Service Mapping

Top Down, Tag Based and Discovery Pattern Setup Guide

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Contents

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Overview:

- In this document we will give a complete overview of the difference between Discovery (Horizontal Discovery) and Service Mapping (Top-Down Discovery).
- We will discuss what products (CIs) can be discovered through Discovery and Service Mapping. We will also discuss benefits of using Service Mapping and its notable features. During this we will cover configuration and setup of Service Mapping for top-down and tag-based approach.
- In this document we will also explain about design patterns, mapping jobs, viewing the Service Map and Discovery Log message.

Difference between Discovery and Service Mapping:

- **ServiceNow Discovery:** The discovery product engages a “horizontal” method of uncovering organization’s devices that are on the network. These devices include desktops, laptops, printers, servers, routers, and switches. The discovery product updates the configuration management database (CMDB) with the information that it uncovers. Organizations primarily use the discovery product to improve asset management compliance and cost management as well as for preventive maintenance of devices that contribute to frequent incidents.

- **Service Mapping:** Service mapping allows organizations to quickly create an accurate picture of how their IT applications, equipment, and dependencies work together to deliver end-user services. Service Mapping utilizes a “top-down” approach to map the underlying components that comprise a business service. These components include applications, services, and data storage that are needed to enable services such as payroll, claims processing, or customer services to be successfully executed.
- It reduces the time taken to map a large number of services when compared to manual mapping. “Top-down” means that the Service Mapping product maps dependencies

between these components based on connections between them. Like Discovery, Service Mapping populates the CMDB with business service components. Organizations typically require Service Mapping to monitor the health of critical business services, minimize business service outages, and to be predictive in how they support and maintain key services.

Benefits of using Service Mapping:

- It speeds up the mapping process and enhances overall accuracy.
- It helps in obtaining control, diagnosing problems, and efficiently prioritizing.
- It executes a multi-cloud strategy with great precision.
- It helps in the preservation of existing investments.

Notable features of Service mapping:

- Tag-based, machine-learning, traffic-based, and top-down automation are all supported.
- The service maps rely on excellent accuracy, which identifies changes automatically.
- It supports multi-cloud, which integrates discovery and mapping with the most common cloud services.
- CMDB Integration, which helps with configuration management, configuration items, and more.

Chapter 1. Dependencies

- For the ‘Service Mapping’ ServiceNow App to work on a ServiceNow Instance, the following apps are required as well.

Name	Version
ServiceNow Instance	Orlando
ServiceNow Service Mapping Plugin	
EV390z Discovery	7.3.0
Mid Server Communication	

Chapter 2. Concepts

Service Mapping enables service owners to:

- Identify which of their business services are likely to be affected when an issue occurs on a Configuration Item (CI) in the business service. CIs can be any machine, component, or application associated with the business service.
- See if their business services will be affected when a change is requested for any CIs in their services.
- Drill down seamlessly from service maps into detailed asset information, providing a powerful integrated environment for resolving service issues and managing service changes.

Users will be able to create one or more sets of patterns in ServiceNow that will be used by the Service Mapping process. This process can run on demand or be scheduled to run when the user wants to run.

After the Service Mapping process has run, it will include the CIs that met the pattern conditions for the service they are associated with. The user can drill down into any of the CIs on the Service Map to get a relationship view of the CIs below and above it in the CI hierarchy.

Users can create and change the rules at any time, but the CIs associated with services will only be updated after the mapping process has run.

Chapter 3. Service Mapping Components

Credentials

The credentials are required by the app in order to add CIs to services without the intervention of a human user. The credentials only need to be configured once and then the scheduled job will be able to run using those credentials to add CIs to services.

Application Services

The application services are the applications which are running on the host. These applications can be used in Service Mapping. You can also link more than one application. See the ServiceNow documentation on how to "Link Application Services".

Patterns

The Patterns determine what CIs will be associated with the application services they are assigned to. Patterns contain criteria that a CI must match in order to be included in a service. You can AND these Patterns together to form more detailed criteria that the CIs need to meet.

Scheduled Job

The scheduled job is what runs through all the patterns defined, finds the CIs that match them, and associates them to their respective service. This Scheduled Job can either be run manually or set for automated runs.

Chapter 4. Creating the Credentials

Before running the Service Mapping Job, credentials need to be created so that it can add the CIs to the Application Services. This breaks down into three parts:

- Create a ServiceNow user
- Assign the roles required
- Configure the Service Mapping credentials

These steps are described in the following sections.

Create a ServiceNow User

A ServiceNow user needs to be created for the required roles to be assigned to.

- Within ServiceNow, search for **Users**.
- Select the **User Administration** > **Users option**.
- Click the **New** button to create a new user.
- Provide the following user details:

User ID: Any name that meets your company's policies. Password: Any password that meets your company's policies.

Password needs reset: Not selected. To make sure the password is not reset after first use.

Active: Selected

Web service access only: Selected

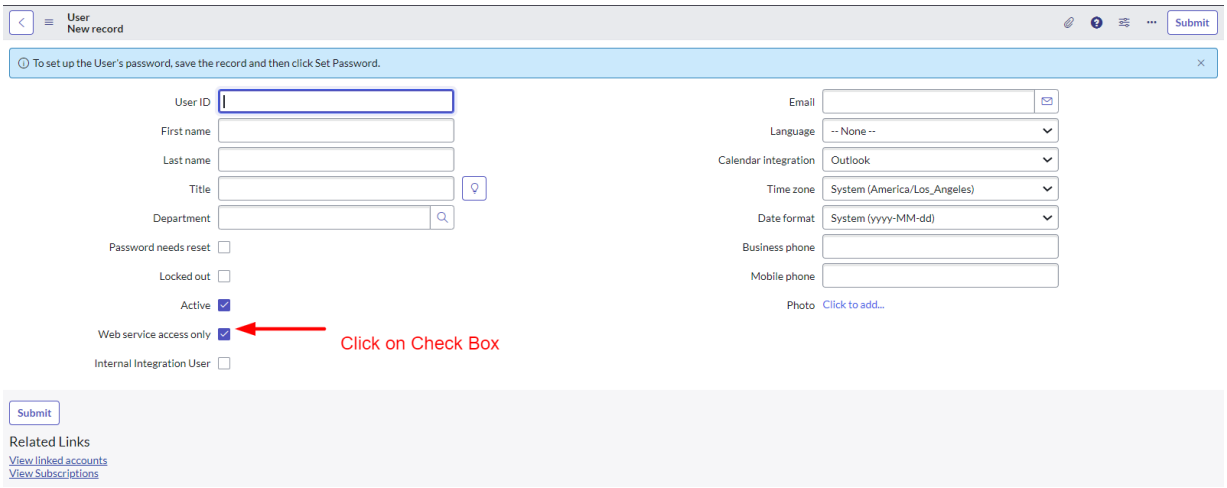

Fig. 1

- Upon completion, click the **Submit** button.

Assign the Required Roles

The ServiceNow User will require the correct roles assigned to it for the Service Mapping Job to function properly.

- In the **Users** – **User Administration** list view, select the user that you just created in the "Create a ServiceNow User" procedure.
- Once the User page is opened, scroll to the bottom and select the **Roles** tab.

Fig. 2

- Click **Edit** to open the UI for assigning roles.

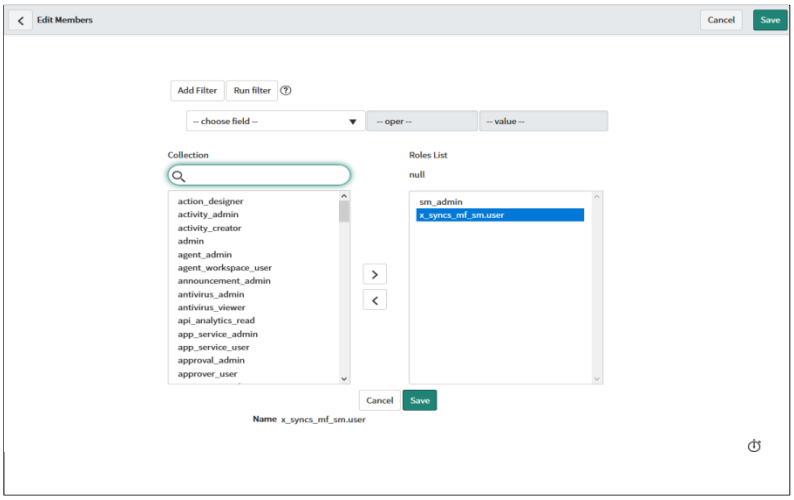

Fig. 3

- **Find and assign the following roles to the ServiceNow User**.
    - **sm_admin** - This role sets up the Service Mapping application. This user maps, fixes, and maintains business services. They also perform the product's advanced configuration and customization. Assign this role to application administrators.
    - **sm_user -** This role views business service maps to plan change or migrate as well as to analyze the continuity and availability of services. Assign this role to application users.
    - **sm_app_owner -** This role provides the information necessary to successfully map a business service. Once a service is mapped, this user reviews the results and either approves it or suggests changes. Assign the sm_app_owner role to users who own business services and are familiar with the infrastructure and applications that make up the services.

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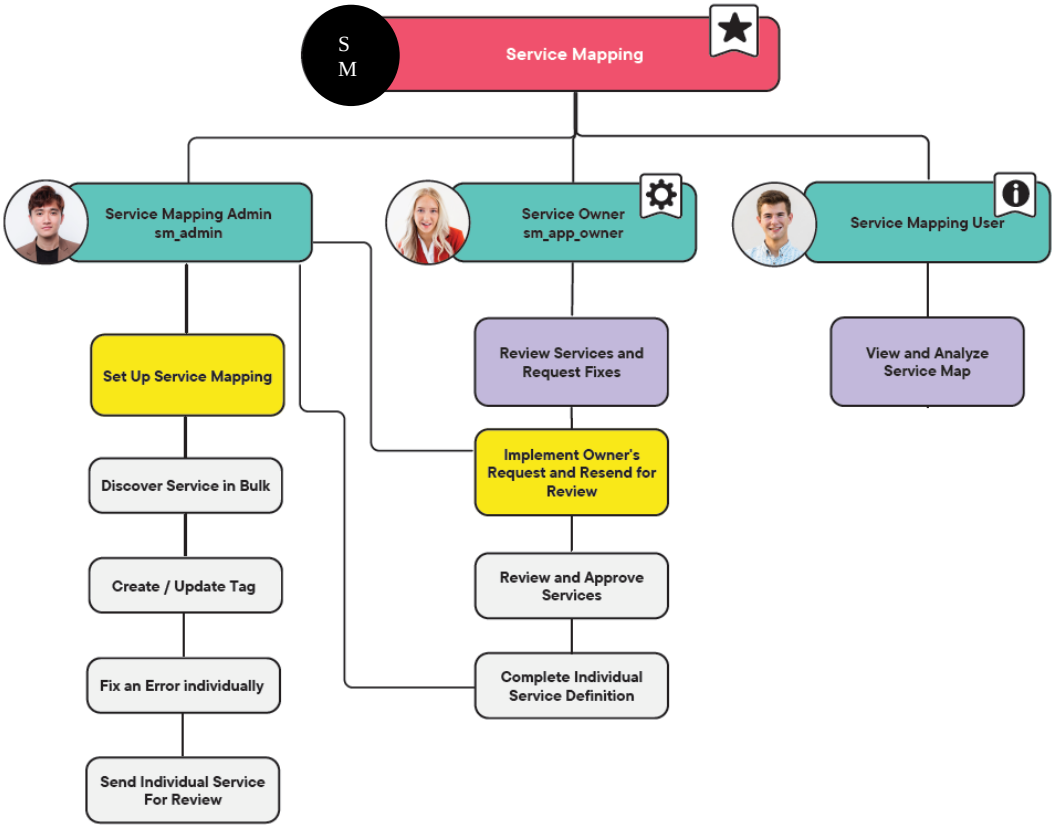

Fig. 4

- Click **Save** to assign the roles to the user.

Note: ServiceNow will automatically assign any required roles that go with the sm_admin role.

- Click **Update** when all the roles have been added to the user.

Configure the Service Mapping Credentials

- **Host credentials:**

Service Mapping uses credentials of the hosts to access applications running on the host. Typically, host credentials are enough for Service Mapping.

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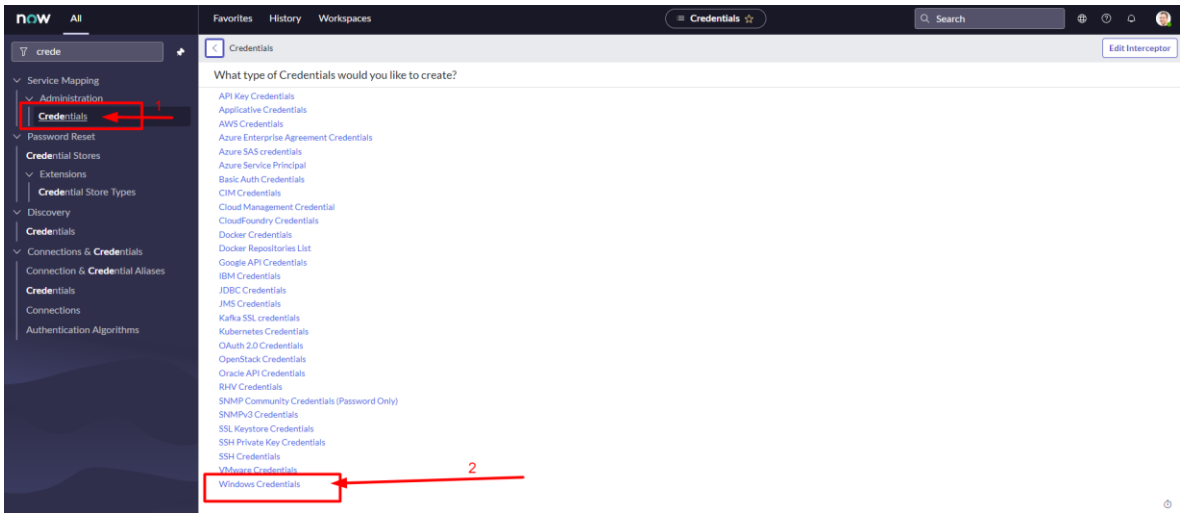

Fig. 5

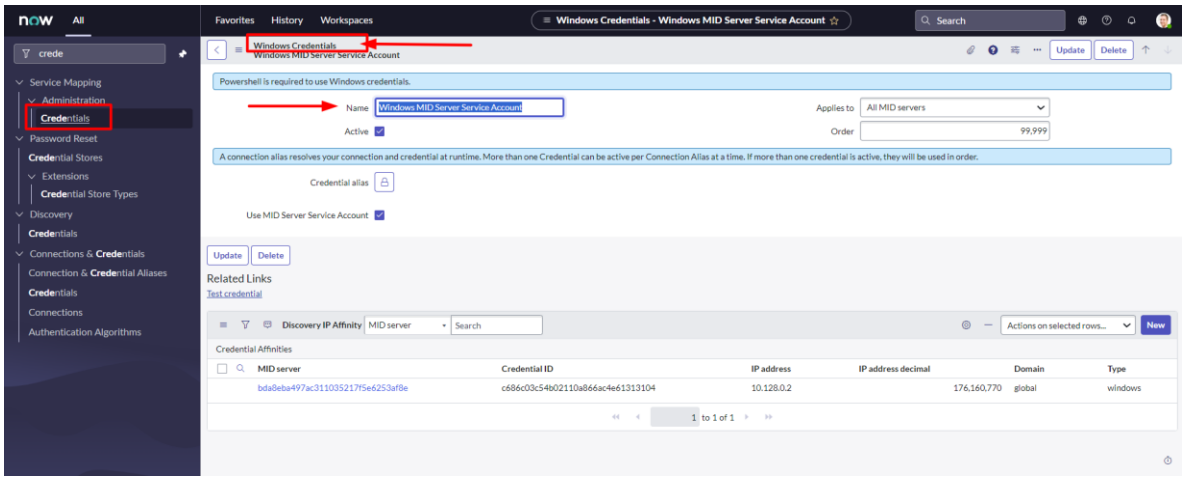

Fig. 6

Applicative credentials:

- To discover applications, Service Mapping needs separate credentials from credentials of the host on which such applications run. These credentials are referred to as applicative credentials in ServiceNow.

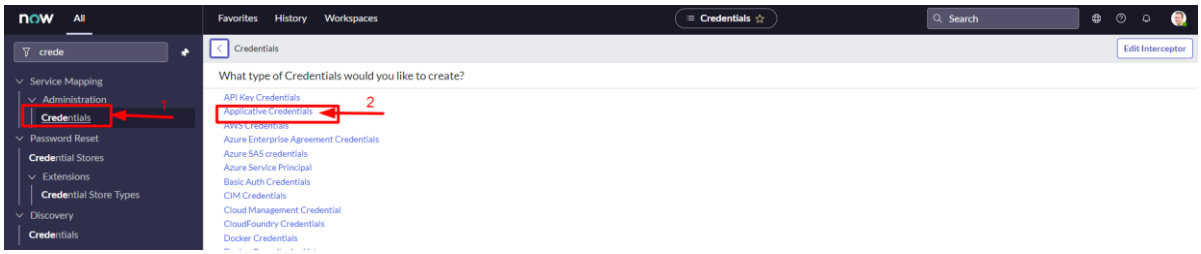

Fig. 7

- Once you have Discovery / Service Mapping installed on your instance, you will be able to navigate to a module called 'Credentials' via the Filter

Navigator. Here you need to enter your credentials. It is best practice to allow the customer or application / host owner to enter the credentials themselves on the instance rather than communicating them via email etc.

- Enter the required information for the user that was created during the "Create a ServiceNow User" procedure and click submit.

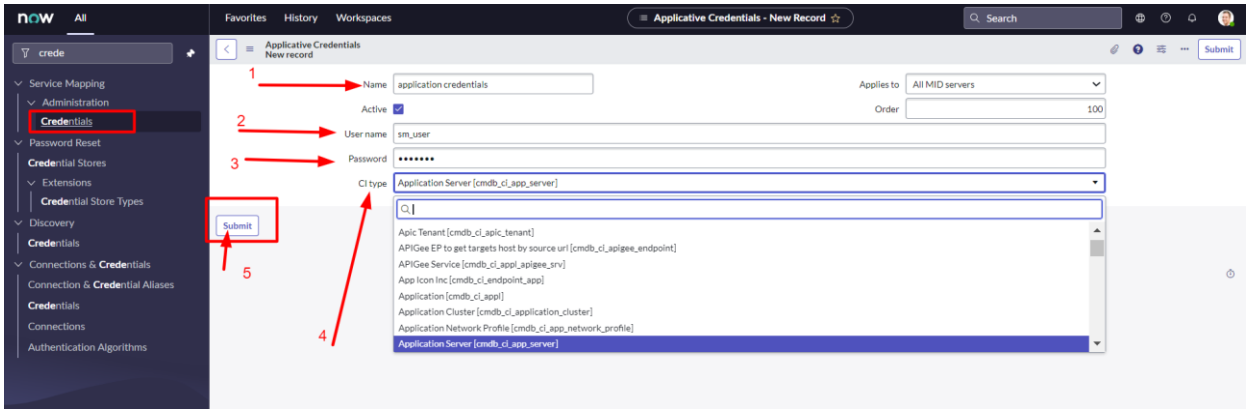

Fig. 8

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Chapter 5. Top Down Service Mapping

- **The ServiceNow CMDB is populated by three methods:**
  - Horizontal discovery
  - Top Down Service Mapping
  - 3rd party sources such as home grown or other vendor discovery applications with ServiceNow's automated identification and reconciliation framework. The attributes of configuration items are accurately and carefully populated only by the "trusted sources" as configured for each class or selected attributes.

- **Service Mapping provides these capabilities:**
  - Only discovers components of the service and ignores everything else
  - Allows IT Operations to become Service-Aware
  - Provides a targeted discovery of the IT infrastructure directly related to the service. Top-Down discovery discovers only the IT components that support the provisioning of the service

- **Mainly there are 4 Key components of Service Mapping:**
  - Mid Server
  - Discovery Pattern (Identifies Application and Connection).
  - Discovery Detection (Detect Hosts)
  - Identification and Reconciliation (Determine Insert and Updates to CMDB).

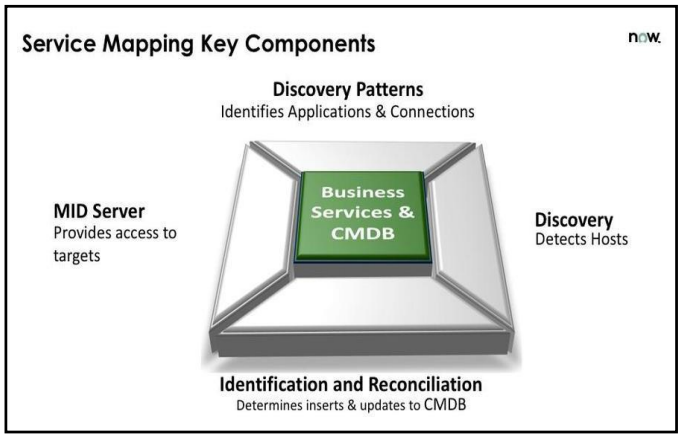

Fig. 9

- Understand Top-Down Discovery.
- Understand what the business problem service mapping will address.

