Informatica® Cloud Data Integration

ServiceNow Connector

Informatica Cloud Data Integration ServiceNow Connector
December 2023

Publication Date: 2024-05-09

Table of Contents

Preface 5

Informatica Resources. 5

Informatica Documentation. 5

Informatica Intelligent Cloud Services web site. 5

Informatica Intelligent Cloud Services Communities. 5

Informatica Intelligent Cloud Services Marketplace. 5

Data Integration connector documentation. 6

Informatica Knowledge Base. 6

Informatica Intelligent Cloud Services Trust Center. 6

Informatica Global Customer Support. 6

Chapter 1: Introduction to ServiceNow Connector. 7

Introduction to ServiceNow. 7

ServiceNow Connector assets. 7

ServiceNow Connector operations. 8

Administration of ServiceNow Connector. 8

Set up the ServiceNow integration user and the GMT time zone. 8

Enable the aggregate web service. 9

Setting up the ServiceNow user, group, and role. 10

Set up a ServiceNow user without the ITIL role. 16

Chapter 2: Connections for ServiceNow. 20

Connect to ServiceNow. 20

Before you begin. 20

Connection details. 21

Advanced settings. 21

Firewall configuration. 21

Proxy server settings. 22

Configure proxy server through proxy.ini file. 22

Test a ServiceNow connection. 22

Chapter 3: Synchronization tasks with ServiceNow Connector. 25

ServiceNow sources in synchronization tasks. 25

ServiceNow targets in a synchronization task. 26

ServiceNow lookups in a synchronization task. 27

Synchronization example. 28

Guidelines for synchronizing data from ServiceNow with Salesforce. 31

Data filters. 32

Simple data filters. 32

Advanced data filters. 33

Supported data filter operators. 33
Rules and guidelines for data filters. 34

Chapter 4: Mappings and mapping tasks with ServiceNow Connector. 36
ServiceNow sources in mappings. 36
ServiceNow targets in mappings. 37
Upsert operation in ServiceNow target. 38
Rules and guidelines for ServiceNow mappings. 38

Chapter 5: Troubleshooting. 39
Fail ServiceNow Read Mapping on Error. 39
Increasing query rows in ServiceNow. 39
Increasing Secure Agent memory. 40
Best practices for increasing memory of the Secure Agent. 41

Chapter 6: Data type reference. 43
ServiceNow and transformation data types. 43

Index. 46

Preface

Use *ServiceNow Connector* to learn how to read from or write to ServiceNow by using Cloud Data Integration. Learn to create a ServiceNow connection, develop mappings, and run synchronization and mapping tasks in Cloud Data Integration.

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Developers can learn more and share tips at the Cloud Developer community:

https://network.informatica.com/community/informatica-network/products/cloud-integration/cloud-developers

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Use the Informatica Knowledge Base to find product resources such as how-to articles, best practices, video tutorials, and answers to frequently asked questions.

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You can contact a Global Support Center through the Informatica Network or by telephone.

To find online support resources on the Informatica Network, click **Contact Support** in the Informatica Intelligent Cloud Services Help menu to go to the **Cloud Support** page. The **Cloud Support** page includes system status information and community discussions. Log in to Informatica Network and click **Need Help** to find additional resources and to contact Informatica Global Customer Support through email.

The telephone numbers for Informatica Global Customer Support are available from the Informatica web site at https://www.informatica.com/services-and-training/support-services/contact-us.html.

CHAPTER 1

Introduction to ServiceNow Connector

You can use ServiceNow Connector to securely read data from and write data to ServiceNow. You can also use ServiceNow Connector to connect to any on-premise or cloud application.

You can create ServiceNow connection and use the connection in synchronization tasks. You can map source and target object fields, filter, synchronize the data, and easily schedule real-time or batch integration processes. You can switch the mapping to advanced mode to include transformations and functions that enable advanced functionality.

You can synchronize ServiceNow data with any on-premise systems like SAP or cloud-based applications, such as Salesforce CRM, Microsoft Sharepoint, Altassian JIRA, or Microsoft Team Foundation Server (TFS).

ServiceNow connector supports all versions of ServiceNow except the Express Edition.

Introduction to ServiceNow

ServiceNow is a software-as-a-service (SaaS) provider of enterprise service management software.

ServiceNow automates enterprise operations and creates a single system of record for all service management processes within an organization. ServiceNow brings together the strategy, design, transition, and operation on the cloud platform. ServiceNow applications are built on a single platform-as-a-service which offers consistent and intuitive user experience through the entire service management lifecycle for services, such as Incident Management, Problem Management, Change Management, User Administration, CMBD, and Service Management.

ServiceNow Connector assets

Create assets in Data Integration to integrate data using ServiceNow Connector.

When you use ServiceNow Connector, you can include the following Data Integration assets:

- Mapping
- Mapping task
- Synchronization task

For more information about configuring assets and transformations, see *Mappings*, *Transformations*, and *Tasks* in the Data Integration documentation.

ServiceNow Connector operations

You can specify all the default and custom ServiceNow objects as sources and targets in mappings and mapping tasks. You can configure ServiceNow Connector to read, lookup, insert, update, upsert, and delete the default and custom ServiceNow objects. You can also preview the data in the source and target objects in the mapping.

Administration of ServiceNow Connector

As a user, you can synchronize data between ServiceNow and Salesforce modules such as Incident Management, Problem Management, Change Management, User Administration, CMBD, and Service Management modules.

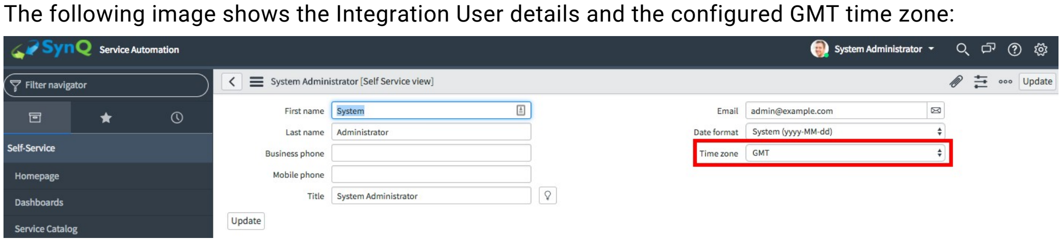
Before you can perform data integration between Salesforce and ServiceNow, you must perform the following tasks:

- Ensure that you have the Salesforce, ServiceNow, and Informatica Cloud Account credentials.
- Enable the XML WebService - SCHEMA export processor to read the schema definition.
- Set up the ServiceNow Integration User and the GMT time zone.
- Enable the Aggregate Web Service plugin to fetch the total row count while reading data.
- Enable the JSON Web Service plugin to write data to the ServiceNow tables. For more information about enabling the JSON web service plugin in the ServiceNow instance, see the following website: https://docs.servicenow.com/?title=JSON_Web_Service#Activating_the_Plugin
- Set up the ServiceNow user, group, and role. Include the following roles for the ServiceNow user:
  - soap: To read data from and write data to the tables.
  - rest-service and itil: To access views or tables from the ServiceNow modules.

Set up the ServiceNow integration user and the GMT time zone

Set up an Integration User for ServiceNow and set the user time zone to GMT.

The following image shows the Integration User details and the configured GMT time zone:

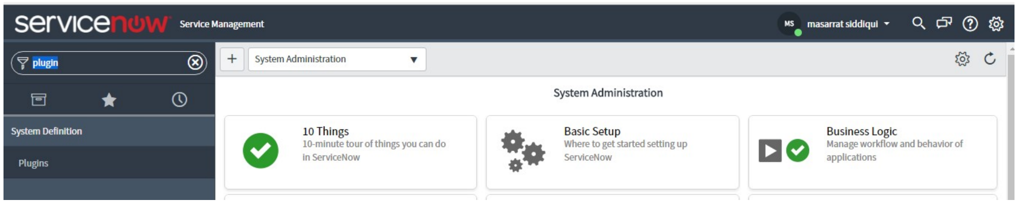


Enable the aggregate web service

You must enable the required ServiceNow plugins and the system properties for ServiceNow Connector.

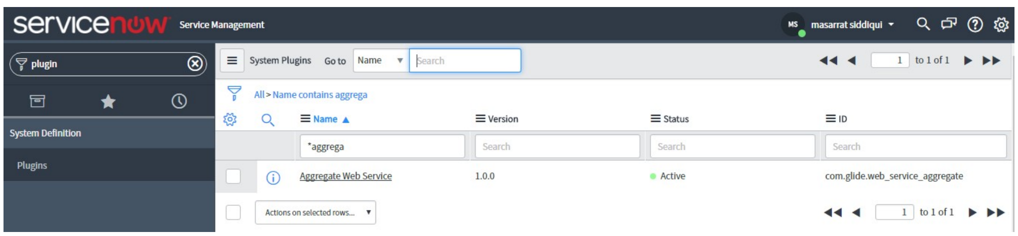
1. To enable the Aggregate Web Service plugin, click **Plugin** from the **System Definition** application menu, and then search for Aggregate Web Service.

   The following image shows the System Definition application menu:

2. Make sure that the status of Aggregate Web Service is Active. If it does not display Active status, right-click the service and select **Activate**.

   The following image shows the status of the aggregate web service:

3. To view all the system properties, type sys_porperties_list.do in the filter navigator, and press **Enter**.

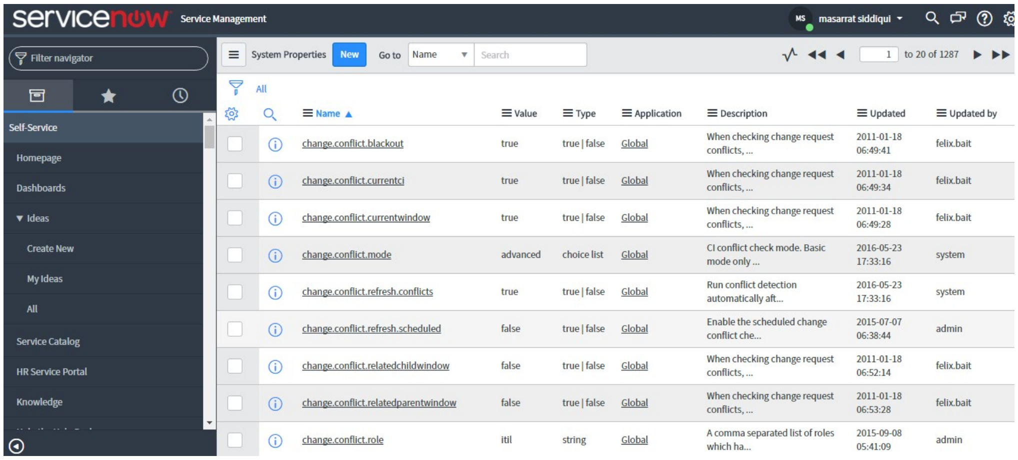
   The following image shows the filter menu:

   All the system properties appear.

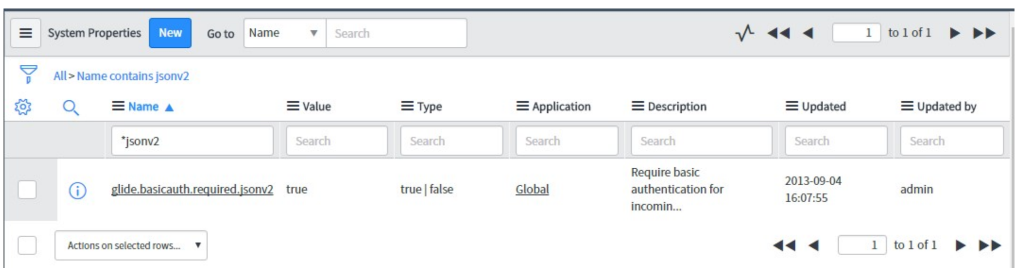
4. Search for JSONV2 from the **Go To** filter.

