

# **Project Design Phase – Backend Development & Configurations**

## **Automated Network Request Management in ServiceNow**

### **1. Introduction to the Project Design Phase**

The **Project Design Phase** is a critical stage in the implementation of the Automated Network Request Management system in ServiceNow. This phase focuses on translating the approved planning outputs into a detailed technical and functional design. It acts as the blueprint for backend development, automation, and UI/UX customization.

In this project, the Design Phase accounts for **50% of the overall project weightage**, emphasizing its importance in ensuring system scalability, maintainability, and user satisfaction. The design phase is divided into two major areas: - **Backend Development & Configurations** - **UI/UX Development & Customization**

This document covers **Data Architecture**, **Automation Logic**, **Business Rules**, and **Interface Design elements** such as navigation flow, usability, tooltips, and help text.

### **2. Backend Development & Configurations**

Backend design ensures that the system is robust, secure, and capable of handling automated workflows efficiently. In ServiceNow, this involves designing tables, relationships, flows, and server-side logic.

### **3. Data Architecture**

#### **3.1 Overview of Data Architecture**

The data architecture defines how data is stored, managed, and related within the ServiceNow platform. For Automated Network Request Management, the architecture is designed to support: - Structured request intake - Task-level tracking - Approval and audit history - SLA monitoring

The design follows ServiceNow best practices by extending existing base tables instead of creating standalone custom tables.

## 3.2 Table Design

### 3.2.1 Network Request Table

- Table Name: u\_network\_database
- Extends: sc\_req\_item

Purpose: - Stores all network-related service requests - Acts as the parent record for approvals and tasks

Key Fields: - Request Number (Auto-generated) - Requested For - Request Type (LAN, WAN, VPN, Firewall, IP Allocation) - Business Justification - Priority - Approval Status - Requested Date - SLA Target

The screenshot shows the configuration interface for the 'Network Database' table. At the top, there are fields for 'Label' (Network Database), 'Name' (u\_network\_database), and 'Extends table' (sc\_req\_item). On the right, there are options for 'Application' (Global), 'Create module' (checked), 'Create mobile module' (checked), 'Add module to menu' (dropdown set to '-- Create new --'), 'New menu name' (text input), 'Remote Table' (checkbox), and 'Class' (Table). Below this, a table titled 'Dictionary Entries' lists various columns with their types and properties:

Column label	Type	Reference	Max length	Default value	Display
Sys ID	Sys ID (GUID)	(empty)	32	false	false
Updated	Date/Time	(empty)	40	false	false
Device Details	String	(empty)	40	false	false
Requested Number	String	(empty)	40	false	false
Created by	String	(empty)	40	false	false
Customer Document	String	(empty)	40	false	false
Date of Enquiry	Date	(empty)	40	false	false
Customer Address	String	(empty)	40	false	false
Created	Date/Time	(empty)	40	false	false
Updated by	String	(empty)	40	false	false
Updates	Integer	(empty)	40	false	false

### 3.2.2 Network Task Table

- Table Name: u\_network\_task
- Extends: task

Purpose: - Tracks individual tasks created for fulfilling network requests

Key Fields: - Task Number - Parent Network Request - Assignment Group - Assigned To - Task State - Work Notes - Resolution Details

The screenshot shows the ServiceNow Table Definition interface for the 'Network Task' table. At the top, there are fields for 'Label' (Network Task), 'Name' (u\_network\_task), 'Application' (Global), 'Extends table' (Task), and 'Class' (Table). Below this is a table titled 'Dictionary Entries' with columns: Column label, Type, Reference, Max length, Default value, and Display. The table lists various task-related fields like Short description, Upon reject, Actual start, Expected start, Approval history, Updated, Urgency, Business duration, User input, Description, Active, Additional comments, Opened, and SLA due.

Column label	Type	Reference	Max length	Default value	Display
Short description	String	(empty)	40	false	
Upon reject	String	(empty)	40	cancel	false
Actual start	Date/Time	(empty)	40		false
Expected start	Date/Time	(empty)	40		false
Approval history	Journal	(empty)	4,000		false
Updated	Date/Time	(empty)	40		false
Urgency	Integer	(empty)	40	3	false
Business duration	Duration	(empty)	40		false
User input	User Input	(empty)	4,000		false
Description	HTML	(empty)	8,000		false
Active	True/False	(empty)	40	true	false
Additional comments	Journal Input	(empty)	4,000		false
Opened	Date/Time	(empty)	40	javascript:gs.nowDateTime()	false
SLA due	Due Date	(empty)	40		false

### 3.3 Table Relationships

- One Network Request can have multiple Network Tasks (One-to-Many)
- Network Tasks inherit common task properties such as state, priority, and assignment

