What to expect with the latest IBM IMS Enterprise Suite Explorer for Development
+
IMS modernization solutions updates

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Agenda

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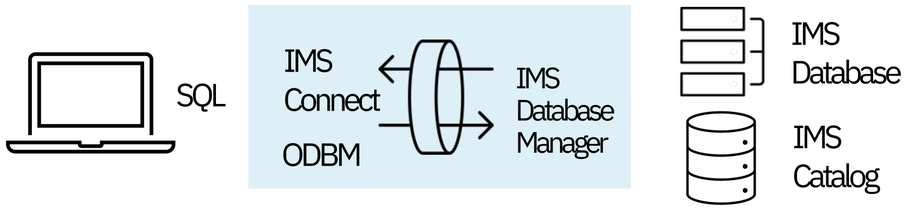
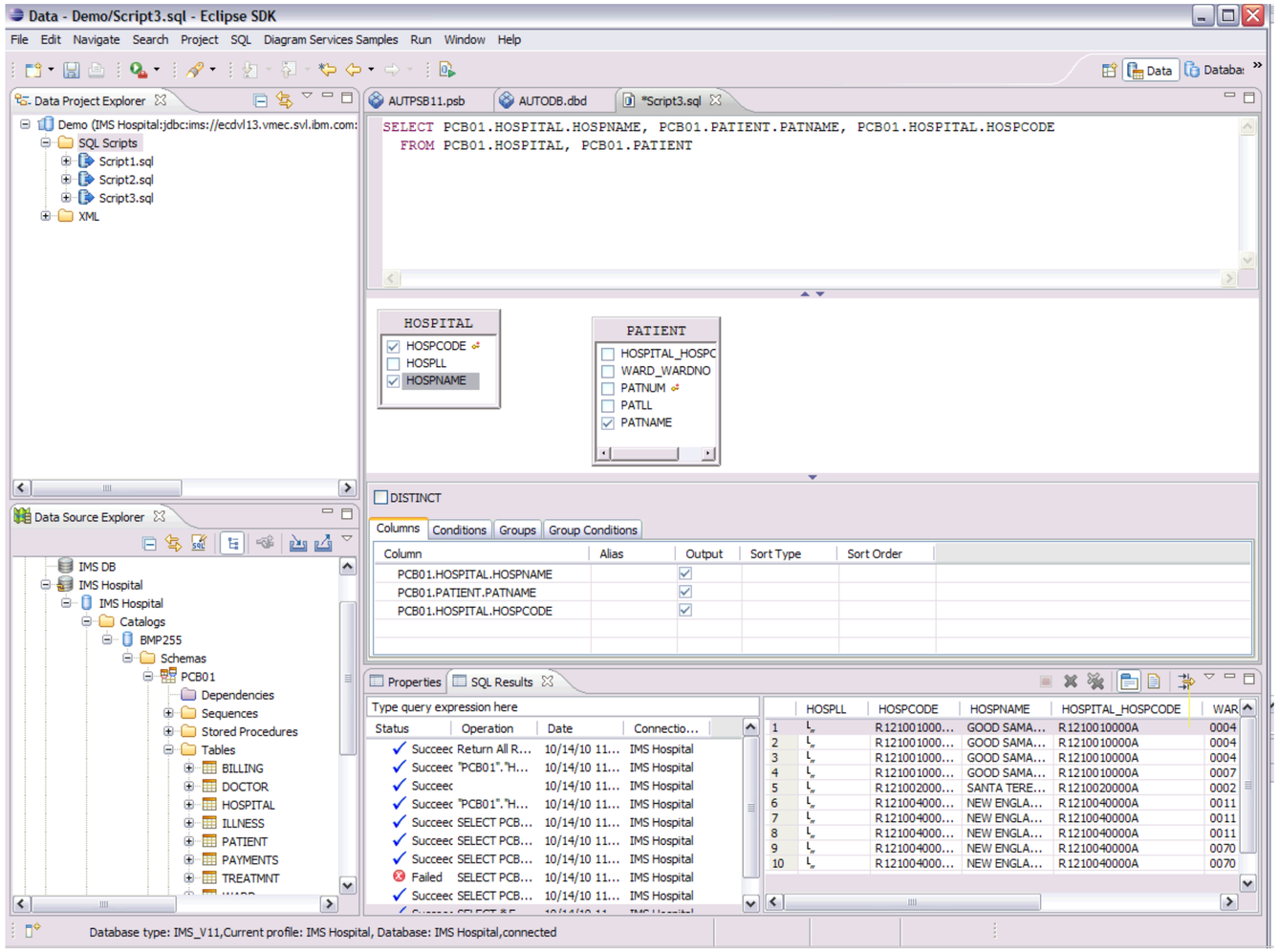
IMS Explorer for Development

