

IN181: Achieving Composability with Graph

Stephanie Lewellen
Product Manager, Graph, SAP Integration Suite

Chaim Bendelac
VP Product, API Management, SAP Integration Suite

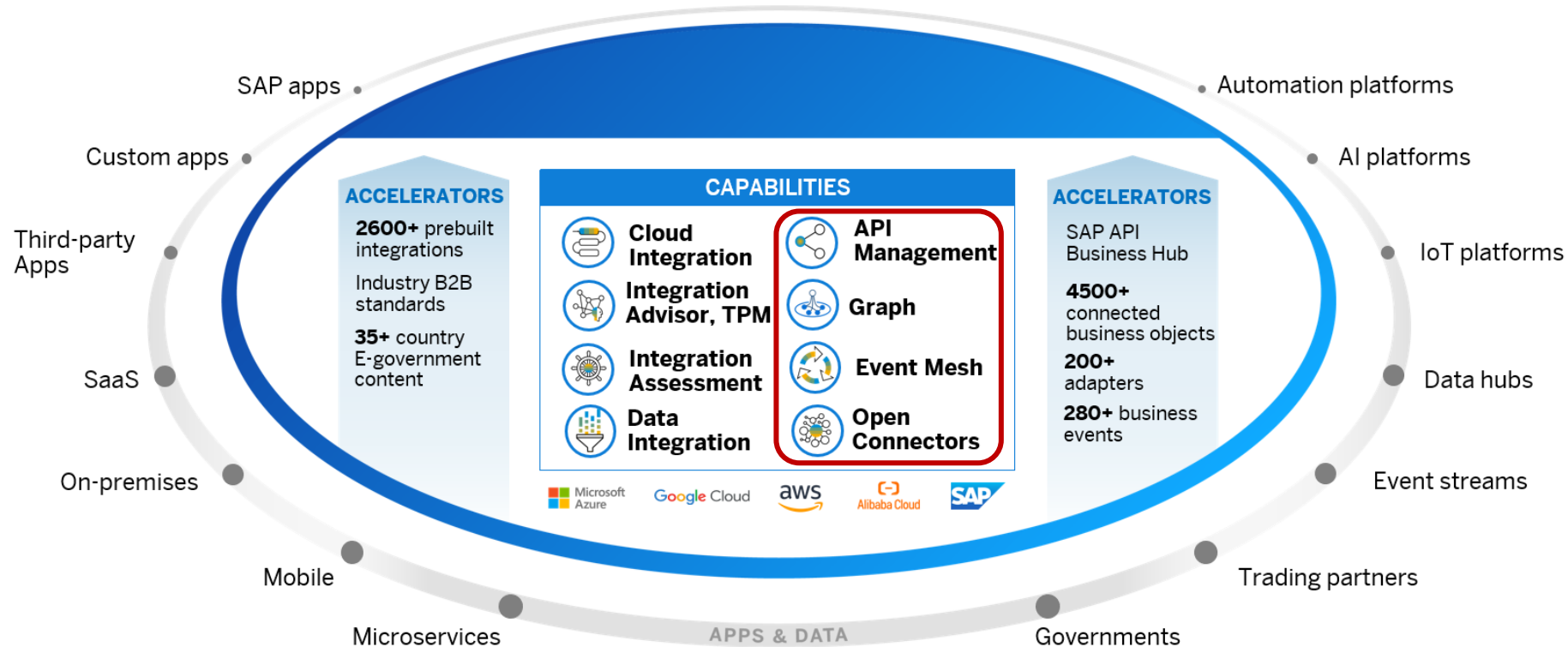
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SAP Integration Suite