The following image shows the displayed system properties:



5. Ensure value is true for glide.basicauth.required.jsonv2.

The following image shows the value for the selected glide.basicauth.required.jsonv2:



Setting up the ServiceNow user, group, and role

Before you use ServiceNow Connector to integrate data from ServiceNow, you must create the ServiceNow user, group, and role. ServiceNow Connector uses JSONv2 web services to communicate with ServiceNow. ServiceNow Connector also requires access to the system tables, such as sys_db_object and sys_db_view.

To perform operations in ServiceNow, you must create a group, assign the custom role to the group, and then add the integration user to the group.

The custom role must include the following roles required for integrating data:

- ITIL
- Rest_Service
- Soap_query

For incident management related tables, it is recommended to include the ITIL role while creating the user and role.

For more information about the SOAP roles, see the ServiceNow documentation.

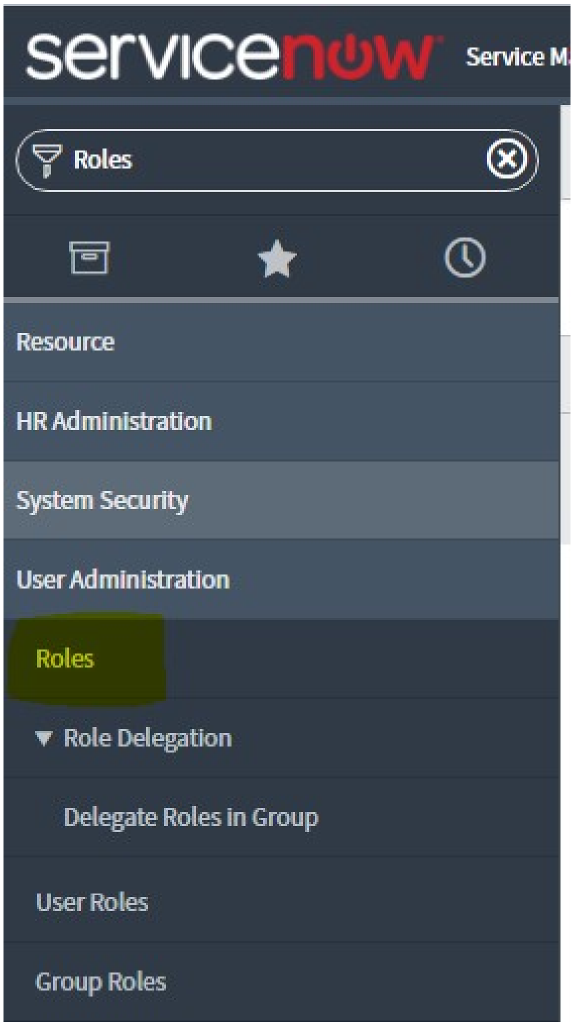
Create a ServiceNow role

You must first create the ServiceNow role. ServiceNow recommends that you assign roles to a group and assign users to a group.

The following example shows you how to create a ServiceNow role.

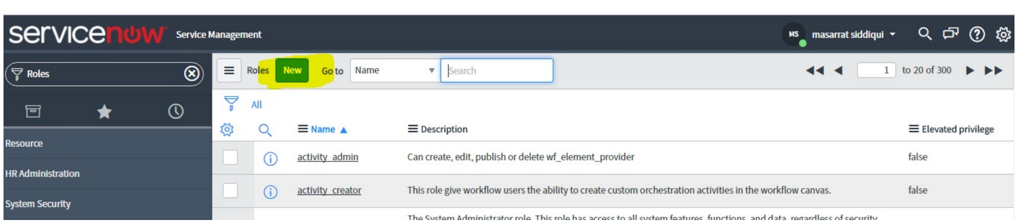
1. Click the **Role** module that resides in the **User Administration** application menu.

   The following image shows the **Role** screen that appears, displaying the existing roles and their attributes:



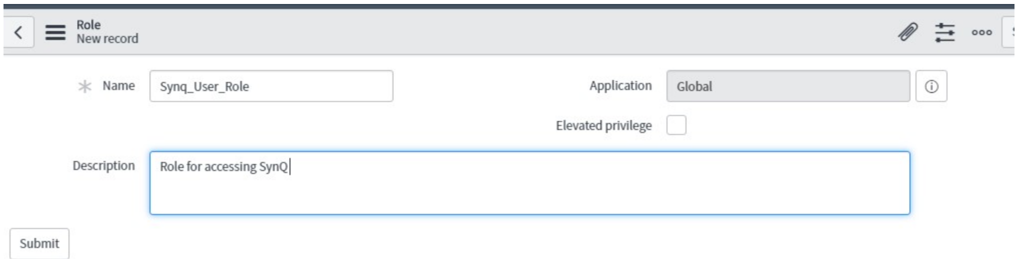
2. Click **New** to create a new role.

   The following image shows the **New** tab:



3. Enter a valid name in the **Name** field and optionally enter a description.

The following image shows the specified Synq_User_Role:

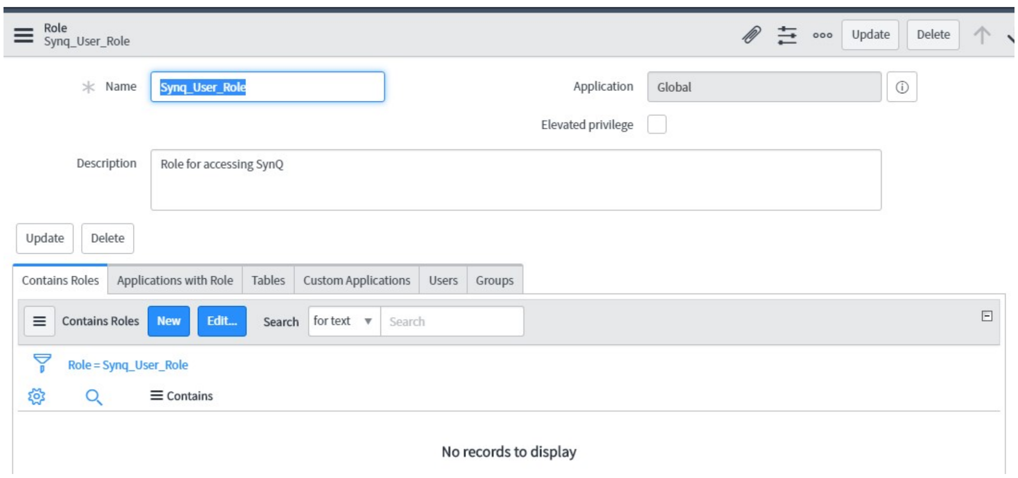


4. Select Global in the **Application** field.

   The role is created.

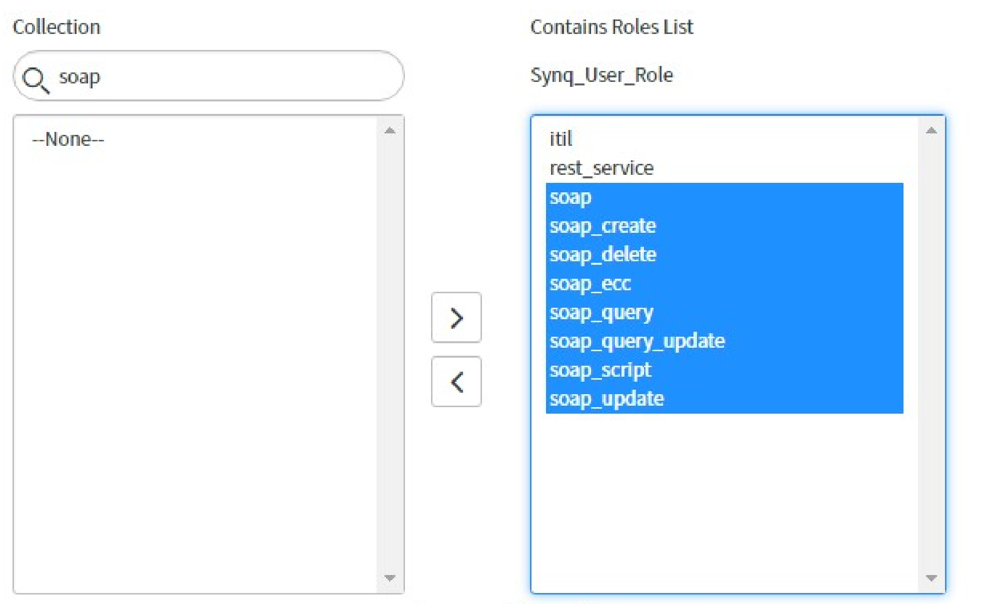
5. To assign existing roles to the newly created role, click the **Contains Role** tab, and then click **Edit**.

   The following image shows the **Contains Role** tab on the lower side, with the **Edit** tab:



6. Include the roles required for gaining access to all the ServiceNow features.

   The following image shows the selected roles:



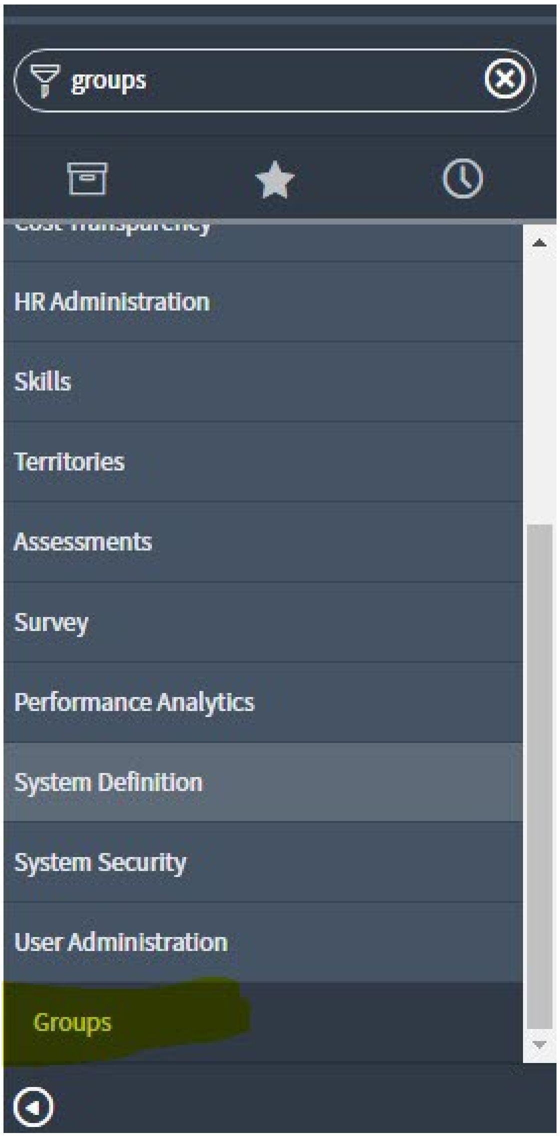
7. Click **Save** to complete the operation.

Create a group

Create a group and assign the configured role to the user group.

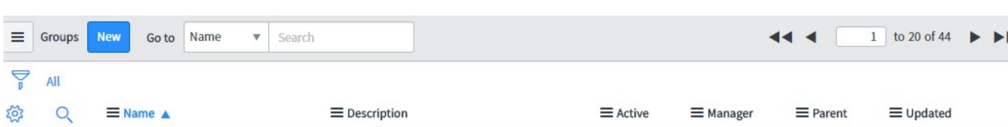
1. Click the **Groups** tab from the **User Administration** menu.

