Variables (3) Variable Sets Catalog UI Policies Catalog Client Scripts Available For Not Available For Categories (1) Catalogs (1) Catalog Data Lookup Definitions Related Articles Related Catalog Items Assigned Topics

Order Search 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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servicenow Home > Service Catalog > Software Installation

Software Installation Request installation of licensed software

Software Name: Excel

Software Version: 2021.17.08

License Type: Free

Order Confirmation

Request for: System Administrator

Delivery Information (Optional)

Special instructions (Optional)

Cancel Checkout

Quantity: 1

Delivery Time: 2 Days

Add to Cart Save as Draft Order Now

Submitting...

Choose a file or drag it here. Copy and paste clipboard files here.

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.

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)	Request Approval

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.

📸 Screenshot Evidence:

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

The screenshot shows the ServiceNow interface for a Requested Item (RITM). The top navigation bar includes 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', and 'Admin'. The title bar says 'Requested Item - RITM0010010'. The main area displays various fields for the RITM record, including:

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

Below these fields is a section titled 'Variables' containing:

- * Software Name: Excel
- * Software Version: 2021.17.08
- Licence 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.

📸 Screenshot Evidence:

Screenshot from `sc_item_option_mtom.list` showing variable values linked to the RITM.

The screenshot shows a ServiceNow grid titled "Variable Ownerships". The columns are "Parent Item" and "Dependent Item". The "Parent Item" column lists various RITM IDs, and the "Dependent Item" column lists corresponding GUIDs. A specific row for RITM0010010 is selected, highlighted in blue.

Parent Item	Dependent Item
RITM0010006	8b98495e8382b610a67095d0deaad313
RITM0010009	f77559af83823210a67095d0deaad3c0
RITM0010006	4398495e8382b610a67095d0deaad313
RITM0010010	84f4256f83463210a67095d0deaad3fb
RITM0010007	dcl3d16e8382310a67095d0deaad31c
RITM0010007	9013d16e8382310a67095d0deaad31d
RITM0010004	908c5d4d83863610a67095d0deaad3ca
RITM0010004	1c8c5d4d83863610a67095d0deaad3c9
RITM0010007	1013d16e8382310a67095d0deaad31c
RITM0010002	a6f0598e83063610a67095d0deaad3b7
RITM0010003	e819d1ce83463610a67095d0deaad30f
RITM0010003	6719d1ce83463610a67095d0deaad30f
RITM0010002	2210598e83063610a67095d0deaad3b7
RITM0010002	ee0f0598e83063610a67095d0deaad3b7
RITM0010008	64ffdd6a63063310a67095d0deaad327
RITM0010001	b221b44283423610a67095d0deaad396
RITM0010005	77250d4683ca3610a67095d0deaad31c
RITM0010008	e8ffdd6a63063310a67095d0deaad327
RITM0010001	fe21b44283423610a67095d0deaad395
RITM0010005	4b20598e83063610a67095d0deaad30f

The screenshot shows the "Requested Item - RITM0010010" detail view. The top section displays basic information: Number (RITM0010010), Item (Software Installation Request), Request (REQ0010010), Requested for (System Administrator), Due date (2026-01-02 23:26:28), Configuration item (empty), and Opened by (System Administrator). The bottom section, titled "Variables", contains fields for Software Name (Excel) and Software Version (2021.17.08), along with a License Type section where "Free" is selected.

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.

The screenshot shows the ServiceNow interface for a Requested Item (RITM0010014). At the top, there are several activity logs:

- System Administrator requested to approve task (Comments • 2026-01-01 20:54:56)
- System Administrator requested to approve task (Comments • 2026-01-01 20:54:38)
- System Administrator (Impact 3 - Low, Opened by System Administrator, Priority 4 - Low, State Open) (Field changes • 2026-01-01 20:54:36)

Below the logs, there is a section for Catalog Tasks (2), Approvers (2), and Group approvals. The Catalog Tasks table shows:

State	Approver	Comments	Created
Approved	System Administrator		2026-01-01 20:54:56
No Longer Required	System Administrator		2026-01-01 20:54:38

At the bottom, there are Update and Delete buttons.

The screenshot shows the ServiceNow interface for an Approval (Requested Item: RITM0010014). It displays the following information:

- Approver: System Administrator, State: Approved
- Approval Reason: Approval required for software installation request
- Summary of item being approved:

Description	Price	Quantity	Total
Request installation of licensed software	\$0.00	1	\$0.00

 A Comments field is present with a Post button.
- Activities (2):
 - System Administrator: Approved was Requested (Field changes • 2026-01-01 21:02:33)
 - System Administrator: Requested (Field changes • 2026-01-01 20:54:56)

At the bottom, there are Update and Delete buttons.

