

KOVAIR

KOVAIR

Kovair Software, Inc.

2410 Camino Ramon, STE 230
San Ramon, CA 94583
www.kovair.com
sales@kovair.com

Document Version History		
Release	Date	Reason
Kovair ServiceNow Madrid Adapter	30/04/2019	For ServiceNow Madrid
Field Changes - Configuration item,Affected CI,Company exposed	18/10/2019	New changes
PlannedDateFilter feature implemented	10/21/2019	New changes
Task entity exposed	11/15/2019	New changes
Story and Defect entity exposed 'Work notes' or 'Additional comments' will flow as comments based on flag in config of events service	12/23/2019	New changes
Epic, Theme, Application Model, Group, Scrum release and Enhancement entities exposed and All Attachment/All Comment Sync Implementation	1/31/2020	New entities exposed for agile and All Attachment/All Comment Sync Implementation
Orlando Release	05/15/2020	Version Upgrade
Paris Release	08/27/2020	Version Upgrade
Quebec Release	07/09/2021	Version Upgrade
Rome Release	12/20/2021	Version Upgrade

Table of Contents

Table of Contents	2
Supported Tool Version	3
Adapter Components	3
Adapter and Event Service Pre-requisites	4
Registration of Service Now Adapter:	5
Initial Polling Time configuration for Service Now Adapter:.....	6
Adapter Configuration	6
Database Configuration.....	6
Other Configurations	7
Adapter Console Configuration	11
Event Service Configuration	13
Database Configuration.....	13
Other Configurations	14
Note:	17
Supported Entities and Features	18
Supported Field Types	19
Field Sample Values.....	21
Adapter and Event Service XML Configurations:	25
Relations (Entity Object -relation as field) Exposed	31
Events Exposed	31
Actions Exposed:	32
Attachment Support	34

Comment Support 34
 Note 34
All Comments Synchronization 35
 Feature:..... 35
 Prerequisites:..... 35
 Notes:..... 35
 Additional feature: 35
All Attachments Synchronization..... 36
 Feature:..... 36
 Prerequisites:..... 36
 Notes:..... 36
Sync back Support 37
Entity Reflow..... 37
Disclaimers 40

Supported Tool Version

ROME

Adapter Components

Kovair Service Now Adapter	WCF Web Service
Kovair Service Now Event Service	Event Service

Adapter and Event Service Pre-requisites

- Microsoft .NET Framework 4.6 Runtime
- For connecting to the Service Now instance and expose metadata, transactional data a dedicated Service Now user is required with **Admin** role.

Service Now Permission for User: Service Now user used for Service Now adapter registration must be assigned to Service Now **Admin** role.

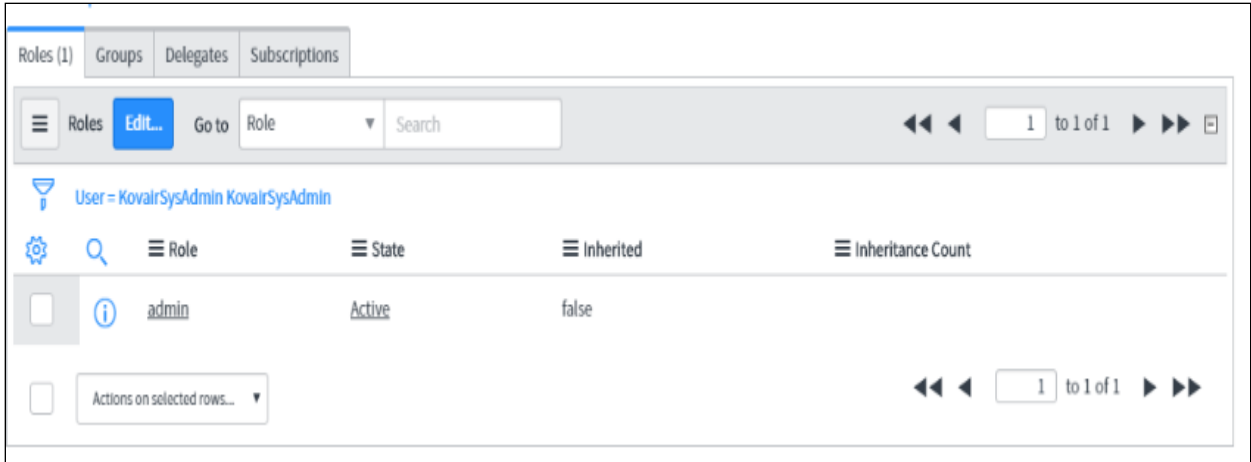
Steps to set Admin Role in Service Now:

For adding 'admin' Role one has to perform the following steps:

- I. Need to open this url : <http://<SiteName>.service-now.com>
- II. Click on 'User Administration' and click on 'Users' link.
- III. Select Specific User from users list.

The screenshot shows the 'User Administration' interface for a user named 'System Administrator'. The user ID is 'admin' and the email is 'admin@example.com'. The first name is 'System' and the last name is 'Administrator'. The title is 'System Administrator' and the department is 'Finance'. The user is currently active, as indicated by the checked 'Active' checkbox. Other fields include 'Password', 'Notification' (set to 'Enable'), 'Calendar integration' (set to 'Outlook'), 'Time zone' (set to 'System (US/Pacific)'), 'Date format' (set to 'System (yyyy-MM-dd)'), 'Business phone', 'Mobile phone', and 'Photo' (with a 'Click to add...' link). The interface includes navigation icons, a search icon, and 'Update' and 'Delete' buttons.

- IV. Scroll to the Roles section. Click on edit and add 'admin' to the assigned roles and click on Update.



Note: The user needs to have at least admin role access in order to perform the functions.

- ServiceNow must be accessible from the machine where Adapter will be installed.
- Minimum Random Memory: 4 GB RAM at Adapter server.
- Minimum HDD Size (Native): 150 MB
- Supports both HTTP / HTTPS access
- The IIS Application pool identity user and the windows service **Log on Account** user should have full read-write-delete access. (Attachment, Comment Parsing and RTF read write purpose)
- Both ServiceNow Adapter and Event Service point to a single adapter Database.

Registration of Service Now Adapter:

Following parameters are required at the time of registration:

View Project Registration		
	Parameter Name	Parameter Value
1. General Information	Site Name	https://dev69906.service-now.com
2. Security Parameters	User ID	admin
	Password	****
3. Select Project	Initial Call Time	2020-04-24 12:00:00

- I. **Site Name:** Put the Site Name of ServiceNow.
- II. **User Name:** Provide ServiceNow Login Name.

- III. **Password:** Provide corresponding Password for the user.
- IV. **Initial Call Time:** Provide initial call time in yyyy-MM-dd HH:mm:ss format.

Initial Polling Time configuration for Service Now Adapter:

- For first time polling, uses value of the key 'InitialCallTime' found in the configuration file of the event service.
- Value must be in UTC and in the following format:
yyyy-MM-dd HH:mm:ss.

[e.g.: 2017-03-19 12:37:41]
- For subsequent calls, uses the data stored in EventPollingHistory table of adapter database.

Adapter Configuration

The adapter installation path contains a configuration file 'Web.config'. The sole objective of this file is to configure the database connectivity, data pool size etc.