   The following image shows the **Groups** tab:

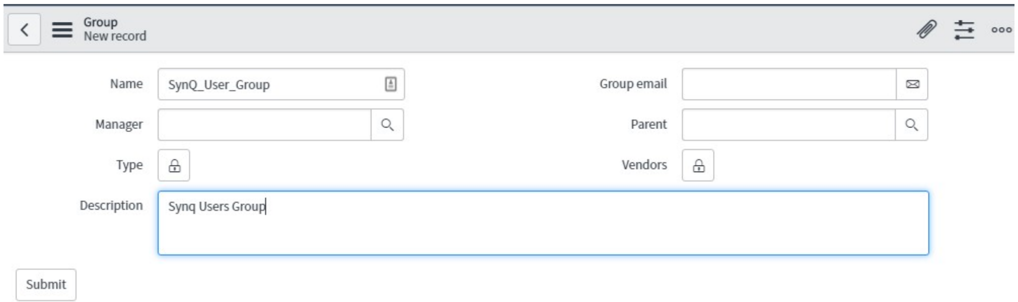
2. Click **New** to create a new group.

   The following image shows the **New** tab:

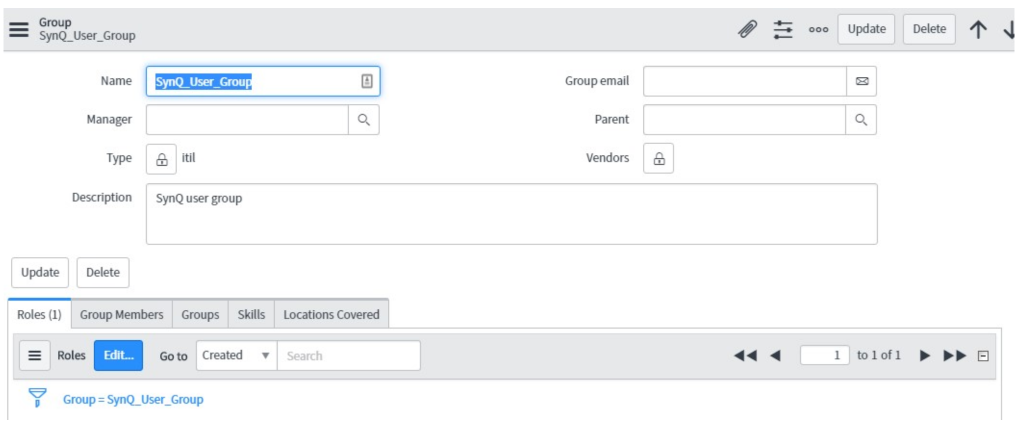
3. Enter a name and provide a description for the user group.

The following image shows the specified name for the user group:



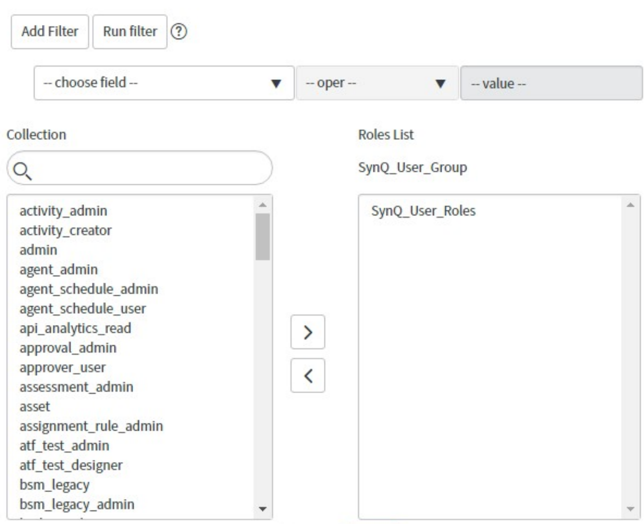
4. Click **Submit** to save the information.

   The group is created.



5. Click **Edit** on the **Roles** tab to assign the roles to the group.
6. Select Synq_user_Role from the available roles.

   The following image shows the selected Synq_user_Role in the Roles list:



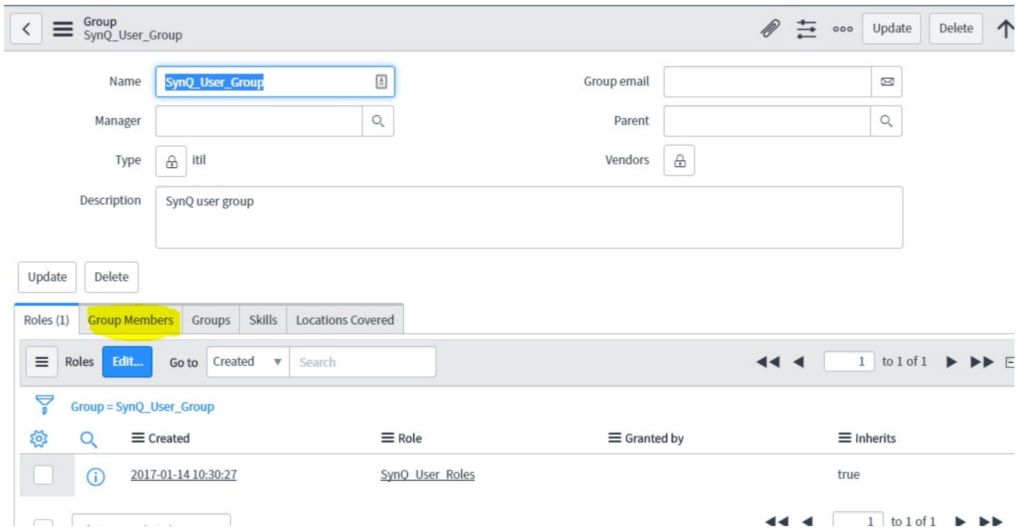
7. Click **Save**.

Use an existing user or create a new user

Assign an existing user to SynQ_User_Group or create a new user and then assign the created new user to SynQ_User_Group.

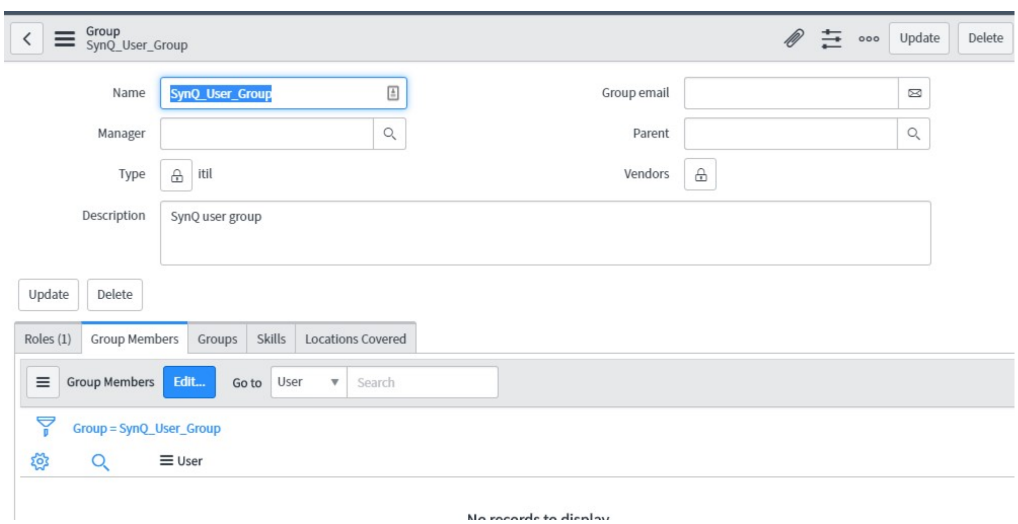
1. Click the **Group Members** tab.

   The following image shows the **Group Members** tab in the SynQ_User_Group:



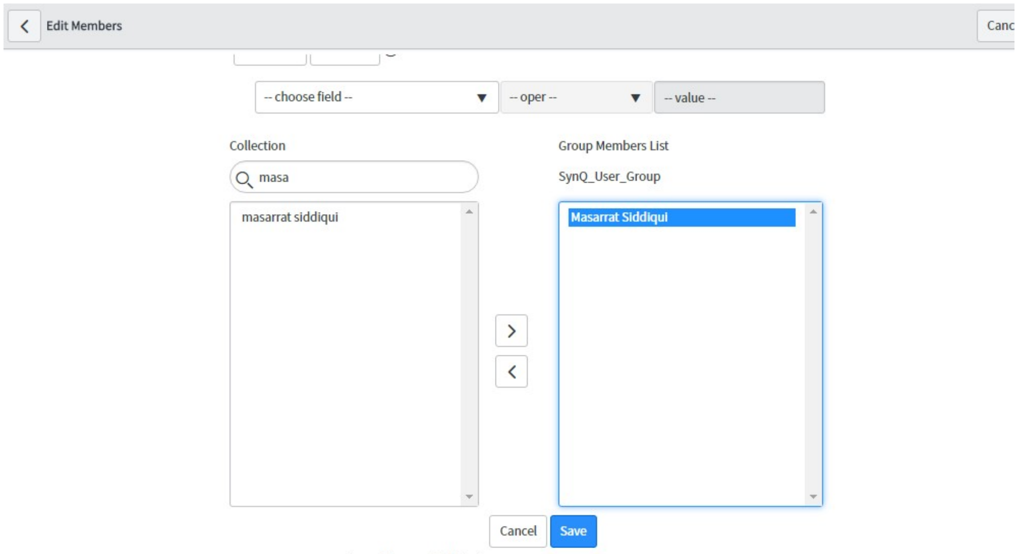
2. Choose to create new users, or click **Edit** to add existing users to the group.

   The following image shows the **Edit** tab for the SynQ_User_Group:



3. Click **Save**.

   The following image shows the added group members to the SynQ_User_Group:

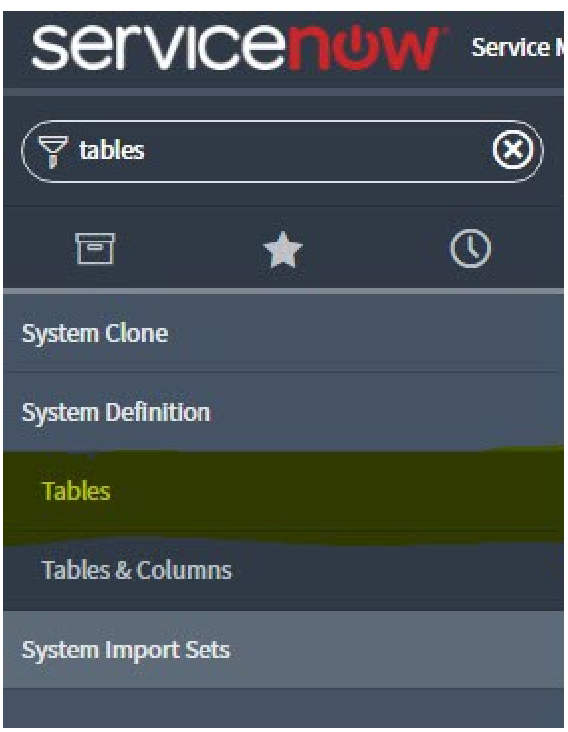
   

Set up a ServiceNow user without the ITIL role

You can access ServiceNow without assigning the ITIL role to the user. It is recommended that you must have the ITIL role if you want to perform operations on the Incident Management tables.