Connect and automate your business

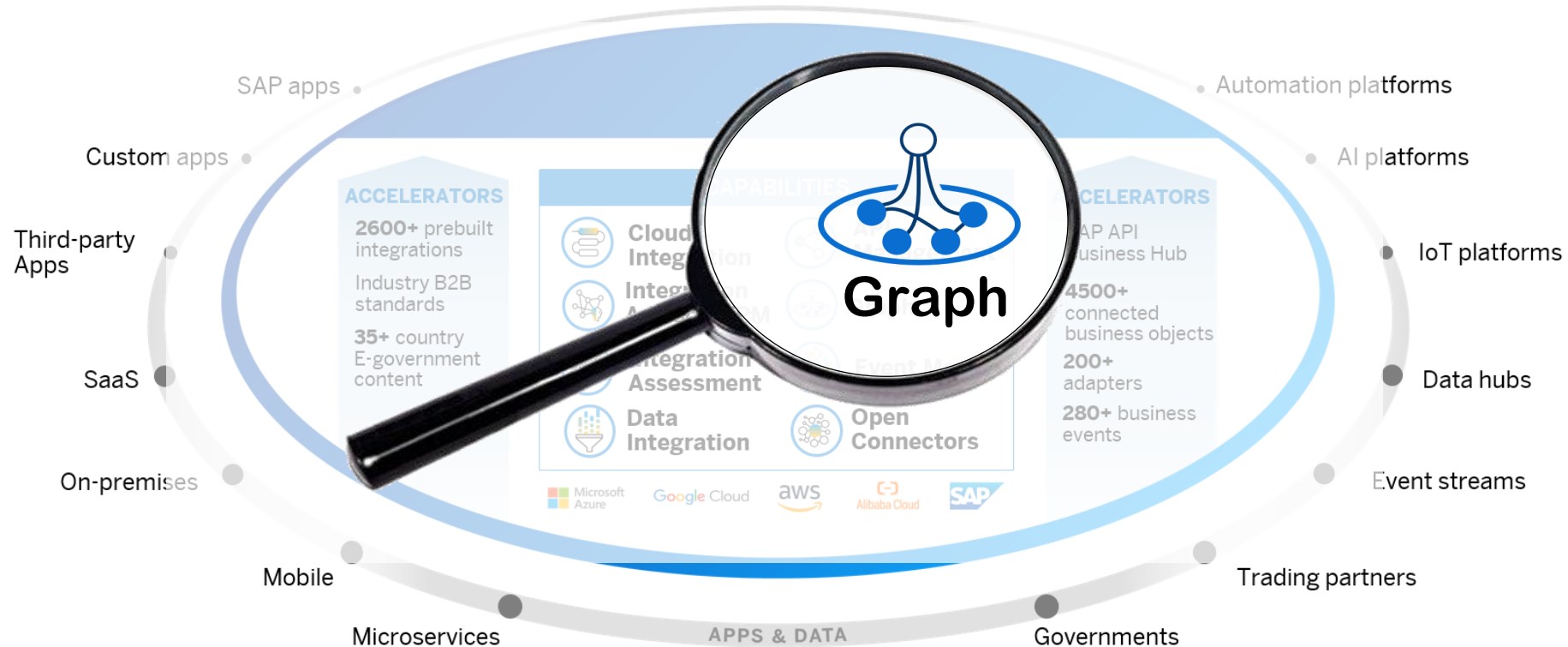
SAP Integration Suite is SAP's premier integration platform for the Intelligent Enterprise