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- Define the Datacenter and SMA – Service Mapping Architecture.
- Understand the Credential type, Applicative credential setup and Entry Point.
- Brief explanation of Map Services
- Process of Service Mapping

- **Top down Discovery (Also called Vertical Discovery):** Top Down Discovery is one of the types of Service Mapping which tracks all the dependent Business Services and CI's right from an entry point (starting point) and goes till the last node. It is a top down approach where you give it a starting point then it's starts discovering connections specific to that business service.
- **Business problem service mapping will address:**

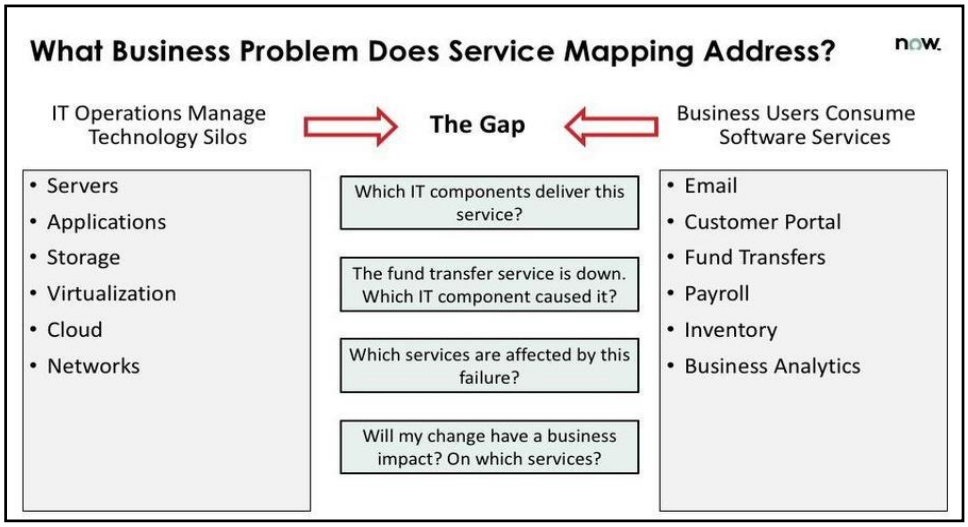

Fig. 10

- **Define Datacenter and SMA – Service Mapping Architecture**
  - During the Service Mapping, initially we need to set up Initial Discovery and Mid Server Architecture so that we can get actual visibility of the services using the Service Mapping.

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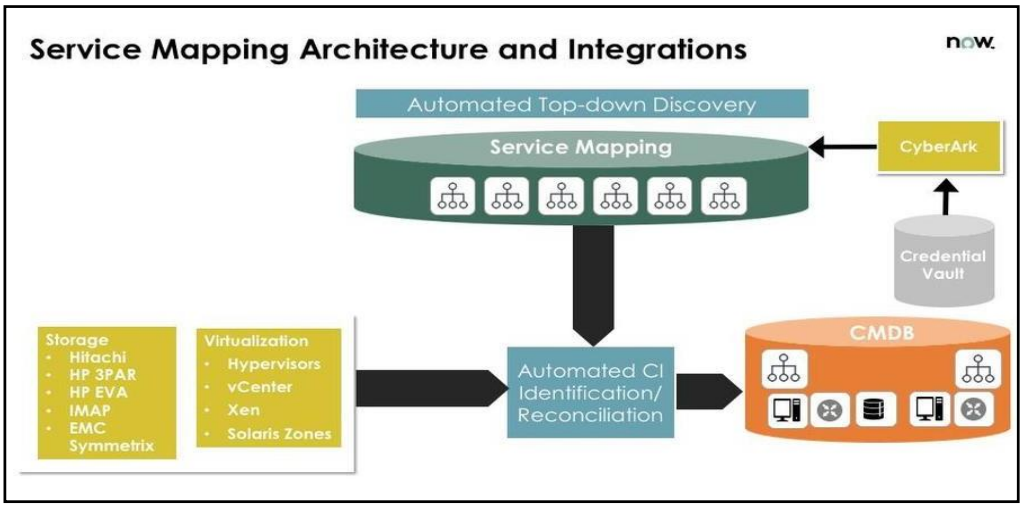

Fig. 11

- According to the services we can define a single Datacenter or Multiple Datacenters.

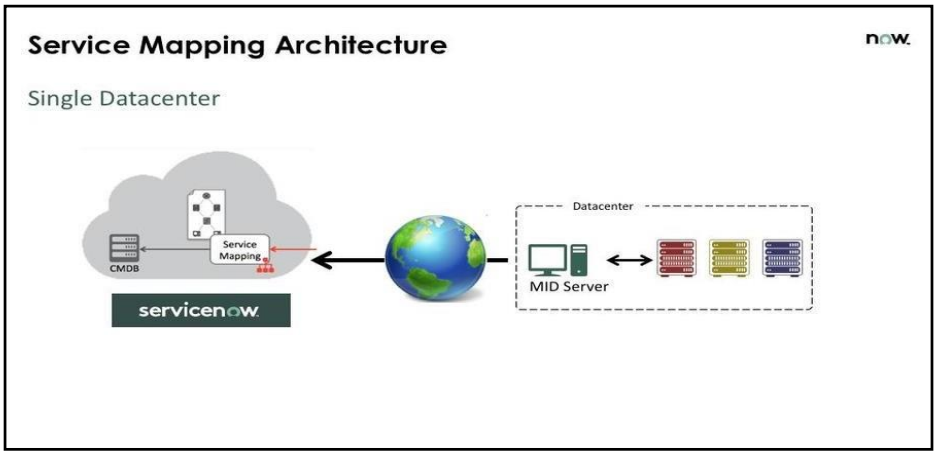

Fig. 12

- This image helps you to understand the Service Mapping utilized to discover the data based on a single datacenter.

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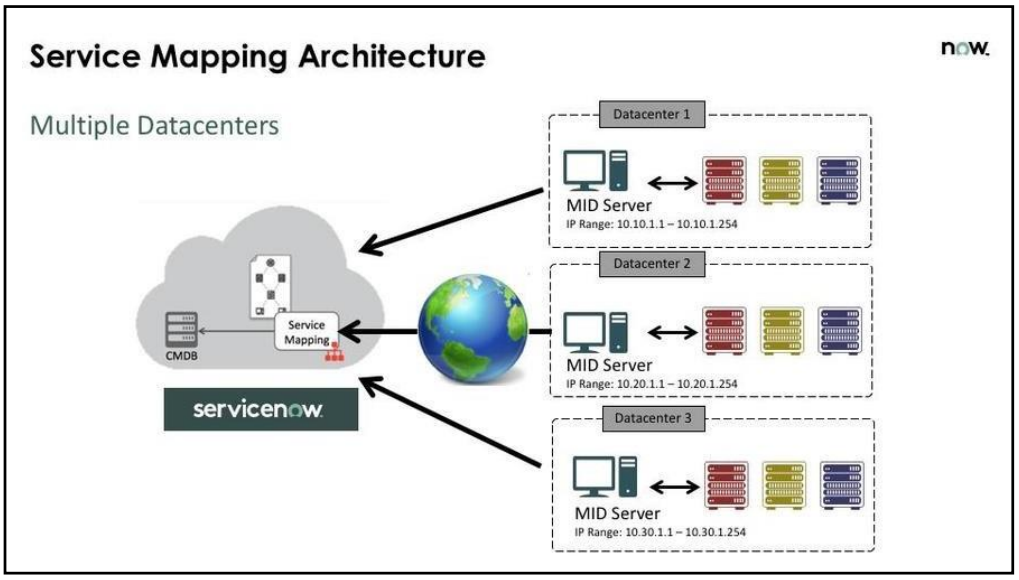

Fig. 13

This image helps you to understand the Service Mapping utilized to discover the data based on multiple datacenters.

- **Understand the Credential type, Applicative credential setup and Entry Point:** Typically, it is enough to create credentials for hosts only, but some applications require separate credentials from credentials of the host on which they run. This type of credential is referred to in ServiceNow as applicative credentials.

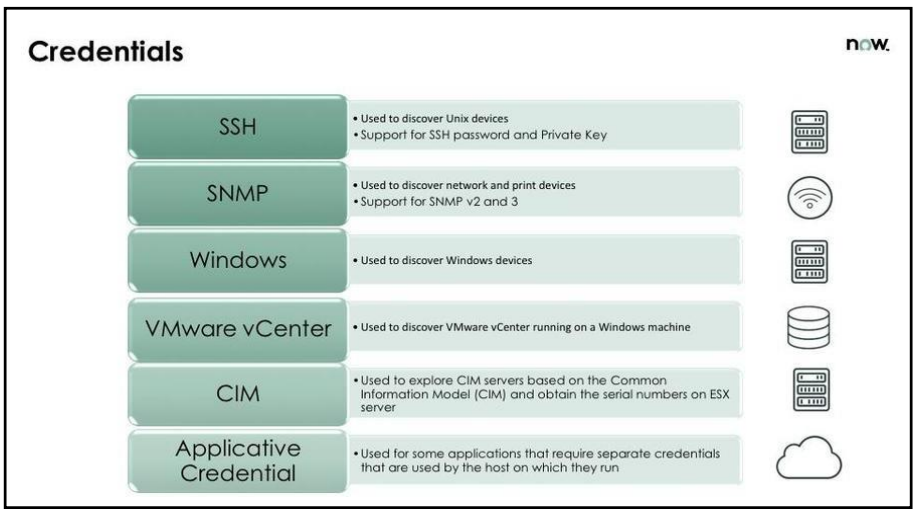

Fig. 14

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- **Brief explanation of Map Services:**
    - Service Mapping discovery begins with an entry point. This is usually a URL that users use to access the service. Service Mapping requires credentials to access the host machines that run the applications that comprise the service. It then uses discovery pattern information to build a service map of all the components that contribute to that service.

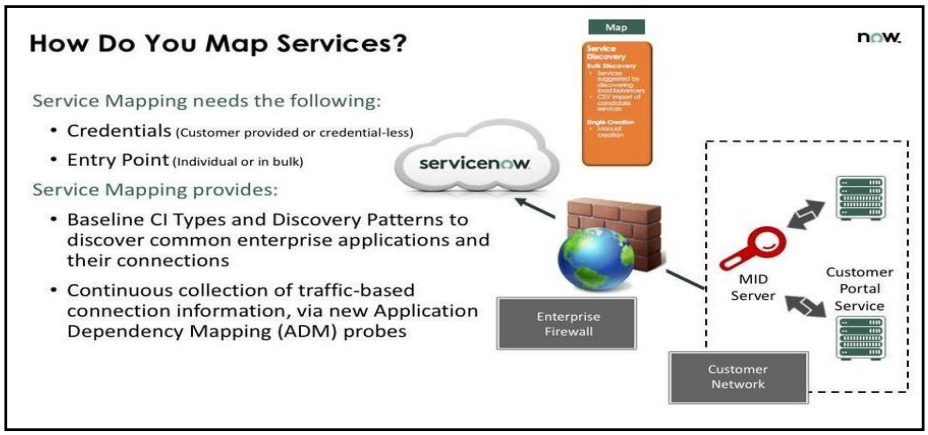

Fig. 15

    - Entry point is the first-tier application on a host CI where the end user receives the service. Service Mapping starts the mapping process from this point.
    - Entry points may vary depending on the nature of the service; a TCP port, a URL, a SQL port can all serve as entry points to a service. Service Mapping comes with a list of preconfigured entry points types and the attributes configured for the entry points depend on the type.
    - Entry points can be manually entered one by one, or imported from a CSV allowing for multiple services to be discovered in parallel

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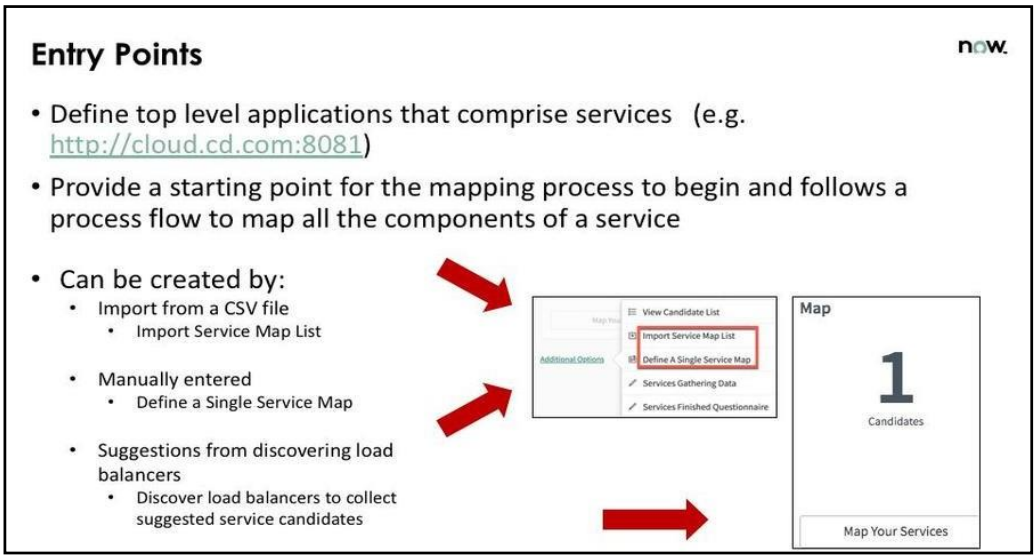

Fig. 16

- **Service Mapping – Home Page.**

  Navigate to **Service Mapping > Home.**

  We can see the Service Mapping Home (Dashboard).

  - **What is behind the various tiles?**
    - Map – Candidate entry point based on predefined criteria
    - Fix – Service maps that contain errors
    - Approve – Service maps flagged manually as ready-for-review/rejected or maps with CI count > 0 and Error count = 0
    - Completed – Service maps flagged manually as approved.

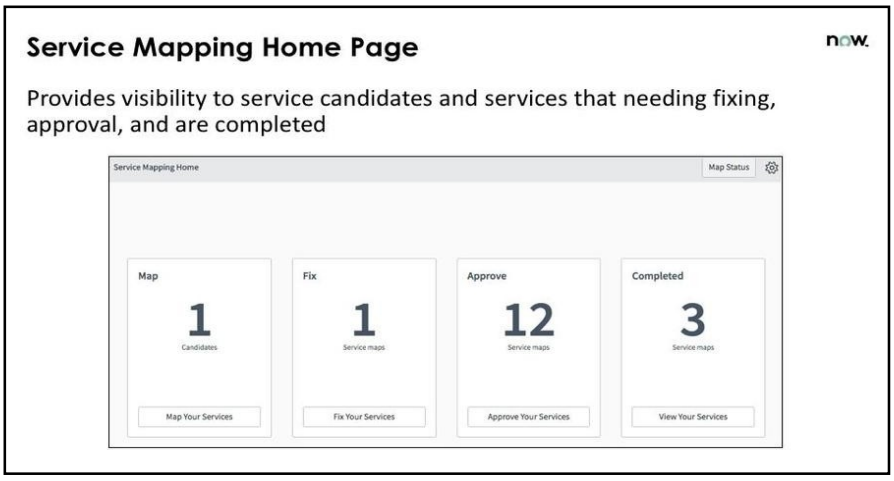

Fig. 17

- In the Service Mapping Home page, there is an additional option called Hyperlink.

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- Click on the hyperlink, one pop-up will open.
- Select ‘Services Gathering Data’.

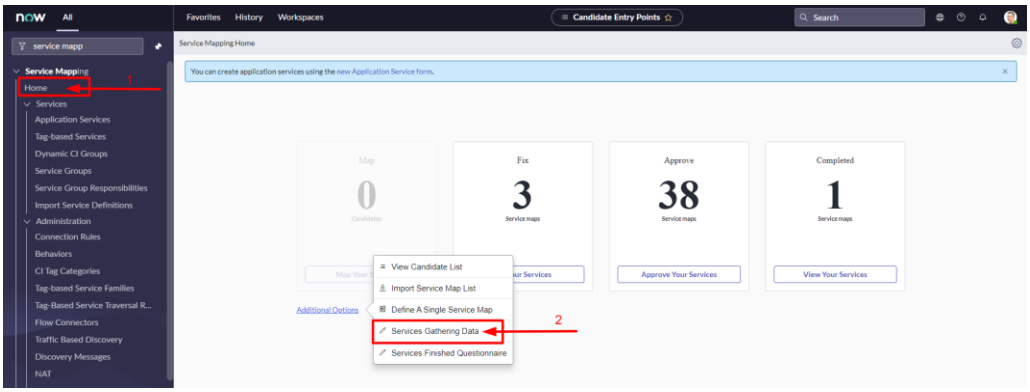

Fig. 18

- You will be redirected to the ServiceNow Mapping Home Dashboard filter and query criteria page.

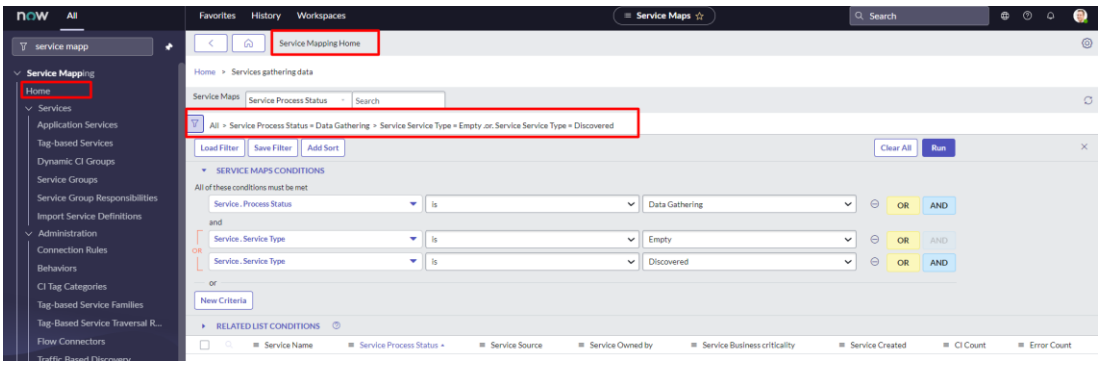

Fig. 19

- In this page we can set multiple query criteria to create a dashboard.

- **Services contain a new field called Process Status that contains the following states:**
  - Data Gathering
  - Finished Questionnaire
  - In Progress
  - In Review
  - Rejected
  - Approved

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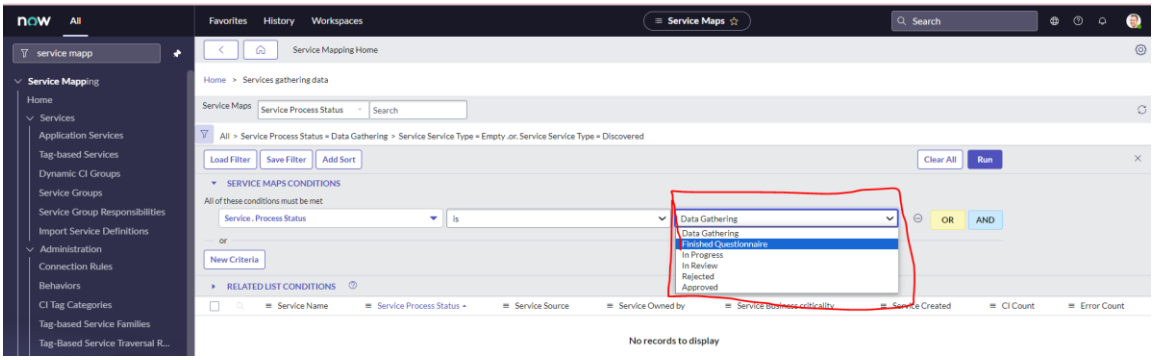

Fig. 20

- Above images navigate and help us to check Process Status based on our Query Criteria.
- We can customize it using the Process Status filter and make our own dashboard.

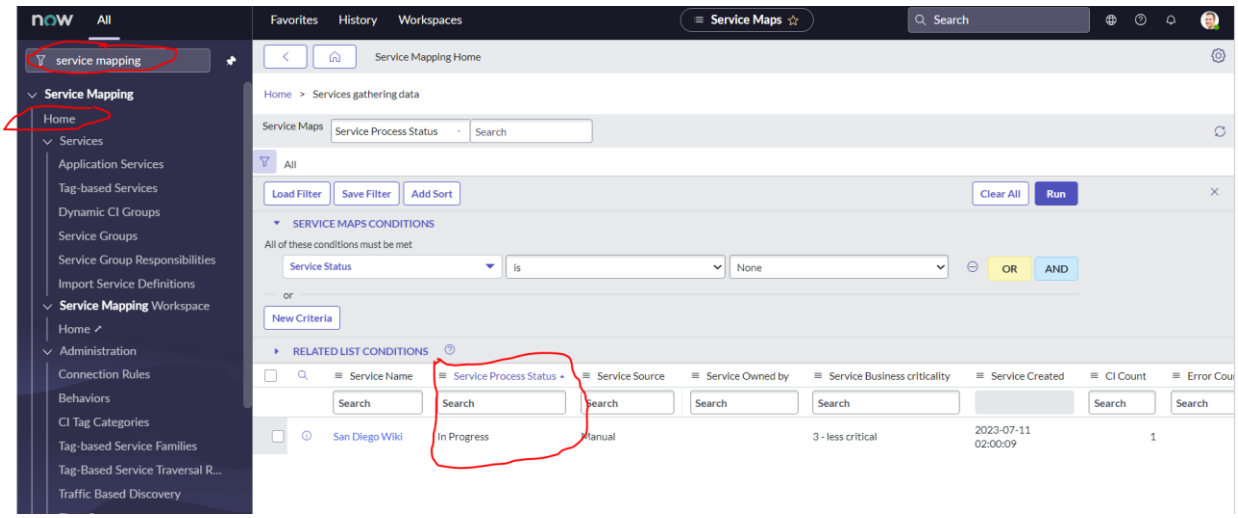

Fig. 21

- This image helps us to understand the mapping results of key concepts which will be automatically discovered.