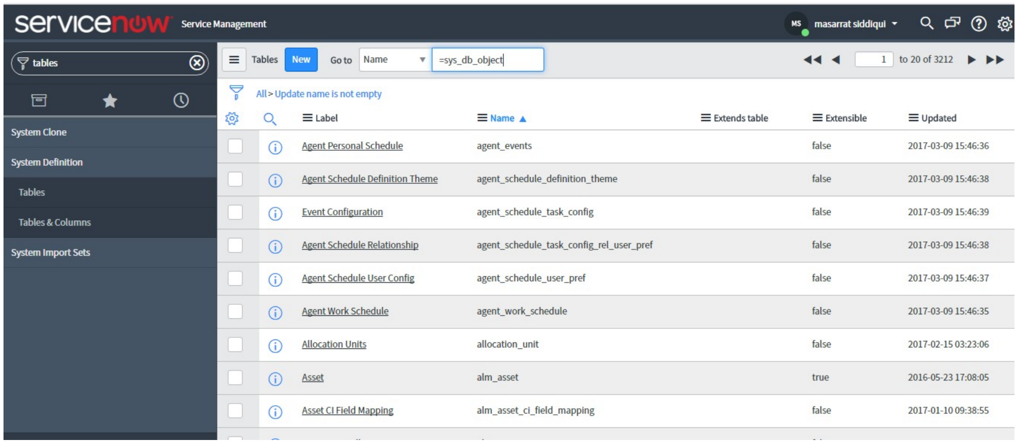
1. Update the ACL of the sys_db_object table.
2. Click **Tables** to get the list of tables.

   The following image shows the **Tables** tab:

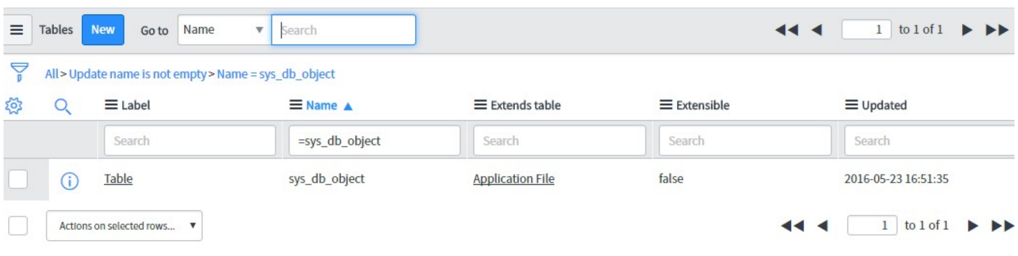
3. Search for sys_db_object.

   The following image shows the list of tables from which you use the search to list the sys_db_object:



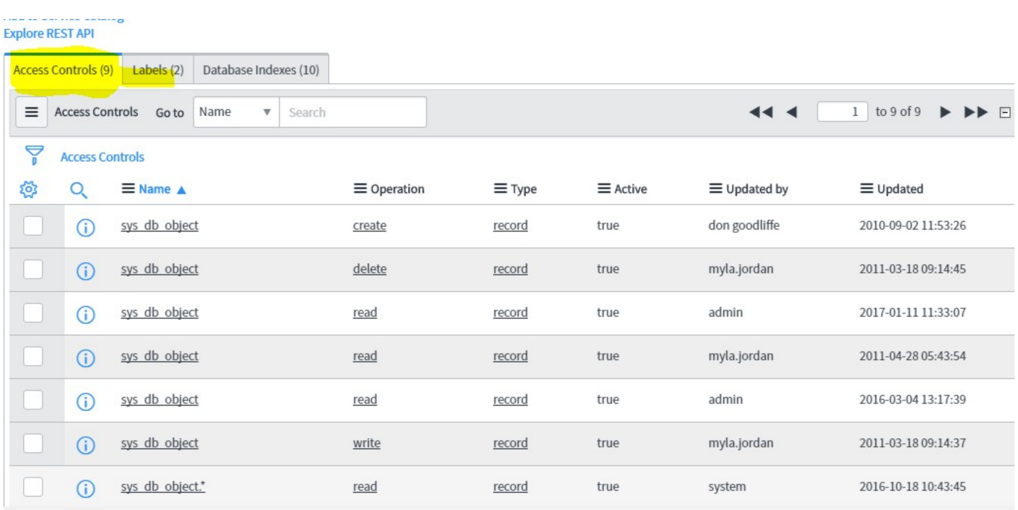
4. Click the **Table** label value to view and update the attributes of the sys_db_object table.

   The following image shows the **Table** label:



5. On the **Access Controls** tab, scroll down to view the ACLs.

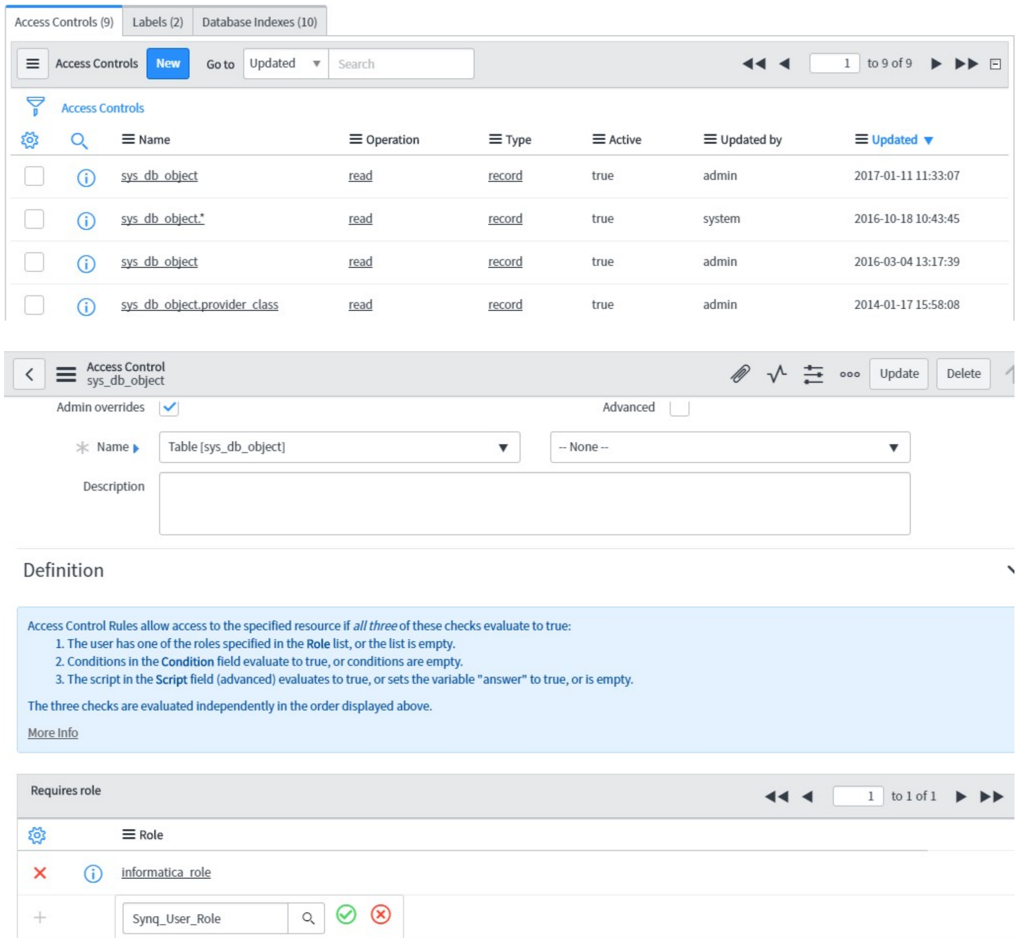
   The following image shows the listed ACls:



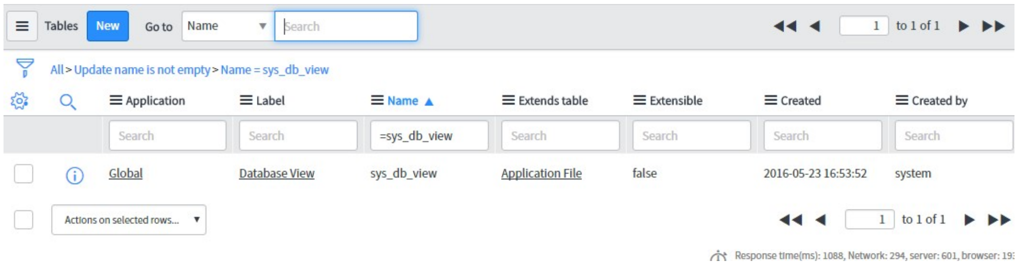
   The sys_db_object contains metadata of the ServiceNow tables. For accessing data from the sys_db_object table, assign the role to the read operation. You must have the security_admin elevated role for updating the ACL for any of the tables. Enable the role before updating the ACLs.

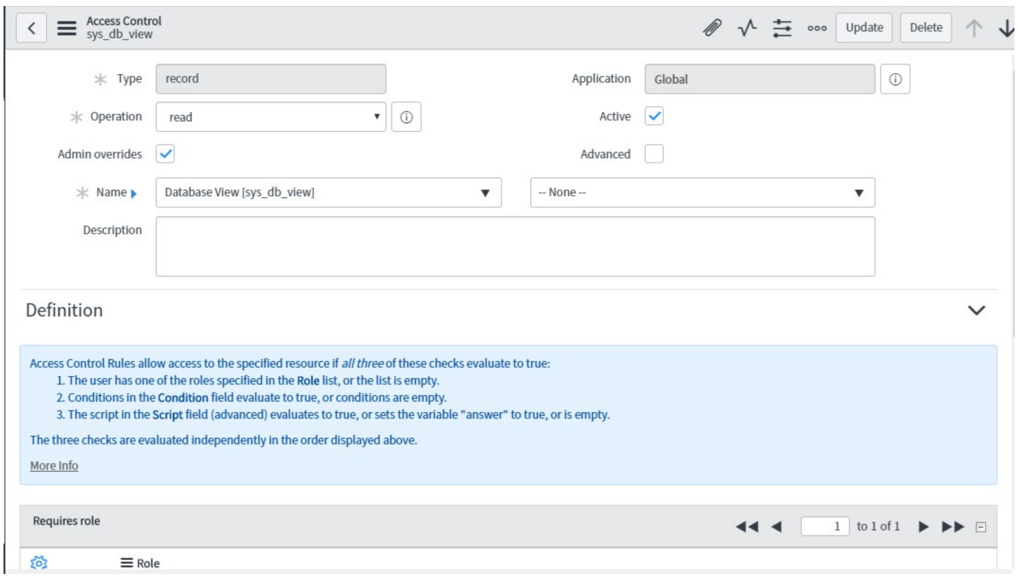
6. To add a new ACL for the read operation for the Synq_User_Role, click **New**.

The following image shows the **New** tab where you can create a new ACL:



7. Repeat steps similarly to update the ACLs for the sys_db_view table:





For more information about updating ACLs, see the ServiceNow documentation.

CHAPTER 2

Connections for ServiceNow

Create a ServiceNow connection to securely read data from or write data to ServiceNow. You can use ServiceNow connections to specify sources and targets in mapping tasks or synchronization tasks.

Create a connection and associate it with a synchronization task. Define the source and target properties to read data from or write data to ServiceNow.

You can create a ServiceNow connection on the **Connections** page and use it in the Mapping task or Synchronization task wizard when you create a task. The connection becomes available to the entire organization.

Connect to ServiceNow

Let's configure the ServiceNow connection properties to connect to ServiceNow.

Before you begin

Before you configure the connection properties, you'll need to get the user name, password, and service URL from your ServiceNow account.