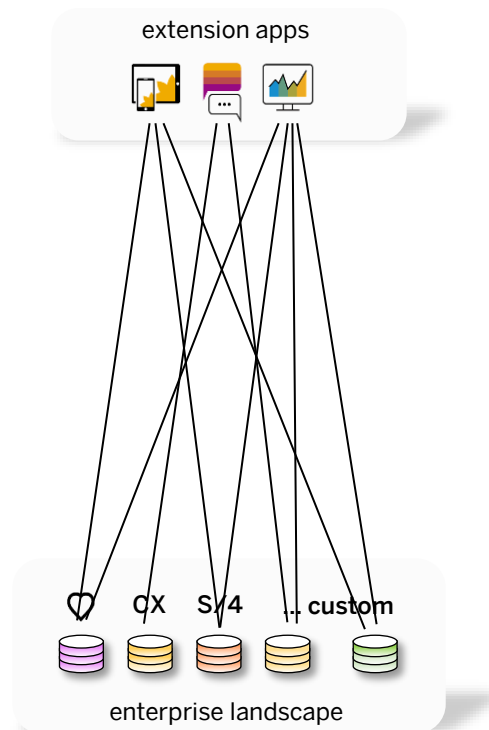
SAP Integration Suite

Connect and automate your business

SAP Integration Suite is SAP's premier integration platform for the Intelligent Enterprise



The app developer challenge ...



App developers require ever more expertise and skills

- Understanding the landscape: where data lives, replications, leading systems ...
- Diverse connectivity and security challenges
- Identifying and using the correct APIs

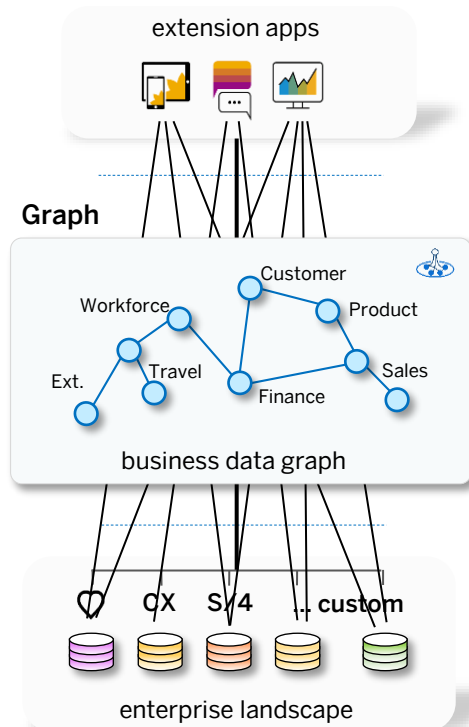
Each application deals with the same complexity...

Enterprise landscapes expand in scale and complexity

- Growing portfolio of SAP and other cloud solutions, more diversity
- Various data models, security technologies, tools, APIs and protocols

Graph: one connection to your business data

Graph introduces a **new, unified SAP API** to access all business data as a single, semantically connected, **Business Data Graph**



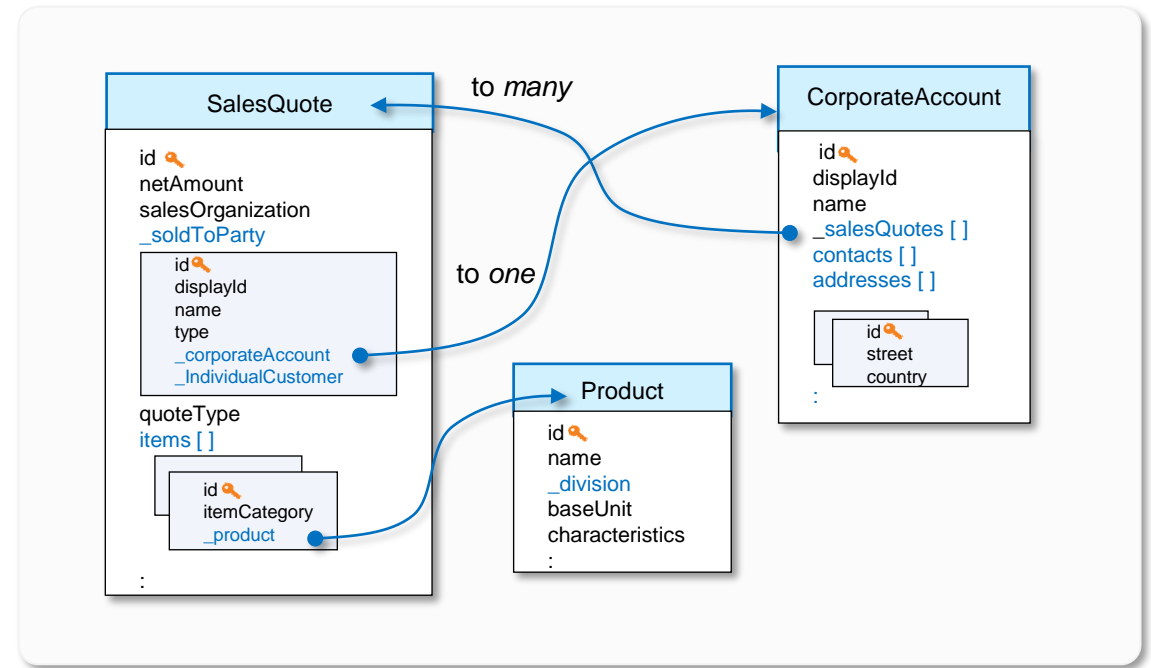
Developers use a single, powerful and connected API to the business data they need, as a **data graph**

