

SAP RAP – Editable List Report with OData V4

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Purpose :

This document explains how to build an Editable List Report using SAP RAP (OData V4) with a Singleton-based architecture.

Steps:

- Create a Singleton CDS and Carrier Interface view.
- Create a Projection View for the Singleton CDS and Carrier Interface View.
- Create a Metadata extension for Projection Singleton CDS and Carrier CDS view.
- Create a Behavior Definition for Interface Singleton and Projection Singleton CDS.
- Create a service Definition and Binding.
- Test the RAP Application using preview.

Creating a Singleton CDS :

```
@AccessControl.authorizationCheck: #NOT_REQUIRED
@EndUserText.label: 'Singleton Entity'
@Metadata.ignorePropagatedAnnotations: true
define root view entity zi_carrier_singleton_rap
as select from I_Language
  left outer join /dmo/carrier on 1 = 1
composition [0..*] of zi_carrier_rap as _Carrier
{
  key 'Singleton' as SingletonID,
    max(/dmo/carrier.last_changed_at) as LastChangedAtMax,
    _Carrier
}
where
I_Language.Language = $session.system_language
```

Creating a Carrier Interface View :

```
@AccessControl.authorizationCheck: #NOT_REQUIRED
@EndUserText.label: 'Carrier Data'
@Metadata.ignorePropagatedAnnotations: true
define view entity zi_carrier_rap
as select from /dmo/i_carrier as Carrier
association to parent zi_carrier_singleton_rap as
_Singleton on $projection.SingletonId = _singleton.SingletonID
{
  key AirlineID,
```

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```
'Singleton' as SingletonID,  
name,  
CurrencyCode,  
@Semantics.user.createdBy: true  
LocalCreatedBy,  
@Semantics.systemDateTime.createdAt: true  
LocalCreatedAt,  
@Semantics.user.lastChangedBy: true  
LocalLastChangedBy,  
@Semantics.systemDateTime.localInstanceLastChangedAt: true  
LocalLastChangedAt,  
@Semantics.systemDateTime.lastChangedAt: true  
LastChangedAt,  
_Singleton  
}
```

Purpose

- Provide **one fixed parent** for all carrier records.
- Give the RAP BO a stable entry point.
- Aggregate some carrier data (like the latest change timestamp).

Root entity

zi_carrier_singleton_rap

- Always exactly **one instance**
- Collects:
 - Maximum change timestamp from */dmo/carrier*
 - Language-specific selection
- Holds *n.. carriers** in composition

Child entity

zi_carrier_rap

- Individual
- Always associated with the single
- Provides standard audit fields

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Creating a Singleton Projection View :

```
@AccessControl.authorizationCheck: #NOT_REQUIRED
@EndUserText.label: 'Consumption View for Singleton'
@Metadata.ignorePropagatedAnnotations: true
@Metadata.allowExtensions: true
@ObjectModel.semanticKey: ['SingletonID']
define root view entity zc_carrier_singleton_rap
  provider contract transactional_query
  as projection on zi_carrier_singleton_rap
  {
    key SingletonID,
    @Consumption.hidden: true
    LastChangedAtMax,
    _Carrier : redirected to composition child zc_carrier_rap
  }
}
```

Creating a Carrier Projection View :

```
@AccessControl.authorizationCheck: #NOT_REQUIRED
@EndUserText.label: 'Consumption View'
@Metadata.ignorePropagatedAnnotations: true
@Metadata.allowExtensions: true
@ObjectModel.semanticKey: ['AirlineID']
define view entity zc_carrier_rap
  as projection on zi_carrier_rap
  {
    key AirlineID,
    @Consumption.hidden: true
    SingletonID,
    name,
    @Consumption.valueHelpDefinition: [
      { entity:
        { name: 'I_CurrencyStdVH',
          element: 'Currency' },
        useForValidation: true
      }
    ]
    CurrencyCode,
    LocalLastChangedAt,
    _Singleton : redirected to parent zc_carrier_singleton_rap
  }
}
```

Projection View Details :

- Wraps the interface singleton for UI consumption
- Hides technical fields not needed in the UI
- Redirects carrier child to its consumption projection
- Becomes the BO *root* in the service binding

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Creating a metadata Extension For Carrier and Singleton Projection views :