The following video shows you how to get the information you need:

Connection details

The following table describes the basic connection properties:

Property	Description
Connection Name	Name of the connection. Each connection name must be unique within the organization. Connection names can contain alphanumeric characters, spaces, and the following special characters: _ . + -, Maximum length is 255 characters.
Description	Description of the connection. Maximum length is 4000 characters.
Type	ServiceNow
Runtime Environment	The name of the runtime environment where you want to run tasks. Select a Secure Agent, Hosted Agent, or serverless runtime environment. Do not use a Hosted Agent if you use the connection in mappings in advanced mode.
Username	User name of the ServiceNow instance.
Password	Password for the ServiceNow instance.
EndPoint URL	The ServiceNow endpoint URL.

Advanced settings

The following table describes the advanced connection properties:

Property	Description
Instance Type	Type of ServiceNow instance. Select JSONv2.

Firewall configuration

If your organization uses a protective firewall, include the Secure Agent IP address ranges on the list of approved IP addresses to ensure that the Secure Agent can perform all the necessary tasks through the firewall.
The Secure Agent uses the following IP address ranges:

- 209.34.91.0-255
- 206.80.52.0-255
- 206.80.61.0-255
- 209.34.80.0-255

Proxy server settings

If your organization uses an outgoing proxy server to connect to the Internet, the Secure Agent connects to Informatica Intelligent Cloud Services through the proxy server.

You can configure the Secure Agent to use the proxy server on Windows and Linux. You can use only the unauthenticated proxy server. You can configure proxy both in mappings and in mappings in advanced mode.

To configure the proxy settings for the Secure Agent, use one of the following methods:

- Configure the Secure Agent through the Secure Agent Manager on Windows or shell command on Linux. For instructions, see "Configure the proxy settings on Windows" or "Configure the proxy settings on Linux" in *Getting Started* in the Data Integration help .
- Configure the proxy server properties in the proxy.ini file.

When you use a serverless runtime environment, you cannot use a proxy server to connect to Informatica Intelligent Cloud Services.

Contact your network administrator for the correct proxy settings.

Configure proxy server through proxy.ini file

To enable the proxy server, configure the Secure Agent through the `proxy.ini` file.

1. Navigate to the following directory on the Secure Agent machine: `<Secure Agent installation directory>\Informatica Cloud Secure Agent\apps\agentcore\conf\proxy.ini`
2. Add the host and port number of the proxy server in the `proxy.ini` file:
```
InfaAgent.ProxyHost=<Proxy server hostname>
InfaAgent.ProxyPort=<Proxy server port number>
```
3. Restart the Secure Agent.

Test a ServiceNow connection

To verify if you can connect to ServiceNow, open any REST or SOAP client and test the connection. It is recommended that you use the following SOAP URL and test the REST, JSON, JSONv2, or SOAP endpoints.

You need to use the user credentials that has the SynQ_User_Role or the name that you specify for the role.

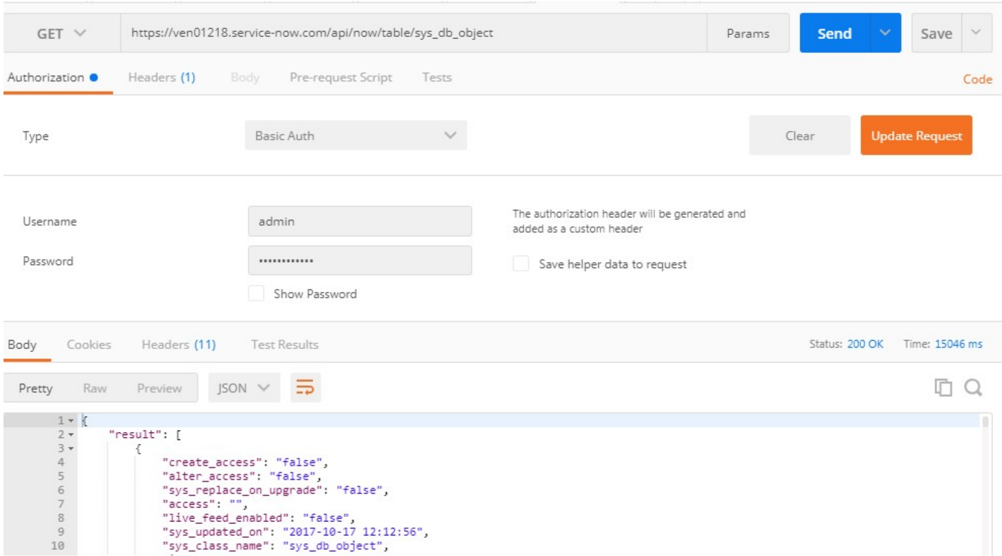
Verify the connection status

To verify the connection status, call the REST API from any REST client.

Before you make a call to the API, ensure that you have set up the user, group, and role:

```
Purpose : Testing Connection with ServiceNow
URL :https://<instance>.service-now.com/api/now/table/sys_user
Authentication: Basic
```

If you set the appropriate roles, you will get a response similar to the following image:

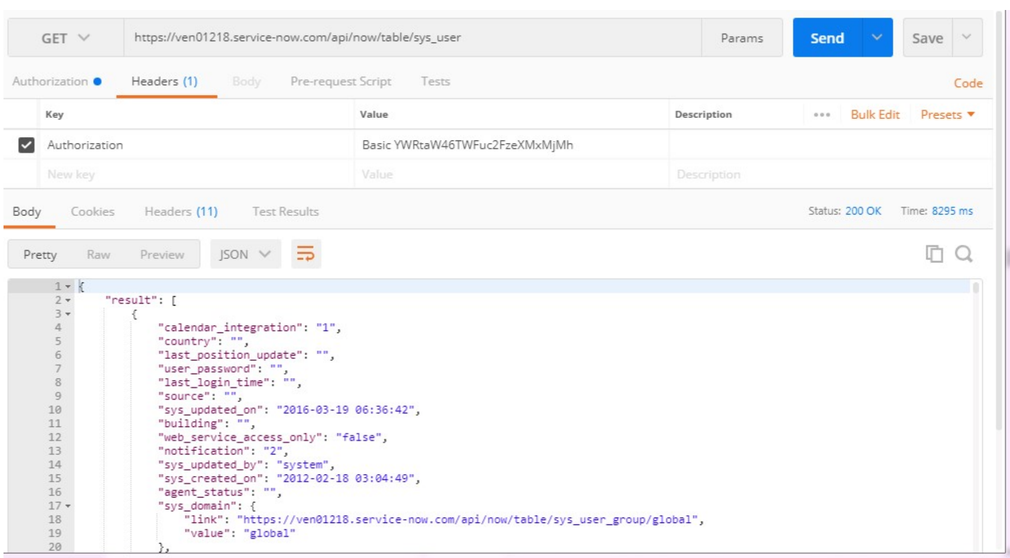


If you do not get the expected results, verify the user credentials and ServiceNow ACLs.

Verify the credentials

To verify if the ACL and user settings are correct, call the REST API from a REST client.

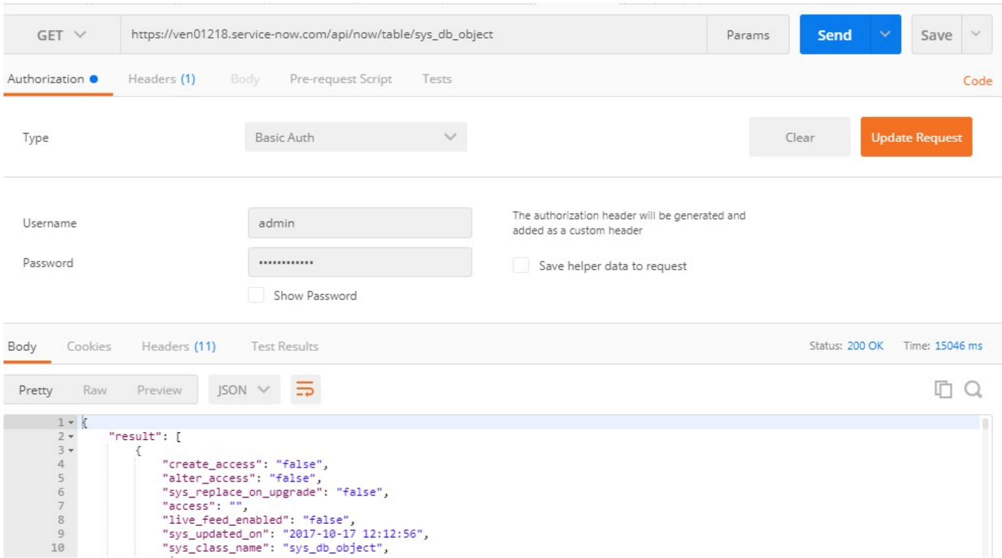
The following image shows an example of a GET request validation from a REST Client:



To create a successful connection with Data Integration, verify the credentials and ACLs with the following API:

```
API URL :https://<instance>.service-now.com/api/now/table/sys_db_object
Authentication:Basic
```

The following image shows an example of a GET request validation from a REST Client:



Test the APIs

If you have access to read data from or write data to ServiceNow, test the APIs for metadata information.

- Test the following APIs if you can access the metadata:
  - https://<instance>.service-now.com/api/now/table/sys_db_view.do
  - https://<instance>.service-now.com/api/now/table/sys_db_object.do
  - https://<instance>.service-now.com/api/now/table/<table_name>.do?SCHEMA
- Test the SOAP and REST APIs to read from the ServiceNow tables or views.
- You can test the ACL and user-role setup using the REST clients. To test using a REST client, you require a valid REST API URL, the suitable methods, valid parameters, and authentication. For example, call a REST API to get data from a ServiceNow table. Use the following details to make a REST call:

```
Authentication : Basic (Requires username /password of user who is having
SynQ_User_Role)
Method : Get
URL : valid api url
```

For more information about the REST API URLs and parameters, see Getting Started in the ServiceNow documentation.

CHAPTER 3

Synchronization tasks with ServiceNow Connector

Use the Synchronization task to synchronize data between a source and target.

You can configure a synchronization task using the Synchronization Task wizard.

When you create a task, you can associate it with a schedule to run it at specified times or on regular intervals. Or, you can run it manually. You can monitor tasks that are currently running in the activity monitor and view logs about completed tasks in the activity log.

ServiceNow sources in synchronization tasks

You can use a single object in a synchronization task.

You can use the following ServiceNow objects as a source object in a synchronization task:

- Incident
- Cases
- Contract
- Account
- Assets
- Contact
- Log_Entry
- Catalog_Task
- Ticket
- Knowledge
- Event
- Variables
- Work Order

You can configure the ServiceNow source properties on the **Source** page of the Synchronization Task wizard.

The following table describes the ServiceNow source properties:

Property	Description
Connection	Name of the ServiceNow source connection.
Source Type	Type of the ServiceNow source objects available. You can read data from a single ServiceNow source object.
Source Object	Name of the ServiceNow source object.
Display technical names instead of labels	This property is not applicable for ServiceNow Connector.
Display source fields in alphabetical order	Displays source fields in alphabetical order. By default, fields appear in the order returned by the source system.

The following table describes the advanced ServiceNow source properties:

Source Property	Description
Read Batch Size	The maximum number of records that the Secure Agent reads in a batch from ServiceNow. **Note:** You can specify a maximum batch size of up to 10,000 records. If you specify a batch size beyond 10,000 records, data loss is encountered.

ServiceNow targets in a synchronization task

You can use a single ServiceNow object as a target in a synchronization task.

