



# Leverage the **Improved OData Client** of **SAP Cloud SDK for Java**

September 1, 2020

PUBLIC

# Disclaimer

The information in this presentation is confidential and proprietary to SAP and may not be disclosed without the permission of SAP. Except for your obligation to protect confidential information, this presentation is not subject to your license agreement or any other service or subscription agreement with SAP. SAP has no obligation to pursue any course of business outlined in this presentation or any related document, or to develop or release any functionality mentioned therein.

This presentation, or any related document and SAP's strategy and possible future developments, products and or platforms directions and functionality are all subject to change and may be changed by SAP at any time for any reason without notice. The information in this presentation is not a commitment, promise or legal obligation to deliver any material, code or functionality. This presentation is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. This presentation is for informational purposes and may not be incorporated into a contract. SAP assumes no responsibility for errors or omissions in this presentation, except if such damages were caused by SAP's intentional or gross negligence.

All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.

# SAP Cloud SDK User Survey Q3/2020

- As part of our continuous effort to improve the SAP Cloud SDK, we'd like to ask you to participate in a 10-minute survey.
- Here is the link to the survey:  
[https://sapinsights.eu.qualtrics.com/jfe/form/SV\\_0pUmWpCadpoLhyZ](https://sapinsights.eu.qualtrics.com/jfe/form/SV_0pUmWpCadpoLhyZ)
- The survey is anonymous. Feel free to forward this link to other members of your team who are also using the SAP Cloud SDK.
- Thank you for your participation! Your answers will help us to make the SAP Cloud SDK even better.
- Please only consider the SAP Cloud SDK when answering, not other tools by SAP (like CAP, ...).



# What's New in SAP Cloud SDK

## Java Library ([release notes](#)):

- Virtual Data Model for [SAP S/4HANA Cloud release 2008](#)
- Support for additional OData v4 features
- Improved OData client implementation



## JavaScript Library ([release notes](#)):

- Virtual Data Model for [SAP S/4HANA Cloud release 2008](#)
- Move OData v4 support from experimental to GA status (since version 1.28.0)



# Agenda



**INTRODUCTION +  
RECAP OF CURRENT  
ODATA CLIENT**



**INTRODUCE THE  
NEW ODATA CLIENT**



**DEMO +  
CONCLUSION**

# **Introduction + Recap of Current OData Client**

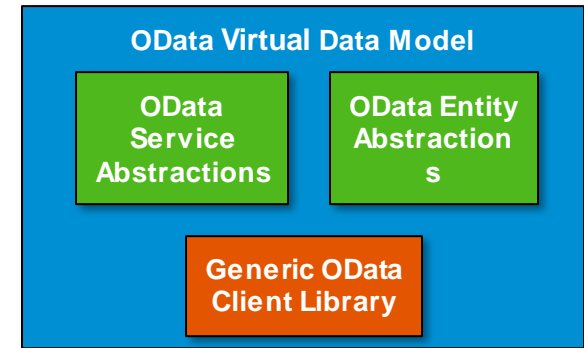
# Introduction and Recap of Current OData Client

- [OData](#) is the **de-facto standard** for data integration with SAP solutions
- SAP S/4HANA offers access to business data through numerous [OData APIs](#)
- [SAP Cloud SDK](#) **simplifies** OData communication with the [Virtual Data Model](#)
  - Type-safe and convenient access to OData APIs in your Java code
  - Java abstractions of all service operations and OData entities out-of-the-box
  - Tightly integrated with SDK core concepts (destinations, tenant-awareness, etc.)

```
final List<BusinessPartner> germanPartners =  
    service.getAllBusinessPartner()  
        .filter(BusinessPartner.NAME_COUNTRY.eq("GERMANY"))  
        .select(BusinessPartner.FIRST_NAME, BusinessPartner.LAST_NAME)  
        .top(10)  
        .cachingMetadata()  
        .execute(destination);
```

# Introduction and Recap of Current OData Client

- The **Virtual Data Model (VDM)** is built on top of a generic **OData client library**
  - The OData client library handles OData communication in a generic manner
  - The VDM adds the OData entity- and service-specific Java abstractions
- **Currently** the VDM utilizes a **third-party** OData client library



- SAP Cloud SDK [version 3.26.0](#) introduces a **brand-new, improved OData client library**
- You can **adopt** the new client library with **only slight adjustments** to your existing code base



# Introduction and Recap of Current OData Client

- Before covering the new OData client, we'll recap using the **current OData client**
- Obtain an OData service representation

```
final BusinessPartnerService service = new DefaultBusinessPartnerService();
```