```
@Metadata.layer: #CORE
@UI.headerInfo: {
  typeName: 'Carrier Detail',
  typeNamePlural: 'Carrier Details',
  title: {
    type: #STANDARD,
    label: 'Airline',
    value: 'AirlineID'
  }
}
}
annotate entity zc_carrier_rap with
{
  @UI.facet: [{ type: #IDENTIFICATION_REFERENCE }]
  @UI.lineItem: [{ position: 10 }]
  @UI.identification: [{ position: 10 }]
  AirlineID;
  @UI.lineItem: [{ position: 11 }]
  @UI.identification: [{ position: 11 }]
  name;
  @UI.lineItem: [{ position: 12 }]
  @UI.identification: [{ position: 12 }]
  CurrencyCode;
}
```

```
@Metadata.layer: #CORE
@UI.headerInfo: {
  typeName: 'Manage Carrier',
  typeNamePlural: 'Manage Carriers',
  title: {
    type: #STANDARD,
    value: 'SingletonID'
  }
}
}
annotate entity zc_carrier_singleton_rap with
{
  @UI.facet: [{
    purpose: #STANDARD,
    position: 10,
    label: 'Multi Line Edit',
    type: #LINEITEM_REFERENCE,
    targetElement: '_Carrier'
  }]
  @UI.lineItem: [{ position: 10 }]
  SingletonID;
}
```

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Creating the Behavior Definition For Interface view

```
managed implementation in class zbp_i_carrier_singleton_rap unique;
strict ( 2 );
with draft;
define behavior for zi_carrier_singleton_rap //alias <alias_name>
with unmanaged save
draft table zsm_d_car_slg
lock master
total etag LastChangedAtMax
authorization master ( global )
{
draft action Edit;
draft action Activate;
draft action Discard;
draft action resume;
draft determine action prepare;
field ( readonly ) SingletonID;
association _Carrier { create; with draft; }
}
define behavior for zi_carrier_rap //alias <alias_name>
persistent table /dmo/carrier
draft table zsm_d_carriers
lock dependent by _Singleton
authorization dependent by _Singleton
etag master LocalLastChangedAt
{
update;
delete;
field ( readonly ) SingletonID;
field ( mandatory : create, readonly : update ) AirlineID;
field ( mandatory ) name, CurrencyCode;
association _Singleton { with draft; }
mapping for /dmo/carrier
{
AirlineID      = carrier_id;
CurrencyCode   = currency_code;
Name           = name;
LocalCreatedBy = local_created_by;
LocalCreatedAt = local_created_at;
LocalLastChangedBy = local_last_changed_by;
LocalLastChangedAt = local_last_changed_at;
LastChangedAt  = last_changed_at;
}
}
```

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Singleton	One root instance controlling child data
Carrier	Child entities maintained under the singleton
Managed Behavior	CRUD auto-handled by RAP
Unmanaged Save	Save logic implemented in behavior class
Draft Enabled	UI supports draft editing & activation
Association	One-to-many between Singleton → Carriers

Creating the Behavior Definition For Projection View