You can use the following ServiceNow objects as the target in a synchronization task:

- Incident
- Cases
- Contract
- Account
- Assets
- Contact
- Log_Entry
- Catalog_Task
- Ticket
- Knowledge
- Event
- Variables
- Work Order

The following table describes the ServiceNow target properties:

Property	Description
Connection	Name of the ServiceNow target connection.
Target Object	You can select an existing object from the list or create a target at run time.
Child Object	This property is not applicable for ServiceNow Connector.
Display technical names instead of labels	This property is not applicable for ServiceNow Connector.
Display target fields in alphabetical order	Displays target fields in alphabetical order. By default, fields appear in the order returned by the target system.

The following table describes the advanced ServiceNow target properties:

Target Property	Description
Insert Batch Size	The maximum number of records that the Secure Agent writes in a batch to ServiceNow. You can specify a maximum batch size of up to 10,000 records. If you specify a batch size beyond 10,000 records, data loss is encountered. **Note:** When you insert records and a single record fails in the batch, the number of success rows in the **Job Properties** page is displayed as 0.

ServiceNow lookups in a synchronization task

You can create a lookup condition based on the information in the ServiceNow source on the **Field Mapping** page of the synchronization task wizard. A lookup returns values from the ServiceNow source field based on the configured lookup condition.

When you create a lookup condition, you can define the following components:

- Lookup connection and object. The connection and object to use to perform the lookup.
- Source and lookup fields. The fields used to define the lookup condition. The synchronization task compares the value of the source field against the lookup field and then returns a value based on the match. You can define multiple conditions in a lookup.
  For example, you define the following conditions for a lookup:

  ```
  SourceTable.Name = LookupTable.Name
  SourceTable.ID = LookupTable.ID
  ```

  The synchronization task performs the following lookup:

  ```
  Lookup (SourceTable.Name = LookupTable.Name, SourceTable.ID = LookupTableID)
  ```

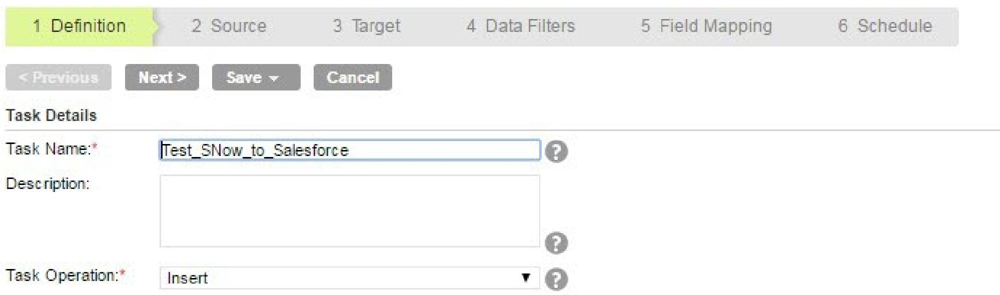
Synchronization example

You want to integrate incident records from ServiceNow to Salesforce. Configure a synchronization task to read incident records from the ServiceNow account and insert them to Salesforce.

Perform the following steps to configure a synchronization task in Data Integration:

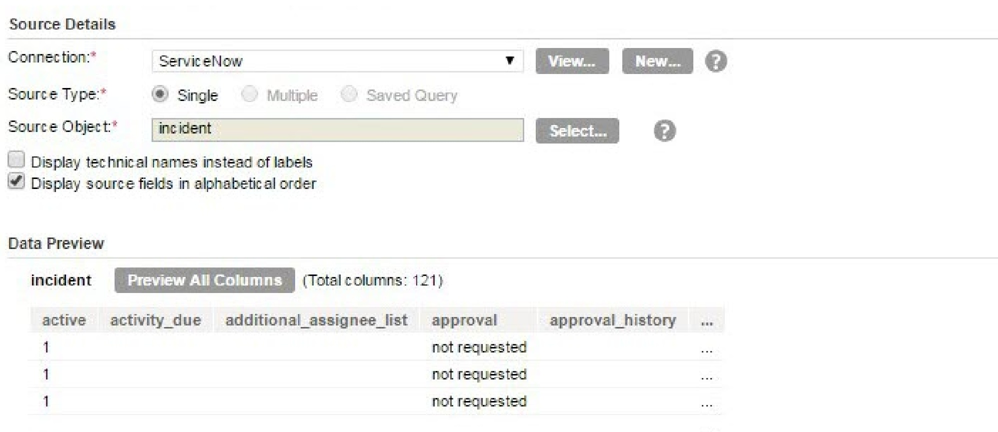
1. In Data Integration, click **New** > **Tasks** > **Synchronization Task**, and then click **Create**.

   The following image shows the **Definition** tab:

2. Specify the task name and provide a description for the task.
3. Select the Insert task operation.
4. Click **Next**.
5. Select the ServiceNow **Source Connection**, single **Source Type**, and incident **Source Object** that you want to use in the task.

   The following image shows the configured source details:

6. Click **Next**.

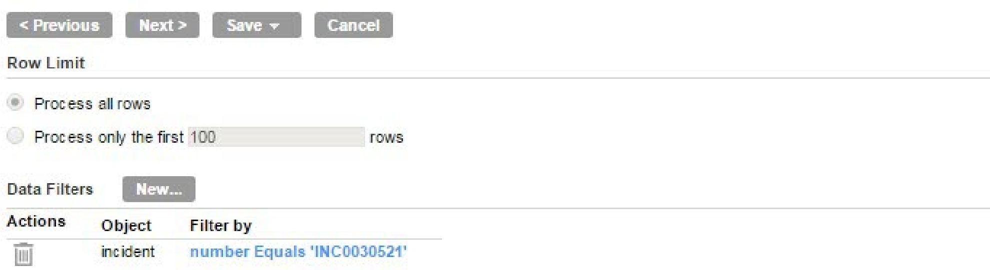
   The **Target** tab appears.

7. Select the Salesforce connection and Case **Target Object** for the task.

The following image shows the configured target details:

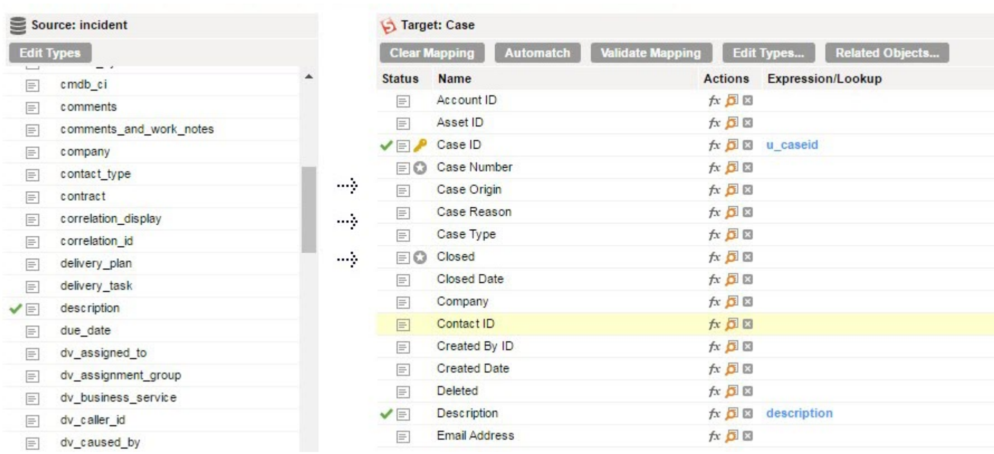
8. Click **Next**.

   On the **Data Filters** tab, Process All Rows are chosen, by default.
   The following image shows the **Data Filters** tab:



9. Click **Next**.
10. On the **Field Mapping** tab, map the Incident source fields to the Case target fields.

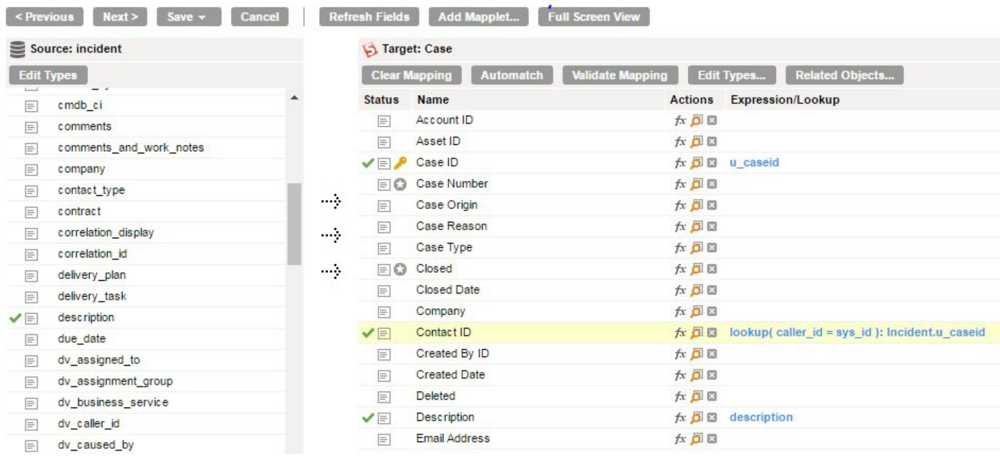
    The following image shows the **Field Mapping** tab:



11. To configure a lookup expression to lookup the Contact ID from the Incident record, click **Add** or **Edit Lookup** next to the Contact ID field.

    You can add multiple lookup conditions to look up a field in a record.

The following image shows the **Field Mapping** tab, where you can configure a lookup:



12. To create a lookup, provide the lookup connection and the source and target fields for the lookup object, and click **OK**.

    The following image shows the configured lookup details:

13. Click **Next**.

    The **Schedule** tab appears where you can schedule the task accordingly to the requirement and then save.

14. To run the task, on the **Explore** page, navigate to the task, click **Actions** and select **Run**.

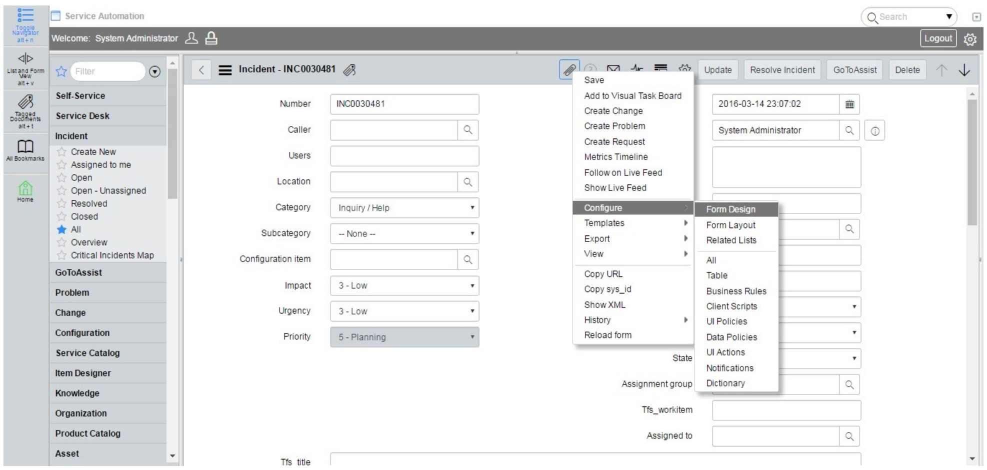
    In Monitor, you can monitor the status of the task.