### 3.4 Data Integrity and Validation

- Mandatory fields enforced at form level
- Choice lists standardized for request types and priorities
- Reference fields used for users and groups
- Duplicate request prevention logic

## 4. Automation Logic

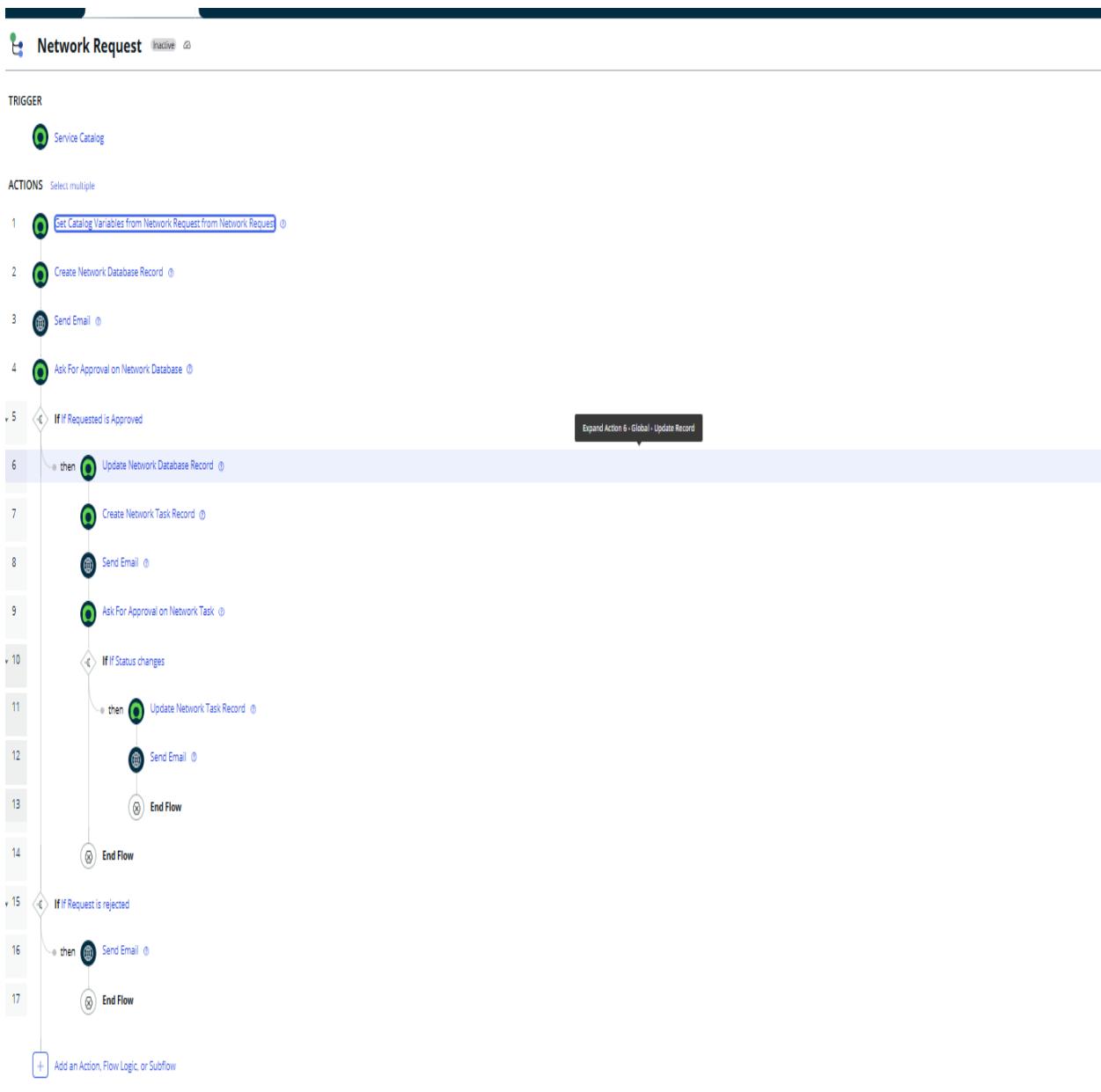
### 4.1 Overview of Automation Strategy

Automation is implemented using **ServiceNow Flow Designer**, ensuring low-code, maintainable, and scalable solutions.