Database Configuration

Following highlighted text is subjected to change.

```
<KovairDBProvider>
<DbProperties DBName="#####" DataBaseType="SQLSERVER" UserName="#####" Password="#####" DatabasePath=""
DbProvider="SqlClient" IsDBPasswordEncrypted="false" ServerName="Database" SqlAuthenticationMode="SQL"/>
</KovairDBProvider>
```

Details of the configuration changes:

Key Name	Key Value
DBName	Name of the SQL Server adapter database. Typically, it gets created during adapter installation

UserName	SQL Server database user name. This should be valid sql server account. The information is required only when the authentication is done through SQL mode
Password	SQL Server database user password in encrypted format. This should be valid sql server account password. The information is required only when the authentication is done through SQL mode. For windows authentication, it need to be blank.
SqlAuthenticationMode	This value can be SQL or Windows. Kovair always recommends to use Windows.
IsDBPasswordEncrypted	<p>false, only when the password contains encrypted text.</p> <p>true, only when password contains non-encrypted Text</p> <p>Note:</p> <p>This key is only valid if the mode is SQL.</p>
DATABASE	The name of the SQL Server Database Instance Name, the name is typically access through name pipe or IP address.

Other Configurations

Following highlighted text is subjected to change.

```

<appSettings>
  <add key="NoOfEvents" value="19"/>
  <add key="AdapterVersion" value=""/>
  <add key="PageSize" value="50"/>
  <add key="AdapterDateFormat" value="MM/dd/yyyy"/>
  <add key="AdapterDateTimeFormat" value="MM/dd/yyyy HH:mm:ss"/>
  <add key="AdapterTimeZoneID" value="UTC"/>
  <add key="SNOWDateFormat" value="yyyy-MM-dd"/>
  <add key="SNOWDateTimeFormat" value="yyyy-MM-dd HH:mm:ss"/>
  <add key="SNOWTimeZoneID" value="UTC"/>
  <add key="ExecuteActionDateFormat" value="yyyy-MM-dd"/>
  <add key="ExecuteActionDateTimeFormat" value="yyyy-MM-dd HH:mm:ss"/>
  <add key="ExecuteActionTimeZoneID" value="UTC"/>

  <add key="GetEventsUsingEventService" value="Y"/>
  <add key="IsSyncBackFieldSupportHTML" value="Y"/>
  <add key="IsFetchEntityFieldsFromTool" value="Y"/>
  <add key="IsFetchEntityLookupFieldsFromTool" value="Y"/>
  <add key="TaskReferenceDefaultEntity" value="Change Request"/>
  <add key="AssignmentGroupFieldName" value="Assignment Group"/>

```



```

<add key="IsForPlugin" value="Y"/>
<add key="PluginDateFormat" value="yyyy-MM-dd"/>
<add key="PluginTimeFormat" value="HH:mm:ss"/>
<add key="IsFetchPluginFormFieldsFromTool" value="Y"/>
<add key="IsPluginFieldSupportHTML" value="N"/>
<add key="MaxRetryCount" value="5"/>
<add key="RequestTimeout" value="20000"/>
<add key="LegacySearchFieldName" value="Short Description"/>
<add key="IsLegacySearchRequired" value="Y"/>
<add key="LegacySearchFieldSystemName" value="short_description"/>
<add key="SupportHTMLTagsInMultilineTextFld" value="N"/>
  <add key="TagsReplacedByNewLineForMLTFld" value="&lt;br /&gt;,&lt;div&gt;"/>
  <add key="SplitCharacterForAffectedCIFFromSourceTool" value="&lt;br&gt;"/>
<add key="AdapterConfigFolderPath"
value="D:\Kovair\Omnibus\KOVAIR_ServiceNow_Service_Now_REST_MADRID\Source\ServiceNowService\ConfigXML"/>
<add key="AdapterLogPath"
value="D:\Kovair\Omnibus\KOVAIR_ServiceNow_Service_Now_REST_MADRID\Source\ServiceNowService\Log"/>
<add key="EventServiceExePath" value="C:\Program Files (x86)\Kovair Incl\Kovair ServiceNow Event
Service\ServiceNowEventService.exe"/>
<add key="EventServiceConfigFolderPath" value="C:\Program Files (x86)\Kovair Incl\Kovair ServiceNow Event Service\ConfigXML"/>
<add key="EventServiceName" value="Kovair ServiceNow Event Service"/>
<add key="EventServiceLogPath" value="C:\Program Files (x86)\Kovair Incl\Kovair ServiceNow Event Service\Log"/>
<add key="EnableAllCommentsFlow" value="Y"/>
<add key="EnableAllAttachmentsFlow" value="Y"/>
<add key="AttachmentSharedPath" value="\\KOV-ALM02\SharedPath"/>

<add key="CommentField" value="work_notes"/>

<add key="ManipulateCommentText" value="N"/>
</appSettings>

```

Details of the configuration changes

Key Name	Key Value
NoOfEvents	No of records adapter will expose to Omnibus engine for collection.
AdapterVersion	Version of Adapter
PageSize	Number of records to be fetched from tool using REST call per collection.
AdapterDateFormat	Adapter Server Date Format

AdapterDateTimeFormat	Adapter Server Date Time Format
AdapterTimeZoneID	Adapter Time Zone ID
SNOWDateFormat	Date Format of Service Now Tool
SNOWDateTimeFormat	Date Time Format of Service Now Tool
SNOWTimeZoneID	Time Zone ID of Service Now Tool
ExecuteActionDateFormat	Execute Action Date Format
ExecuteActionDateTimeFormat	Execute Action Date Time Format
ExecuteActionTimeZoneID	Execute Action Time Zone ID
GetEventsUsingEventService	For fetching Events by Event Service set the value as 'Y'
IsSyncBackFieldSupportHTML	Provide Y in order to support HTML tags in Sync Back fields.
IsFetchEntityFieldsFromTool	Provide Y in order to fetch Entity Fields From tool or N in order to fetch entity fields from Database
IsFetchEntityLookupFieldsFromTool	Provide Y in order to fetch Entity Look up values From tool or N in order to fetch entity fields from Database
TaskReferenceDefaultEntity	Default Entity for Task Reference
AssignmentGroupFieldName	Provide the labelname of the assignment group field from the tool
IsForPlugin	Provide Y in order to retrieve details for plugin

PluginDateFormat	Date Format for Plugin
PluginTimeFormat	Time Format for Plugin
IsFetchPluginFormFieldsFromTool	Provide [Y/N] Y in order to Fetch Plugin FormFields From Tool
IsPluginFieldSupportHTML	Provide [Y/N] Y in order to support HTML for Plugin Field
MaxRetryCount	Max retry count for Executing action for a record
RequestTimeout	Request Timeout for Rest call to Service Now
LegacySearchFieldName	Service Now field Label used for legacy record search
IsLegacySearchRequired	Provide (Y/N) To activate/deactivate Service Now legacy record search functionality during Execute Action
LegacySearchFieldSystemName	Service Now field Name used for legacy record search
SupportHTMLTagsInMultilineTextFld	Provide [Y/N] Y in order to Support HTML in normal MultilineText Field other than richtext fields in Service Now
TagsReplacedByNewLineForMLTFld	Provide the tags which are needed to be replaced by newline for normal MultilineText Field other than richtext fields in Service Now
SplitCharacterForAffectedCIFromSourceTool	Provide the split character for Affected CI field based on which values from source tool will be separated.By default it is " ".
EnableAllCommentsFlow	Provide [Y/N] Y in order to enable All Comments flow
EnableAllAttachmentsFlow	Provide [Y/N] Y in order to enable All Attachments flow