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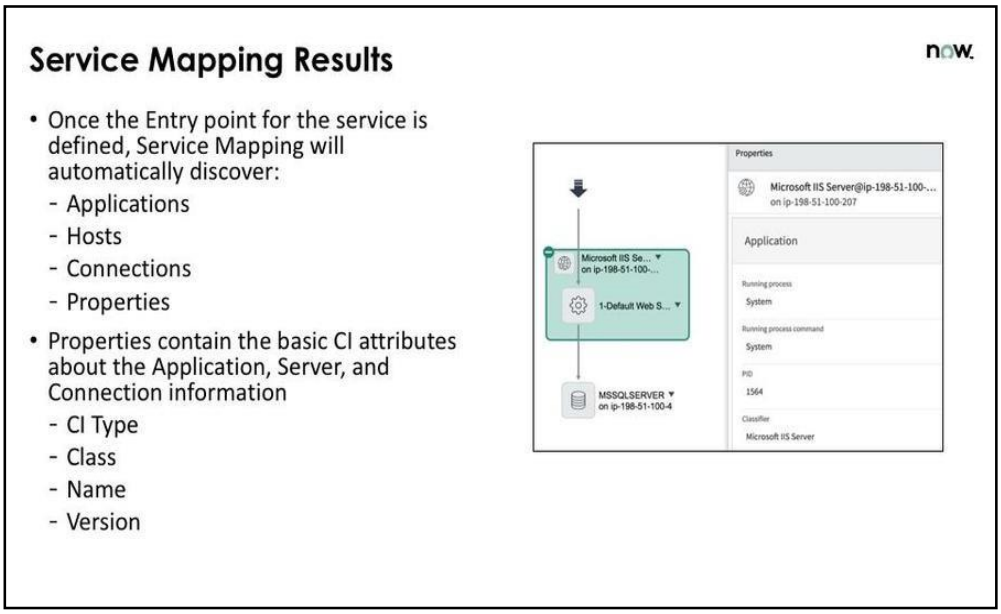

Fig. 22

- This is the mapping view image, where we can expand and collapse to see what devices and servers are going to be mapped. This image helps us to navigate to the menus and map view.

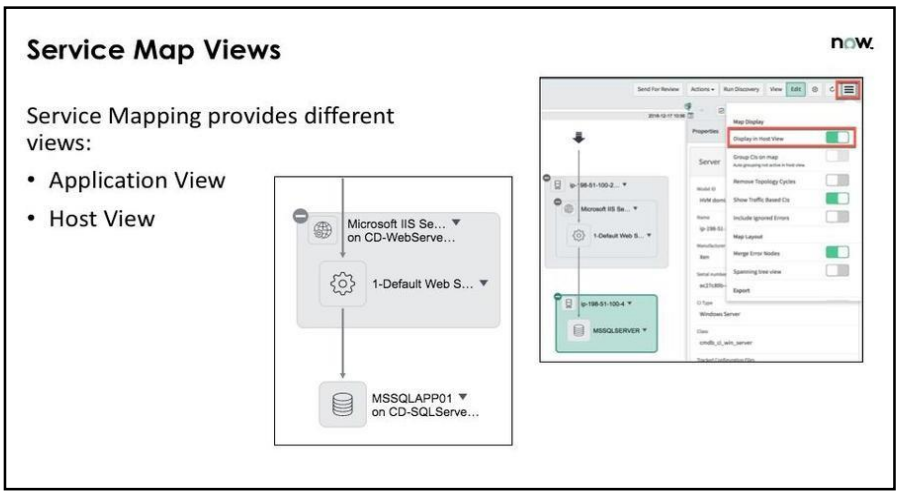

Fig. 23

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- **Role required to audit, if we made any new changes or modification in mapping: admin, sm_admin or sm_user**

Every time we add a CI to or remove a CI from a service, a CI is upgraded or updated. Information about the change is recorded in CMDB and Service Mapping retrieves it to create the change history view. We may need to see the changes made to a service as part of the maintenance, planning, or troubleshooting procedures.

There are several ways to view changes in Service Mapping:

  - View change records for the entire service.
  - View change records for a specific CI inside Service Mapping.
  - We can see a detailed history of a specific CI separate from its service as described in the Timeline of CI changes.
  - Compare the service before and after changes.
- Below image indicates that if there are any changes within the mapping and CI relationship, it will show us the prompt notification that we can easily identify.

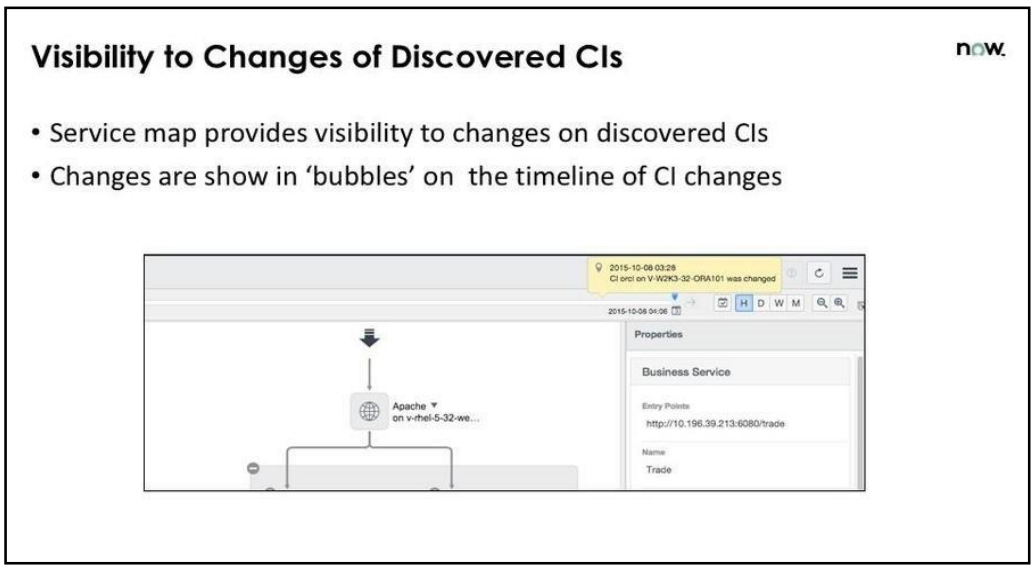

Fig. 24

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- The discovery log displays all the patterns and steps performed with an indication of fail, pass or executed.

  Detailed log messages are displayed by:

  - Entire log
  - Pattern
  - Identification / Connection sections
  - Individual steps

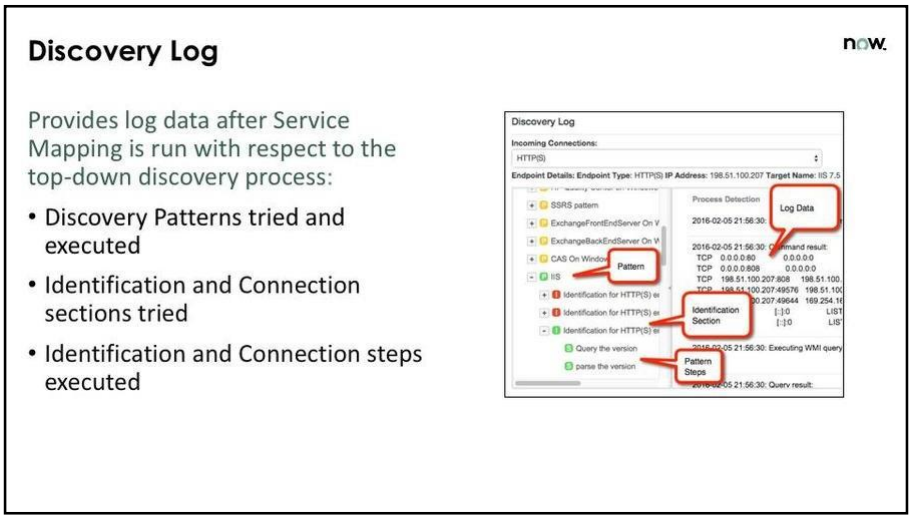


Fig. 25

A. Example of Configuring Service Mapping to Discover the Online Payroll Portal

Summary

a) **Actual Service Mapping:** In this example we have discussed how actual service mapping will work and how application will be discovered and mapped. We have also discussed the nature of service mapping.

I. Sample Scenario:

i. We have hosted MID server on a Windows Server machine.

ii. Inside the windows server Apache Web Server is running locally on the private ip of windows server.

iii. Inside the Apache Web Server Online Payroll Services is also running.

iv. Added Entry Point URL, saved it and started Discovery, after discovery completion, application will be mapped successfully.

a) Actual Service Mapping:

This service is supported by an Apache Web Server and is installed on your MID Server instance over port 8080.

1. From your ServiceNow instance, navigate to **Service Mapping** > **Home**.
2. From the **Additional Options** link, choose **Define A Single Service Map**.

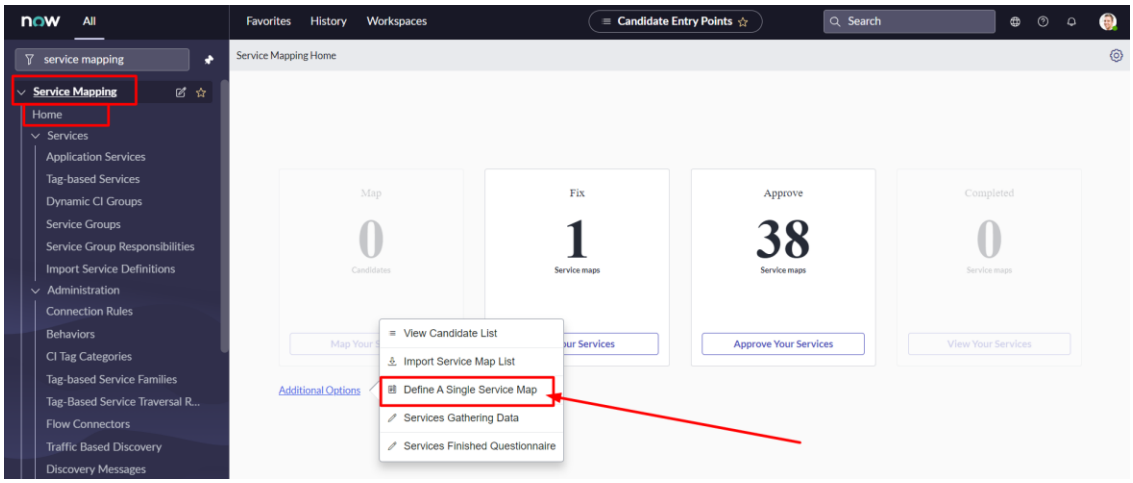
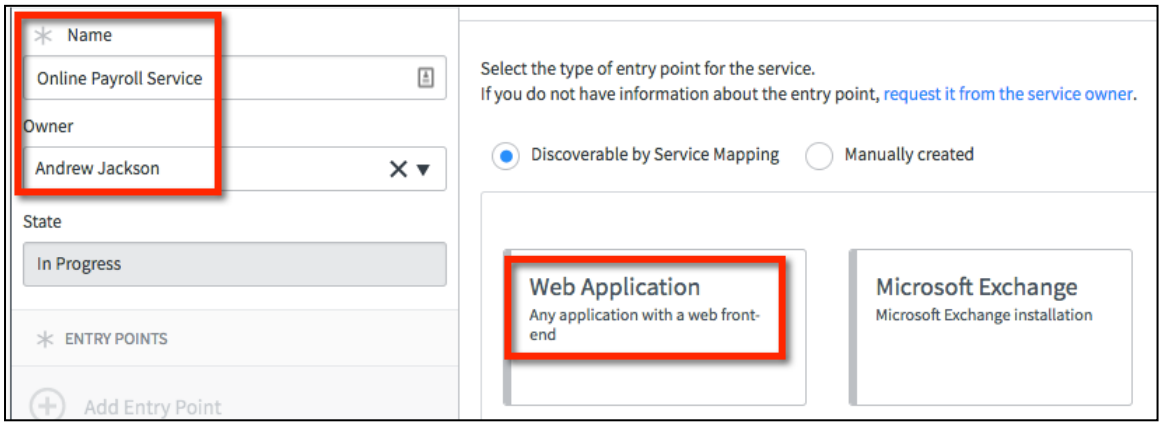


Fig. 26

3. Complete the form as shown:
   - Name: **Online Payroll Service**
   - Owner: **Andrew Jackson**
4. From the right pane, select **Web Application**.

Fig. 27



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5. Configure the form as shown replacing Private IP with the Private IP address of your Windows Server.
    - URL: **http://[Private IP]:8080**

Fig. 28

6. Click **Add**.

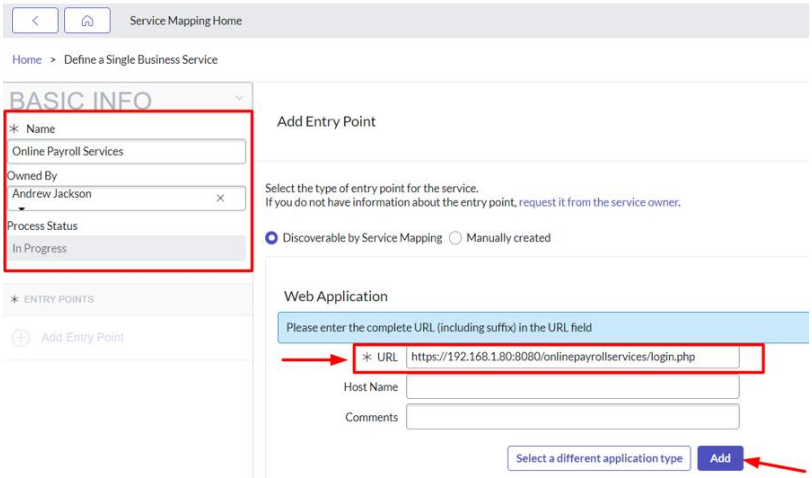

Fig. 29

7. From the left pane, under **Add Entry Point**, click **HTTP(S) Endpoint** to view the entry point just added.

8. Click **Add Entry Point**.

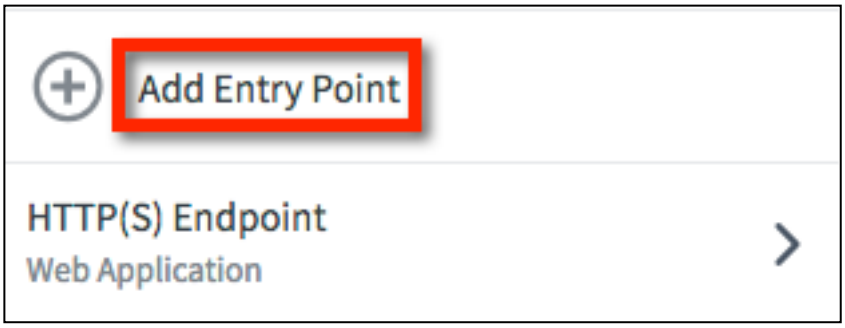

Fig. 30

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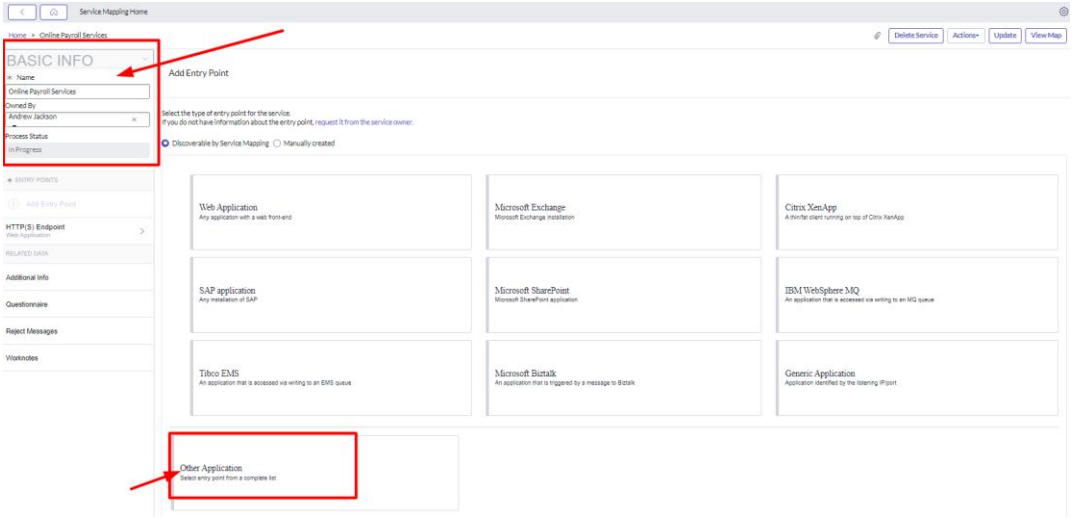

Fig. 31

9. From the top right of the **Service Mapping Home** form, click **Save**.

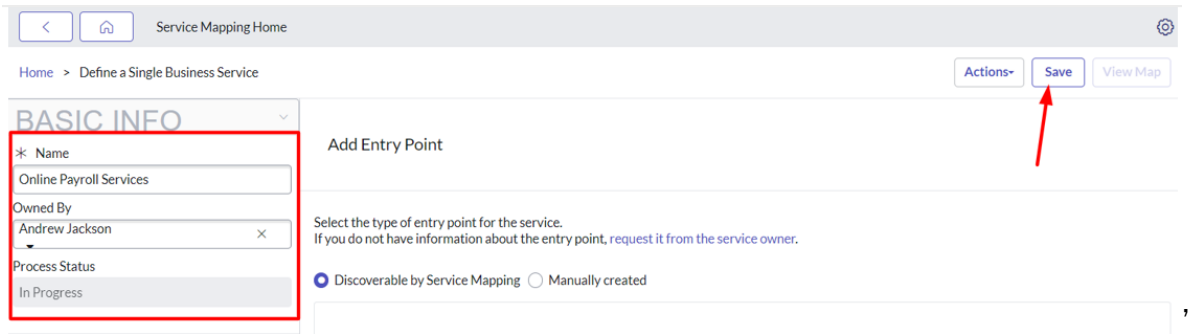

Fig. 32

10. From the top right of the Service Mapping Home form, click **View Map**.

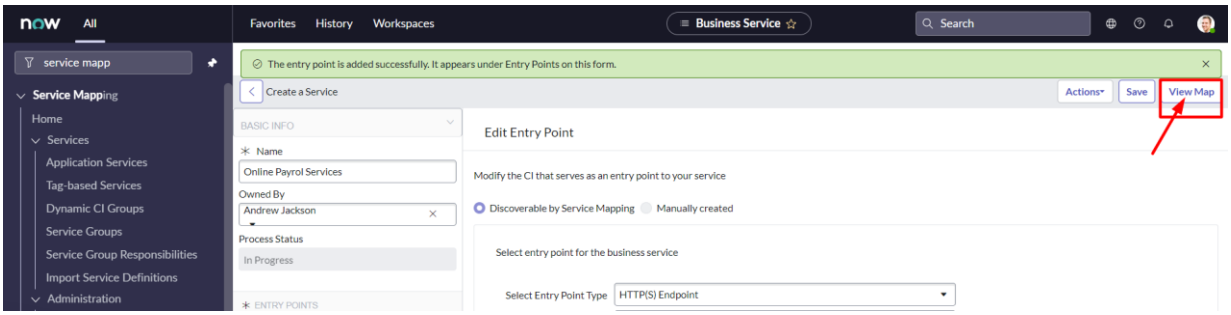

Fig. 33

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- Verify that after short while your service map displays as shown:

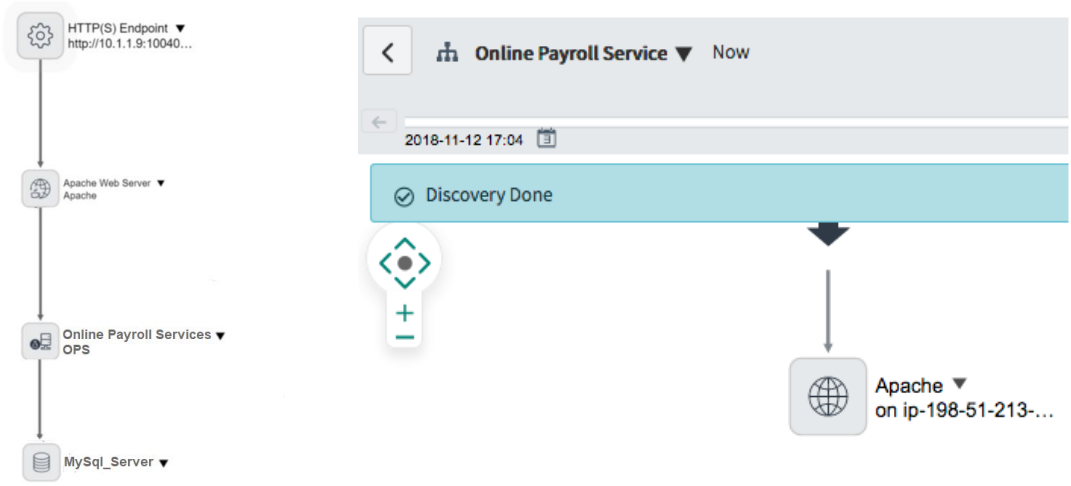

Fig. 34

11. Navigate to **Service Mapping** > **Home** and verify that there is one service completed.

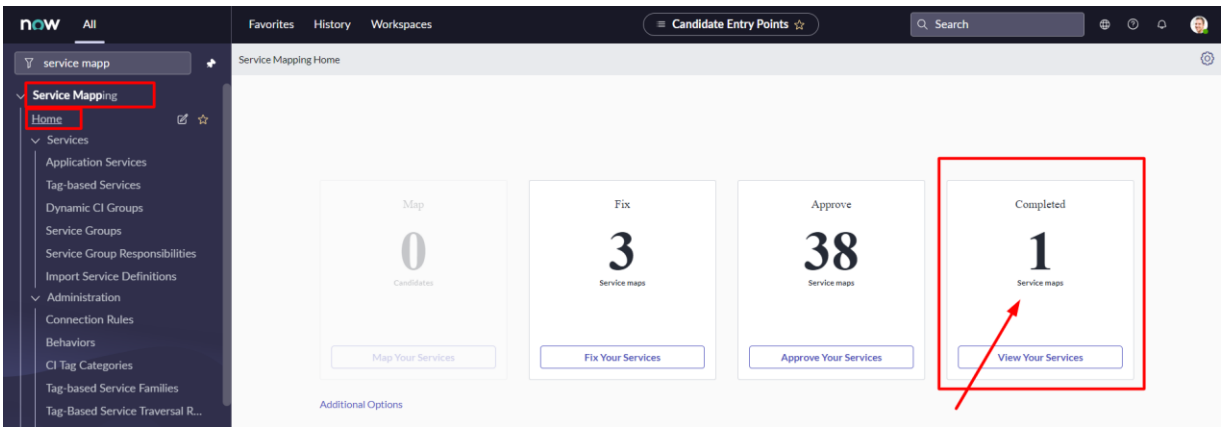

Fig. 35

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B. View the Service Mapping Discovery Log

The Service Mapping Discovery Log is useful in understanding and troubleshooting Service Mapping discovery.