IMS Explorer for Development

- Eclipsed-based tooling to aid IMS application development. Shell-share with IBM Developer for z/OS.
- Ease visualization and editing of IMS Database and Program Definitions
- Connect to IMS catalog, build and execute SQL to access IMS data in real time
- Import application metadata to IMS catalog for JDBC and SQL usage





IMS Explorer Eclipse Roadmap

IMS Explorer 3.3.2
(Aqua 3.2 support)

IMS Explorer 3.3.1
End of Service announcement

Multi-Factor Authentication support
(Intended support)

Aqua 3.3 support
(Intended support)

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*Plan and dates are subject to change

IMS Explorer 3.3.1 End Of Service

Support for Aqua 3.1 has been withdrawn on April 30, 2023.

Clients using IMS Explorer for Development Version 3.3.1 (Aqua 3.1 based) are encouraged to migrate to IMS Explorer Version 3.3.2 (Aqua 3.2 based) or later

Source: IMS 15.4 RFA

Multi-Factor Authentication support

Intended support

As-Is:

Authentication is triggered multiple times for various reasons. Most MFA configurations specifies that the MFA token is a one-time use token, making the re-authentication flows in IMS Explorer unworkable.

To-Be:

Authenticated socket connections will be cached and reuse as long as IMS Connect is configured to allow. It will be possible to only have to drive a single MFA authentication event per IMS Explorer session.

Aqua 3.3 support

Intended support

As-Is:

Customer currently using IMS Explorer shell-shared with IBM Developer for z/OS (IDZ) is unable to upgrade to IDZ V16 because IMS Explorer (V3.3.2.x) is Aqua 3.2 based (not Aqua 3.3).

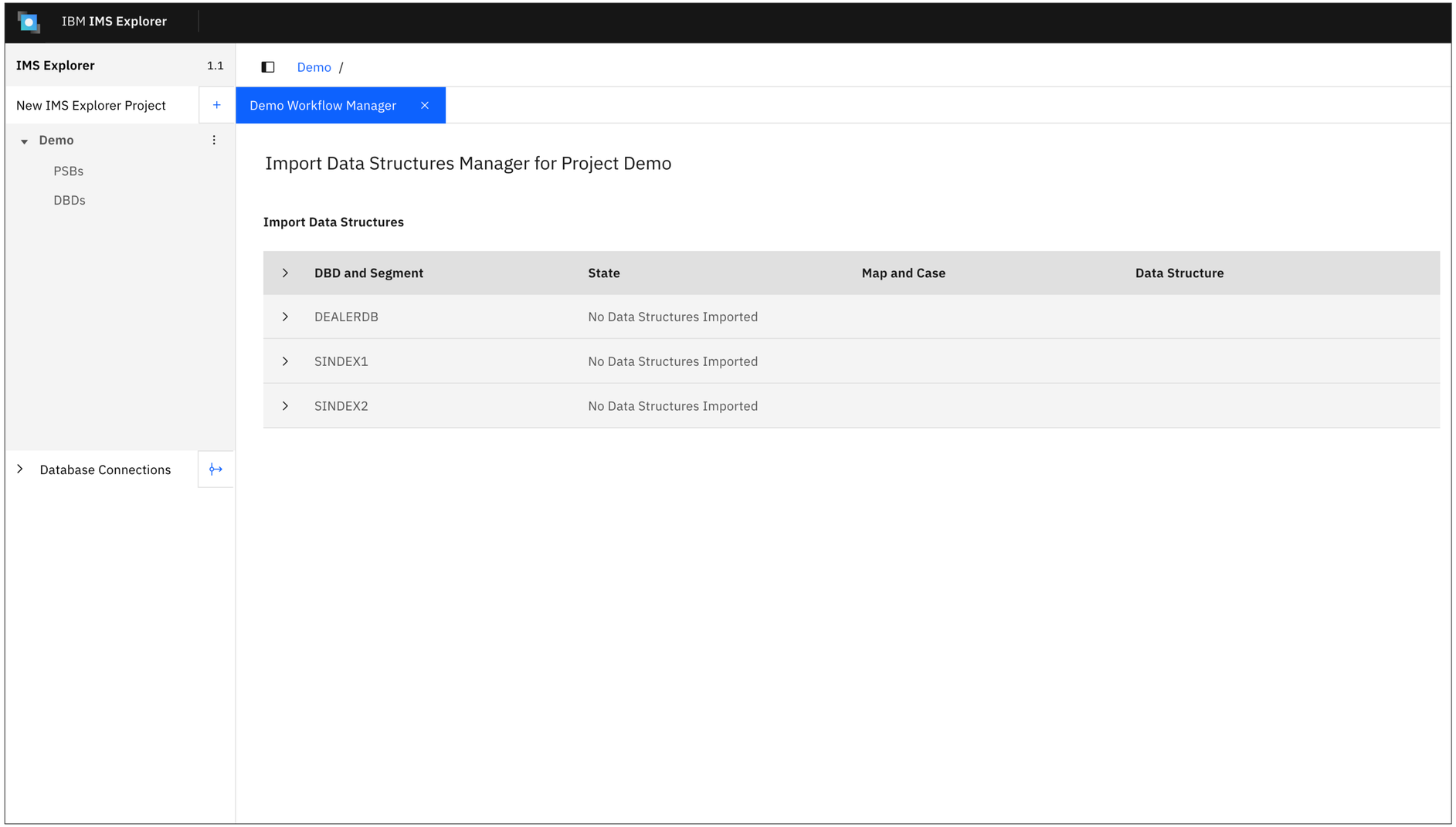
Customer needs to use IDZ V16 would require to re-install IMS Explorer as a standalone separately outside of IDZ.