AttachmentSharedPath	Shared Path for All Attachment Synchronization feature. (Full Read/Write access must be provided)
AdapterConfigFolderPath	Provide fully qualified physical path of adapter config folder path
AdapterLogPath	Provide fully qualified physical path of adapter log path
EventServiceExePath	Provide fully qualified physical path of eventservice.exe path
EventServiceConfigFolderPath	Provide fully qualified physical path of event service config folder path
EventServiceName	Provide event service name
EventServiceLogPath	Provide fully qualified physical path of event service log path
CommentField	[comments/work_notes] Provide 'comments' for 'Additional comments' to flow as Comments Provide 'work_notes' for 'Work notes' to flow as Comments
ManipulateCommentText	Provide [Y/N] Y in order to perform manipulation in comment text in Service Now

Adapter Console Configuration

For adapter console configuration,

- Change the values of following six keys with related values in adapter web.config file.
 1. AdapterConfigFolderPath
 2. AdapterLogPath
 3. EventServiceExePath
 4. EventServiceConfigFolderPath
 5. EventServiceName
 6. EventServiceLogPath

- Depending on the app pool, add required sections in adapter web.config file.
 1. If app pool is **integrated** mode, the below sections need to added in adapter web.config file.

```
<configuration>
<system.webServer>
  <handlers>
    <remove name="Telerik_Web_UI_WebResource_axd"/>
    <add name="Telerik_Web_UI_WebResource_axd" path="Telerik.Web.UI.WebResource.axd"
type="Telerik.Web.UI.WebResource" verb="*" preCondition="integratedMode"/>
  </handlers>
</system.webServer>
</configuration>
```

2. If app pool is **classic** mode, the below sections need to added in adapter web.config file.

```

<system.web>
<configuration>
<httpHandlers>
  <add verb="*" path="Telerik.Web.UI.WebResource.axd" type="Telerik.Web.UI.WebResource,
Telerik.Web.UI" validate="false"/>
  <add verb="*" path="Telerik.Web.UI.DialogHandler.aspx" type="Telerik.Web.UI.DialogHandler,
Telerik.Web.UI, Culture=neutral, PublicKeyToken=121fae78165ba3d4"/>
  <add verb="*" path="Telerik.Web.UI.SpellCheckHandler.axd"
type="Telerik.Web.UI.SpellCheckHandler, Telerik.Web.UI, Culture=neutral,
PublicKeyToken=121fae78165ba3d4"/>
</httpHandlers>
</system.web>
</configuration>

```

Event Service Configuration

The Windows Service installation path contains a configuration file '**ServiceNowEventService.exe.config**'. The file can be accessed by right clicking on the Event Service and selecting the **Properties** menu. Get the path from '**Path to executables**'

Database Configuration

Following highlighted text is subjected to change.

```

<KovairDBProvider>
<DbProperties DBName="#####" DataBaseType="SQLSERVER" UserName="#####" Password="#####" DatabasePath=""
DbProvider="SqlClient" IsDBPasswordEncrypted="false" ServerName="Database" SqlAuthenticationMode="SQL"/>
</KovairDBProvider>

```

Details of the configuration changes

Key Name	Key Value
DBName	Name of the SQL Server adapter database. Typically, it gets created during adapter installation
UserName	SQL Server database user name. This should be valid sql server account. The information is required only when the authentication is done through SQL mode
Password	SQL Server database user password in encrypted format. This should be valid sql server account password. The information is required only when the authentication is done through SQL mode. For windows authentication it need to be blank.
SqlAuthenticationMode	This value can be SQL or Windows. Kovair always recommends to use Windows.
IsDBPasswordEncrypted	false , only when the password contains encrypted text. true , only when password contains non-encrypted Text Note: This key is only valid if the mode is SQL .
DATABASE	The name of the SQL Server Database Instance Name, the name is typically access through name pipe or IP address.

Other Configurations

Following highlighted text is subjected to change.

```
<appSettings>
  <add key="TickTime" value="2000"/>
  <add key="PageSize" value="50"/>
  <add key="ActionLockMaxRetryCount" value="100" />
  <add key="AdapterDateFormat" value="MM/dd/yyyy"/>
  <add key="AdapterDateTimeFormat" value="MM/dd/yyyy HH:mm:ss"/>
  <add key="AdapterTimeZoneID" value="UTC"/>
```

```

<add key="SNOWDateFormat" value="yyyy-MM-dd"/>
<add key="SNOWDateTimeFormat" value="yyyy-MM-dd HH:mm:ss"/>
<add key="SNOWTimeZoneID" value="UTC"/>
<add key="IsSyncBackFieldSupportHTML" value="Y"/>
<add key="InitialCallTime" value="2017-03-19 12:37:41"/>
<add key="SplitCharacterForAffectedCI" value="\n"/>
  <add key="ApplyPlannedDateFilter" value="Y"/>
    <add key="PlannedDateFilterFields" value="Planned start date(start_date),Planned end date(end_date)"/>
  <add key="CommentField" value="comments"/>
<add key="EnableAllCommentsFlow" value="Y"/>
<add key="EnableAllAttachmentsFlow" value="Y"/>
  <add key="AttachmentSharedPath" value="\\KOV-ALM02\SharedPath"/>
  <add key="ApplyFilterForEvents" value="N"/>

  <add key="EnableLogArchival" value="N"/>

  <add key="IsParallelProcessingNeeded" value="Y"/>

  <add key="MaxAllowedCountForParallelThreads" value="25"/>

  <add key="MaxEventFetchCount" value="100" />

  <add key="RequestTimeout" value="20000"/>

  <add key="ManipulateCommentText" value="Y"/>

</appSettings>

```

Details of the configuration changes:

Key Name	Key Value
TickTime	Integer value representing milliseconds. The interval at which windows service will poll the tool via adapter for fresh data.
PageSize	Number of records to be fetched from tool using REST call per collection. Typically, this is not to be changed with Kovair support consultations.
ActionLockMaxRetryCount	Integer value for ActionLock Max Retry Count
AdapterDateFormat	Adapter Server Date Format
AdapterDateTimeFormat	Adapter Server Date Time Format

AdapterTimeZoneID	Adapter Time Zone ID
SNOWDateFormat	Date Format of Service Now Tool
SNOWDateTimeFormat	Date Time Format of Service Now Tool
SNOWTimeZoneID	Time Zone ID of Service Now Tool
AdapterDateFormat	Adapter Server Date Format
InitialCallTime	Initial call time for collecting events from tool.
SplitCharacterForAffectedCI	Provide the character which will be treated as the value separator for Affected CI field while generating events.By default it is “\n”.
ApplyPlannedDateFilter	Provide Y or N to specify whether planned date filter will be applied or not.
PlannedDateFilterFields	Provide the two field names (as exposed by the adapter) with a comma separator.Only two fields of date /datetime needs to be provided for applying the planned date filter feature.
CommentField	[comments/work_notes] Provide 'comments' for 'Additional comments' to flow as Comments Provide 'work_notes' for 'Work notes' to flow as Comments.
EnableAllCommentsFlow	Provide [Y/N] Y in order to enable All Comments flow
EnableAllAttachmentsFlow	Provide [Y/N] Y in order to enable All Attachments flow
AttachmentSharedPath	Shared Path for All Attachment Synchronization feature. (Full Read/Write access must be provided)

ApplyFilterForEvents	Filter for event generation (polling)
IsParallelProcessingNeeded	[Y/N] 'Y' to activate event generation in parallel tasks. 'N' for normal event generation
MaxAllowedCountForParallelThreads	Maximum number of counts for parallel Threads
MaxEventFetchCount	Maximum number of Events to fetched.
RequestTimeout	Request Timeout for Rest call to SNOW
ManipulateCommentText	Provide [Y/N] Y in order to perform manipulation in comment text in Service Now

Note : For applying planned date filter the following needs to be considered:

1. The key “**ApplyPlannedDateFilter**” in the config needs to be “Y”.
2. The two fields on which comparison and filtration will be done needs to be provided in the “**PlannedDateFilterFields**” key in the config with a comma separator. The field names should be exactly same as that of exposed by the adapter. There should be no extra spaces in between them. Both the fields should be of date or datetime format. No other type of fields can be applied.
3. If the date value of the first field provided is equal to the date value of the second field with respect to days i.e., number of days is 0 then the actual value of the first field won't get generated and synced with the event. In this case the value of the first field in the event will generate as empty.