Enterprise IT establishes and controls a secure interface to the business data they want to share with developers...

... by easily creating business data graphs

What is a data graph?

- A data graph represents **entities** (data objects) as *nodes* of a graph
 - Entities are grouped in **namespaces**
 - The fields of an entity are called **attributes**
- **Edges** represent semantic relations
 - between a root-node and its sub-nodes: a **composition**
 - between independent nodes: an **association**



data graphs support queries that explore the *data as well as the relationships*

DEMO

The screenshot displays the SAP Graph Explorer interface. On the left, the 'Entities' sidebar shows a tree structure with 'sap.graph' expanded, containing 'SalesQuote' and 'SalesQuoteCollection'. The main area shows a GET request to `/sap.graph/SalesQuote/c4c~257$select=id,quoteType&$expand=items($select=itemCategory;$expand=_product($select=name))`. The response is a 200 OK status with a JSON payload containing two items, each with an itemCategory and a product name. A 'Navigate' panel on the right lists various navigation paths like `_orderReason`, `_distributionChannel`, and `_division`.

Entities

Quote

68/2230 Entities [Show Code Lists](#)

- ▼ sap.graph
 - SalesQuote
 - > sap.hcm
 - ▼ sap.s4
 - ▼ sap.c4c
 - > Other
 - ▼ Sales Quote
 - SalesQuoteCollection

← Back Reset

Schema Try Out

`/sap.graph/SalesQuote/c4c~257$select=id,quoteType&$expand=items($select=itemCategory;$expand=_product($select=name))`

Run

Download Postman Collection [Download](#)

Response: sap.graph.SalesQuote 200 OK

`/sap.graph/SalesQuote/c4c~257$select=id,quoteType&$expand=items($select=itemCategory;$expand=_product($select=name))`

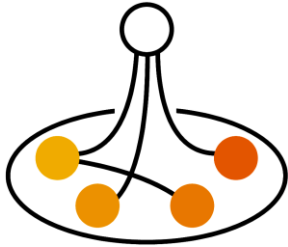
```
{
  "odata.context": "$metadata#SalesQuote(id,quoteType,items(_product(name),itemCategory))/$entity",
  "odata.etag": "W/\"datetimeoffset'2018-01-31T11:33:39.3440.36221802'\"",
  "id": "c4c~257",
  "quoteType": "AG",
  "items": [
    {
      "itemCategory": "AGN",
      "_product": {
        "id": "c4c~P300104",
        "name": "Green Future Microprocessor"
      }
    },
    {
      "itemCategory": "AGN",
      "_product": {
        "id": "c4c~P300103",
        "name": "ZOMEI F678 55-Inch Flexible Tripod Set"
      }
    }
  ]
}
```