To-Be:

Enhance IMS Explorer to support Aqua 3.3 which enable IMS Explorer to shell-share with the newer version of IDZ

IMS Explorer Web UI

(Intended support)



*Plan and dates are subject to change

IMS Explorer Web UI

Intended support

As-Is:

- Client often restricted by company policy for applying Window-based (Eclipse) software updates (may take months)
- Developers end up with different versions installed which is problematic

To-Be:

- Single-server Install, web-based IDE
- Make IMS Explorer more accessible
- The lightweight IDE option desirable for non-application developers (e.g. IMS DBA & Sysprog)

IBM Information Management System (IMS™) has innovative strategies in each of the following trending areas to support your modernization journey…

IMS SOAP Gateway
IMS .NET Data provider announcements

IMS SOAP Gateway Statement of Direction

IBM intends to discontinue support of IBM IMS Enterprise Suite for z/OS SOAP Gateway, a component of IBM IMS Enterprise Suite Version 3.2.

Customers interested in exposing IMS transactions for enhanced access outside of IMS might consider migrating to other options like IBM z/OS Connect which provides RESTful API access to IMS transactions and the ability to call RESTful APIs from IMS applications.

Source: IMS 15.4 RFA

IMS Data Provider for Microsoft .NET Version 3.2 End of Service announcement

Effective December 31, 2023, the IMS Data Provider for Microsoft .NET for IMS Enterprise Suite Version 3.2 will no longer be supported. Clients interested in exposing IMS data for enhanced access outside of IMS may consider using other options like z/OS Connect with the IMS database service provider, which provides RESTful API access to an IMS database.