- Query one entity by a given key and select one entity field

```
final BusinessPartner myPartner = service  
    .getBusinessPartnerByKey("my-partner")  
    .select(BusinessPartner.PERSON_FULL_NAME)  
    .execute(destination);
```

- Query all entities of one entity set with a filter condition

```
final List<BusinessPartner> germanPartners = service  
    .getAllBusinessPartner()  
    .filter(BusinessPartner.NAME_COUNTRY.eq("GERMANY"))  
    .execute(destination);
```

# Introduction and Recap of Current OData Client

- Create a new entity in the backend system

```
final BusinessPartner businessPartner = BusinessPartner.builder()  
    .businessPartner("key")  
    .firstName("John")  
    .lastName("Doe")  
    .build();  
  
final BusinessPartner createdPartner = service  
    .createBusinessPartner(businessPartner)  
    .execute(destination);
```

# Introduction and Recap of Current OData Client

- Query all entities of one entity set along with \$top, metadata caching and custom error handler

```
final ErpErrorResultHandler errorHandler = obtainCustomErrorHandler();  
  
final List<BusinessPartner> germanPartners = service  
    .getAllBusinessPartner()  
    .filter(BusinessPartner.NAME_COUNTRY.eq("GERMANY"))  
    .select(BusinessPartner.FIRST_NAME, BusinessPartner.LAST_NAME)  
    .top(10)  
    .cachingMetadata()  
    .withErrorHandler(errorHandler)  
    .execute(destination);
```

# Introduction and Recap of Current OData Client

- Drawbacks of the **current OData client**
  - Using a 3<sup>rd</sup> party dependency, SAP Cloud SDK team cannot provide:
    - ❖ new features or improvements
    - ❖ fast bug fixes
  - Tightly coupled to OData version 2 (V2), low reusability for newer OData version 4 (V4)
  - Impacts performance as it issues unnecessary metadata calls to the backend
  - Coarse-grained exception handling
- Cloud SDK team plans to **deprecate** the current OData client in a future version



**Introduce the New OData Client**

# Introduce New OData Client

- Cloud SDK team has built a brand-new OData client library
  - Entirely **built in-house** from scratch
  - Not relying on any other OData client library any longer
  - **Overcomes** the drawbacks of the current OData client library
  - You can **easily** adopt the new client library in your existing code base
- In the following slides, we'll introduce how to use the **new OData client** library



# Introduce New OData Client

- Obtain an OData service representation

```
final BusinessPartnerService service = new DefaultBusinessPartnerService();
```

- Query one entity by a given key and select one entity field

## New Client

```
final BusinessPartner myPartner = service  
.getBusinessPartnerByKey("my-partner")  
.select(BusinessPartner.PERSON_FULL_NAME)  
.executeRequest(destination);
```

Yes, that's all!



## Current Client

```
final BusinessPartner myPartner = service  
.getBusinessPartnerByKey("my-partner")  
.select(BusinessPartner.PERSON_FULL_NAME)  
.execute(destination);
```

# Introduce New OData Client

- Query all entities of one entity set with a filter condition

## New Client

```
final List<BusinessPartner> germanPartners = service  
    .getAllBusinessPartner()  
    .filter(BusinessPartner.NAME_COUNTRY.eq("GERMANY"))  
    .executeRequest(destination);
```

Yes, that's all!



## Current Client

```
final List<BusinessPartner> germanPartners = service  
    .getAllBusinessPartner()  
    .filter(BusinessPartner.NAME_COUNTRY.eq("GERMANY"))  
    .execute(destination);
```



# Introduce New OData Client

- Create a new entity in the backend system

## New Client

```
final BusinessPartner businessPartner = BusinessPartner.builder()  
    .businessPartner("key")  
    .firstName("John")  
    .lastName("Doe")  
    .build();  
  
final ModificationResponse<BusinessPartner> response = service  
    .createBusinessPartner(businessPartner)  
    .executeRequest(destination);  
  
final BusinessPartner createdPartner = response.getModifiedEntity();
```

**ModificationResponse** class  
allows accessing request and  
response entity, response status  
code and entity version  
identifier.

## Current Client

```
final BusinessPartner businessPartner = BusinessPartner.builder()  
    .businessPartner("key")  
    .firstName("John")  
    .lastName("Doe")  
    .build();  
  
final BusinessPartner createPartner = service  
    .createBusinessPartner(businessPartner)  
    .execute(destination);
```

# Introduce New OData Client

- Improved and Fine-Grained Error Handling

## New Client

```
try {
    service.getAllBusinessPartner()
        .top(20)
        .executeRequest(destination);
}
catch (ODataErrorResponseException e){
    log.error(e.getError());
}
catch (ODataException e){
    log.error(e.getMessage());
}
```

The new OData client allows fine-grained differentiation of error causes.