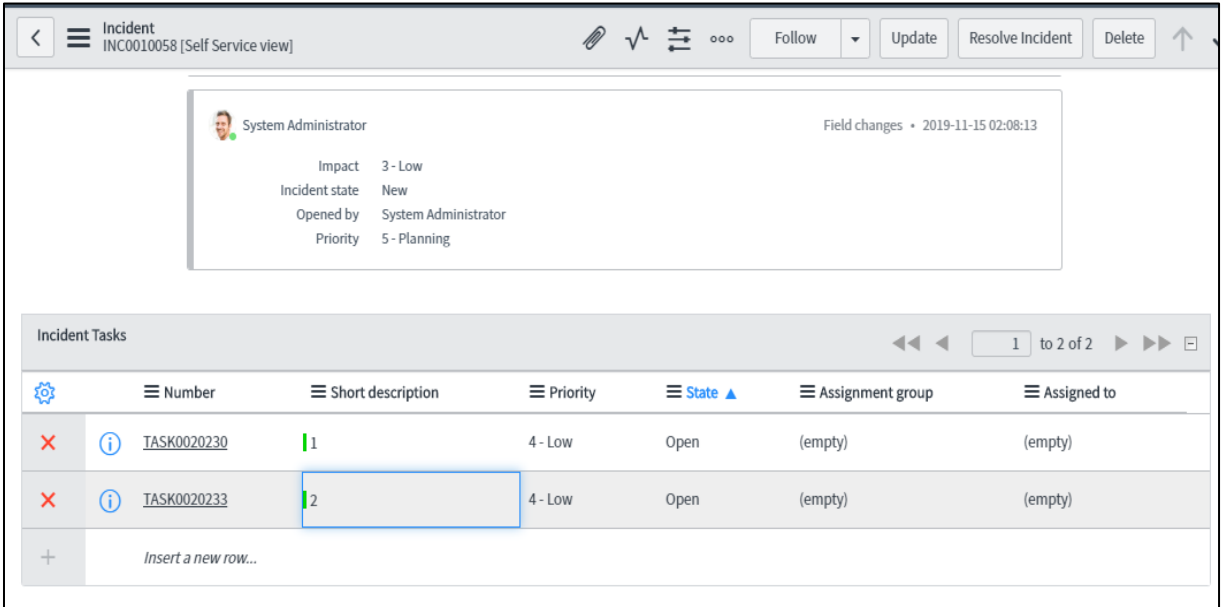
Note:

- Please ensure **AdapterDateFormat**, **AdapterDateTimeFormat** and **AdapterTimeZoneID** key values of adapter web.config and eventservice.exe.config remain in sync.
- Please do not change **SNOWDateFormat**, **SNOWDateTimeFormat** and **SNOWTimeZoneID** key values.

Supported Entities and Features

Entity Name	System Fields	Custom Fields	Attachment	Comment
Incident	Yes	Yes	Yes	Yes
Problem	Yes	Yes	Yes	Yes
Change Request	Yes	Yes	Yes	Yes
Knowledge Base	Yes	Yes	Yes	No
Knowledge	Yes	Yes	Yes	No
Task*	Yes	Yes	Yes	Yes
Story	Yes	Yes	Yes	Yes
Defect	Yes	Yes	Yes	Yes
Epic	Yes	Yes	Yes	Yes
Theme	Yes	Yes	Yes	No
Application Model	Yes	Yes	Yes	Yes
Group	Yes	Yes	Yes	No
Scrum release	Yes	Yes	Yes	Yes
Enhancement	Yes	Yes	Yes	Yes

The above exposed task entity is the incident tasks which are exposed under each incident data. Refer to the below screenshot:



Only the above specified tasks will be supported by this entity.

NOTE : Agile Development 2.0 needs to be installed in the tool to Expose these entities **Epic, Theme, Application Model, Story, Group, Scrum release and Enhancement** otherwise meta data or events will not come for the respected entity.

Supported Field Types

ServiceNow Field Type	Omnibus Field Type	Multivalued
<ul style="list-style-type: none"> ○ Workflow ○ URL ○ Translated Text ○ Table Name ○ String(Full UTF-8) ○ String ○ Phone Number(E164) ○ Password(1 Way Encrypted) 	Single Line Text	No

<ul style="list-style-type: none"> ○ Password(2 Way Encrypted) ○ Name-Value Pairs ○ Long ○ IP Address ○ Duration ○ Domain Id ○ Color ○ Calendar Date/Time 		
<ul style="list-style-type: none"> ○ Wiki ○ Translated HTML 	Multi Line Text	No
<ul style="list-style-type: none"> ○ Integer 	Integer	No
<ul style="list-style-type: none"> ○ Price ○ Percent Complete ○ Floating Point Number ○ Decimal 	Float	No
<ul style="list-style-type: none"> ○ Date 	Date	No
<ul style="list-style-type: none"> ○ Due date ○ Date/Time 	DateTime	No
<ul style="list-style-type: none"> ○ True/False ○ Suggestion ○ Choice 	Lookup	No

Note: Above custom field types are supported along with the system fields. There may be other field types in Service Now but currently they are not supported.

Fields Sample Value

Field Name	Sample Value
Acceptance criteria(acceptance_criteria)	<p>Test Criteria</p>
Acquisition method(acquisition_method)	Both
Active(active)	True
Actual end(work_end)	04/11/2020 07:00:00
Actual start(work_start)	01/16/2020 06:43:40
Additional assignee list(additional_assignee_list)	System Administrator(admin)
Approval set(approval_set)	01/18/2020 09:09:35
Approval(approval)	Not Yet Requested
Asset tracking strategy(asset_tracking_strategy)	Leave to category
Assigned to(assigned_to)	Annie Approver(annie.approver)
Assignment group(assignment_group)	Development Team
Average Daily FTE Hours/Hours Per Person Day(average_daily_fte)	25.75
Backlog Type(backlog_type)	Product
Barcode(barcode)	111
Blocked reason(blocked_reason)	For testing purpose
Blocked(blocked)	True
Bundle(bundle)	False
Business service(business_service)	Blackberry

Certified(certified)	False
Classification(classification)	Feature
Close notes(close_notes)	note
Closed by(closed_by)	Alene Rabeck(alene.rabeck)
Closed(closed_at)	12/01/2020 04:32:58
CMDB CI class(cmdb_ci_class)	cmdb ci class
Color(color)	DeepSkyBlue
Comments(comments)	comments
Company(company)	ACME Australia
Configuration item(cmdb_ci)	*ANNIE-IBM
Contact type(contact_type)	Phone
Correlation display(correlation_display)	22
Correlation ID(correlation_id)	11
Cost center(cost_center)	Finance
Cost(cost)	5
Created by(sys_created_by)	System Administrator(admin)
Created(sys_created_on)	01/14/2020 04:44:14
Cust boolean(u_cust_boolean)_LKP	False
Cust Date(u_cust_date)	01/17/2020
Cust DateTime(u_cust_datetime)	01/18/2020 07:29:12
Cust Float(u_cust_float)	1.9
Cust HTML(u_cust_html)	<p>cust html</p>
Cust Integer(u_cust_integer)	11
Cust String(u_cust_string)	Sample string
Cust URL(u_cust_url)	https://dev69395.service-now.com/