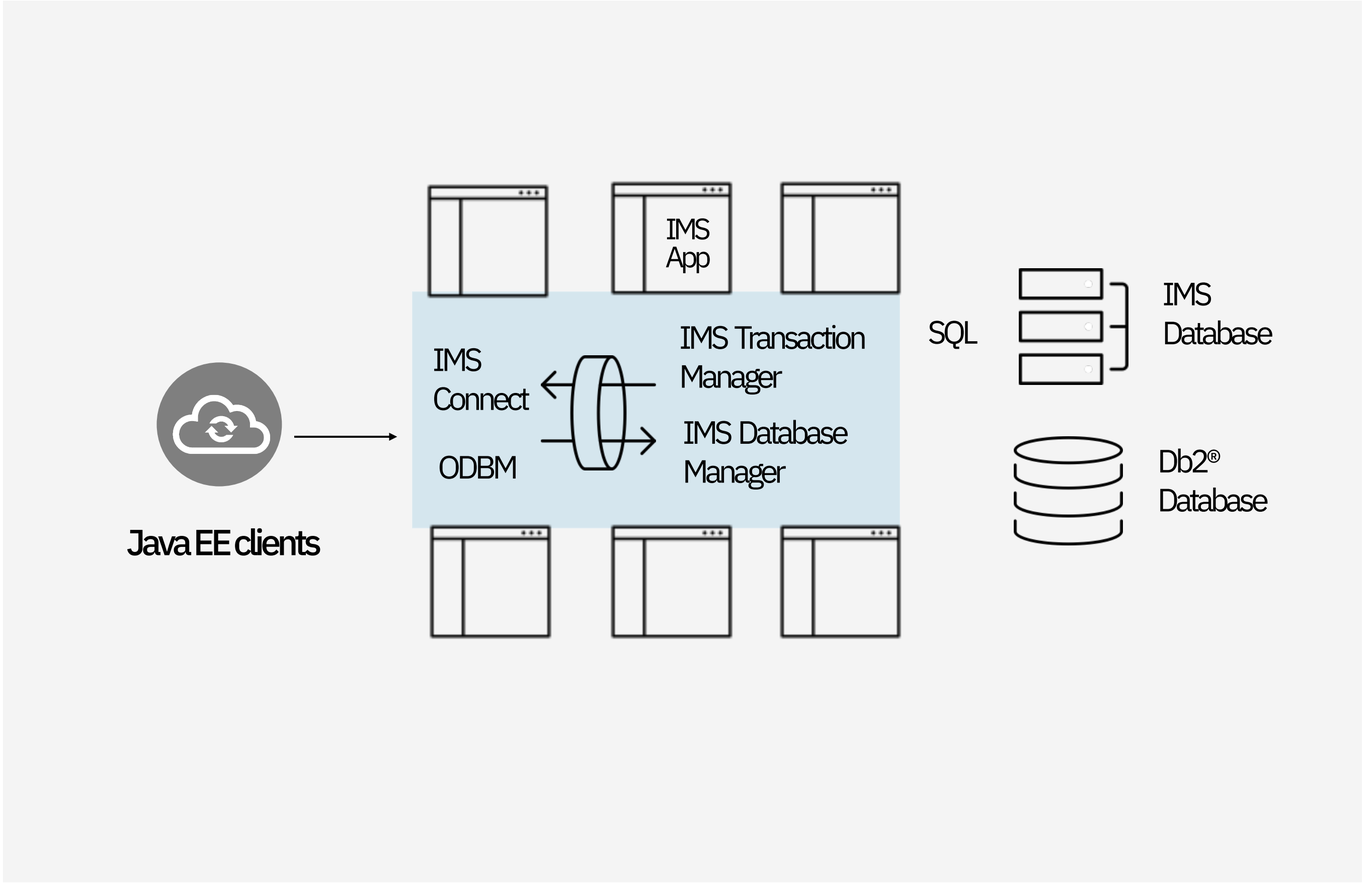
Source: IMS 15.4 RFA

Java support roadmap

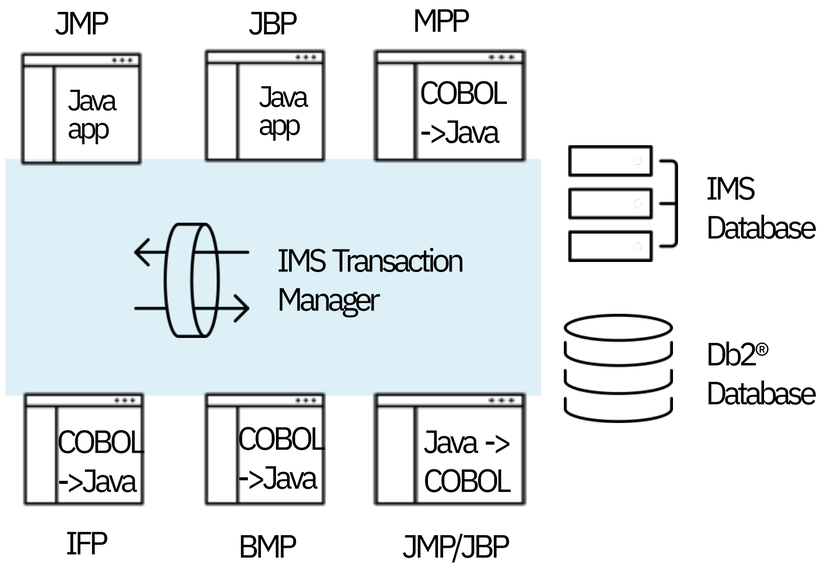
IMS TM resource adapter
IMS Universal Driver
IMS Java regions

Java EE Integration with IMS

- Hybrid cloud Java EE application with direct access to both IMS transaction and data
- Extend your IMS investment to Java clients running anywhere (Cloud / Container)
- Java access options
  - Java access to IMS transaction with IMS TM resource adapter
  - SQL access IMS data with IMS JDBC driver (Type-2 or 4)



Running Java in IMS



*Java can interoperate with COBOL or PLI

Extend existing IMS applications with Java

- Extend new business logic in Java
- Call Java code as subroutines from COBOL or PLI application or program-switch to Java transaction
- Convert heavy CPU consumption routines to Java
- Transitions development from COBOL to Java