```
projection;  
strict ( 2 );  
use draft;  
define behavior for zc_carrier_singleton_rap //alias <alias_name>  
{  
  use action Edit;  
  use action Activate;  
  use action Discard;  
  use action Resume;  
  use action Prepare;  
  use association _Carrier { create; with draft; }  
  field ( suppress ) lastchangedatmax;  
}  
define behavior for zc_carrier_rap //alias <alias_name>  
use etag  
{  
  use update;  
  use delete;  
  use association _Singleton { with draft; }  
}
```

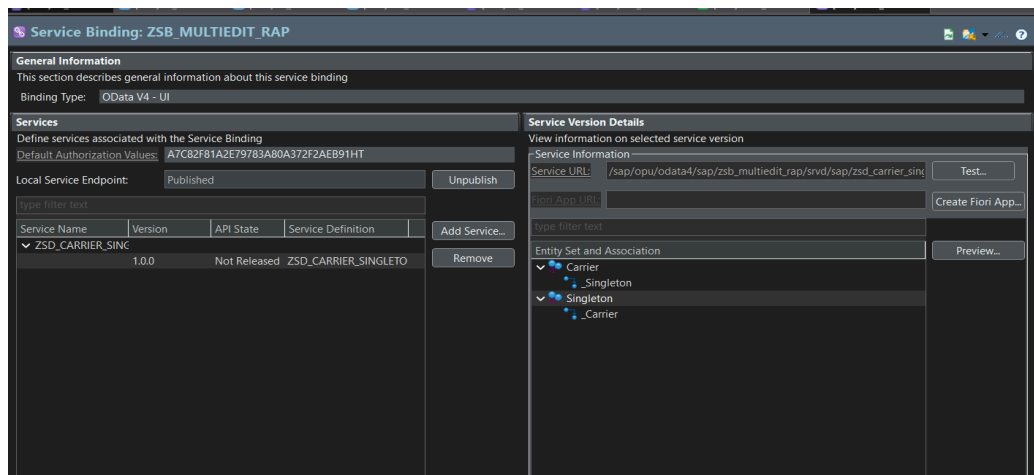
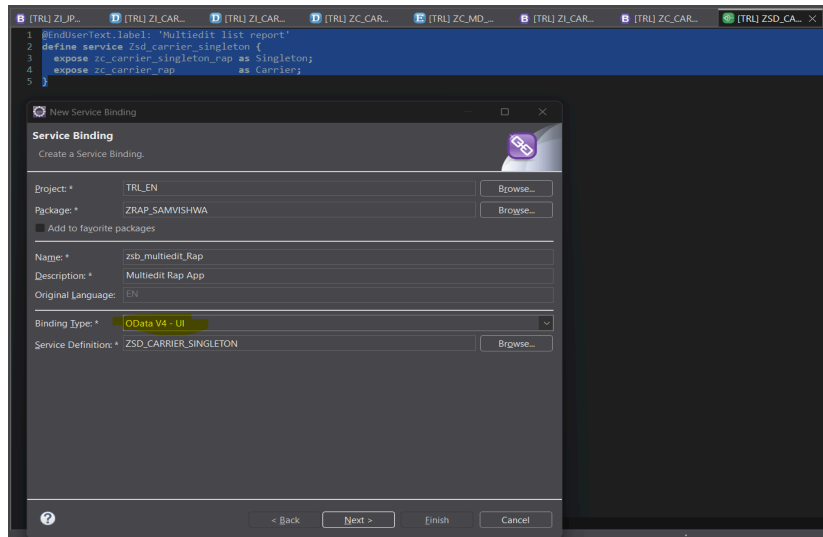
Creating the Service Definition