Navigate

- `_orderReason` → sap.graph.SalesDocumentReason
- `_distributionChannel` → sap.graph.DistributionChannel
- `_division` → sap.graph.Division
- `_documentCurrency` → sap.graph.Currency
- `_netAmountCurrency` → sap.graph.Currency
- `_incotermsClassification` → sap.graph.IncotermsClassification
- `_c4c` → sap.c4c.SalesQuoteCollection
- `_c4c` → sap.c4c.SalesQuoteCollection

Expand

Follow along: https://github.com/SAP-samples/teched2022-IN181/blob/main/exercises/IN181-Achieving_Composability_with_Graph.pdf



Composability: Implement an API strategy

- 1 Deploy Graph to create a connected data graph of your SAP-managed data, for instant developer productivity
- 2 *Enhance* the data graph API with your own custom data sources and model extensions
- 3 Configure API Management policies for additional fine grained control, analytics and monetization

Deploy Graph as part of API Management

Welcome to SAP Integration Suite
Simplify and accelerate enterprise integration

Capabilities
Develop and manage enterprise-wide integration across heterogeneous landscapes.
To know how to add and activate capabilities, and assign capability-specific roles to users, see [Capabilities](#).

You haven't added any capabilities.

Add Capabilities

Activate Capabilities

1 Select Capabilities 2 API Management

1. Select Capabilities

1 Activation of Trading Partner Management will automatically activate the following capabilities:

- ☐ **Design, Develop and Operate Integration Scenarios**
Cloud Integration supports end-to-end process integration through the exchange of messages.
- ☒ **Design, Develop and Manage APIs**
API Management creates simple digital experiences for your consumers, partners and employees.
- ☐ **Implement Interfaces and Mappings**
Integration Advisor enables development of interfaces and mappings using crowdsourcing and machine learning.