II. After Discovery completes, right-click the **Apache** icon and select **Show discovery log.**

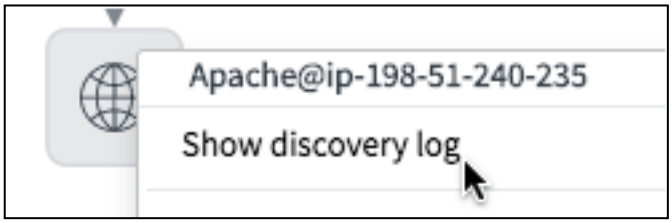

Fig. 36

The discovery log shows the pattern that Service Mapping used to identify this application. Additional details appear in the right pane when a specific pattern is selected.

III. From the left pane, select **Discovery Log**.

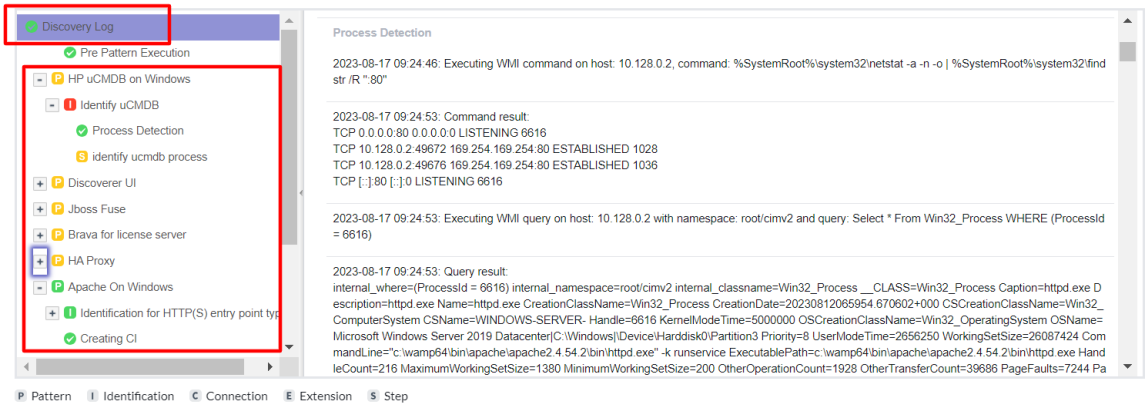

Fig. 37

P = Discovery Pattern

I= Identification Section

C = Connection Section

Green = success

Red = tried but not successful

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IV. View the **Process Detection** details which are automatically picked up with Service Mapping.

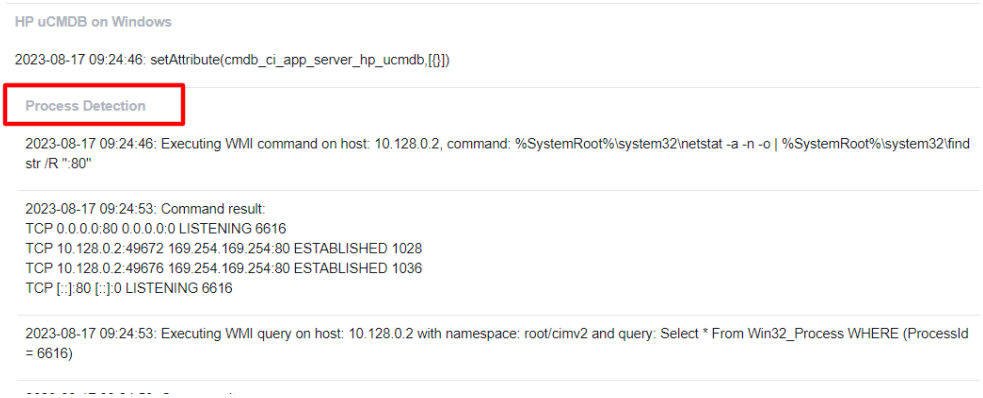

Fig. 38

The process details collected are used extensively by patterns to correctly identify applications running on a specific host and port.

V. Close the **Discovery log.**

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Chapter 6. Discovery Patterns:

Overview:

ServiceNow discovery Pattern to be used in Discovery (Horizontal Discovery) and Service Mapping (Top-Down Discovery) to detect attributes of a CI and its outbound connections. We have summarized all information that helps us to decide which pattern we will use for discovery and Service Mapping based on infrastructure needs.

- In this section we have described the Discovery Pattern which has been used in Discovery and Service Mapping. Type of discovery pattern and what is the core concept to use this pattern.
- Precisely it is used for identify and Connect to explore target CIs and their attributes.
- There are plugins that need to be installed to get all OOTB patterns.
- We have also covered OOTB discovery patterns that are going to be used for standard discovery (Horizontal and Top-Down Discovery).
- Introduction about custom discovery pattern and workflow and why a custom pattern is required.
- We have also described about Pattern Section. These sections are like- Identification, Extension and Connection sections.

Pattern types: There are four types of Discovery Pattern in ServiceNow.

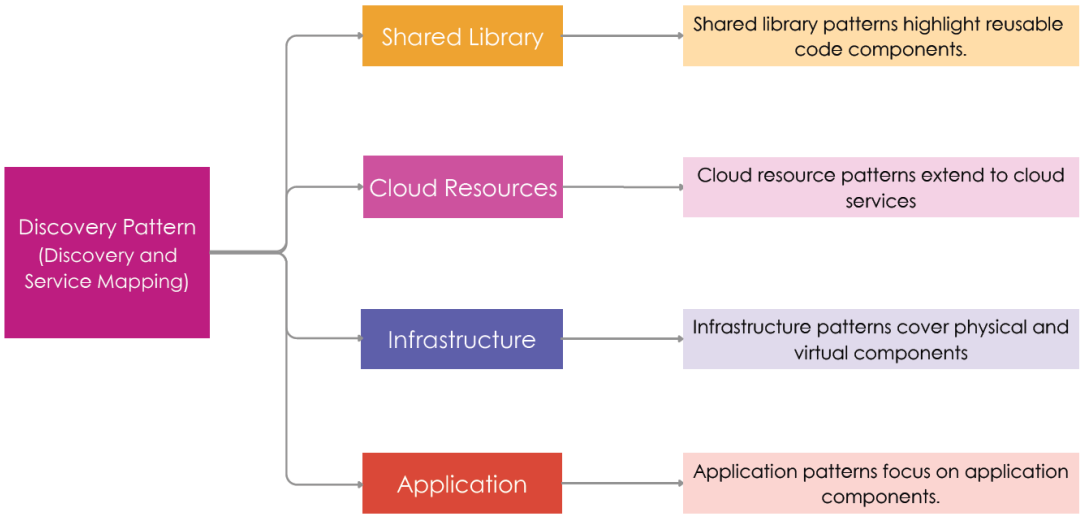

Fig. 39

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Quick Overview about Discovery Pattern:

A pattern is a set of commands whose purpose is to detect attributes of a CI and its service map.

Service Mapping and **Discovery** share a set of preconfigured patterns that cover most of the commonly used devices and applications.

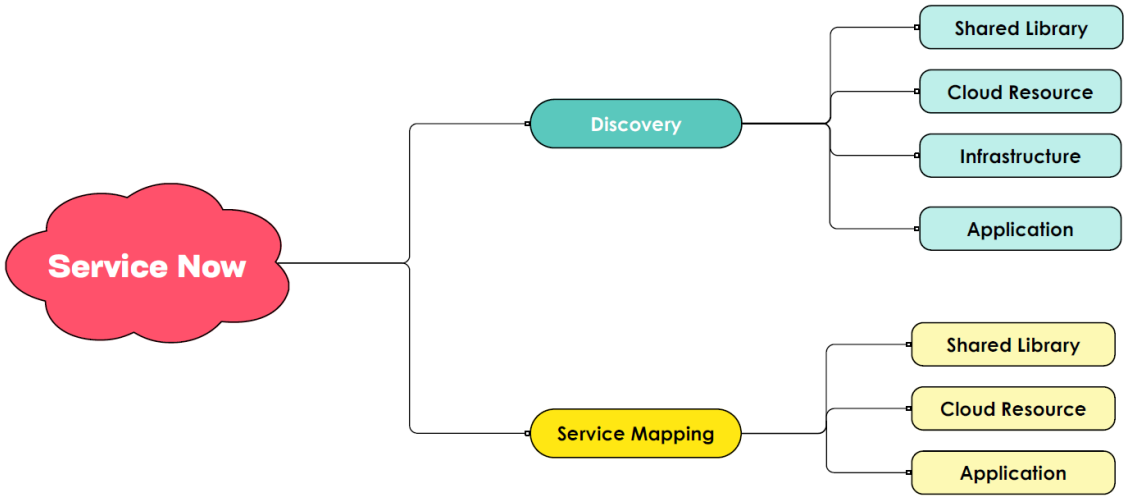

Fig. 40

Pattern Uses by Discovery and Service Mapping:

- **Shared Library:** Shared library patterns are used to identify and map the relationships related to shared code libraries, frameworks, and reusable components.
    - **Example:** Consider a Java library used by multiple applications in an organization. A shared library pattern would show which applications use this library, highlighting its impact on the overall service landscape.
  - For more information please refer to the link given below: https://docs.servicenow.com/bundle/vancouver-it-operations-management/page/product/service-mapping/task/t_LibraryReferencePatDef.html

- **Cloud Resources:** Cloud resource patterns are used to discover and map the relationships within cloud environments, such as virtual machines, databases, and load balancers.

- **Example:** In an AWS environment, a cloud resource pattern would help identify the EC2 instances, RDS databases, and Elastic Load Balancers that collectively deliver a web-based application.

  - For more information please refer to the link given below: https://docs.servicenow.com/en-US/bundle/utah-it-operations-management/page/product/discovery/reference/data-discovered-aws-patterns.html

- **Infrastructure Pattern:** Infrastructure patterns are used to discover and map the relationships between various infrastructure components such as servers, network devices, and storage systems.
  Infrastructure patterns help IT teams understand the physical and virtual elements that support applications and services, aiding in monitoring, capacity planning, and maintenance.
  - **Example**: Imagine a data center with multiple racks of servers, switches, and storage arrays. An infrastructure pattern would identify and map the relationships between these components, showing how they're interconnected.

  - For more information please refer to the link given below: https://docs.servicenow.com/bundle/sandiego-it-operations-management/page/product/service-mapping/reference/oracle-cloud-infrastructure-discovery.html

- **Application Pattern:** Application patterns are used to discover and map the relationships between components that constitute an application. This includes identifying servers, databases, and other components that make up the application's stack.
  - **Example**: Consider an e-commerce website application. The application pattern would help identify the web servers, application servers, databases, and caching servers that collectively deliver the online shopping experience.

- For more information please refer to the link given below: https://docs.servicenow.com/en-US/bundle/utah-it-operations-management/page/product/service-mapping/task/t_PatternExamplePatDef.html

- **Infrastructure and application type patterns are most commonly used:**
  - Infrastructure patterns are used only by Discovery for creating lists of devices.
  - Application patterns serve both Service Mapping and Discovery, which use the same application patterns for their purposes.
    - **Example,**
      I. Discovery runs the horizontal discovery with the Apache Web Server pattern to find and list all Apache Web Servers in your organization.
      II. Service Mapping runs the top-down discovery using the same pattern to discover a specific Apache Web Server and place it on an application service map.

- **OOTB Discovery Pattern (After installing the Plugins)**

After installing the plugin almost 900+ OOTB patterns are available in ServiceNow. The following images show the Pattern Type Group by categories.

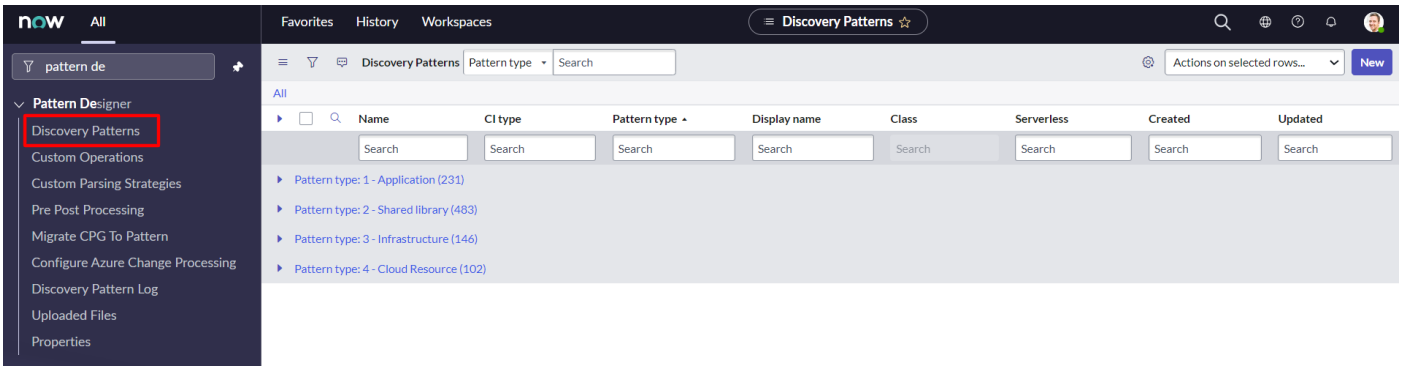

Fig. 41

- **Customize the Discovery Patterns:**
  Though there are more than 900+ OOTB patterns available, we sometimes have to customize patterns. For example,
  - If our organization uses proprietary devices and applications, create patterns for these items to enable Discovery and Service Mapping to discover them.

- Steps to create custom pattern:

I. Navigate to **All** > **Pattern Designer** > **Discovery Patterns**.

II. Click **New** or select the relevant pattern from the list.

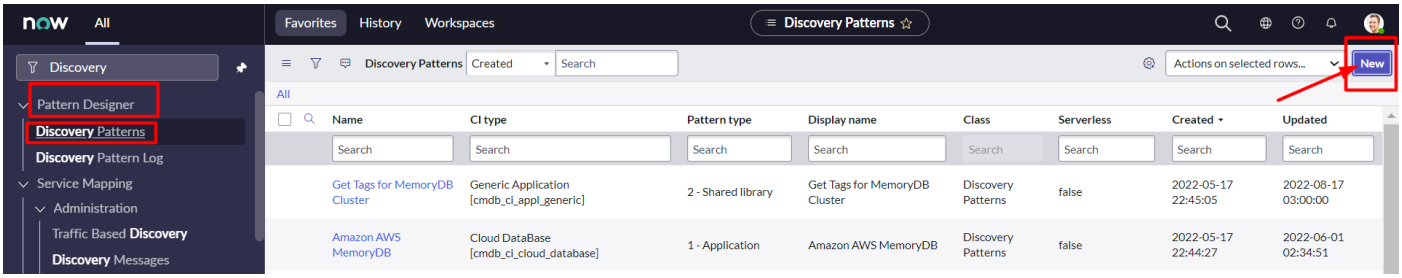

Fig. 42

III. Define the basic pattern attributes on the **Basic** tab.

IV. Select any Pattern Type which you want to create.

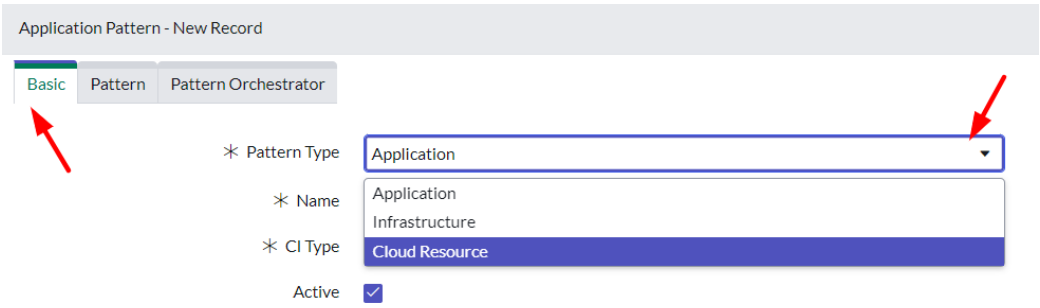

Fig. 43

V. After selecting the Pattern Type we have filled in all the details for the Pattern.

VI. Pattern structure is divided into three sections: **Identification, Extension,** and **Connection Section**. On the same page below, we can see the Identification Section that we need to configure.

VII. Click on **New** in the 'Identification Section'.

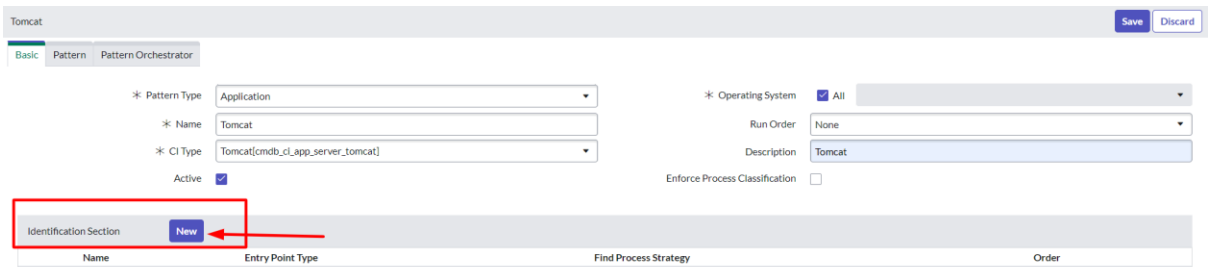

Fig. 44

VIII. After clicking on “New” Button Immediately one pop-up page will open, we need to fill all the forms with proper Entry Point Type and Process Strategy Port and click on the Done button.

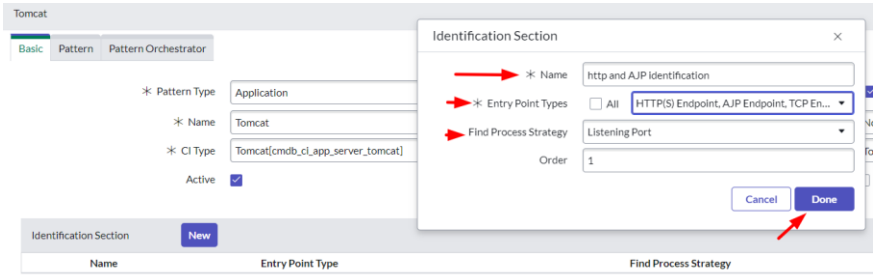

Fig. 45

- **Entry Point Type:** It is a classification or Protocol used to determine how a specific application is identified, tracked, and managed within the ServiceNow platform.
- **Process Strategy Port:** It is a network port that is used to listen to incoming network requests. ServiceNow communicates over specific network ports to receive and respond to requests from users or other systems.

IX. In the Identification section, we have added 2 process strategies and click on Save.

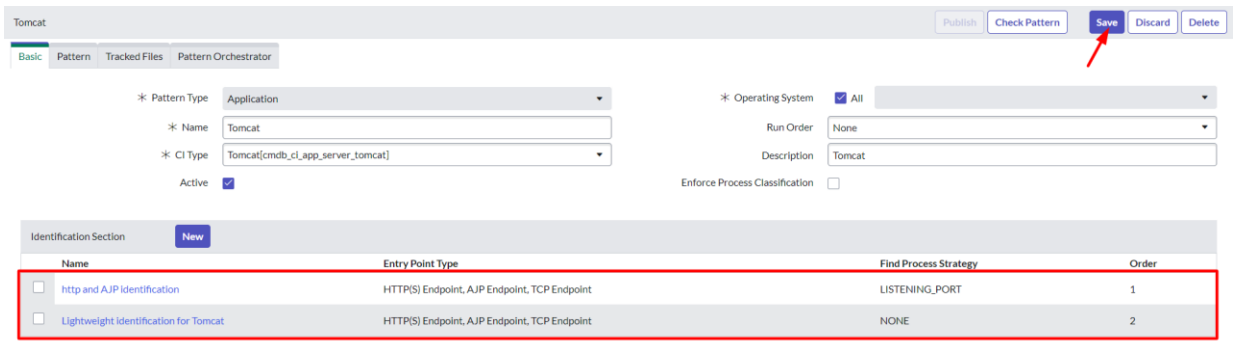

Fig. 46

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X. Once Click on save, we will be on the same page. Now Click on the name link in the Identification Section.

XI. After Clicking the name link in the Identification Section, we will be redirected to the Identification Discovery Pattern Page.