The new OData client uses unchecked exceptions.

## Current Client

```
final ErrorHandler errorHandler = obtainCustomErrorHandler();

try {
    service.getAllBusinessPartner()
        .top(20)
        .withErrorHandler(errorHandler)
        .execute(destination);
}
catch (final ODataException e) {
    log.error("Error fetching business partners.", e);
}
```

The current OData client uses a checked exception.

# Introduce New OData Client

- Fine-grained exception hierarchy in the new OData client

```
com.sap.cloud.sdk.datamodel.odata.client.exception  
public class ODataException  
extends IllegalStateException
```

The generic OData exception.

Its sub-types will be thrown in the following scenarios:

- [ODataSerializationException](#)  
If entity cannot be serialized for HTTP request.
- [ODataConnectionException](#)  
When the HTTP connection cannot be established.
- [ODataRequestException](#)  
When the OData request could not be sent due to a generic reason.
- [ODataResponseException](#)  
When the OData response could not be correctly received due to a generic reason.
- [ODataDeserializationException](#)  
When deserialization process failed for the OData response object.  
Or when the received OData service response contained a non-parsable error message.
- [ODataServiceException](#)  
If the response code infers an unhealthy state, i.e. when  $\geq 400$
- [ODataErrorResponseException](#)  
If the received OData service response contained a parsable error message.

# Introduce New OData Client

## ★ Advantages of the **new improved OData client**

- Shares code base with OData v4
- Generic implementation allows faster innovations for both OData versions V2 and V4
- Boosting performance by avoiding unnecessary roundtrips for OData metadata retrieval
- Better and fine-grained exception handling



**Demo**

**Conclusion**

## Conclusion

- SAP Cloud SDK has released a **new, improved OData client library**
- The new library can be **easily adopted** within an existing code base
- We invite **you** trying out the new library 😊
  - Check out the [official documentation](#)
- **Supported features** as of today:
  - Read entity by key
  - Read all entities
  - Create, update, delete entities
  - Batch requests
  - Count entities
- **Not yet supported:**
  - Function Imports

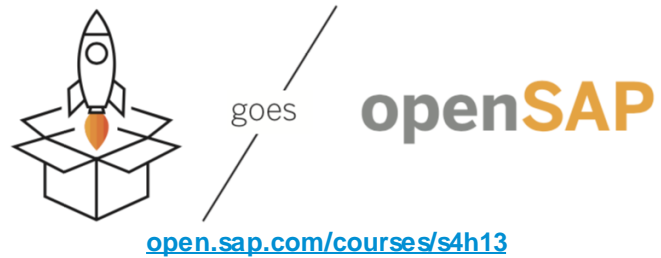
# SAP Cloud SDK User Survey Q3/2020

- As part of our continuous effort to improve the SAP Cloud SDK, we'd like to ask you to participate in a 10-minute survey.
- Here is the link to the survey:  
[https://sapinsights.eu.qualtrics.com/jfe/form/SV\\_0pUmWpCadpoLhyZ](https://sapinsights.eu.qualtrics.com/jfe/form/SV_0pUmWpCadpoLhyZ)
- The survey is anonymous. Feel free to forward this link to other members of your team who are also using the SAP Cloud SDK.
- Thank you for your participation! Your answers will help us to make the SAP Cloud SDK even better.
- Please only consider the SAP Cloud SDK when answering, not other tools by SAP (like CAP, ...).





# Learn about **SAP Cloud SDK**



- [SAP Cloud SDK Documentation](#)
- [Tutorials Navigator](#)
- [SAP Community Blogs](#)
- [Overview Blog Post](#)

Select tag "SAP Cloud SDK"

## Reach Out

[cloudsdk@sap.com](mailto:cloudsdk@sap.com)

- [GitHub Issues](#)
- [SAP Community Q&A](#)

# Thank you

Marco Dahms

Tanvi Gupta

Follow us



[www.sap.com/contactsap](http://www.sap.com/contactsap)

© 2020 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

The information contained herein may be changed without prior notice. Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors. National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

In particular, SAP SE or its affiliated companies have no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation, and SAP SE's or its affiliated companies' strategy and possible future developments, products, and/or platforms, directions, and functionality are all subject to change and may be changed by SAP SE or its affiliated companies at any time for any reason without notice. The information in this document is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, and they should not be relied upon in making purchasing decisions.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. All other product and service names mentioned are the trademarks of their respective companies.

See [www.sap.com/copyright](http://www.sap.com/copyright) for additional trademark information and notices.