2. API Management

2 API Portal is activated by default. Select the checkbox if you want to activate API Management.

Configure API Management

Enable API Business Hub Enterprise: ☒

Enable Graph (Beta): ☒

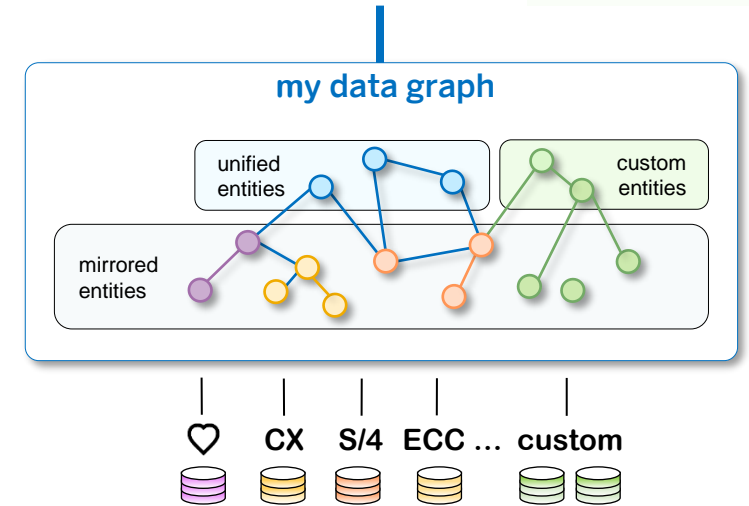
Capabilities

API Management

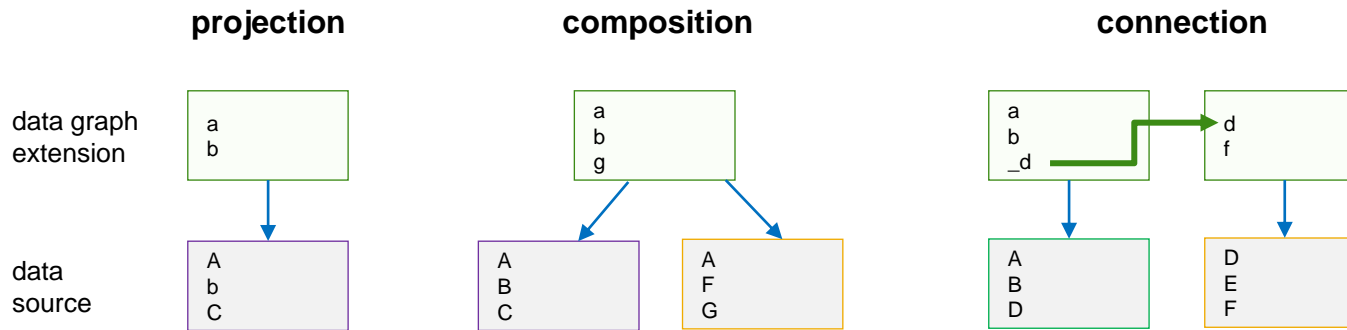
- API Portal **Active**
- API Business Hub Enterprise **Active**
- Graph (Beta) **Active**

Create and customize your Business Data Graphs

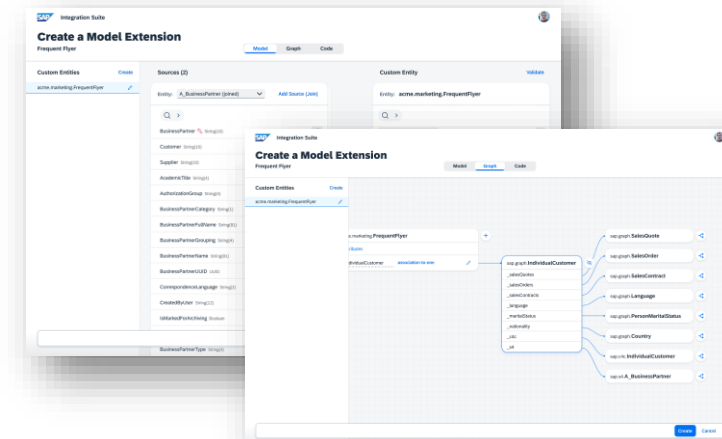
1. Give the business graph a name
2. Select relevant **data sources**: the data graph is built *from the nodes up*
3. Specify and connect **custom model extensions** to the data graph
4. Review location policies, and *create*. The URL goes live!



What are custom model extensions?



Custom model extensions allow you to compose your own data graph!



Create a Business Data Graph

≡

SAP

Integration Suite

Home

Design


Graph

Settings

Graph

Business Data Graphs

Model Extensions



There are no business data graphs yet
Start by creating a new business data graph.

Create new business data graph

Create from file

1. ID and Description

ID:

Description:

2. Data Sources

Select one or more data sources for the business data graph:

3 of 4 data sources selected

☐ Data Source

☒ bupa

☒ c4c

☐ s4-product

☒ s4-product-sandbox

3. Model Extensions

Select a model extension to include

Model Extension:

4. Review Configuration

```
1 {
2   "businessDataGraphIdentifier": "bestrunsales",
3   "description": "BestRun sales dashboard",
4   "graphModelVersion": "v2",
5   "schemaVersion": "1.2.0",
6   "dataSources": [
7     {
8       "name": "s4",
9       "services": [
10        {
11          "destinationName": "bupa"
12        },
13        {
14          "destinationName": "s4-product-sandbox"
15        }
16      ]
17    },
18    {
19      "name": "c4c",
20      "services": [
21        {
22          "destinationName": "c4c"
23        }
24      ]
25    }
26  ],
27  "locatingPolicy": {
28    "cues": [],
29    "rules": [
30      {
31        "name": "sap.s4.*",
32        "leading": "s4",
33        "local": []
34      }
35    ]
36  }
37 }
```

Previous

Create

Cancel

Create a Business Data Graph

The screenshot displays the SAP Integration Suite interface. On the left, a sidebar contains navigation links: Home, Design, Graph (selected), and Settings. The main content area is titled 'Graph' and features a sub-section 'Business Data Graphs' with a table listing existing graphs. A sidebar on the right, triggered by a menu icon, lists various SAP tools and services.