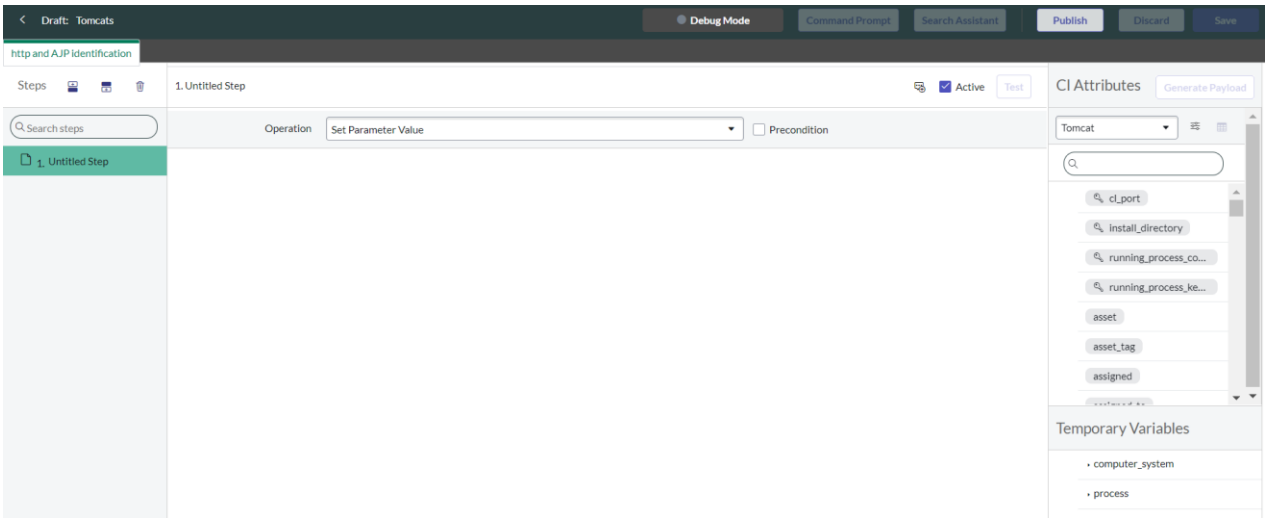

Fig. 47

XII. Service Mapping patterns contain identification sections that are sequences of commands which are used to discover applications and their outgoing connections.

- Identify the application
- Configure Identification Rule of CI Type
- Populate Mandatory fields
- Collect attributes if required in Organization.

XIII. Click on the **Debug Mode**. It's best practice to enable it before building the Identification logic.

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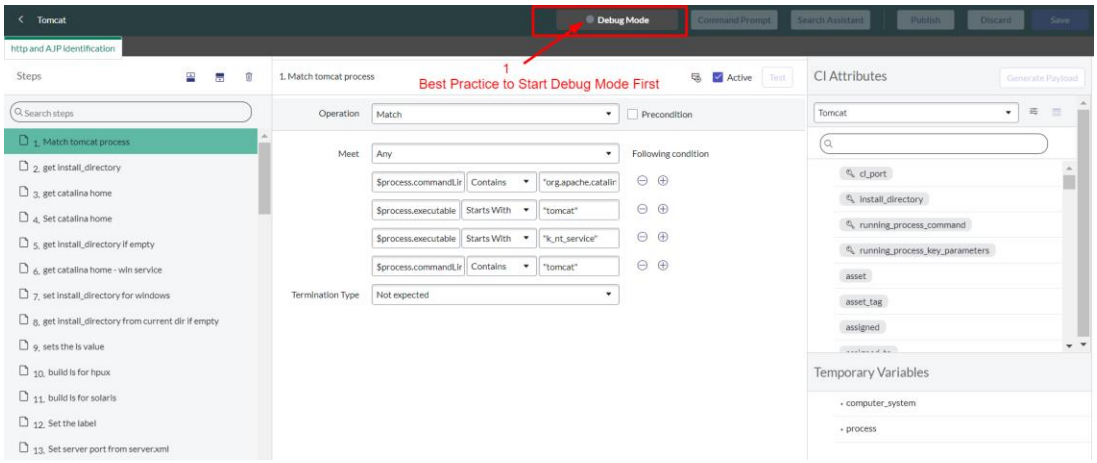

Fig. 48

XIV. When we click on **Debug Mode** we will get the Pop-up form as below, fill the all required details.

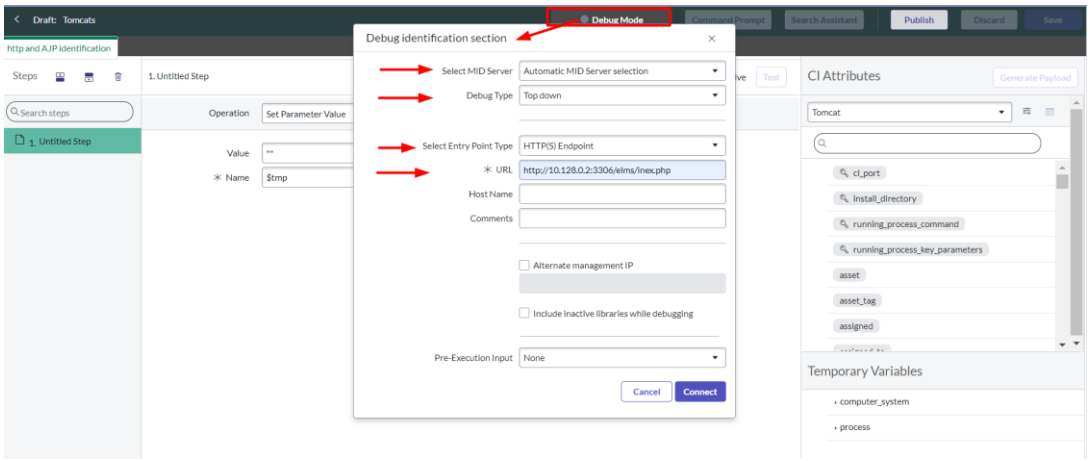

Fig. 49

- **Select Mid Server:** If you have more than one MID Server installed on your Network and you want to use a specific MID Server for This Service Mapping Pattern then choose those specific MID Server or else leave as Automatic MID Server Selection.
- **Debug Type:** In this LOV there are two options **Horizontal** and **Top down**. We will select **Top down**, because its Application Service and It's followed the Top Down Approach using Service Mapping Rule.
- **Select Entry Point Type:** We will select **Http(S) End Point**. Because it captured URL based protocol.
- **URL:** We will add the Entry Point URL.
- Click on Connect button.

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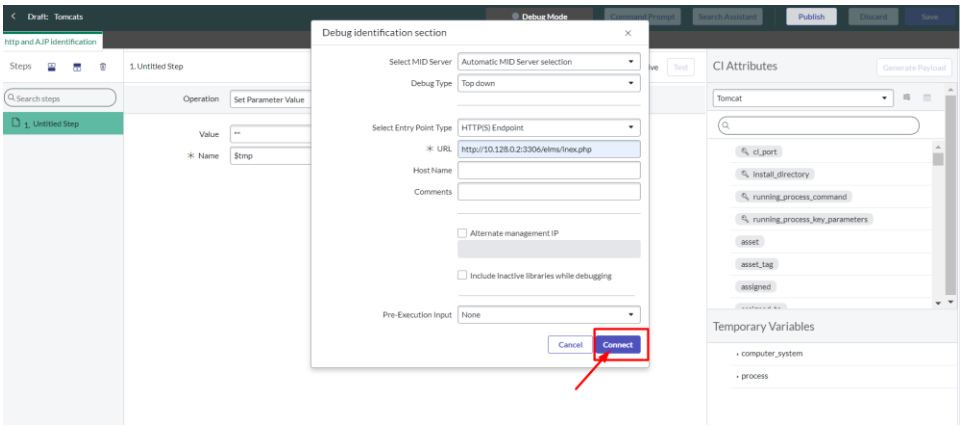

Fig. 50

XV. After Successful connection Debug Mode will enable, then start Building the Identification Logic.

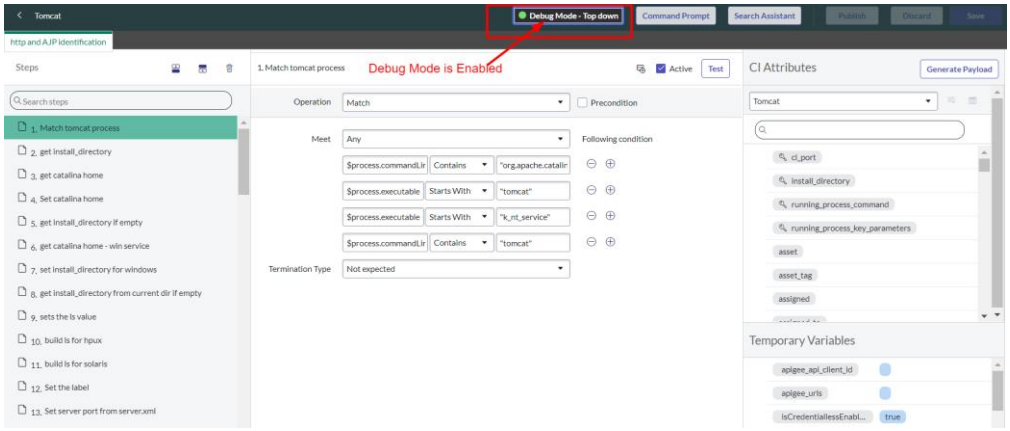

Fig. 51

XVI. Discovery Pattern is completely dependent on these 4-model section.

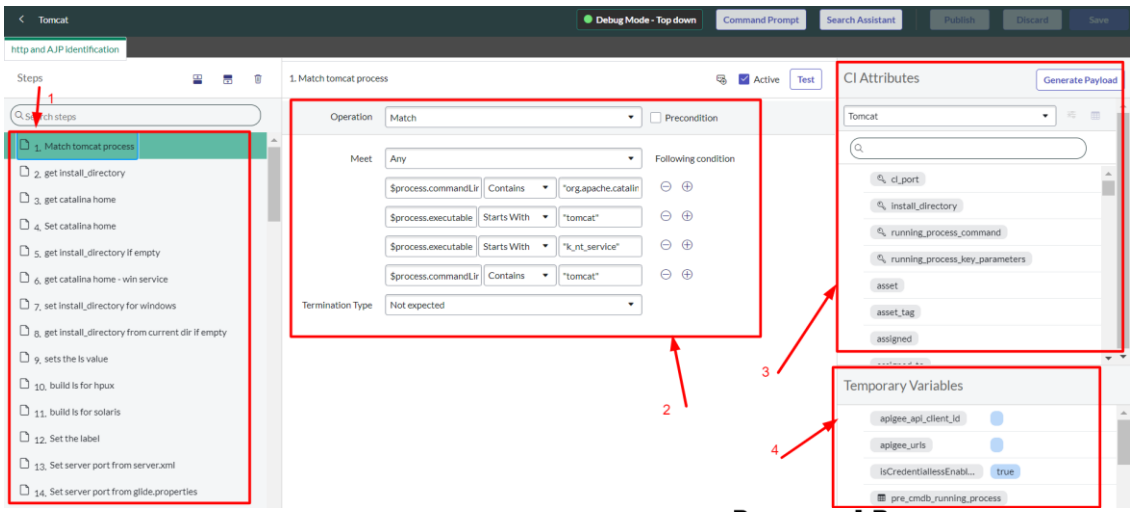

Fig. 52

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1. We can define our steps like – Collecting Information, parsing files, setting variables and matching the information.
2. We can define the logics to identify the application based on criteria and also Match operation. If the precondition is not met on a step, the step is ignored and not evaluated, and the next step is tried.
3. We can select the attribute on which attribute we need value.
4. We can select variables and we can also see the value within that and prevent the use of hardcoded file paths in steps.

XVII. After successfully creating Identification Discovery Pattern, then we will Test it and save and Publish.

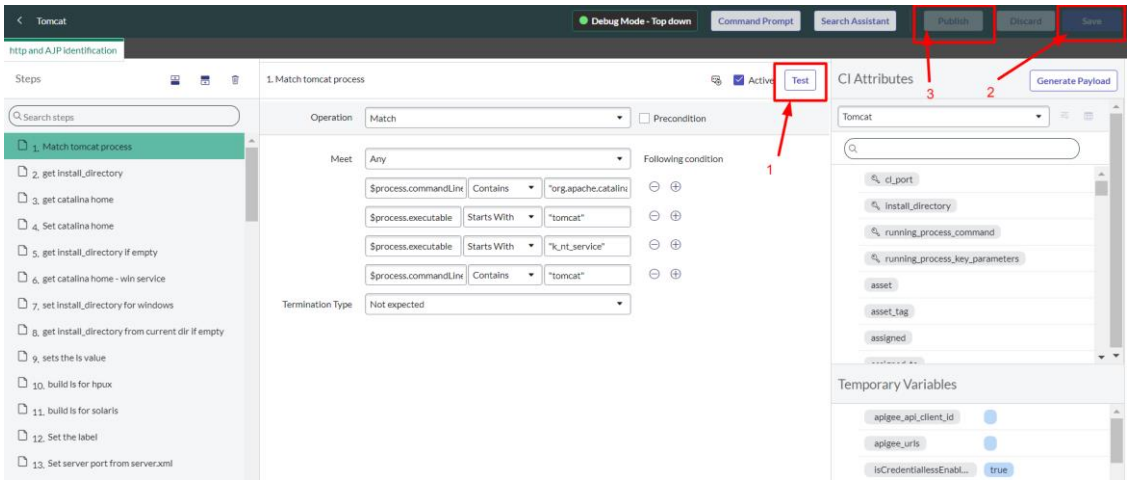

Fig. 53

XVIII. After successfully Publishing the Identification Discovery Pattern, then we can go back and create Extension Section, if we want to enable extension section to search for additional attributes.

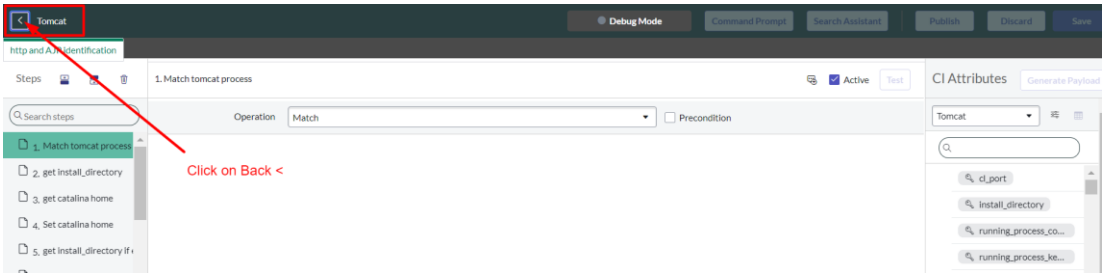

Fig. 54

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XIX. You will be redirect to previous page, which is ‘Tomcat’ discovery Pattern setup page.

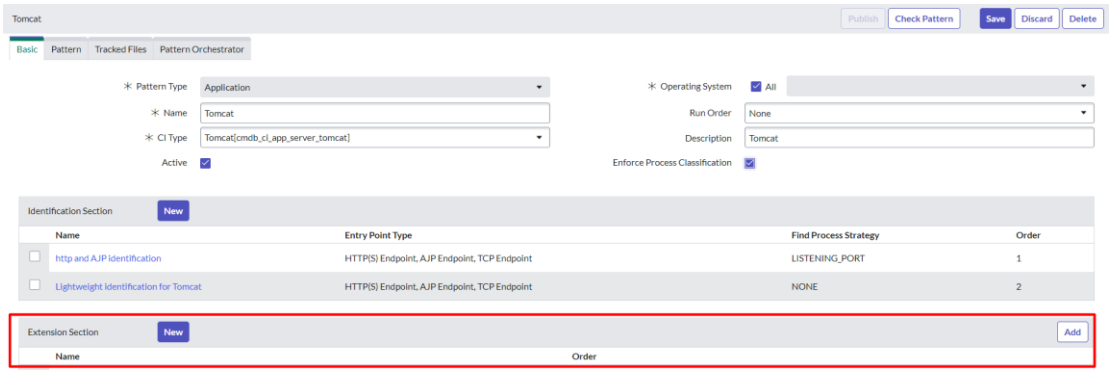

Fig. 55

OR

XX. Navigate to **All** > **Pattern Designer** > **Discovery Patterns** and open the ‘**Tomcat**’ pattern from the pattern list.

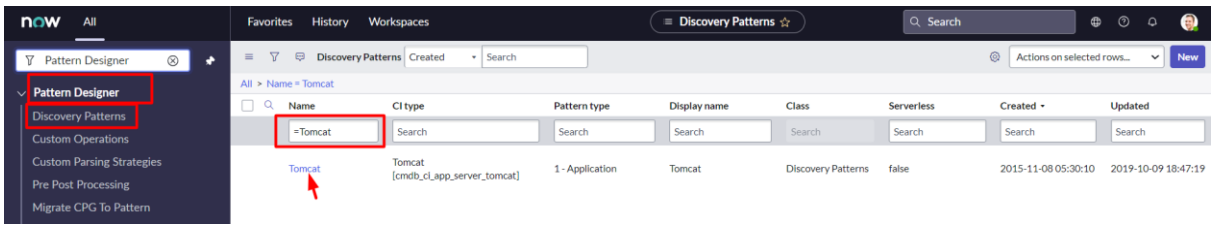

Fig. 56

- **Extension Section:** Enhance patterns without changing their identification sections. We can enable patterns to search for additional attributes and modify pattern discovery logic defined in identification sections by using extension sections.
  For Example: Country Name, Location, Version.

  - If at least one identification section is complete successful within a pattern, then the steps within the extension section are tried.

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The pattern can be of the Infrastructure or Application type.

To create an extension section:

I. Click **New** under **Extension section**.

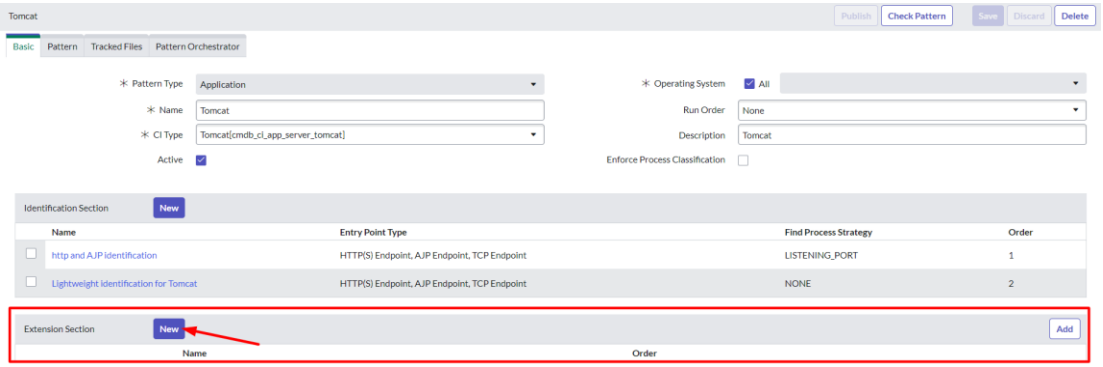

Fig. 57

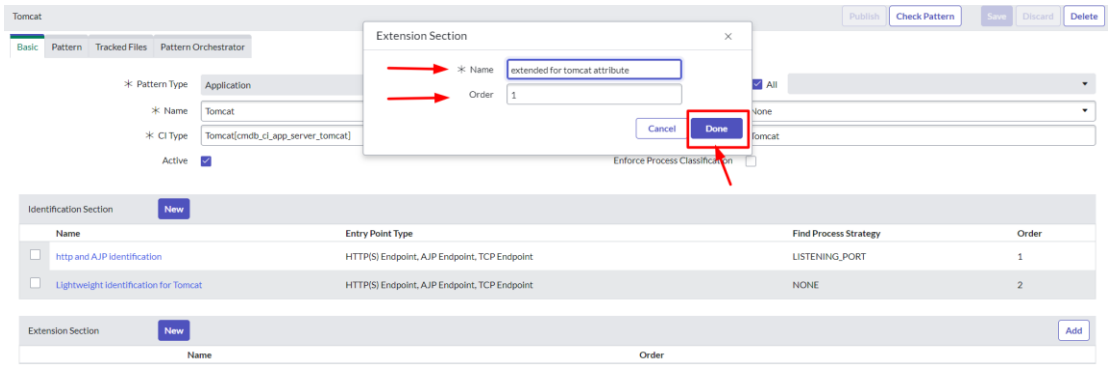

Fig. 58

II. Enter the **Name** of this extension section.

III. Enter the **Order** of this extension section.

IV. Click **Done**.

The extension has been added and displays the new section under Extension section.

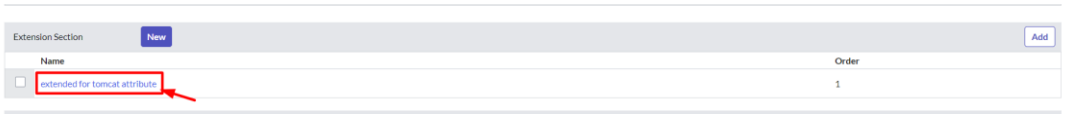

Fig. 59

- **Click** on the **name** of the new extension section.

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The Pattern Designer opens showing the blank Untitled Step page.