Default assignee(default_assignee)	Aileen Mottern(aileen.mottern)
Delivery plan(delivery_plan)	Blackberry Delivery Plan
Delivery task(delivery_task)	Procure PC Hardware
Depreciation(depreciation)	DDB 4 Years
Description(description)	desc....
Domain Path(sys_domain_path)	/path
Domain(sys_domain)	global
Due date(due_date)	02/01/2020 04:34:09
Escalation(escalation)	Normal
Exclude manager(exclude_manager)	False
Expected start(expected_start)	01/17/2020 07:27:23
Expenditure type(expenditure_type)	Capex
Flow Rate (cfm)(flow_rate)	22
Follow up(follow_up)	01/22/2020 11:17:10
Full name(full_name)	full name
Global rank(global_rank)	4018800000
Group email(email)	a@gmail.com
Group list(group_list)	Development Team
Height (U)(rack_units)	33
Hourly rate(hourly_rate)	5.6
Impact(impact)	3 - Low
Include members(include_members)	False
Knowledge(knowledge)	False
Licensed User	admin

Made SLA(made_sla)	True
Manager(manager)	Abel Tuter(abel.tuter)
Model categories(cmdb_model_category)	Software
Model number(model_number)	44
Name(name)	Development Team
Number(number)	EPIC0010231
Opened by(opened_by)	System Administrator(admin)
Opened(opened_at)	01/21/2020 11:02:49
Order(order)	123
Owner(owner)	System Administrator(admin)
Parent feature(parent_feature)	DFCT0010018
Points(points)	10
Priority(priority)	3 - Moderate
Product Index(product_rel_index)	100000
Product(product)	DevOps
Rank(rank)	10
Reassignment count(reassignment_count)	1
Release capacity (points)(release_capacity)	10
Release Index(release_index)	100000
Roles(roles)	action_designer
Salvage value(salvage_value)	0
Service Now Item URL	https://dev69395.service-now.com/rm_epic.do?sys_id=58764473db26401098c7a455ca961946
Service Now Item URL HTML	<A HREF="https://dev69395.service-

	now.com/rm_epic.do?sys_id=9c264662db56001098c7a455ca9619d4 " target='_blank'>https://dev69395.service- now.com/rm_epic.do?sys_id=9c264662db56001098c7a455ca9619d4
Short description(short_description)	Test Epic
Skills(skills)	IT
SLA(sla)	sla
Sound Power (bels)(sound_power)	5
Source(source)	source
Sprint Index(sprint_index)	300000
State(state)	Draft
Status(status)	In Production
Sys ID(sys_id)	e1660a50dbbd001098c7a455ca9619db
Task type(sys_class_name)	rm_epic
Time worked(time_worked)	00:08:35
Total committed points(points)	10
Type(type)	Generic
Updated by(sys_updated_by)	System Administrator(admin)
Updated(sys_updated_on)	01/02/2020 12:40:47
Updates(sys_mod_count)	2
Upon approval(upon_approval)	Proceed to Next Task
Upon reject(upon_reject)	Cancel all future Tasks
Urgency(urgency)	3 - Low
User input(user_input)	user input
Visited States(visited_state)	,-6
Watch list(watch_list)	System Administrator(admin)

Weight (lbs)(weight)	5
Work notes list(work_notes_list)	System Administrator(admin)

Adapter and Event Service XML Configurations:

The Windows Service installation path and adapter installation path contains a folder named ConfigXML containing the following xml files:

1. EntityConfig.xml
2. FieldConfig.xml
3. PluginFields.xml
4. ReferenceFieldsMetadata.xml
5. UnsupportedFieldTypesList.xml
6. EventFilter.xml

1. EntityConfig: This xml specifies the details of the entities exposed by the adapter. For exposing any additional Entity except the already exposed entities, add another <Entity> tag with its proper and specific property as metadata.

Note: 'ReferenceTitleFieldName' tag value may or may not contain any value. Please refer to the below embedded document EntityConfig.xml.



EntityConfig.xml

Details of the configuration changes:

Key Name	Key Value
Name	Name of the Entity in service now tool
Table	Table name of the entity in service now tool

DoExtendTask	Provide Y in order to specify whether the entity extends task.
Extends	Provide task type for entities which extends it.
ReferenceTitleFieldName	It refers to the field name, the value of which will be generated for reference type field. This field value is not mandatory.

2. **FieldConfig:** This xml file specifies the additional fields (fields which are not exposed directly from API) which are exposed from Service Now Adapter for respective entities of Service Now tool. The fields behaves according to the mentioned attribute values. Please refer to the below embedded document FieldConfig.xml.



FieldConfig.xml

Note: If there is a need to change any field parameters (example IsEditable ,IsRequired etc)coming from API ,add an extra field tag for that field under the respective Entity.

For example :- **Type** Field of Group entity is readonly field to make it editable field add this Field tag under group entity

```
<Field Name='Type' Label='Type' Type='SingleLineText' IsRequired='N' IsEditable='Y' IsMultivalued='N'/>
```

Details of the configuration changes:

Key Name	Key Value
Name	Field Name of Service Now tool
Label	Field Label of Service Now tool
Type	Exposed DataType of the field
IsEditable	Provide Y is order to make the field editable or N in order to

	make the field readonly
IsRequired	Provide Y is order to make the field mandatory or N in order to make the field not mandatory
IsMultiValued	Provide Y is order to make the field supported for multiple values or N in order to make supported for single values
LanguageAttributeValueForFiltering	Provide the language attribute value for the lookup fields if filtering is required. By default it will not filter.

3. PluginFields: This xml file specifies the fields exposed during Plugin configuration for specific entity and specific Default View. The fields behaves according to the mentioned attribute values. Please refer to the below embedded document PluginFields.xml.



PluginFields.xml

Details of the configuration changes:

Key Name	Key Value
Field Name	Field Name of Service Now tool
Label	Field Label of Service Now tool
Type	Exposed DataType of the field

4. ReferenceFieldsMetadata: This xml file specifies the reference type fields which are exposed from Service Now Adapter for respective entities of Service Now tool. The value of which field will be generated for reference type fields depends on the 'TitleField' attribute.

Add 'Reference' tag for each SingleLineText Field of Service Now Field Type 'reference'. Mention the proper field name (value of field to be shown as title) of reference type field as 'TitleField' property for each Entity. Please refer to the below document ReferenceFieldsMetadata.xml.