New IMS applications in Java

- Write new IMS application in Java (JMP/JBP)
- Allows for easier maintenance
- Can still interoperate with existing COBOL or PL/I code

Java support roadmap

Java 11

Java 11 support is available for

- IMS Java dependent regions on z/OS
- 31-64bit COBOL to Java interoperability
- PL/I to Java interoperability
- IMS TM resource adapter & IMS Universal Drivers on both z/OS and distributed platforms

Java 17
(Intended support)

- Java 17 has been tested for IMS TM resource adapter with Liberty 22 (configured with Java EE option) on distributed platform
- Intended to support Java 17 on z/OS for IMS Java dependent regions, IMS TM resource adapter and IMS Universal Drivers
- Intended to support Java 17 and Liberty with Jakarta

Java 21 / future LTS
(intended support)

Intended to support future LTS version of Java

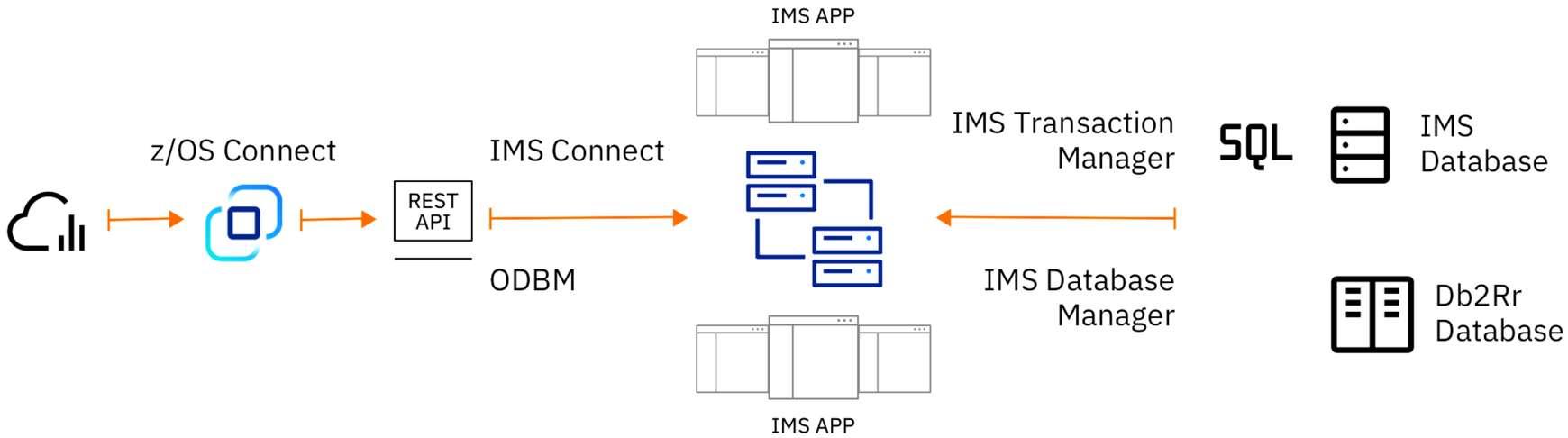
*Plan and dates are subject to change

z/OS Connect Open API3 support

API Integration with IMS & z/OS Connect:
Unlock the potential of hybrid cloud

- Drive value to existing IMS applications
- Extend your IMS investment
- Integrate into hybrid cloud via the API economy

- API access to existing IMS transaction
- API access directly to IMS DB
- IMS application to callout to API



z/OS Connect OpenAPI 3
Enhancements for IMS Service provider

Expanded mapping capabilities

- Added support of JSONata, a powerful expression language, for query and transforming JSON data to provide a much richer and advanced set of mapping capabilities
- Meet-in-the-middle development
- API requester enhancements

Added runtime support for cloud deployment in addition to native z/OS deployment

- z/OS Connect server can now be deployed into cloud environment, for example, in Red Hat OpenShift Container platform

New z/OS Connect Designer

- A new web-based tool for to develop, test, and manage your APIs
- Can run on a container runtime locally (e.g. Docker) or in a shared workspace