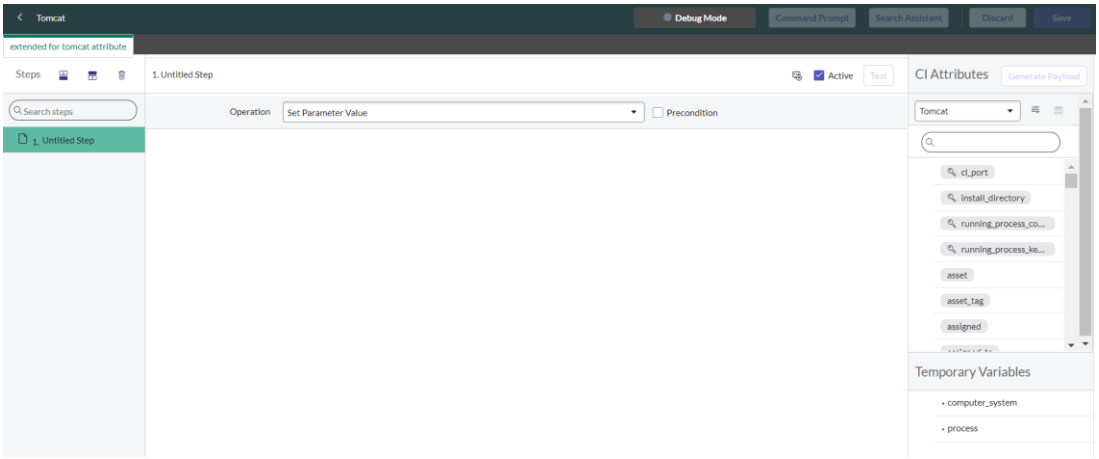

Fig. 60

Follow the same steps as we explained in **Fig.48,49,50,51**:

I. Click on the **Debug Mode**. It's best practice to enable it before building the Extension logic.

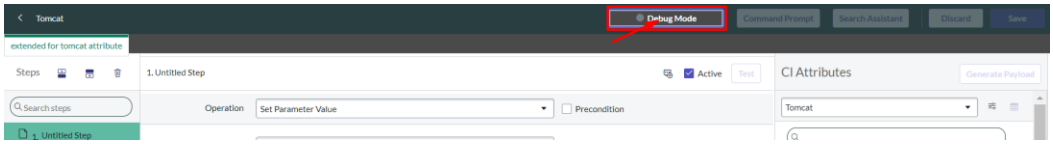

Fig.61

II. When we click on **Debug Mode** we will get the Pop-up form as below, fill the all required details.

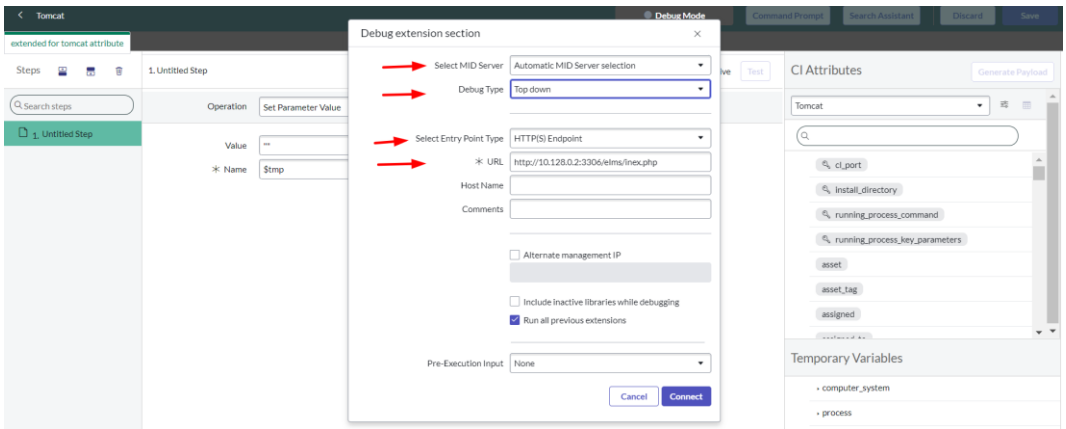

Fig.62

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III. Click on Connect button.

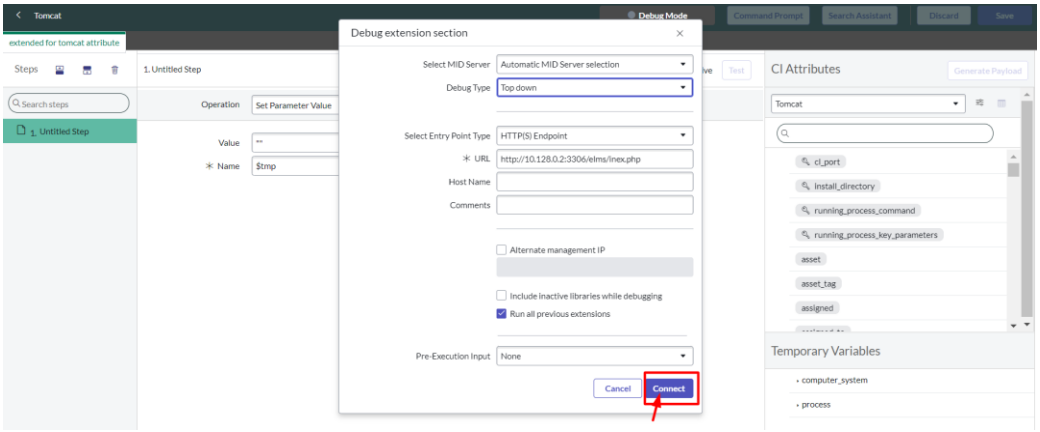

Fig. 63

IV. After Successful connection **Debug Mode** will enable, then start Building the Extention Logic.

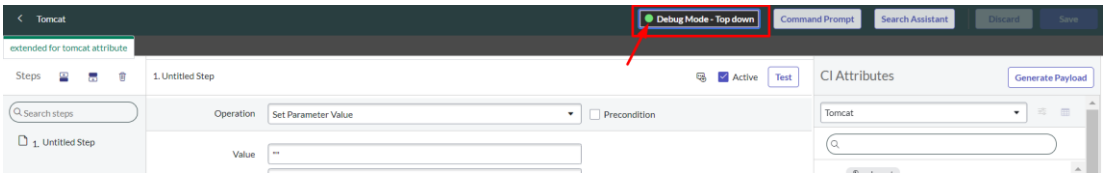

Fig. 64

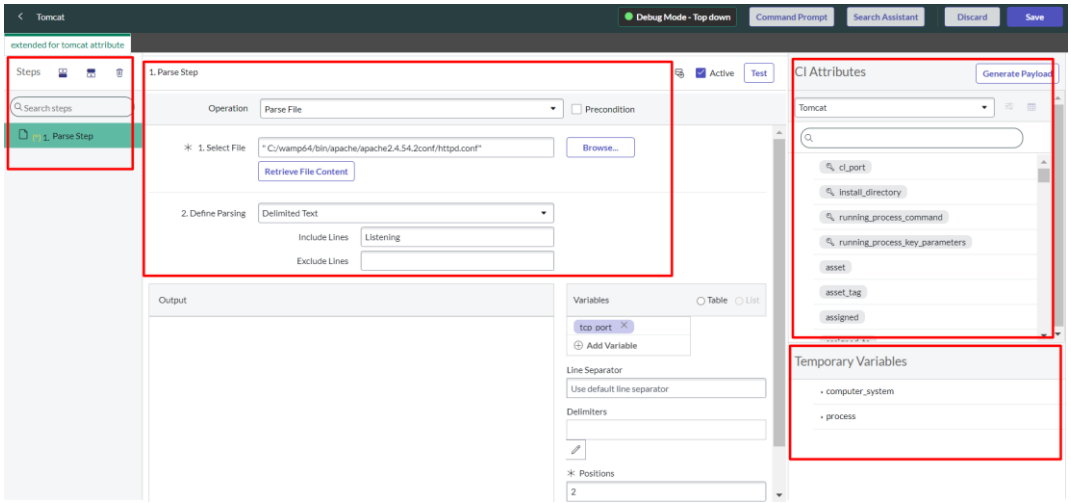

Fig. 65

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V. After successfully creating Extension logic, then we will Test it and Click on Save.

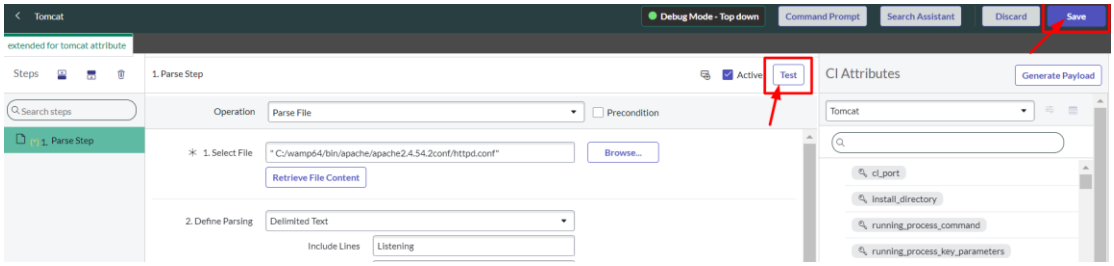

Fig. 66

We do not publish extension sections.

Extension is always part of Shared Library Pattern.

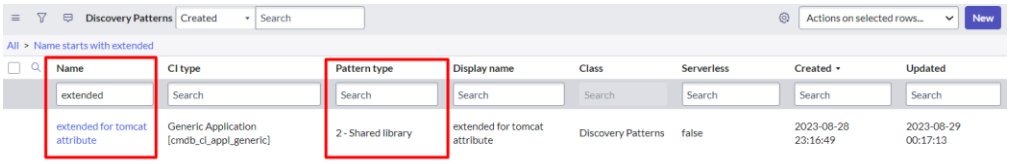

Fig. 67

Whenever we create extension that will fall under the shared library pattern type.

Here is some of the OOTB shared library, that we can use for Extension section.

- Navigate to **All** > **Pattern Designer** > **Discovery Patterns** and group by filter on the '**Pattern Type**' from the pattern list.

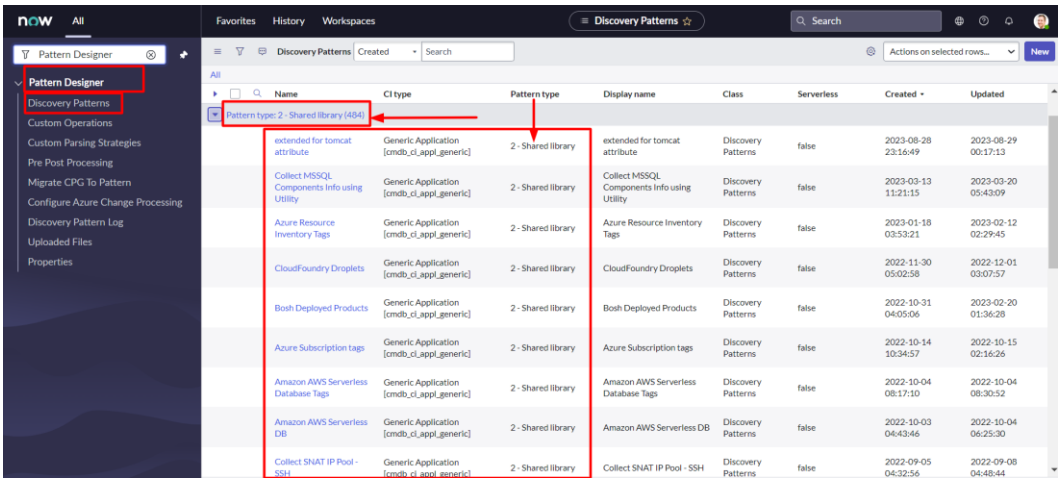

Fig. 68

- To use an existing shared library for the new extension section:
  - Click **Add** under **Extension section**.

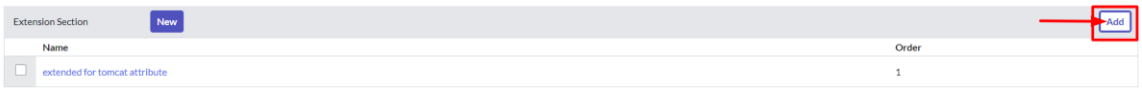

Fig. 69

- After click on Add button, one pop-up window will open and add order.
- If there is only one extension section, its order is 1 by default.
- The section with the lowest order number is used first.

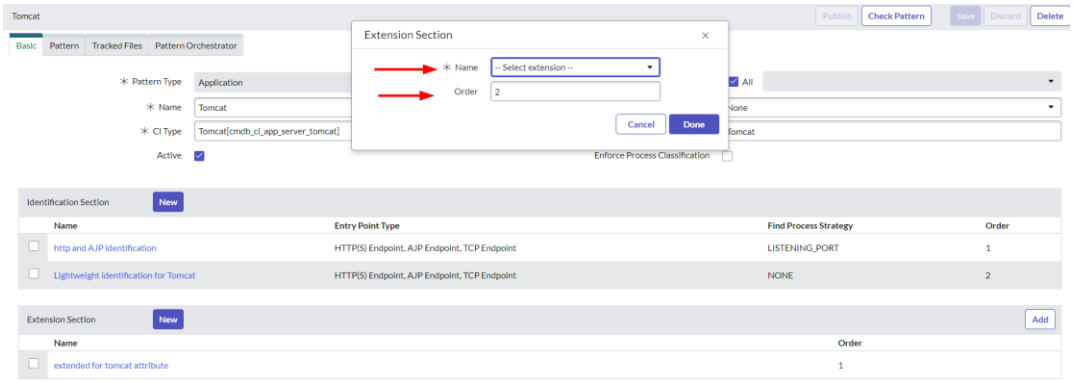

Fig. 70

- Click on Select Extension (shared library) from the name list of values and click **Done**.

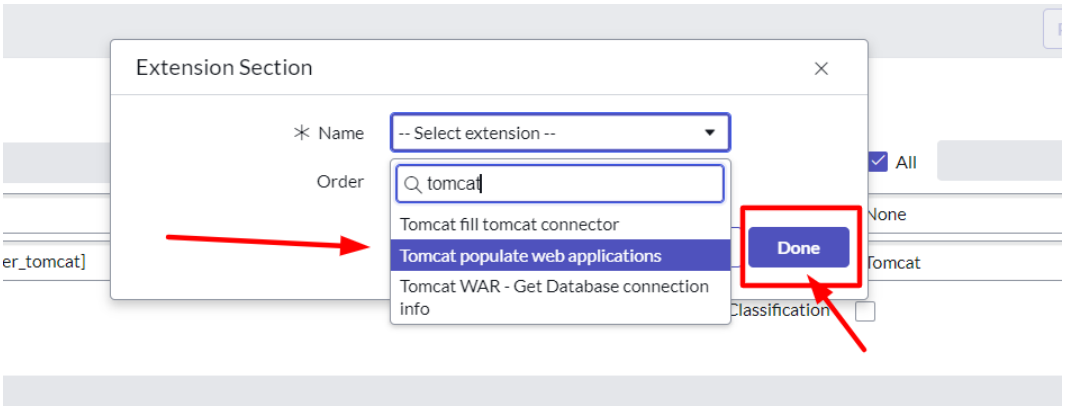

Fig. 71

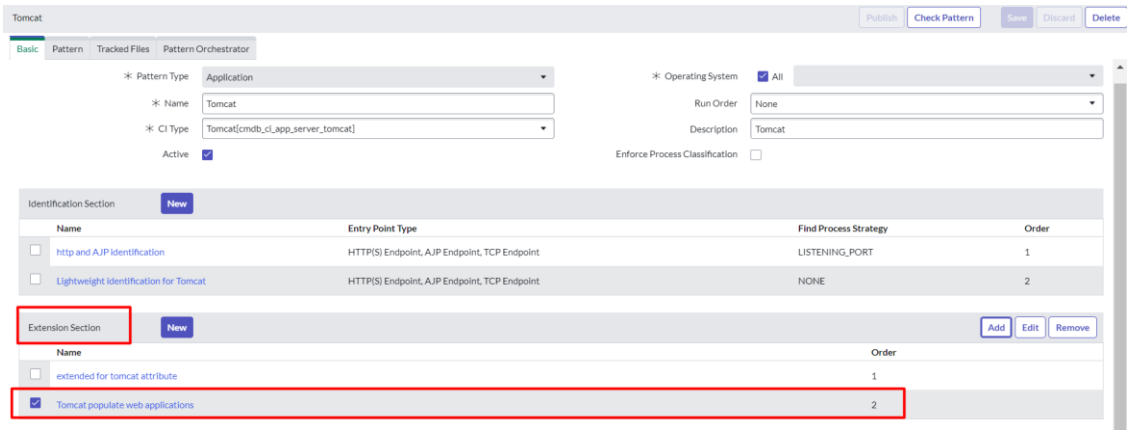

Fig. 72

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- **Connection Section:** A connection section identifies a type of outgoing connection. CIs can have multiple outgoing connections. Configure a separate connection section for each type of outgoing connection.

  For example, a .NET application CI can have outgoing connections of several types: ADO.NET, XML Web Services, or .NET. So, we must add connection sections for these three types to the .NET Application pattern.

  This operation is relevant only for patterns of the application type used by Service Mapping.

  To Add Connection Section, follow the same steps as Fig:56:
  The pattern must be of the Application type.

  - Navigate to **All** > **Pattern Designer** > **Discovery Patterns** and open the '**Tomcat**' pattern from the pattern list.

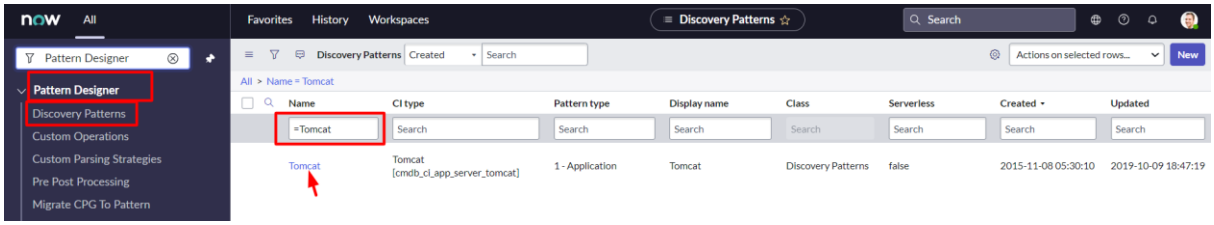

Fig. 73

  - In the **Connection Section**, click **New**.

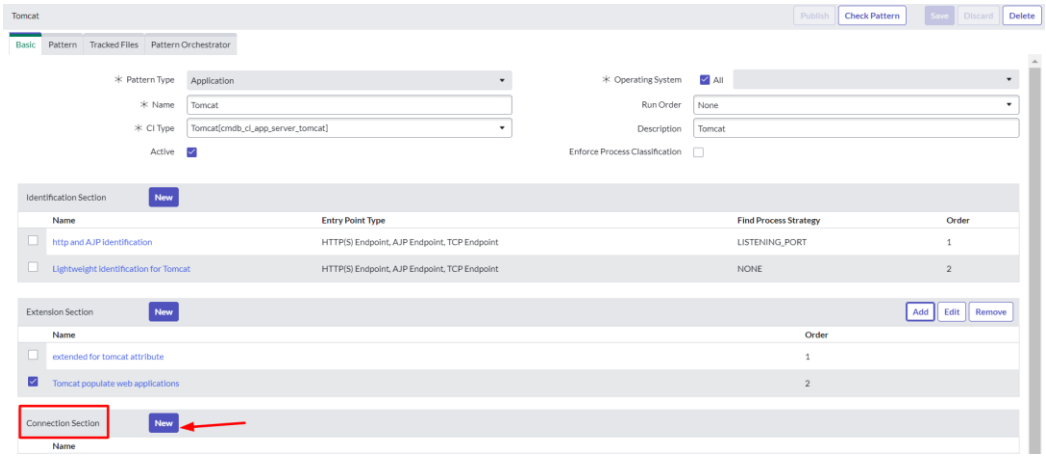

Fig. 74

  - After click on **New,** one pop-up will open.

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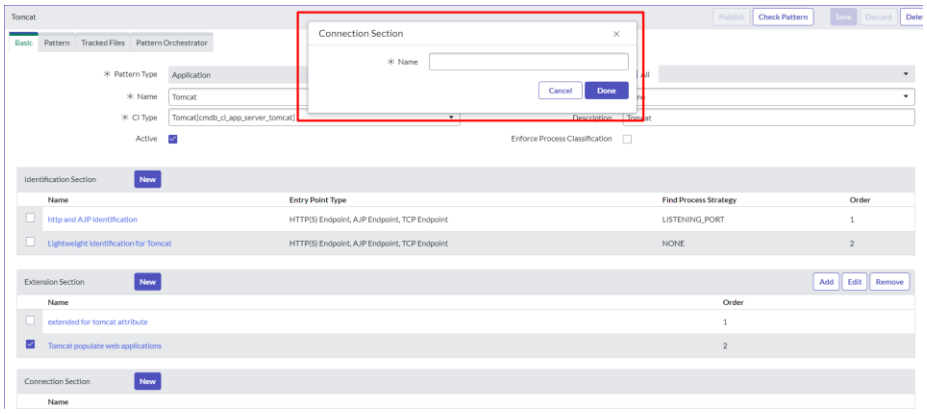

Fig. 75

- Enter the **Name**, and click **Save**.

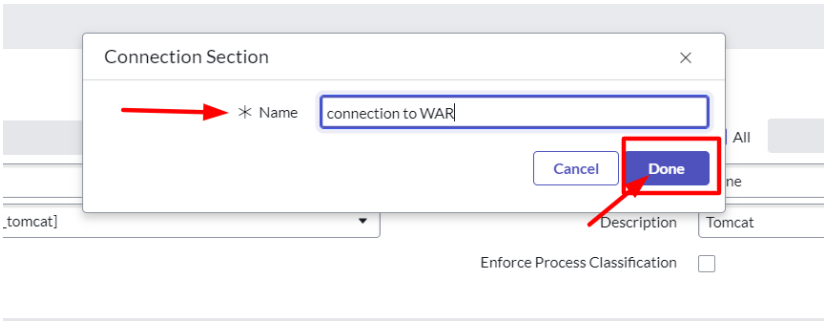

Fig. 76

The connection has been added and displays the new connection under Connection section.