ReferenceFieldsMetadata.xml

Details of the configuration changes:

Key Name	Key Value
Name	Field Name of Service Now tool
Label	Field Label of Service Now tool
Type	Exposed DataType of the field
IsEditable	Provide Y in order to make the field editable or N in order to make the field readonly
IsRequired	Provide Y in order to make the field mandatory or N in order to make the field not mandatory
IsMultiValued	Provide Y in order to make the field supported for multiple values or N in order to make supported for single values

Note:

For generating Mandatory Reference field with reference value as 'task' one has to perform the following steps during field mapping for that entity:

- I. The value of the field mentioned in the 'ReferenceTitleFieldName' attribute in Entity tag in EntityConfig.xml present in ConfigXML folder should be declared in Default Value section of field Mapping.

```
<?xml version="1.0" encoding="utf-8" ?>
<Root>
  <Entities>
    <Entity Name="Incident" Table="incident" DoExtendTask="Y" Extends="task" ReferenceTitleFieldName="number"/>
    <Entity Name="Problem" Table="problem" DoExtendTask="Y" Extends="task" ReferenceTitleFieldName="number"/>
    <Entity Name="Change Request" Table="change_request" DoExtendTask="Y" Extends="task" ReferenceTitleFieldName="number"/>
  <Entity Name="Knowledge Base" Table="kb_knowledge" DoExtendTask="N" ReferenceTitleFieldName="number"/>
  <Entity Name="Task" Table="incident_task" DoExtendTask="Y" Extends="task" ReferenceTitleFieldName="number"/>
    <Entity Name="Story" Table="rm_story" DoExtendTask="Y" Extends="rm_feature" ReferenceTitleFieldName="number"/>
    <Entity Name="Defect" Table="rm_defect" DoExtendTask="Y" Extends="rm_feature" ReferenceTitleFieldName="number"/>
    <Entity Name="Epic" Table="rm_epic" DoExtendTask="Y" Extends="rm_feature" ReferenceTitleFieldName="sys_id"/>
    <Entity Name="Theme" Table="scrum_theme" DoExtendTask="N" ReferenceTitleFieldName="sys_id"/>
    <Entity Name="Application Model" Table="cmdb_application_product_model" DoExtendTask="N" Extends="cmdb_model"
  ReferenceTitleFieldName="sys_id"/>
  <Entity Name="Group" Table="sys_user_group" DoExtendTask="N" ReferenceTitleFieldName="sys_id"/>
  <Entity Name="Scrum release" Table="rm_release_scrum" DoExtendTask="Y" Extends="rm_release" ReferenceTitleFieldName="sys_id"/>
  <Entity Name="Enhancement" Table="rm_enhancement" DoExtendTask="Y" Extends="rm_feature" ReferenceTitleFieldName="sys_id"/>
  </Entities>
</Root>
```

- II. The name of the Default Entity should be mentioned in 'TaskReferenceDefaultEntity' tag in Web.config present in the adapter installation path.

```
<appSettings>
  <add key="TaskReferenceDefaultEntity" value="Change Request"/>
</appSettings>
```

5. UnSupportedFieldTypesList: This xml file specifies the field types which are not supported for any entity by Kovair Service Now Adapter. Please refer to the below embedded document UnSupportedFieldTypesList.xml.



UnSupportedFieldTypesList.xml

Details of the configuration changes:

Key Name	Key Value
Field Type	Datatype of fields which are exposed from Service Now API

6. EventFilter: This xml specifies the details of the event filter. For filtering the events the filter query needs to be placed in the query node in the xml. The project name should be mentioned and its corresponding subscriber Id needs to be placed accordingly. For each event filter for a specific subscriber the whole project tag needs to be repeated along with its sub nodes.

Note: Refer to the "AdditionalFilter" document for xml configuration.



Relations (Entity Object -relation as field) Exposed

Relation Name	Cardinality
Any Exposed Entity with Any Entity	One - to - One
Incident to Problem	One - to - One
Incident to Change Request	One - to - One
Problem to Change Request	One - to - One

Events Exposed

Entity Name	Add	Edit	Delete
-------------	-----	------	--------

Incident	Yes	Yes	Yes
Problem	Yes	Yes	Yes
Change Request	Yes	Yes	Yes
Knowledge Base	Yes	Yes	No
Knowledge	Yes	Yes	Yes
Task	Yes	Yes	Yes
Story	Yes	Yes	Yes
Defect	Yes	Yes	Yes
Epic	Yes	Yes	Yes
Theme	Yes	Yes	Yes
Application Model	Yes	Yes	Yes
Group	Yes	Yes	Yes
Scrum release	Yes	Yes	Yes
Enhancement	Yes	Yes	Yes

Actions Exposed:

Entity Name	Add	Edit	Delete
Incident	Yes	Yes	Yes
Problem	Yes	Yes	Yes
Change Request	Yes	Yes	Yes
Knowledge Base	Yes	Yes	No
Knowledge	Yes	Yes	Yes
Task	Yes	Yes	Yes
Story	Yes	Yes	Yes
Defect	Yes	Yes	Yes
Epic	Yes	Yes	Yes
Theme	Yes	Yes	Yes
Application Model	Yes	Yes	Yes
Group	Yes	Yes	Yes
Scrum release	Yes	Yes	Yes

Enhancement	Yes	Yes	Yes
-------------	-----	-----	-----

For task entity the related incident can be added in the service now by two ways:

- By Parent details flow in action.
- By exposing the related incident field in the XML.

By default incident will be related to the task during task creation by parent details provided in the action flow.

Note :- If there is any **business rule** for the tool to perform any action for any specific entity, This business rule needs to be satisfied in order to perform respective action.

Attachment Support

Event		Action	
Add	Delete	Add	Delete
Yes	Yes	Yes	Yes

Comment Support

Event		Action	
Add	Delete	Add	Delete
Yes	No	Yes	No

Note

- Either **Additional comments** or **Work notes** will flow in comments based on app.config parameter **CommentField** key in config file of event service.
- By default, **Additional comments** will flow in comments. If **CommentField** contains **work_notes** then **Work notes** will flow as Comments.

- If key is set to **work_notes** and both **Additional comments** and **Work notes** are added in tool then **Work notes** will flow only. If key value is changed from **work_notes** to **comments** then new **Additional Comments** along with the previously added **Additional Comments** will flow only if the record is modified further.
- If value of the key **ManipulateCommentText** is changed ,then duplicate comments may flow after the modification of existing record .

All Comments Synchronization

Feature:

- All comments for a record will flow every time. So comment will not get lost even if an event gets blocked by service flow condition.

Prerequisites:

1. Key '**EnableAllCommentsFlow**' should be set to '**Y**' in both adapter web.config and eventservice.exe.config.
2. User should map **Internal Comment Details** (MultiLineText) field from both adapters in field mapping interface of Kovair.
3. Both the source & target adapter database must be hosted in the same SQL Server instance. The database identity / account set in Service Now Adapter > Web.config > KovairDBProvider section must have permission to execute READ query in the adapter database from where comment is coming.
4. In target adapter (if it supports all comment) related flag needs to be turned on as well.

Notes:

1. Rich text formatting / HTML formatting like bold, italic etc will not be supported.
2. Comment text inserted between < > characters will be stripped off.
3. Comment delete in both event and action are not supported. Comment modify event/action are not supported.

Additional feature:

The user can configure an XML, named '**IgnoreCommentUser.xml**' available in Event Service installation directory, to block generation of Comment events done by a user whose name is mentioned in the above mentioned xml file. Sample file:



IgnoreCommentU
ser.xml

All Attachments Synchronization

Feature:

- All attachments for a record will flow every time. So attachment will not get lost even if an event gets blocked by service flow condition.

Prerequisites:

1. Key '**EnableAllAttachmentsFlow**' should be set to '**Y**' in both adapter web.config and eventservice.exe.config.
2. User should map **Internal Attachment Details** (MultiLineText) field from both adapters in field mapping interface of Kovair.
3. Both the source & target adapter database must be hosted in the same SQL Server instance.
4. A shared directory has to be created in the network domain. The network path must be made available to the event service (through key: **AttachmentSharedPath** in configuration file). The accounts through which all the target adapters(s) and Service Now event service are running must be having full read / write permission in the shared network path. The attachments get downloaded locally into the shared directory path specified in **AttachmentSharedPath**.
5. In target adapter (if it supports all attachment) related flag needs to be turned on as well.