Guidelines for synchronizing data from ServiceNow with Salesforce

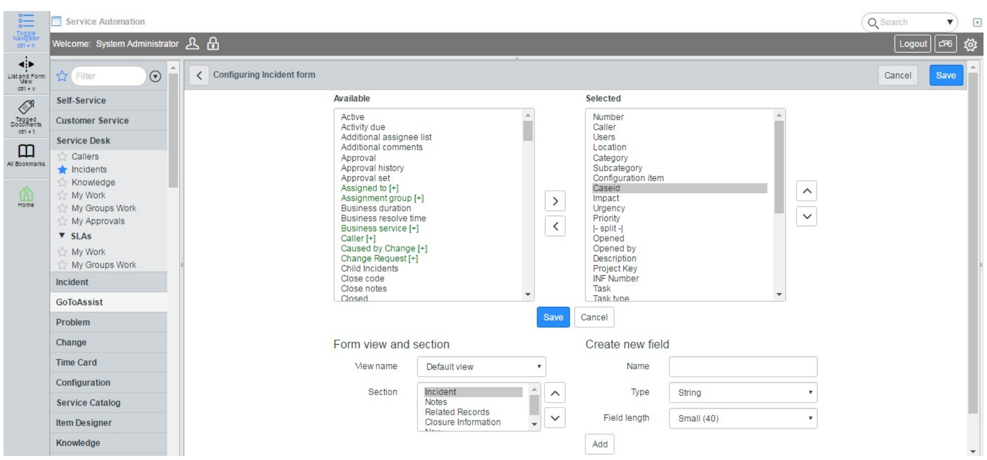
Use the following rules and guidelines for synchronizing data between ServiceNow and Salesforce:

- When you synchronize data from the Incident table in ServiceNow to the Case object in Salesforce, create a field of String data type to store the CaseID of the case records from Salesforce. Perform the following tasks:

  1. Open an incident record. Right-click the Incident table on the top-left corner.

  2. Click **Configure** from the menu and then click the **Form** layout.
  3. Enter the details required to create and add a custom field SFDC_CaseID to store values of the Salesforce CaseID.
  4. Add the CaseID field to the **Selected** list and **Save**.

- When you perform an operation to write records from ServiceNow to Salesforce, you must consider the following rules and guidelines:
  - Map sys_id of ServiceNow to Incident_SysID of Salesforce. Make sure you do not map the Salesforce CaseID.
  - Create a custom field Incident_SysID of String data type in Salesforce to store sys_id of Incident records of ServiceNow.

- During an update or delete operation from ServiceNow to Salesforce, you must map u_SFDC_CaseID of ServiceNow to CaseID of Salesforce. When you perform an updated or delete operation from Salesforce to ServiceNow, you must map Incident_SysID of Salesforce to sys_id of ServiceNow.

Data filters

You can use data filters to fetch specific data of a particular object. The synchronization task processes the data based on the filter field assigned to the object.

You can create simple or advanced data filters.

Simple data filters

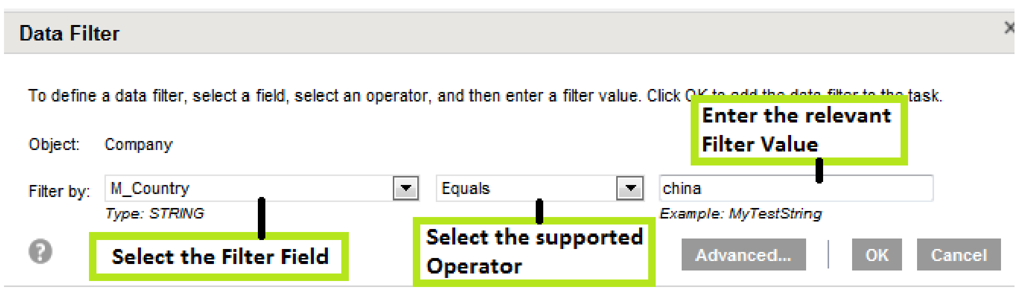
You can create one or more simple data filters. When you create multiple simple data filters, the associated task creates an AND operator between the filters and loads rows that apply to all simple data filters.

1. Select **Data Filters** tab in a synchronization task.

   The **Data Filters** tab appears.

2. Click **New**.

   The **Data Filter** dialog box appears.



3. Specify the following details:

Field Type	Description
Object	Select Object for which you want to assign filter fields.
Filter By	Select the Filter Field.
Operator	Select the operator.
Filter Value	Enter the Filter value.

4. Click **OK**.

Advanced data filters

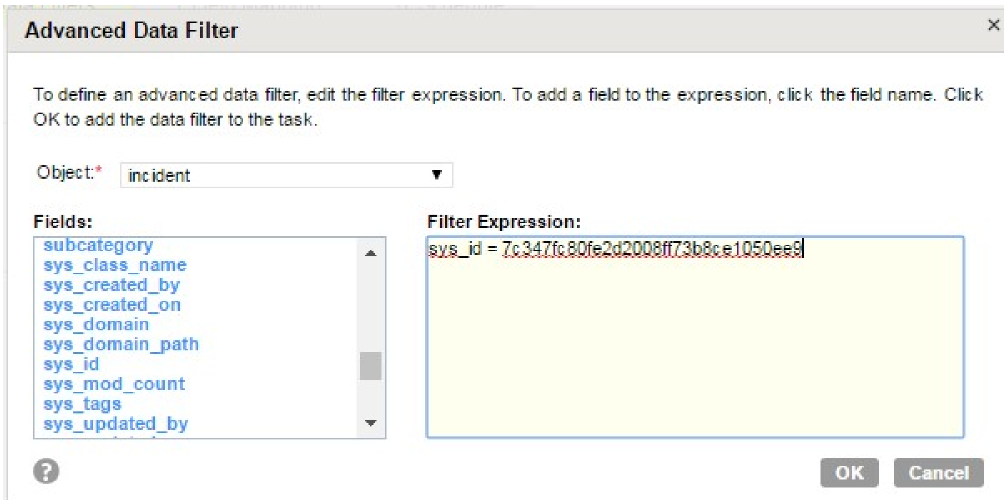
To run search queries containing complex filter expressions, use the advanced data filter.

1. Click **Advanced** in Data Filter dialog box.

   The **Advanced Data Filter** dialog box appears.

2. Enter the **Filter Expression**.
3. Click **OK**.

   The following image shows the Advanced Data Filter page:



Supported data filter operators

ServiceNow supports logical operators that you can use to filter data:

The following table shows the supported operators and the filter usage:

Operator	Symbol	Advanced Filter Usage
Greater than	>	field > value For example, opened_at > $LastRunTime
Greater than equals	>=	field >= value For example, sys_updated_on >= SYSDATE-86 AND caller_idIN 62826bf03710200044e0bfc8bcbe5df1,6816f79cc0a8016401c5a33be04be441
Equals	=	field = value For example, number = INC003451
Less than	<	field < value For example, opened_at < $LastRunTime
Less than equals	<=	field <= value
Not equal	!=	field != value

Operator	Symbol	Advanced Filter Usage
Starts with	STARTSWITH	field STARTSWITH value
Ends with	ENDSWITH	field ENDSWITH value
Contains	CONTAINS	field CONTAINS value
Is empty	ISEMPTY	field ISEMPTY value
Is not empty	ISNOTEMPTY	field ISNOTEMPTY value
In	IN	caller_id IN 46c1293aa9fe1981000dc753e75ebeee, 9ee1b13dc6112271007f9d0efdb69cd0
Date	SYSDATE	field > SYSDATE-1 For example, opened_at > SYSDATE-1
And	AND	field operator value AND field operator value For example, location = a23c49b037d0200044e0bfc8bcbe5dda AND caller_id = 46c1293aa9fe1981000dc753e75ebeee
Or	OR	field operator value OR field operator value
Between	BETWEEN	field BETWEEN value1,value2 For example, sys_updated_on BETWEEN 2017-03-01,2017-03-31 field BETWEEN SYSDATE-<value>,SYSDATE-<value> For example, sys_updated_on BETWEEN SYSDATE-14,SYSDATE-1
ORNewQuery	ORNewQuery	query1 ORNewQuery query2 For example, opened_at >= SYSDATE-14 AND opened_at <= SYSDATE-1 ORNewQuery closed_at >= SYSDATE-14 AND closed_at <= SYSDATE-1

Rules and guidelines for data filters

Consider the following rules and guidelines when you apply data filters to filter ServiceNow objects:

- When you configure a filter, the query options does not accept NULL values.
- When you configure a filter condition, use `Not Parameterized` from the query options.
- For NULL operator, ensure that the <Field name> appears before the <Table name> in the advanced filter condition.
- Do not filter fields that are similar to <table name><Field name>!=null.
- Do not filter fields that are similar to <dv_field name>.
- Open and closed brackets () used in filter conditions are not supported by ServiceNow.

You can instead specify the following operators, or use the formats supported by ServiceNow:

- AND operator for applying AND in simple and complex filter queries.
- OR operator for applying OR in simple queries
- ORNewQuery operator for applying OR for complex queries
  For example, `Category=Software AND Incident_State=7 ^NQ category=hardware AND Incident_state=1 OR Incident_state=2`

  For more information about the formats supported by ServiceNow, see the ServiceNow documentation.

- When you configure a filter to read from or write data to ServiceNow and a part of the filter query is not valid, ServiceNow returns rows using only the valid portion of the query and ignores the rest.
- When you configure advanced filters, ensure that the filter condition contains only the field name, operator, and field value. You must remove any additional text that is appended to the filter condition.

CHAPTER 4

Mappings and mapping tasks with ServiceNow Connector

Use the Data Integration Mapping Designer to create a mapping. In advanced mode, the Mapping Designer updates the mapping canvas to include transformations and functions that enable advanced functionality.

ServiceNow sources in mappings

When you create a mapping, you can configure the source properties to use ServiceNow objects to read data from your ServiceNow account. The source properties appear on the **Source** tab when you specify a ServiceNow connection.

The following table describes the ServiceNow source properties:

Source Property	Description
Connection Type	Name of the source connection.
Source Type	Select Single as the source type.
Source Object	Select the source object for the task.

You can use the following ServiceNow objects as a source object in a mapping:

- Incident
- Cases
- Contract
- Account
- Assets
- Contact
- Log_Entry
- Catalog_Task
- Ticket
- Knowledge
- Event

- Variables
- Work Order
- Task
- Alm_asset
- Sn_customerservice_case_report

The following table describes the advanced ServiceNow source properties:

Source Property	Description
Read Batch Size	The maximum number of records that the Secure Agent reads in a batch from ServiceNow. **Note:** You can specify a maximum batch size of up to 10,000 records. If you specify a batch size beyond 10,000 records, data loss is encountered.

ServiceNow targets in mappings

When you configure a mapping, you can use ServiceNow Connector as a target connection to write data to ServiceNow account. The target properties appear on the **Target** tab when you specify a ServiceNow connection.

The following table describes the ServiceNow target properties:

Source Property	Description
Connection Type	Name of the target connection.
Target Type	Select Single Object as the target type.
Target Object	Select the target object for the task.
Task Operation	Select the target operation. You can perform insert, update, upsert, delete, and data driven operations with ServiceNow Connector.

You can use the following ServiceNow objects as a target in a mapping:

- Incident
- Cases
- Contract
- Account
- Assets
- Contact
- Log_Entry
- Catalog_Task
- Ticket
- Knowledge

- Event
- Variables
- Work Order

The following table describes the advanced ServiceNow target properties:

Target Property	Description
Insert Batch Size	The maximum number of records that the Secure Agent writes in a batch to ServiceNow. You can specify a maximum batch size of up to 10,000 records. If you specify a batch size beyond 10,000 records, data loss is encountered. **Note:** When you insert records and a single record fails in the batch, the number of success rows in the **Job Properties** page is displayed as 0.

Upsert operation in ServiceNow target

When you configure an upsert operation to update data in a ServiceNow target, the Secure Agent updates or inserts the data based on the availability of the SYS_ID value in the target record.

If the SYS_ID value in the record of the input data matches the SYS_ID in the target, the Secure Agent updates that record in the ServiceNow target.