- Click on the **Name** of the new Connection section.

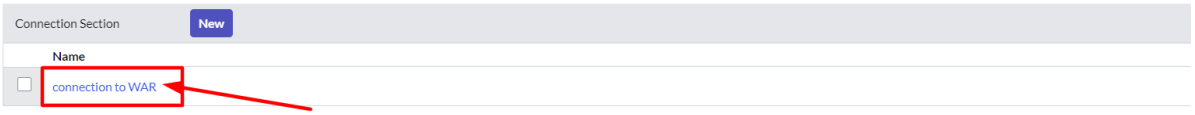

Fig. 77

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The Pattern Designer opens showing the list of operation in the page.

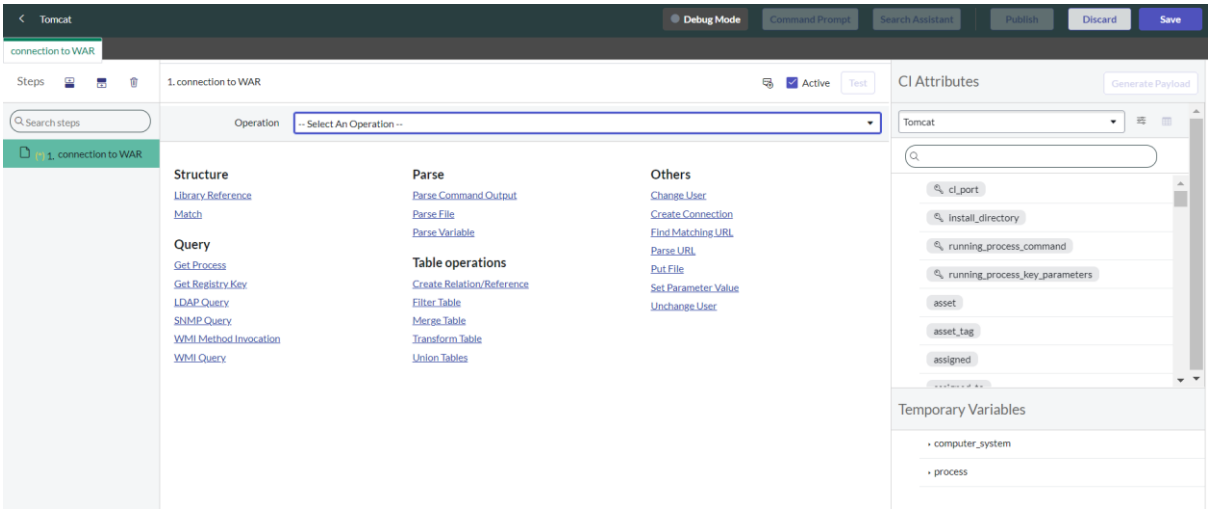

Fig. 78

Follow the same steps as we explained in **Fig.48,49,50,51**:

I. Click on the **Debug Mode**. It's best practice to enable it before building the Extension logic.

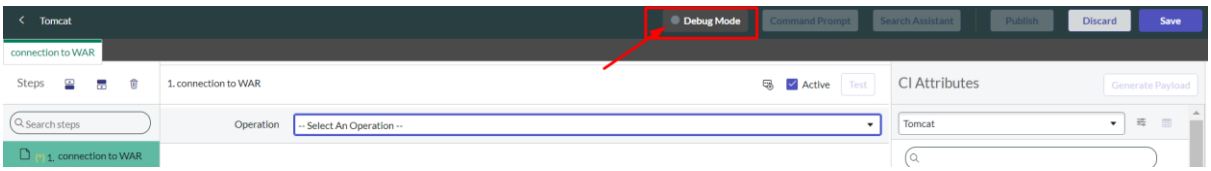

Fig. 79

II. When we click on **Debug Mode** we will get the Pop-up form as below, fill the all required details.

In this form, it will not ask you for Debug type.

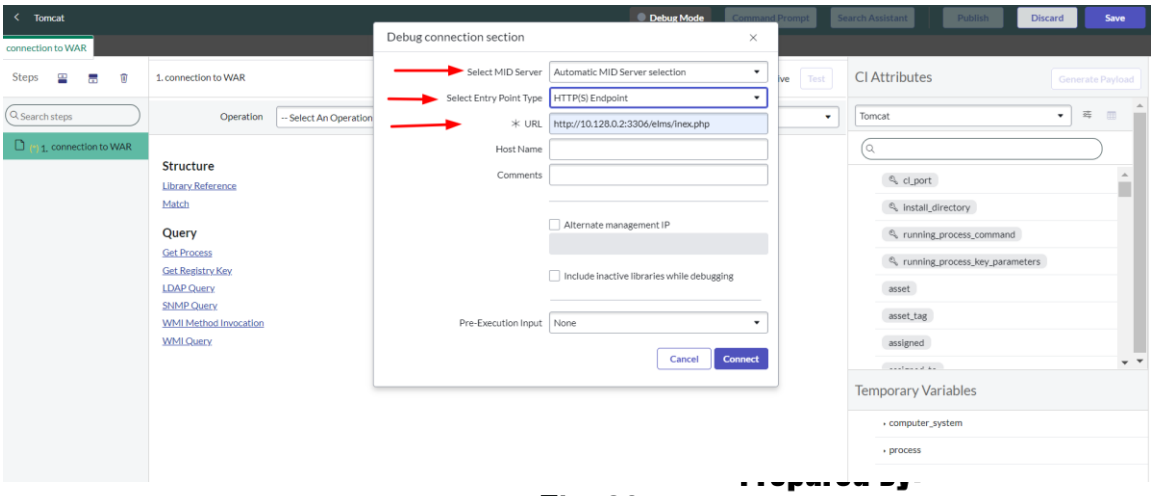

Fig. 80

III. Click on **Connect** button.

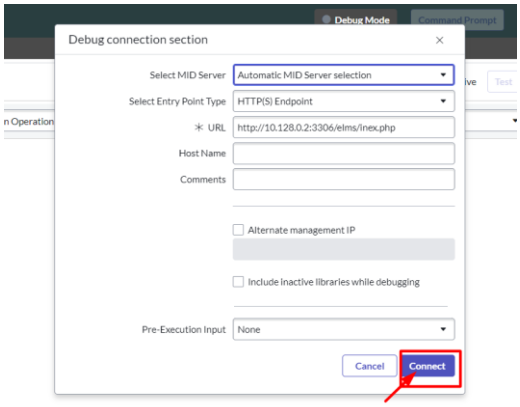

Fig. 81

VI. After Successful connection **Debug Mode** will enable, then start building the Connection Logic.

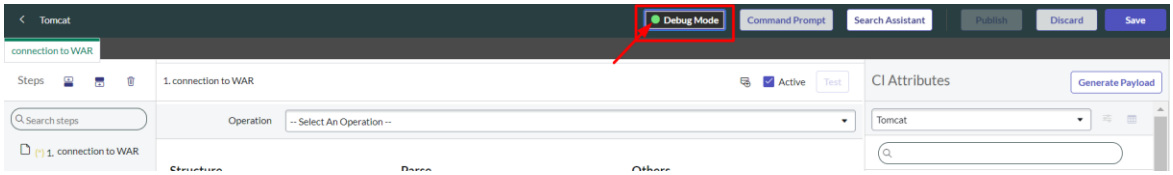

Fig. 82

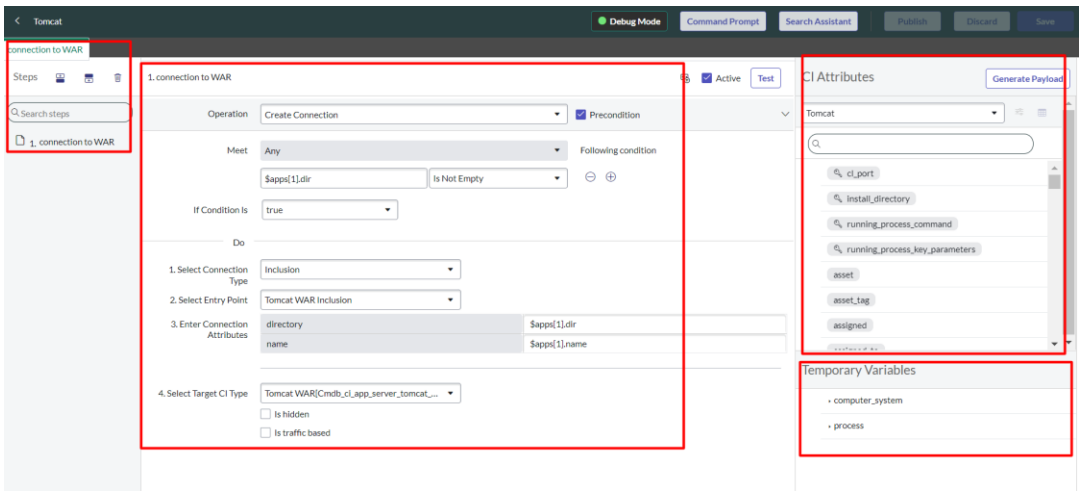

Fig. 83

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VII. After successfully creating Extension logic, then we will click on Test after successful test Click on Save and Publish.

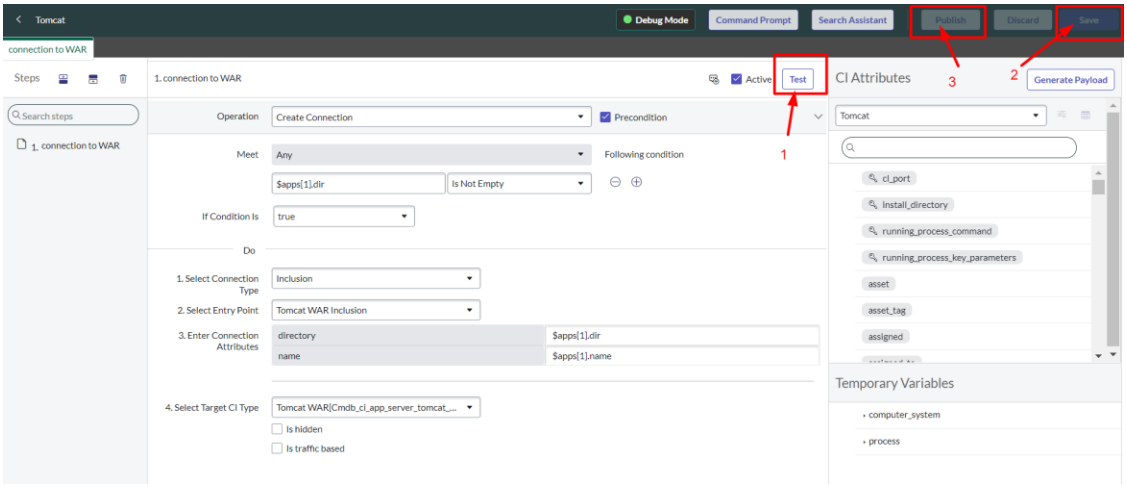

Fig. 84

VIII. After successfully Publishing go back to the 'Tomcat' Discovery Pattern setup page.

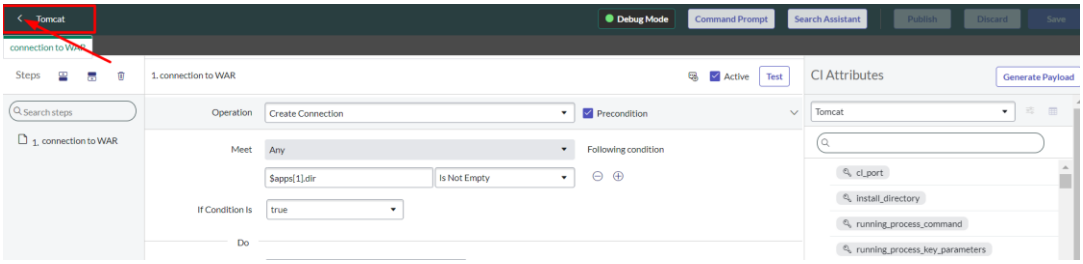

Fig. 85

IX. Click on Save.

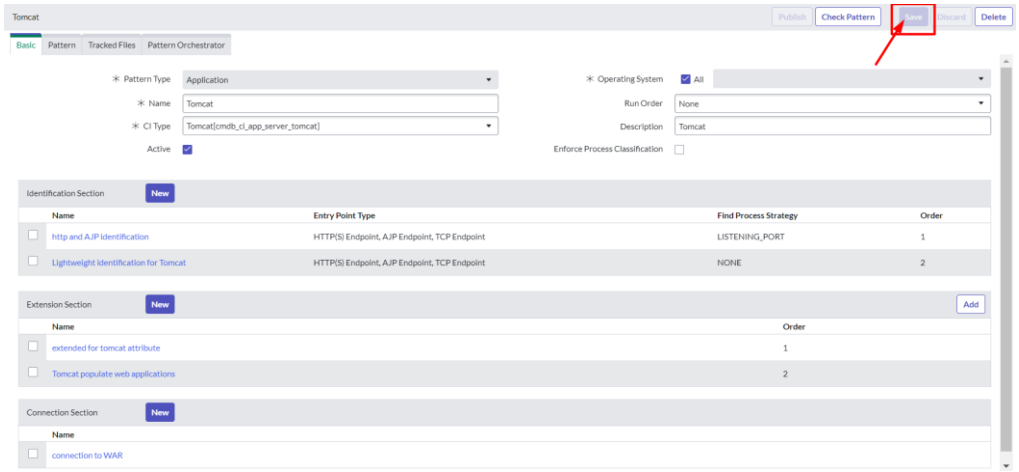

Fig. 86

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To Check Discovery Pattern that we have created recently:

- Navigate to **All** > **Pattern Designer** > **Discovery Patterns**.

In this list we will see the discovery pattern, which we have created in Fig. 43 we will see the Tomcat discovery pattern.

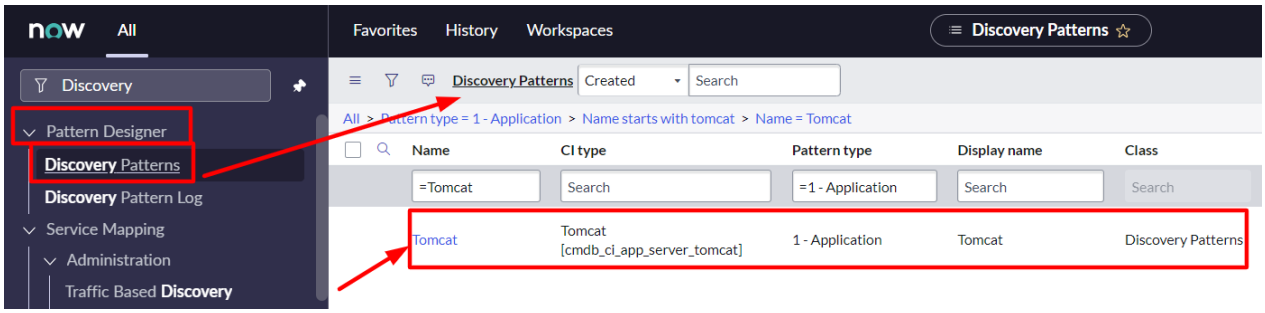

Fig. 87

Chapter 7. Creating Services (Tag Based Approach)

In this topic we'll see the steps to create a service. Mainly there are 4 steps:

Summary:

1. Request, Install and Activate the Plugins: We need to Request, Install and activate some plugins which will facilitate the process of creating a service.
2. In the Tag-Based Service Mapping we have two main Configuration Area:
   a) **CI Tag Categories.**
   b) **Tag-based Service Families.**
3. Create Service Candidates: After creating the tags we have to create Service Candidates. These service candidates are associated with the tags. They create a relationship between them.
4. Mapping View: Based on the Tags and Service Candidates we create a mapping tree using Tag-based Service.

We will see each and every point below in details:

1. **Request, Install and Activate plugin.**

   Navigate to Filter > Plugins > Request plugins

   Plugin Name: com.snc.service-mapping (**Service Mapping**)

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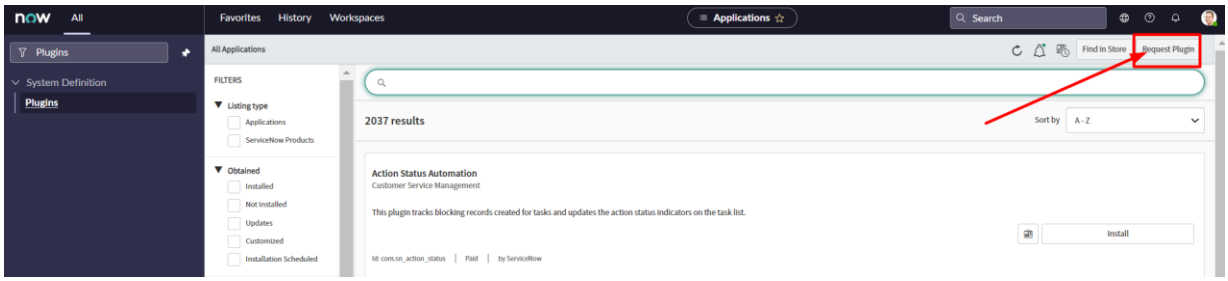

Fig. 88

- **Install Plugins:**

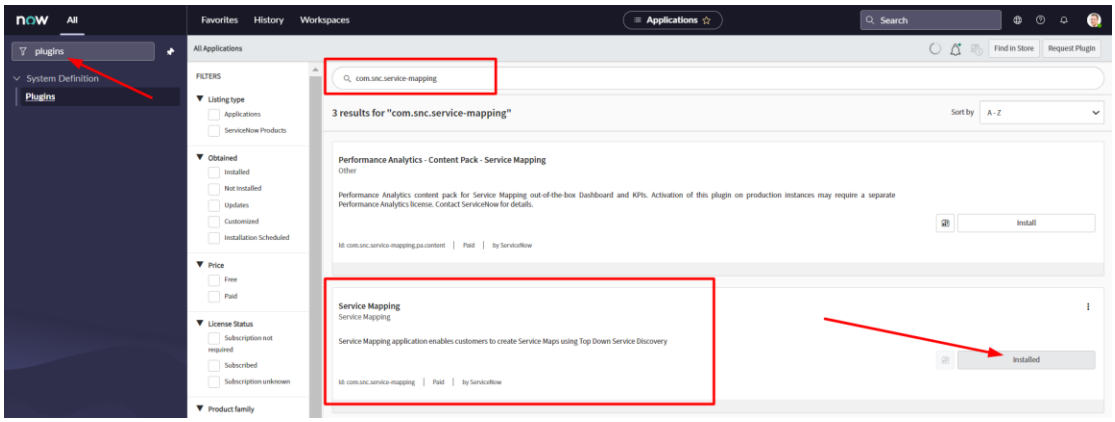

Fig. 89

Navigate to Filter > Plugins > search plugins

Plugin Name: com.snc.service-mapping (**Service Mapping**)

- Click on Install Button as shown in the above image. After Installing the Plugin, it will be automatically activated.

  The following default plugins are activated automatically when the Service Mapping plugin (com.snc.service-mapping) is activated:
- **Discovery** (com.snc.discovery)
- **Pattern Designer** (com.snc.pattern.designer)
- **Cloud Provisioning and Governance Core** (com.snc.cloud.core)
- **Performance Analytics – Content Pack – Service Mapping** (com.snc.service-mapping.pa.content)
- **Event Management and Service Mapping Core** (com.snc.service-watch)
- After Installed and Setup the Plugins.

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2. **In the Tag-Based Service Mapping we have two main Configuration Area:**
    a) **CI Tag Categories**
    b) **Tag-Based Service Families**

a). CI Tag Categories:

The administrator (**sm_admin**) creates CI Tag Categories and defines tag keys for that categories.

- **Navigate to Service Mapping > Administration > CI Tag categories**
    - Click **New**.

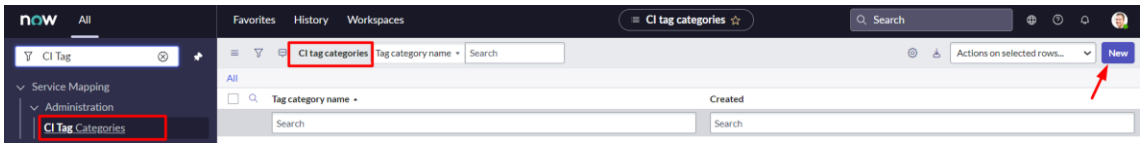

Fig. 90

- Here we can create tag category names, e.g: "**Application service**".

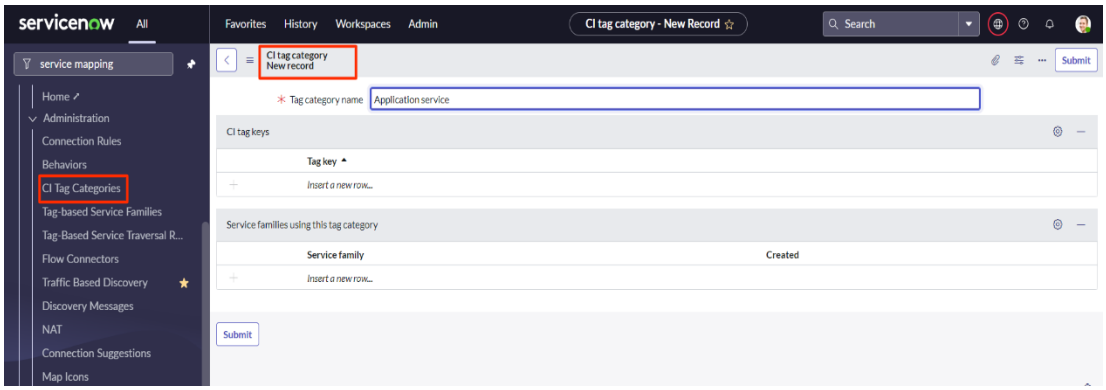

Fig. 91

- **CI Tag keys:** Tag Key is used to identify a particular ci using different keywords.