Notes:

1. Attachments locally downloaded in shared path during sync will not be deleted immediately after the event has been successfully flown to target tool. The event service will keep deleting event attachments from shared directory accumulated two (2) days ago.

Sync back Support

Only following fields are supported for Sync back: All tool exposed fields are supported for sync back. No hard code extra fields exposed by the adapter for supporting different mechanisms are supported for sync back. Only the following hard code fields are applicable for sync backs.

Field Name	Data Type
ServiceNow Item URL	Single Line Text
ServiceNow Item URL HTML	Single Line Text

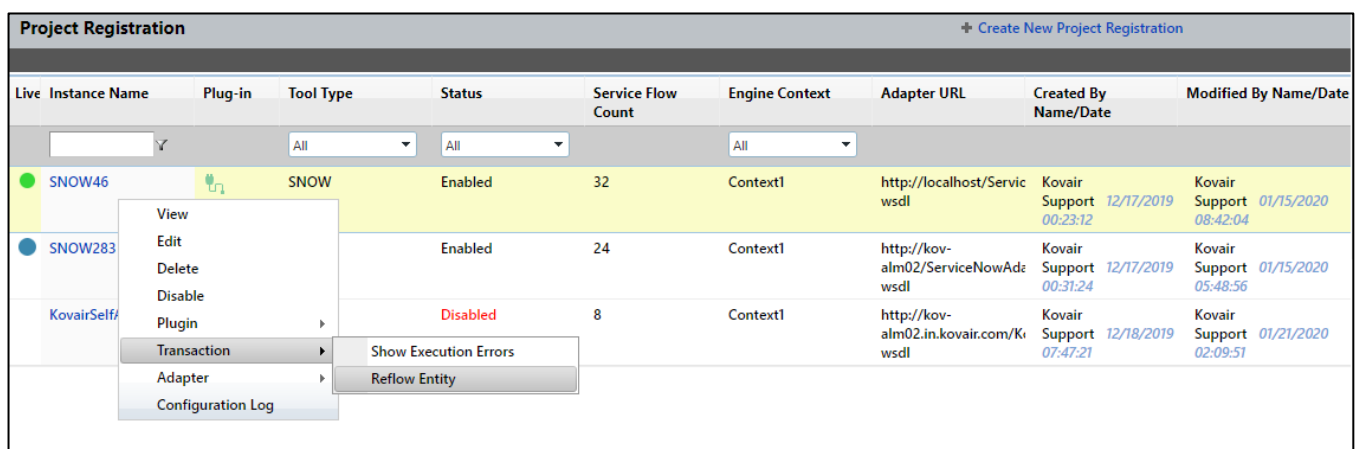
* For Application Model and Group Entity, except 'Number' field all other fields as exposed by the tool are applicable for sync back.

Entity Reflow

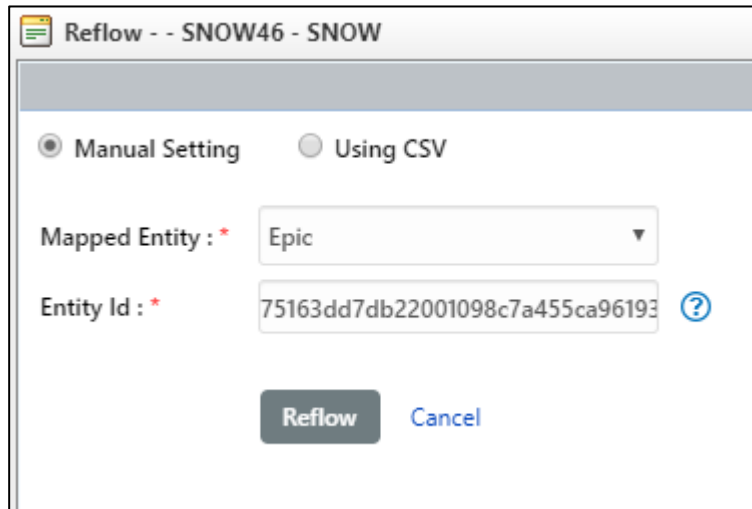
This adapter supports Entity Reflow, where the user gets to reflow those items from Service Now which may not have reached the target tool with which the integration is being done, but exists in Service Now.

This can be done by the following steps:

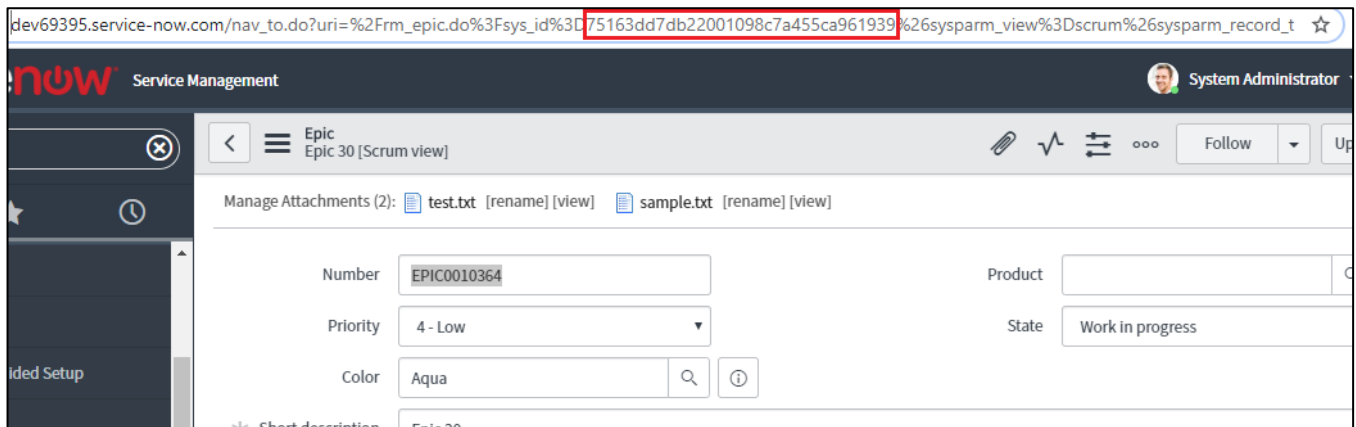
1. Go to the Service Now registration in Kovair and right click on it to bring up its context menu. Then click on 'Transactions' and then click on 'Reflow Entity'.



2. In the window which opens next, one can reflow an entity item by 2 ways: 'Manual Setting' or by 'CSV'. For Manual Setting, select the entity name for which Reflow is to be done from the 'Mapped Entity' dropdown and then specify the corresponding entityId(s) in a comma separated manner and click 'Reflow'.