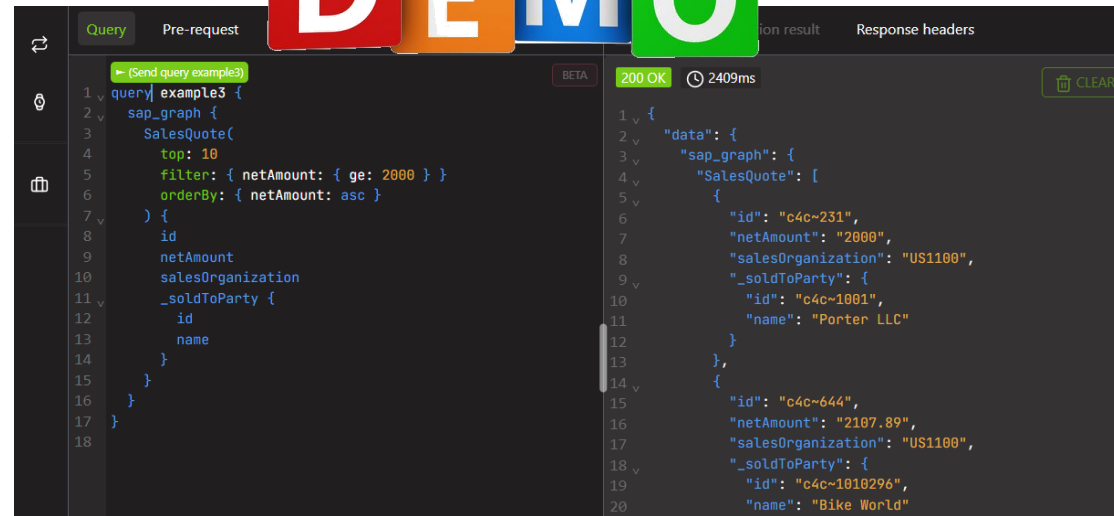
Business Data Graphs (1)

ID	Status	Model Version	Last Updated
bestrunsales	Available	^v2	11/2

Sidebar Tools:

- SAP API Business Hub
- SAP BTP Cockpit
- API Management Client SDK
- API Business Enterprise (highlighted with a hand icon)
- SAP Graph Navigator
- SAP Graph Documentation

DEMO

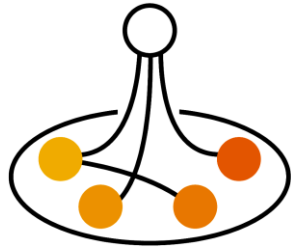


The screenshot displays a GraphQL client interface with a dark theme. At the top, there are tabs for 'Query', 'Pre-request', 'Response result', and 'Response headers'. The 'Query' tab is active, showing a query editor on the left and a response viewer on the right. The query editor contains a query named 'example3' that filters sales quotes by net amount (greater than or equal to 2000) and orders them by net amount in ascending order. The response viewer shows the result of the query, which is a JSON object containing a list of sales quotes. The status bar at the top of the response viewer indicates '200 OK' and a response time of '2409ms'. There is a 'CLEAR' button in the top right corner of the response viewer.

```
1 query example3 {  
2   sap_graph {  
3     SalesQuote(  
4       top: 10  
5       filter: { netAmount: { ge: 2000 } }  
6       orderBy: { netAmount: asc }  
7     ) {  
8       id  
9       netAmount  
10      salesOrganization  
11      _soldToParty {  
12        id  
13        name  
14      }  
15    }  
16  }  
17 }  
18
```

```
1 {  
2   "data": {  
3     "sap_graph": {  
4       "SalesQuote": [  
5         {  
6           "id": "c4c-231",  
7           "netAmount": "2000",  
8           "salesOrganization": "US1100",  
9           "_soldToParty": {  
10            "id": "c4c-1001",  
11            "name": "Porter LLC"  
12          }  
13        },  
14        {  
15          "id": "c4c-644",  
16          "netAmount": "2107.89",  
17          "salesOrganization": "US1100",  
18          "_soldToParty": {  
19            "id": "c4c-1010296",  
20            "name": "Bike World"
```

[review the walkthrough: IN181-Achieving Composability with Graph.pdf](#)



Wrap-up

Why should you use Graph?