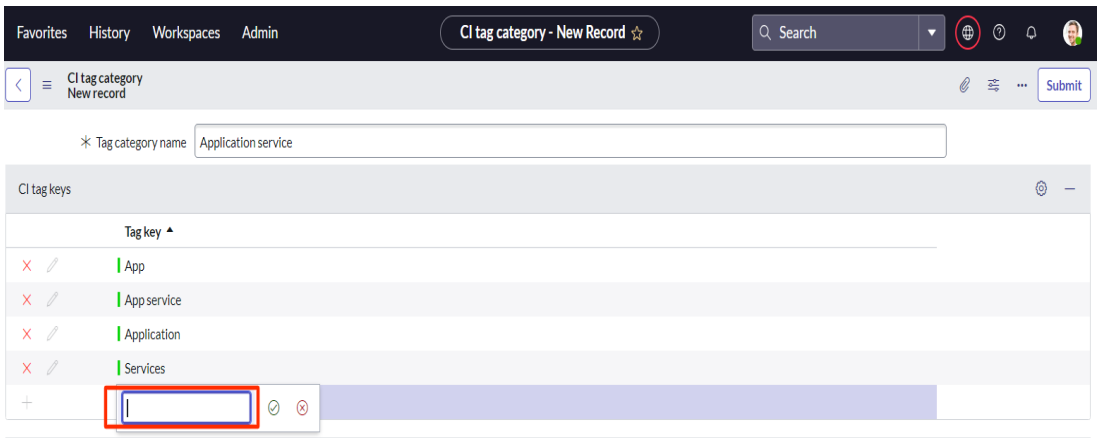

Fig. 92

b). Tag-Based Service Families:

The administrator **(sm_admin)** creates a Tag-Based Service Family and maps **tag categories** to it.

- **Navigate to Service Mapping > Administration > Tag-based Service Families.**
  - Service family name: Enter the name.
  - Click on Checkbox: Regular update service candidate.

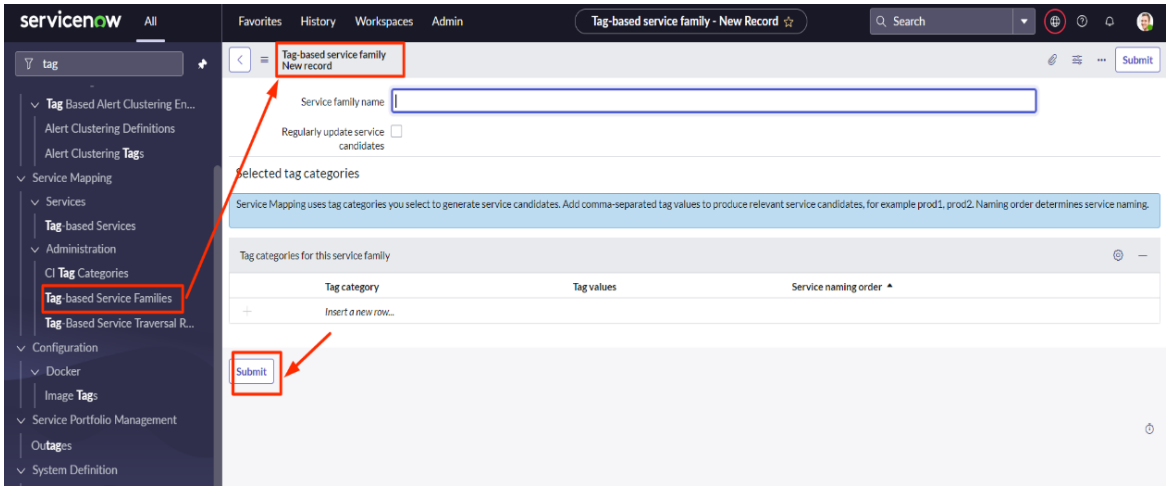

Fig. 93

- We need to add a Tag Category created in **Fig. 49** for this service family.

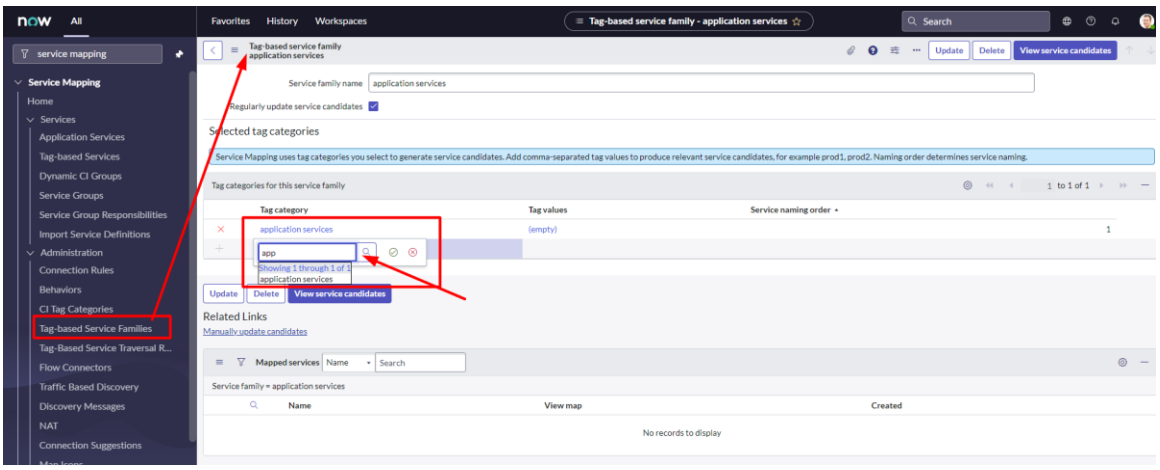

Fig. 94

- After entering all required information click on Update.

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3. Service Candidate:

Navigate to Service Mapping > Administration > Tag-based Service Family.

- In the service family, open the Application Services that we have created in **Fig. 49.**

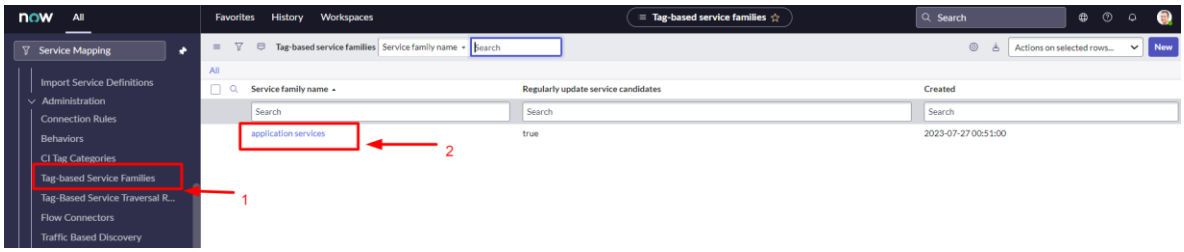

Fig. 95

- There is Button "**View Service Candidate**".

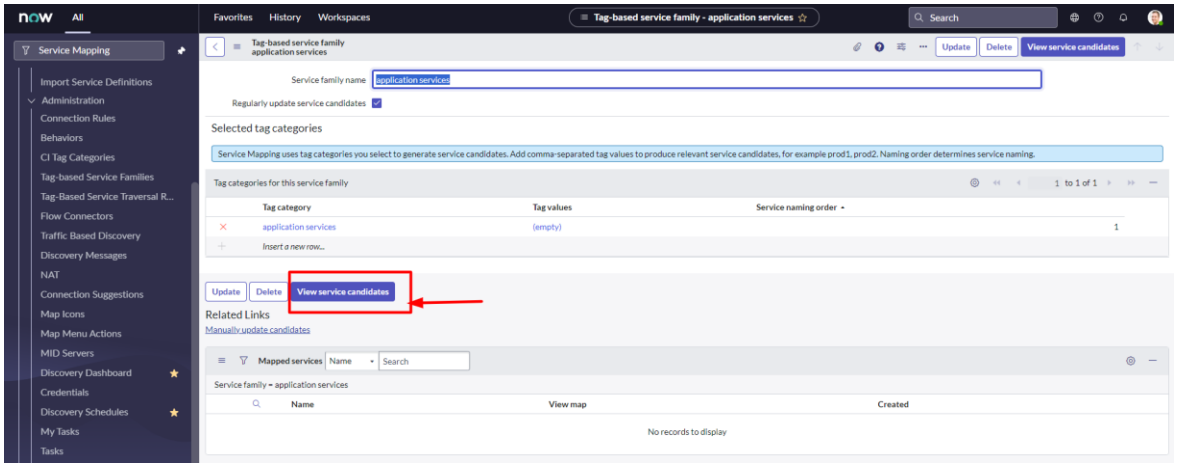

Fig. 96

- Click on "**View Service Candidate**" – Pop-up Window will open.

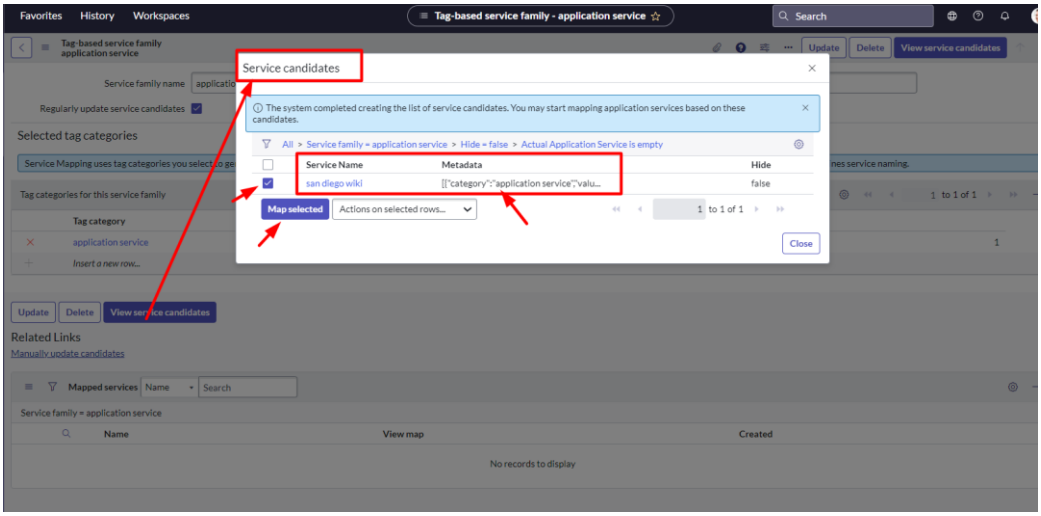

Fig. 97

  - Reference Link: https://youtu.be/Al7b5v7x[illegible]

- Select the appropriate candidate name that helps us to better identify a service.

- Click on Checkbox then **Save** it.

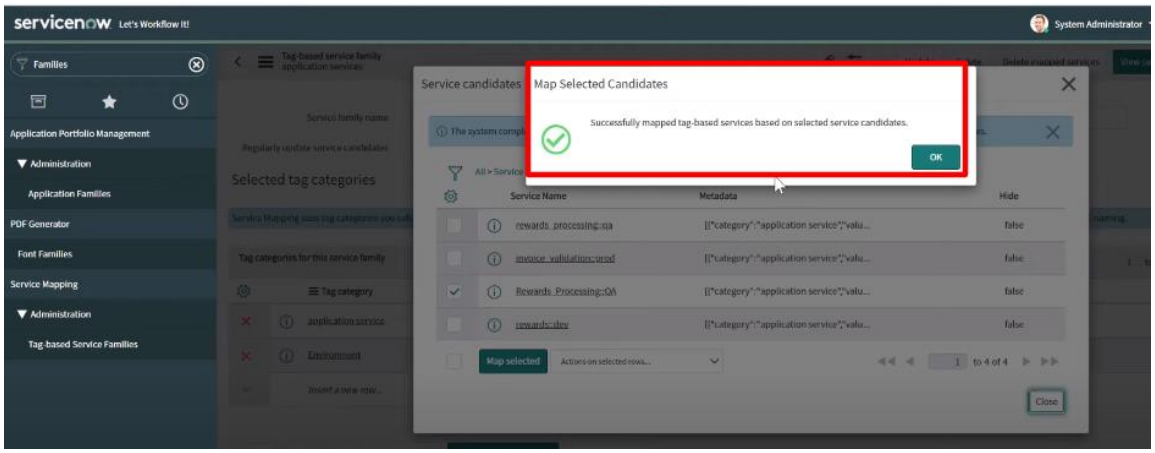

Fig. 98

4. **View Map:**
   - We need to Recalculate it for Mapping. So, Click on Mapped Services.

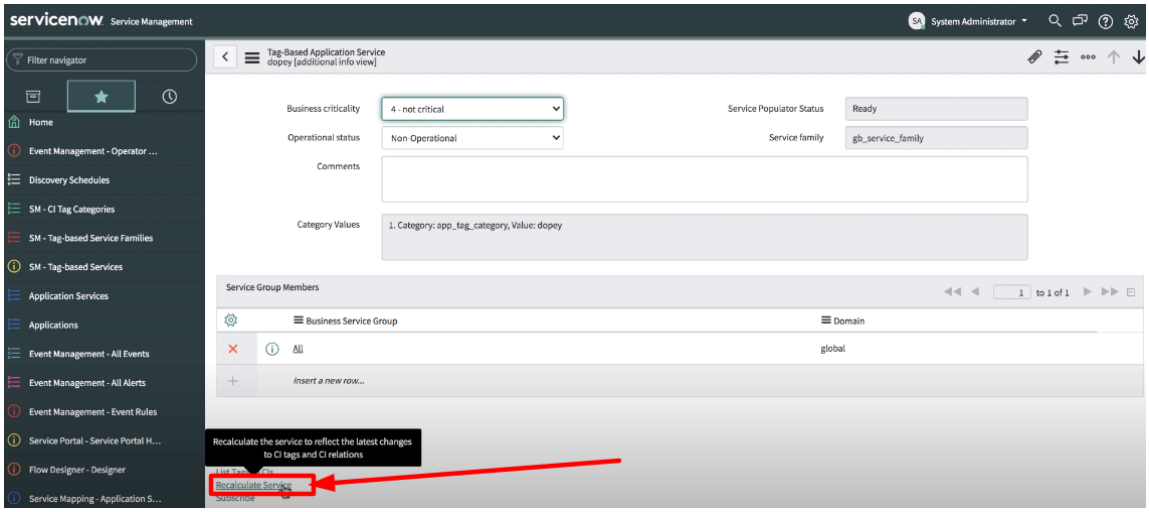

Fig. 99

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- After Recalculating we will Click on the Operational **Status** drop-down Menu and select as **Operational** from the List of values.

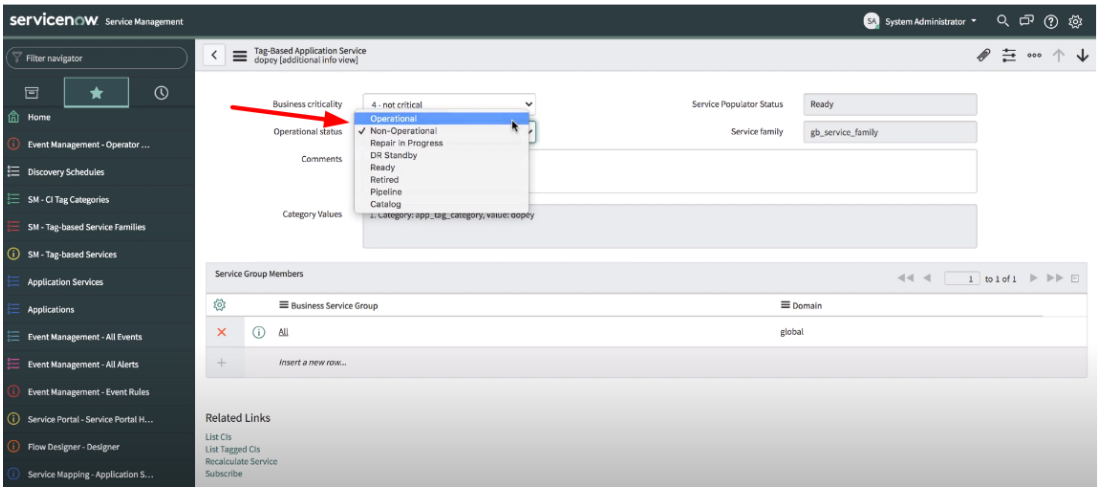

Fig. 100

- After completing these steps and setups. Tag-Based Service Mapping will be almost set up.
- Now we need to check whether Mapping of CI is correct or not.
- Navigate to Tag Based Service.
    - **Navigate to Service Mapping > Services > Tag-based Services.**

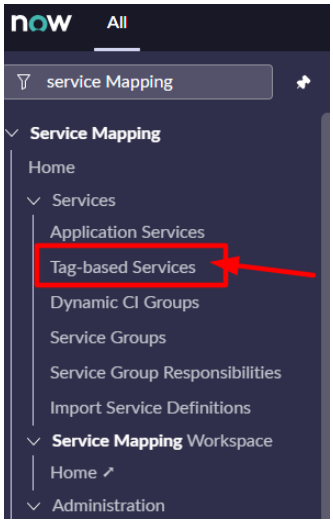

Fig. 101

- We will be able to see all the list of Service Candidate names inside the Tag-based Services. In this list we will find our Service Candidate which we have generated in Fig. 55. Click on “View Map”.

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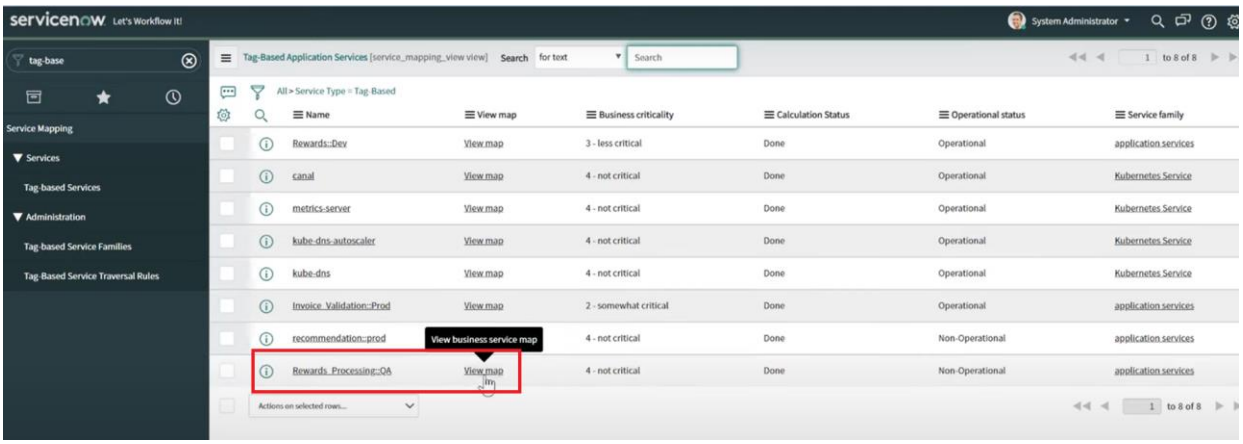

Fig. 102

- Reference Link: https://youtu.be/Al7b5v7xQY4

- Now we will be able to see the service map.

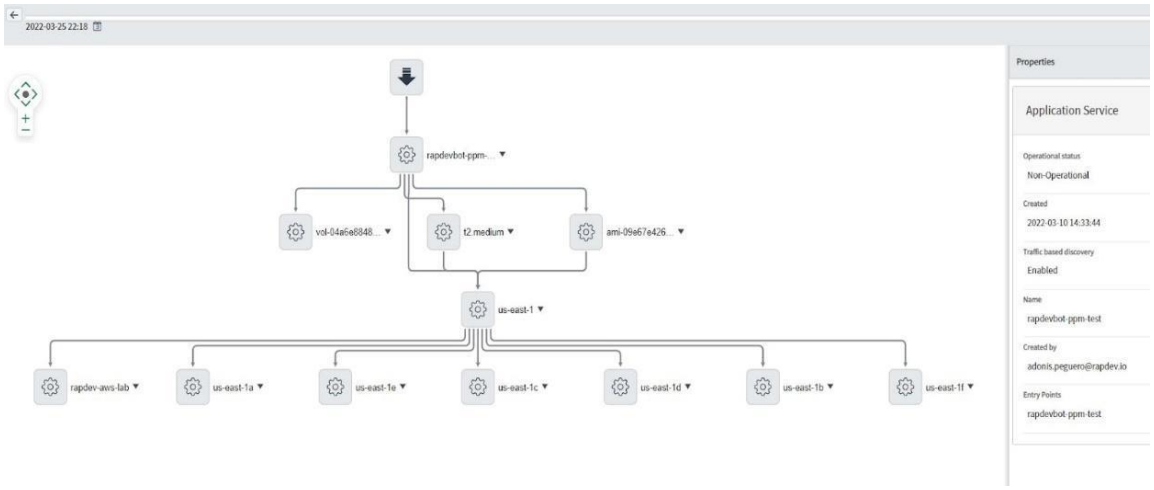

Fig. 103

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