When the SYS_ID value is not available in the ServiceNow target, the Secure Agent inserts that record to the ServiceNow target.

If the SYS_ID in the target does not match with the SYS_ID from the input data, the rejected records are captured in the error file. See the Job properties for the task to view the error rows file.

Rules and guidelines for ServiceNow mappings

Consider the following guidelines before you run a mapping:

- You cannot read or write ServiceNow column or table names that have more than 48 characters.
- The source tables must not be empty. Otherwise, the mapping fails.
- The ServiceNow source and target table and field names can contain only alphanumeric characters and underscores.
- When you read data from the Account object, the Secure Agent displays incorrect number of success rows in the session log.

CHAPTER 5

Troubleshooting

Use the following sections to troubleshoot errors in ServiceNow Connector.

Fail ServiceNow Read Mapping on Error

When you read data from ServiceNow, the mapping might succeed even if errors are encountered. By default, ServiceNow logs the encountered errors but Data Integration does not fail the mapping.

You can, however, set the `DSnow_FailOnReadError=true` property for the task to fail when errors are encountered during the read operation:

1. Click the **Runtime Options** tab in the mapping task.
2. In the **Advanced Session Properties**, click **Add**.
3. In the **Session Property Name** field, select **Custom properties**.
4. In the **Session Property Value** field, specify the following property and set the value to true: `DSnow_FailOnReadError`

   For example, `DSnow_FailOnReadError=true`

When you set `DSnow_FailOnReadError` to true, any errors such as incorrect data types or missing columns encountered when you read data from ServiceNow fails the mapping.

Increasing query rows in ServiceNow

The default query row limit is 250 in ServiceNow. The ServiceNow instances in Dublin have a default query row limit of 10000 for the JSON service.

The system property *[of sys_properties table]: glide.processor.json.row_limit* determines the query row limit.

To enable this property in the ServiceNow table, perform the following tasks:

1. Type *sys_properties.list* in the Navigation filter.
   The entire list of properties in the *sys_properties* table appears. When the property is not available, it uses the default value.
2. If you want a different value, you must create the property. If the property already exists, update the value.
3. To create a new property, click **New** in the **System Properties** list.

4. Specify the **Name** as *glide.processor.json.row_limit*, **Type** as *Integer*, and **Value** with the required number.
5. Click **Save** or **Update**.

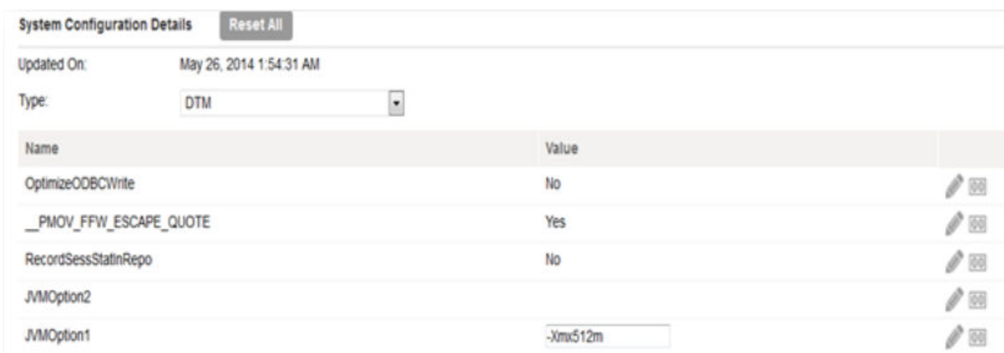
Increasing Secure Agent memory

"**[ERROR] May 21, 2014 1:53:40 PM org.apache.commons.httpclient. HttpMethodBase getResponseBody WARNING: Going to buffer response body of large or unknown size. Using getResponseBodyAsStream instead is recommended.**" **occurs when you run a synchronization task.**

Solution: To resolve out of memory issues, configure the JVM options in the Secure Agent to increase the memory for the Java heap size.
Perform the following tasks:

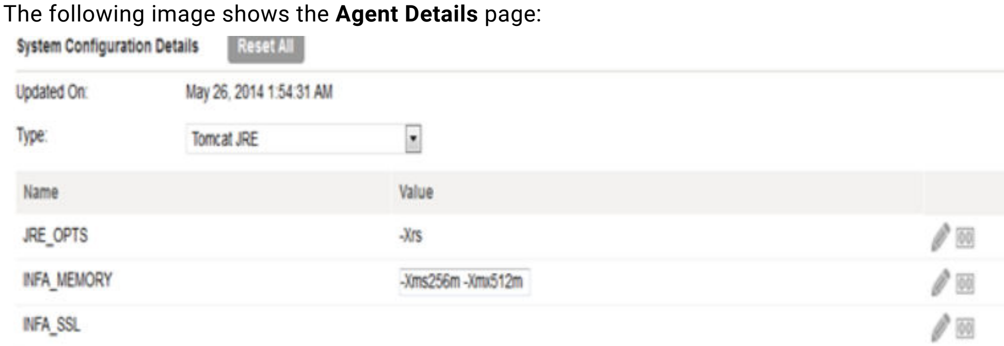
1. In Administrator, select **Runtime Environments**.
2. Select the Secure Agent for which you want to increase memory from the list of available Secure Agents.
3. In the upper-right corner, click **Edit**.
4. In the **System Configuration Details** section, select the **Type** as **DTM** for the Data Integration Server.
5. Edit **JVMOption1** as **'-Xmx512'**.

   The following image shows the **Details** page:



6. In the **System Configuration Details** section, select the **Type** as **Tomcat JRE**.
7. Edit **INFA_MEMORY** as **-Xms256m -Xmx512m**.

   The following image shows the **Agent Details** page:



   Note: The minimum and maximum values for the Java heap size are given as an example. Specify the size according to your requirements.

8. Restart the Secure Agent and run the task.

Best practices for increasing memory of the Secure Agent

You can increase the memory for different operations of the Secure Agent in the System Configuration Details section for types DTM and Tomcat JRE.

Tomcat JRE

Problem: You might encounter memory related or Java heap related error messages when you perform the following tasks:

- Test connection or metadata fetch. You might encounter an error when you select a connection or an object.
- Agent logs. Java out-of-memory or Java heap space error encountered during the INFA Agent login.

Solution: Increase the memory options for the INFA_MEMORY attribute for type Tomcat JRE. Use the following format: *"-Xms***m -Xmx****m -XX:MaxPermSize=***m"*

DTM

Problem: You might encounter Java out-of-memory, Java heap space, out-of-memory, or perGen space error messages either in the session log or the activity log, or both.

Solution: You can specify the default options of JVMOption1, JVMOption2, JVMOption3, and so on. If you have specified all the available JVMOptions, you can add additional options as custom properties for the Secure Agent.

Ensure that you maintain the sequence. If the default ones that you specified stop at JVMOption5, you must add custom properties that start with JVMOption6. Specify the type as DTM and subtype as INFO. Each JVMOption must hold only one JVM property.

The main JAVA memory properties are *-Xms**m*, *-Xmx****m*, and *-XX:MaxPermSize=***m*.

INFA_MEMORY and JVMOptions

You must specify the following memory attributes in the INFA_MEMORY and JVMoptions:

-Xms*m**

The initial value that specifies the amount of memory with which the Java Virtual Machine starts. The memory value you specify for this attribute is allocated when the Java process starts.

-Xmx**m**

The value that specifies the maximum amount of memory that the Java Virtual Machine can allocate as heap. After the Java process starts, it will continue allocating more space to store its objects. The allocation continues until it reaches the maximum setting, after which the Java process crashes with a Java heap space or out-of-memory issue.

-XX:MaxPermSize=*m**

The maximum permissible size that the Java Virtual Machine can use at a given time. If the Java Virtual Machine requires more than the specified amount, the Java process crashes with a permGem space issue.

Set the Required Values

You must set the following values for the attributes:

-Xmsm**

This value represents the base or initial value. You can specify a minimum value, such as 64M or 128M. This value specifies the amount of memory used for the process initialization. The Java process eventually continues to allocate space as and when it requires.

-Xmx*m**

This value represents the maximum value to which the Java heap can grow. The value must be large such that it can hold all the Java objects and classes.

On a 32-bit Secure Agent, you can specify a value that must not exceed 1024M for Windows and 2048M for Linux due to operating system limitations for a 32-bit application. However, it is recommended that you do not specify a value beyond 900M for 32-bit Secure Agents to avoid memory issues for tasks in general and for the Secure Agent.

If the process fails with 900M or higher on a 32-bit Secure Agent, you must use a 64-bit Secure Agent. For a 64-bit Secure Agent, you can specify any -Xmx value, which is limited only by the system memory that the operating system allocates to the system. Generally, on a 64-bit Secure Agent, you can specify a value of about 1024M or 2048M. However, if your tasks fail with a Java heap space or out-of-memory error, you must increase the value further, based on trial and error, as the value is dependent on the amount of data, the classes loaded, and how the Java and operating system stores the data.

CHAPTER 6

Data type reference

Data Integration uses the following data types in mappings, data synchronization tasks, and mapping configuration tasks with ServiceNow:

ServiceNow native data types

ServiceNow data types appear in the **Fields** tab for Source transformation and Target transformation when you choose to edit metadata for the fields.

Transformation data types

Set of data types that appear in the transformations. They are internal data types based on ANSI SQL-92 generic data types, which the Secure Agent uses to move data across platforms. Transformation data types appear in all transformations in a mapping.

When Cloud Data Integration reads source data, it converts the native data types to the comparable transformation data types before transforming the data. When Data Integration writes to a target, it converts the transformation data types to the comparable native data types.

ServiceNow and transformation data types

The following table describes the data types that Data Integration supports for ServiceNow sources and targets:

ServiceNow Data Type	Transformation Data Type
Boolean	Integer
Choice	String
Collection	String
Color	String
Condition String	String
Conditions	String
Currency	Double
Date	Date

ServiceNow Data Type	Transformation Data Type
Date/Time	TimeStamp/Date
Document ID	String
Domain ID	String
Due Date	Date
Duration	Long
Encrypted Text	String
Field Name	String
File Attachment	String
Floating Point Number	Double
HTML	String
Integer	Integer
IP Address	String
Journal	String
Journal Input	String
Long	Long
Password (1 Way E)	String
Password ((2 way E)	String
Percent Complete	Integer
Phone Number (E164)	String
Price	Double
Reference	String
Schedule_Date_Time	Date/Time
Script	String
Script (Plain)	String
String	String
String (Full UTF-8)	String
Suggestion	String

ServiceNow Data Type	Transformation Data Type
Table Name	String
Time	String
Translated HTML	String
Translated Text	String
URL	String

INDEX

C

Cloud Application Integration community
    URL 5
Cloud Developer community
    URL 5
connections
    ServiceNow 20

D

Data Integration community
    URL 5

I

Informatica Global Customer Support
    contact information 6
Informatica Intelligent Cloud Services
    web site 5

M

maintenance outages 6

O

ODBC
    Synchronization task 25

S

Secure Agent
    increasing memory 40
ServiceNow 7, 8
ServiceNow connection
    rules and guidelines 38
ServiceNow connections
    administration 8
ServiceNow Connections
    overview 20
ServiceNow Connector
    overview 7
ServiceNow data types
    mapping to transformation data types 43
    overview 43
ServiceNow source
    mappings 36
ServiceNow target
    mappings 37
status
    Informatica Intelligent Cloud Services 6
synchronization
    ServiceNow sources 25
    ServiceNow targets 26
system status 6

T

trust site
    description 6

U

upgrade notifications 6

W

web site 5