```
@EndUserText.label: 'Multiedit list report'  
define service Zsd_carrier_singleton {  
  expose zc_carrier_singleton_rap as Singleton;  
  expose zc_carrier_rap as Carrier;  
}
```

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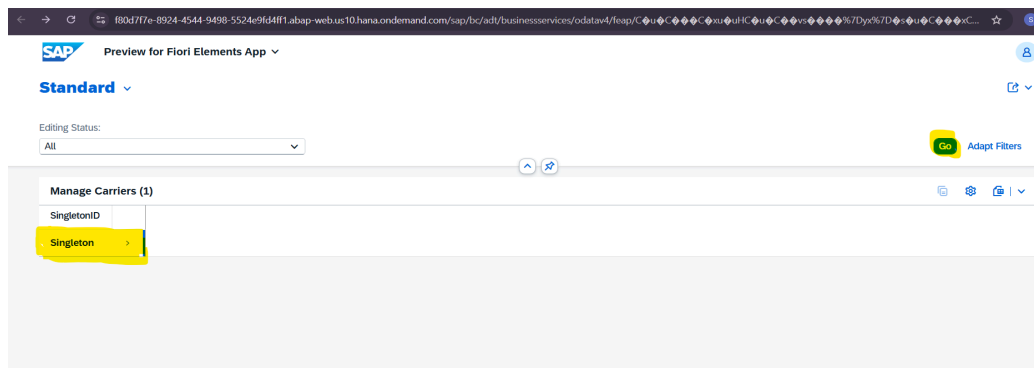
Creating the Service Binding

It should be Odata V4 - UI then only the Multi edit option will work.



Output :

1. If we click on the singleton then Lineitem will be shown.



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2. If we are clicking on the Edit button then it will allow all the entries to be editable.

The screenshot shows the SAP RAP 'Manage Carrier' interface. At the top, there's a header with the SAP logo, 'Manage Carrier' dropdown, and a user icon. Below the header, the title 'Singleton' is displayed. A yellow 'Edit' button is visible in the top right corner. The main content area is titled 'Multi Line Edit (17)' and contains a table with the following data:

Airline ID	Airline Name	Currency Co...	
AA	American Airlines Inc.	CDF	>
AC	Air Canada	CAD	>
AF	KK	EUR	>
AZ	Alitalia Societa Aerea Italiana S.p.A.	EUR	>
BA	British Airways p.l.c.	GBP	>
CO	Cobaltair Ltd. dba Cobalt	USD	>
DL	Delta Air Lines, Inc.	USD	>
FJ	Air Pacific Limited t/a Fiji Airway	USD	>
JL	Japan Airlines Co., Ltd.	JPY	>
KL	Testing	USD	>

Below the table, there is a 'More' link and a pagination indicator '[10 / 17]'.

The screenshot shows the same SAP RAP 'Manage Carrier' interface, but now in 'Draft' mode. The title 'Singleton' is followed by a 'Draft' dropdown. The 'Edit' button is no longer present. The table is now in an edit state, with each row having a checkbox and input fields for 'Airline ID', 'Airline Name', and 'Currency Co...'. The table data is identical to the previous screenshot. At the bottom right, there are 'Save' and 'Discard Draft' buttons.

Here If we edit and not save then the Draft table will get updated. We can again navigate to Draft there we can save.

3. Create Button is available to create a new entry.

The screenshot shows a 'New Object' dialog box. It has a title bar 'New Object' and a label 'Airline ID: *' followed by an empty text input field. At the bottom of the dialog, there are two buttons: 'Continue' and 'Cancel'.

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For Currency F4 help is added.

The screenshot shows a web application interface for 'Carrier Detail'. At the top, there is a SAP logo, a 'Carrier Detail' dropdown, and a user profile icon. Below this, the text 'Singleton /' and 'KQ' are visible. A 'Delete' button and a list icon are also present. The main form area contains three input fields: 'Airline ID:' with the value 'KQ', 'Airline Name:' with the value 'Testing', and 'Currency Code:' with the value 'USD'. A dropdown menu is open for the 'Currency Code' field, showing a table with two columns: 'Currency' and 'Description'. The table has one row with 'USD' and 'United States Dollar'. A 'Show All Items' link is at the bottom of the dropdown. At the bottom right of the form, there is a status bar with the text 'Updating draft...' and an 'Apply' button.

Currency	Description
USD	United States Dollar

Conclusion:

This approach demonstrates how SAP RAP with OData V4 can be leveraged to build a scalable and user-friendly Editable List Report. By using a Singleton-based architecture, managed behaviors, and draft handling, we enable users to update multiple records efficiently in a single interface. This improves productivity, reduces manual steps, and provides a clean foundation for extending the application with additional validations, actions, or UI features in the future.