Automation goals:

- Reduce manual intervention
- Ensure consistent execution
- Improve turnaround time

## 4.2 Flow Design



#### **4.2.1 Request Submission Flow**

Trigger: - When a Network Request record is created

Flow Actions: 1. Validate request details 2. Categorize request type 3. Set priority and SLA  
4. Trigger approval flow

#### **4.2.2 Approval Flow**

- Manager approval for standard requests
- Security approval for firewall and VPN requests
- Conditional branching based on request type

#### **4.2.3 Task Creation Flow**

- Automatically create Network Task records
- Assign tasks to appropriate network group
- Send notifications to assignees

#### **4.2.4 Closure Flow**

- Update request status on task completion
- Send completion notification to requester
- Close request with audit trail

### **4.3 Error Handling and Notifications**

- Flow failure handling with admin alerts
- User-friendly error messages
- Retry logic for failed actions

## **5. Business Rules**

### **5.1 Purpose of Business Rules**

Business Rules are used for **server-side validations and background processing** that cannot be handled by UI policies or flows alone.

### **5.2 Key Business Rules Implemented**

#### **5.2.1 Auto Assignment Rule**

- Trigger: Before insert / update
- Logic:
  - If request type = VPN → assign VPN Network Group
  - If request type = Firewall → assign Security Network Group

### **5.2.2 Priority Calculation Rule**

- Calculates priority based on business impact and urgency

### **5.2.3 Data Consistency Rule**

- Prevents request closure if related tasks are still open

## **5.3 Performance Considerations**

- Minimal use of synchronous business rules
- Preference for async processing where applicable

## **6. UI/UX Development & Customization**

The UI/UX design ensures that the system is intuitive, efficient, and accessible for all user roles.

## **7. Interface Design**

### **7.1 Service Portal Design**

- Custom Network Request catalog page
- Clean and minimal layout
- Role-based visibility of catalog items

### **7.2 Form Design**

- Logical grouping of fields
- Mandatory fields clearly marked
- Conditional field display using UI Policies

## **8. Navigation Flow**

### **8.1 User Navigation Flow**

1. Login to ServiceNow Portal
2. Select Network Services
3. Choose required Network Request
4. Fill and submit request form
5. Track request status

## 8.2 Network Team Navigation Flow

1. Access assigned Network Tasks
2. Update task progress
3. Add work notes
4. Complete task

## 9. Usability Considerations

- Minimal clicks to submit requests
- Auto-filled user information
- Consistent form layouts
- Clear status indicators

The screenshot shows the ServiceNow interface for creating a 'Network Request'. The main form includes fields for User Name (Abraham Lincoln), Email ID (abraham.lincoln@example.com), Phone Number (8907654321), Type of Device (Mobile), and a note field containing 'anna Nagar'. A question 'Is this request opened on behalf of someone else?' has 'Yes' selected. Below the form is an 'Add attachments' section with a file upload area. To the right, a sidebar displays quantity (1), delivery time (2 Days), and buttons for 'Add to Cart', 'Save as Draft', and 'Order Now'. The top navigation bar includes links for Knowledge, Catalog, Requests, System Status, Cart, Tours, and System Administrator.

Created	Recipients	Subject	Type	Notification type	User ID
2025-12-24 01:22:12	admin@example.com	Request REQ0010008 was created	send-ready	SMTP	(empty)
2025-12-24 01:22:12	admin@example.com	Request REQ0010008 was approved	send-ready	SMTP	(empty)
2025-12-24 00:00:13	admin@example.com	Daily job to fetch Email Indicator Data and Email Notifications created completed with error	send-ready	SMTP	(empty)
2025-12-24 01:00:02	aleen.motter@example.com	Restocking Request For APC 42U 3100 SP2 NetShelter Rack	send-ready	SMTP	(empty)
2025-12-24 01:00:03	aleen.motter@example.com	Restocking Request For Fujitsu 1TB Hybrid Solid State Drive	send-ready	SMTP	(empty)
2025-12-24 01:00:04	aleen.motter@example.com	Restocking Request For Dell Inc. PowerEdge M710HD Blade Server	send-ready	SMTP	(empty)
2025-12-24 01:22:11	fred.luddy@example.com	Catalog Task SCTASK0010016 has been assigned to group Software	send-ready	SMTP	(empty)

## 10. Tooltips & Help Text

### 10.1 Purpose

Tooltips and help text improve usability by guiding users and reducing incorrect submissions.

### 10.2 Implementation

- Tooltips added for technical fields (IP Range, Firewall Port)
- Help text explaining approval process
- Inline descriptions for request types

## **11. Accessibility and User Experience Enhancements**

- Keyboard-friendly navigation
- Readable font sizes
- Error messages with corrective guidance

## **12. Conclusion**

The Project Design Phase provides a comprehensive technical and functional blueprint for implementing Automated Network Request Management in ServiceNow. By focusing on strong backend architecture, reliable automation, and intuitive UI/UX design, this phase ensures system efficiency, scalability, and user satisfaction.

This design enables seamless transition into the development and implementation phase while minimizing risks and rework.