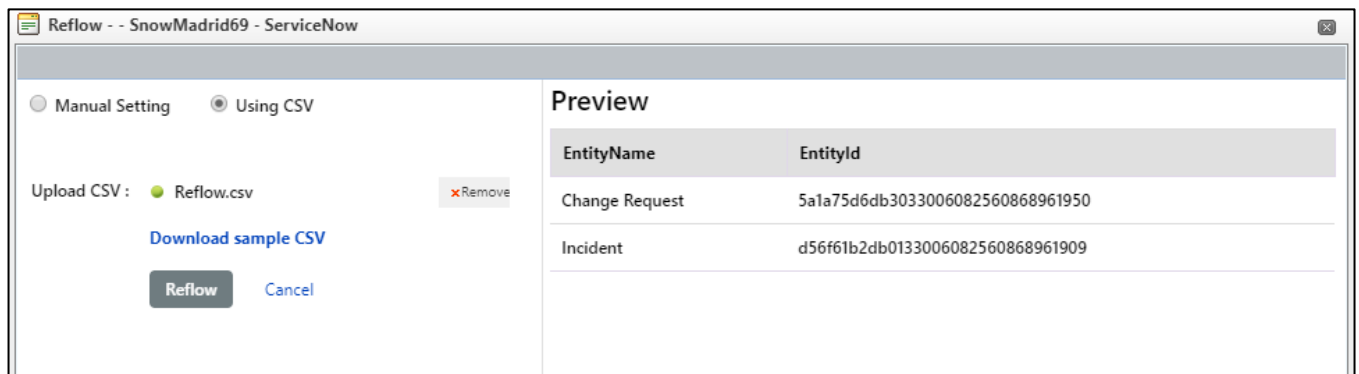
Entity Id can be found from URL of the tool. Refer to the below image.



3. Select the 'CSV' radio button if one wants to reflow multiple items from a CSV file.

Clicking on 'Download sample CSV' downloads a sample CSV file with the format in which the user needs to input the entity Ids.

After saving the csv file, upload it and then click Reflow.



4. To see the status of the reflow, go to Workspace Setup, click on 'Workspace' menu item and click on 'Job Queue'.

Omnibus Reflow Execution for instance - SnowMadrid69	Kovair Support	Omnibus Reflow	04/30/2019 03:22 04/30/2019 03:22	0 hr 0 min 11 sec	Completed	Log.txt
--	----------------	----------------	---	-------------------	-----------	-------------------------

Clicking on the **Log.txt** hyperlink shows the status of the Reflows which has been done recently.

Disclaimers

The following features are not supported by present Kovair ServiceNow Adapter

- **Reference Fields** which are NOT **mandatory** in nature are exposed as read-only single line text. Therefore data can go out of this fields but cannot be pushed in.

Example: Duration, WorkFlow, Domain_id, Domain-Path, timer, Glide_duration Type fields are exposed as Read Only Single Line text field

- **Reference Fields** which are **Mandatory** is exposed as editable Mandatory **Entity Object** Field. Values for these fields need to be provided in default value during Entity Mapping at Omnibus Configuration.

Fields which are Reference Type and are pointing to Task then the parent entity will expose two fields. One of the field is single line read-only text for values. The second field is the entity object which is nothing but relation as field which will expose value of the related record id. The field with its Title field Value should be added as a tag in 'ReferenceFieldMetaData.xml' file.

- Few of the fields like **Subcategory** are a dependent lookup.
Suppose user wants to set value **Antivirus** then you need to map **Activated by** field to get the effect.
- Images from **Image Library** are not supported in HTML/ Translated HTML fields as Rich Text Fields.
- **Videos attributes** are not supported in HTML/ Translated HTML fields.
- All Relation Fields are exposed as **Entity Objects** Fields – relation as field.
- The login Id attribute of Service Now only is used to search users from Service Now.
- **Loopback event** of any modify action may or may not appear always. User has to change value of at least one mapped field of field mapping for loopback event to appear.(In case of **Attachment Add or Delete Action**, change value of at least one mapped field.)
- For some entity example : **Knowledge base ,Group** entity modify events are generated from the tool only if any of the field value is modified and the respective record is updated. When only an attachment is added without any field value modification then no event from tool for respective entity will be generated. So in order to generate modify event for knowledge base ,Group entity for attachment then the user needs to edit any field and update the record.

- For performing action for the affected CI, Company, Configuration Item fields the values passed needs to be exactly same as that in service now. The values are case sensitive. Since the fields are all Singlelinetext or Multilinetext fields so the values needs to be same.
- For the action in Affected CI field - If a value (which is present multiple times with different ids in the tool) is given then the first found value will be taken into consideration. For the field to be mapped with this field in the target tool needs to be description type, then “\n” tag separator will work or else “,” needs to be provided as a separator.
- For attachment delete action for any entity in service now the reverse service flow of that entity (from service now) needs to be present. Both side service flow is required to configured in order to perform attachment delete action in Service Now.
- Comment in Application Model appear in the comments field of the entity.
- No Html or formatted data is supported for comment action in Service Now.
- MultiLineText(Rich Text) I.e. for the description field does not support image.
- Plugin is not supported for Task, Story, Defect, Epic, Theme, Application Model, Group, Scrum release and Enhancement entity.
- Only incident tasks are exposed for task entity. These are present under the incident records.
- Some EntityObject fields are exposed as SingleLineText in Entity Mapping but will not carry any value as those entities are not exposed.
- Some fields value may contain field ids after synchronization of the event.
- Some fields are mandatory during action through API call but not mandatory in UI. For example, **Assignment group, State** are mandatory while performing action on Story, Change Request entities. So, lookup values of **Assignment group, State** need to be mapped as well.
- All attachment names given in RTF field, attachment section should be unique. For RTF fields attachments, the attachments will be added with prefix ‘Img_Cus_Attachment_’.
- Embedded images in comments or worknotes are not supported.
- For problem Entity Field name “Problem Statement” is exposed as “Short Description”.
- For relation during action manual deletion cannot unlink thus need to link to any other record of other entity to unlink the previously linked item.
- During action active field should be true while adding any record to servicenow.
- Technical API constraints :
 - When a snow record is updated without any value change in the record it does not generate any modify event. If any action is performed in snow which does not make any change in the snow record then no modify loopback event will get generated.
 - Once conflict is triggered from tool or by sync from different tool, multiple events of random records may sometimes get retrieved from the API. This leads to generation of multiple modify events for a conflict check in a particular record.

- The Type(type) field needs to be mapped always for both add and modify action for Emergency and standard type of change request record. In case of normal this field may or may not be mapped. This field is required in order to understand the type of record as the APIs work differently. For both standard and emergency type of changes the type field will be skipped for the POST call in the add flow in snow as API does not populate the state field values.
- For the Close Code(close_code) field the APIs for Standard and emergency takes the value rather than the label during the API call.
- Planned start, Planned end of scrum release and Publish workflow,Retire workflow of Knowledge base does not populate the field values.
- For state field, in case of standard and emergency type of change request it takes the label value rather than the integer value which is for the API call for normal change request.Also if same state value is pushed in the any API call it throws error. So in this case the state field value is first retrieved, if the value is different then only state value is updated for standard and emergency type of change request.
- Attachment name should be of 100 characters or else it will be added by truncating the extra characters which may lead to unwanted errors for attachment sync.

Additional Notes:

Following are the additional features implemented :

1. Conflict : Conflict mechanism of SNOW for Change Request entity can be checked for modify flow. An editable lookup(Yes/No) field '**Run Conflict**' is exposed for this by the adapter. Conflict trigger for Change Request entity will only be fired when the value of this field is set to 'Yes'. This will be triggered after the modify action is done. If modify is successfully done, but it got error while checking conflict then it will throw error.

This field is exposed in the adapter side only. This is not exposed in the event side. _LKP is also not exposed for this field. This field with proper value needs to be send for all the actions in which conflict triggering is required to be done.

2. Standard Template Change Action in SNOW : Standard Changes can be added/modified in Snow based on the templates. '**Standard Change Templates**' lookup field is exposed by the adapter which populates all templates available in the tool.

For a standard change add following values are required -

- a) Standard Change Templates lookup field with a valid template.
- b) Require Type field to be mapped with proper value

'**Standard Change Templates**' field is exposed both side which exposes all the template list. In the event side the field generates proper field value for standard type change request. for the other types it will be empty.