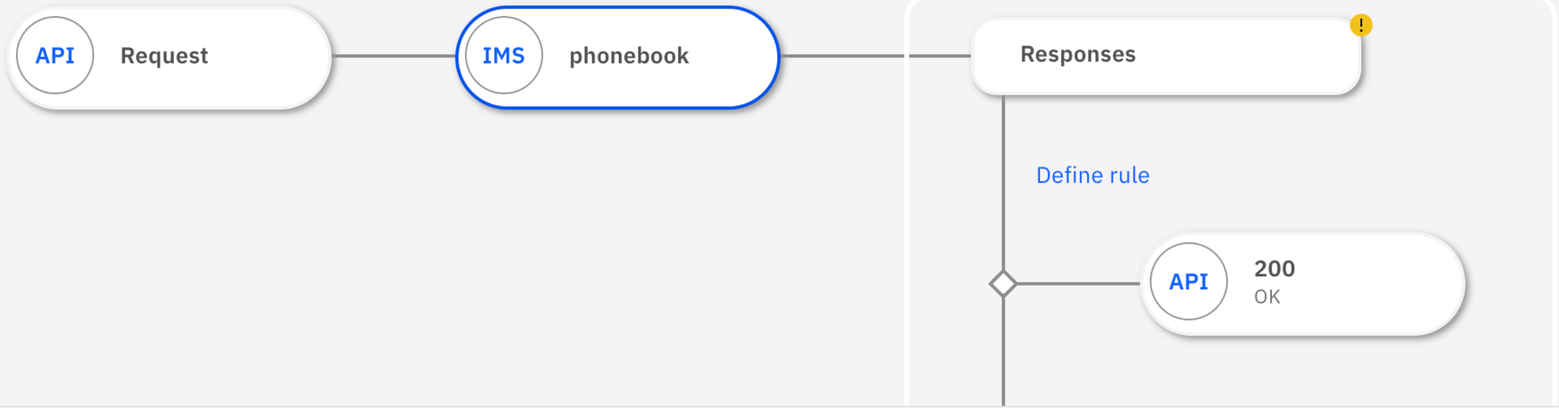
Creating APIs that conform to OpenAPI 3.0 specification

- Added OpenAPI 3.0 support for IMS COBOL applications (V3.0.67)
- Enables for mapping OpenAPI 3.0 operations to IMS message segment and Large Data structures

Phonebook 1.1

Information
Security
Paths ! 2
/phonebook/conta... ! 1
/phonebook/conta... ! 3
GET !
PUT !
DELETE !
z/OS Assets 1 +
Components 5
Tags 0

View operation properties



phonebook z/OS Asset options

Request Response z/OS Asset details

Edit mapping | View structure

Map fields from the API request into the z/OS Asset request.

Message

IVTNO_INPUT-MSG

IN-LL	123	
IN-ZZ	123	
IN-TRANCDE	abc	
IN-COMMAND	abc	

Develop an IMS API

Tutorial: Creating an IMS z/OS Connect API

Sample: sample-ims-api on GitHub

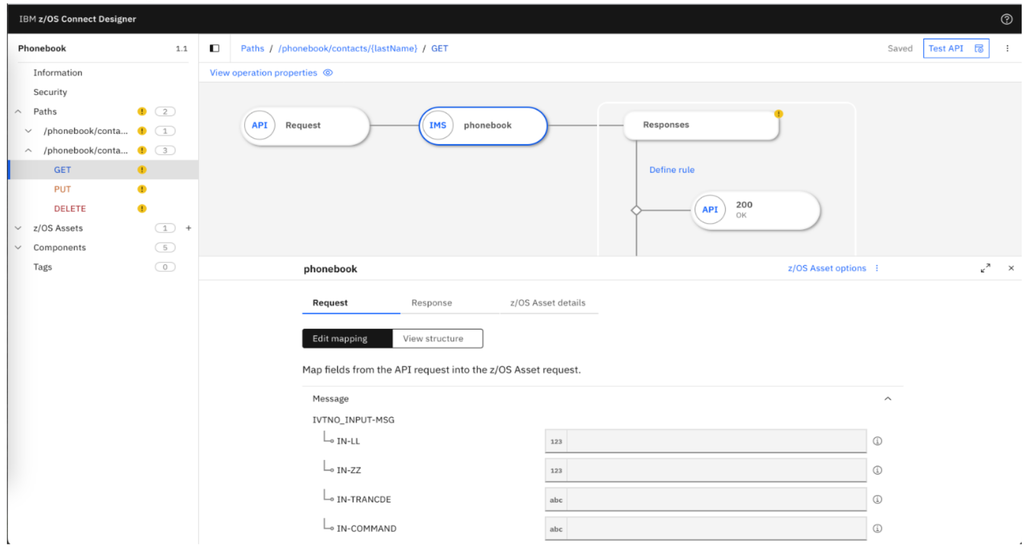
Creating an IMS z/OS Connect API

Learn how to use the z/OS Connect Designer and create an API project to call the example IMS Phonebook program. Then, test your z/OS Connect API with the built-in Liberty REST client.