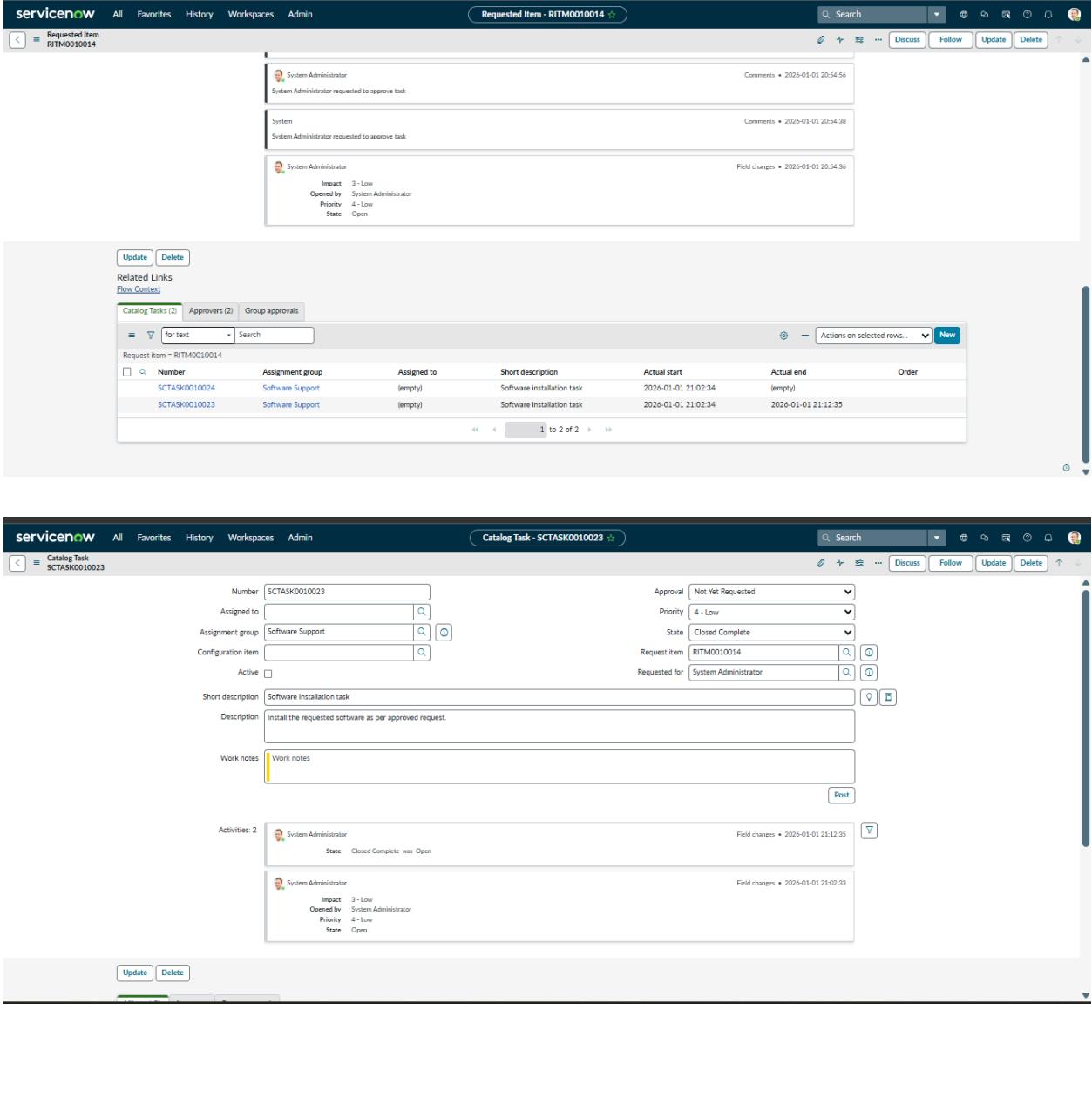
6. Catalog Task (`sc_task`) – SCTASK

Once approvals are completed, fulfillment tasks are created in the `sc_task` table. These tasks are assigned to the IT Software Support or Asset Management teams for installation and configuration activities.

Each catalog task is linked back to the corresponding RITM, ensuring traceability from request submission to fulfillment.

Screenshot Evidence:

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



The image contains two screenshots of the ServiceNow interface, illustrating the relationship between a Requested Item and its associated Catalog Task.

Screenshot 1: Requested Item - RITM0010014

This screenshot shows the Requested Item details page. At the top, it displays the title "Requested Item - RITM0010014". Below the title, there are three comments from "System Administrator" regarding the task approval:

- Comment 1: "System Administrator requested to approve task" (Comments • 2026-01-01 20:54:56)
- Comment 2: "System Administrator requested to approve task" (Comments • 2026-01-01 20:54:58)
- Comment 3: "Impact 3 - Low
Opened by System Administrator
Priority 4 - Low
State Open" (Field changes • 2026-01-01 20:54:58)

Below the comments, there is a "Catalog Tasks" list:

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	

Screenshot 2: Catalog Task - SCTASK0010023

This screenshot shows the Catalog Task details page for "SCTASK0010023". It includes fields such as Number, Assignment group, Assigned to, Short description, Description, Work notes, and various status dropdowns. The "Work notes" field contains the text "Work notes".

At the bottom of the task details, there are two activity logs:

- Activity 1: "System Administrator State Closed Complete was Open" (Field changes • 2026-01-01 21:12:25)
- Activity 2: "Impact 3 - Low
Opened by System Administrator
Priority 4 - Low
State Open" (Field changes • 2026-01-01 21:02:33)

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.