Enable app developer productivity with powerful graph queries

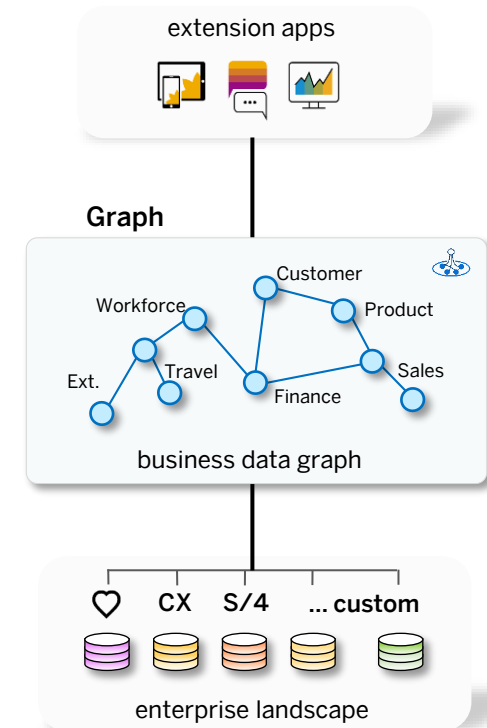
- Developers can use SAP Build (low-code), SAP Build Pro and CAP, or their own tools
Start with a fully connected SAP data model, *out of the box* (up to 4500+ entities, 4000+ connections)
- *Customize, extend* and *simplify* the data graph to the "shape" of your own custom model and API
- Developers gain high-productivity access (OData, GraphQL) to all your data via *one* API

Secure Control

- Protect your APIs from unauthorized use, DoS and other content attacks
- Manage access with unified authentication, identity propagation and revokable credentials
- Control which data is selectively visible for each use cases
- Abstract and hide your landscape & data source details from developers or partners
- *Avoid* data replications/ETLs for new use cases, by creating dedicated BDGs

Integrated with API Management

- Add flexible and fine-grained traffic and quota management
- Create triggers, events, and logs
- Collect usage analytics and monetize your APIs



More information

- VISIT our [community page](#)
- READ and TRY our [multi-part tutorial series](#)
- WATCH our complete [Introduction Course](#)
- Please CONTACT us about your interest in API Management and Graph based implementations

The image displays two overlapping screenshots from SAP. The background screenshot shows a YouTube playlist titled 'SAP Graph' with 17 videos. The videos listed are: 1. SAP Graph: Introduction (5:02), 2. SAP Graph: Admin - Initial Setup (8:23), 3. SAP Graph: Admin - Create Service Instance (8:01), 4. SAP Graph: Key User - Create Graph (10:17), 5. SAP Graph: Key User - Postman (8:26), and 6. SAP Graph: Admin - SAP SuccessFactors (8:31). The foreground screenshot shows the SAP Graph community page. It features a 'Featured Content' section with three articles: 'SAP Graph at a Glance', 'Explore the Business Data Graph with SAP Graph Navigator', and 'What's new and planned for SAP Graph?'. The 'What's new' article includes links for 'What's New (Release Notes)' and 'Road Map (login required)'. On the right side of the community page, there is a 'Search community content' bar and a list of links under 'Browse this topic', 'Getting Started', 'Developer Reference', and 'Relevant Topics'.

Thank you

stephanie.lewellen@sap.com

chaim.bendelac@sap.com

sap.graph@sap.com