See how to download the necessary files for and set up the IMS Phonebook sample application, then create a workspace on your local workstation and run the z/OS Connect Designer with Docker Desktop.

You then use the z/OS Connect Designer to import the OpenAPI definition that is supplied with the GitHub sample and configure your API project. The z/OS Connect Designer is shown in Figure 1.

Figure 1. Creating an IMS z/OS Connect API

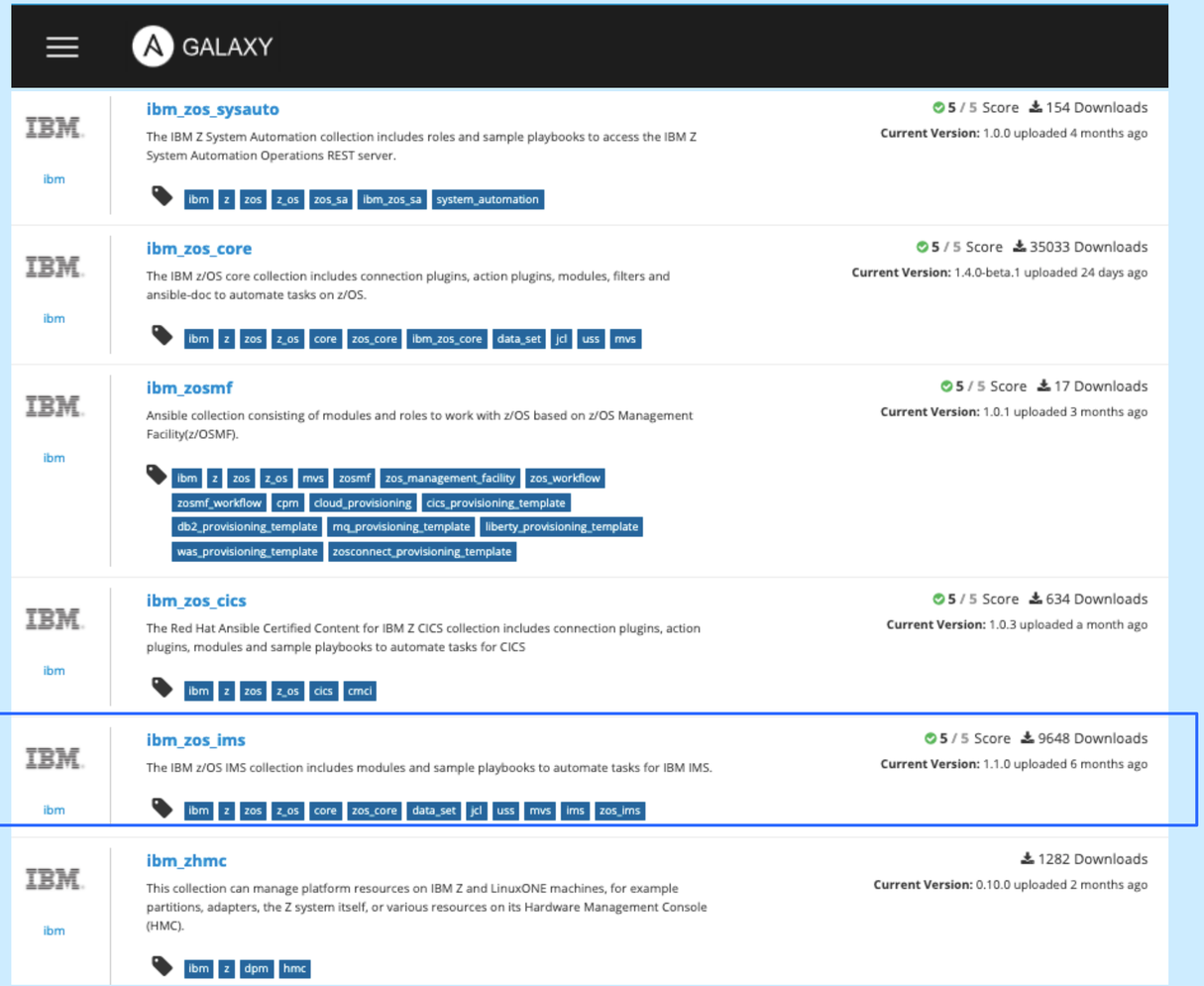


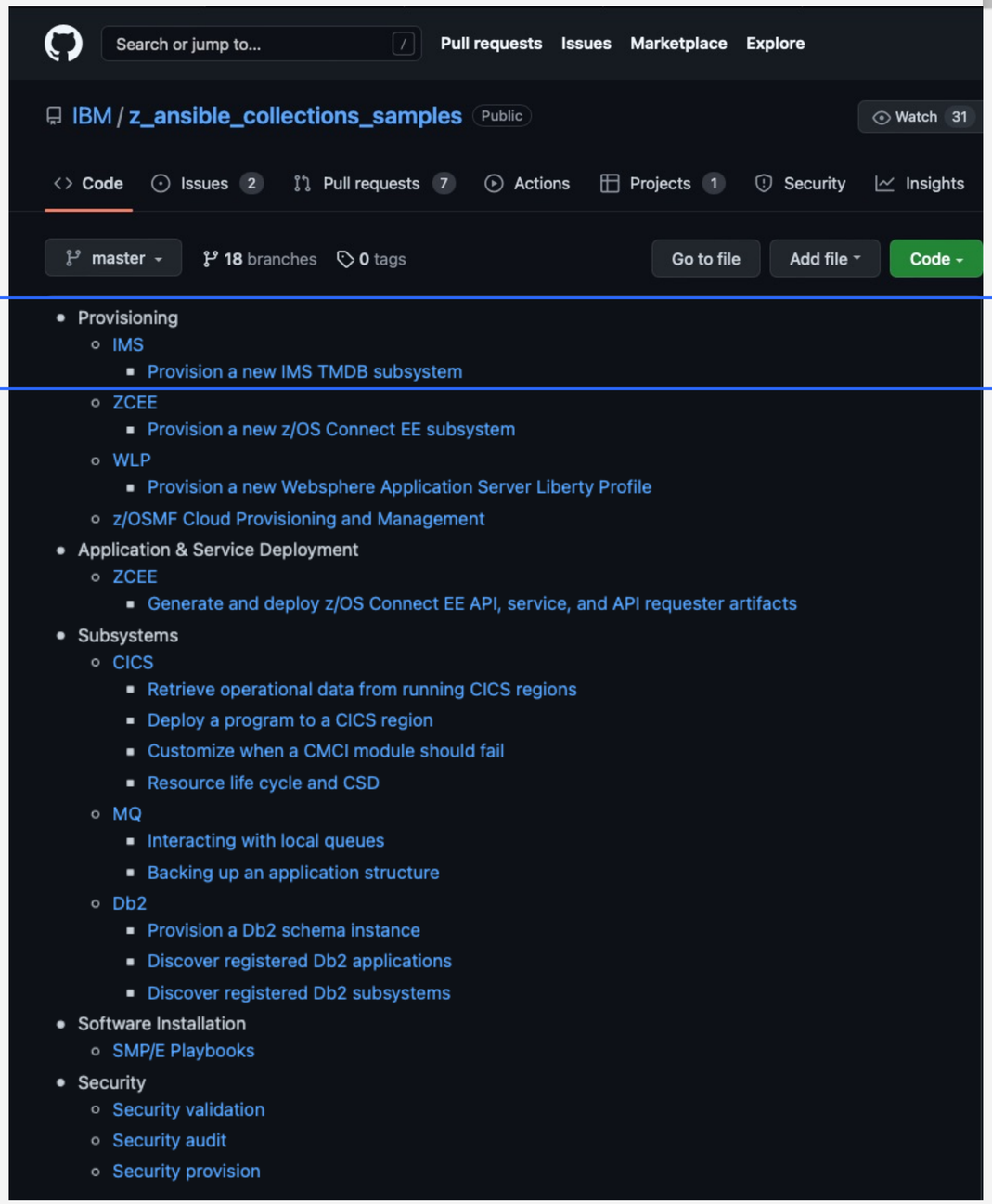
- **Prepare the sample IMS application**
  In this tutorial, the IMS Phonebook sample application is used as the target IMS application program to map the example IMS OpenAPI definition. This sample application needs to be installed and configured in your target IMS region.
- **Creating the IMS tutorial workspace**
  Learn how to create the IMS workspace for the Phonebook z/OS Connect API project.
- **Define the GET operation for the /phonebook/contacts/{lastName} path**
- **Define the PUT operation for the /phonebook/contacts/{lastName} path**
- **Stopping the z/OS Connect Designer**
  Use Docker Compose to stop the z/OS Connect Designer.
- **Check your z/OS Connect API project into source control**
  Source Control Management (SCM) is an invaluable tool for modern software development and forms the basis for modern DevOps and CI/CD pipelines in z/OS Connect and cloud-native development.
- **Exploring the finished IMS demo project**
  Explore the finished IMS Phonebook API project.

Ansible IMS collection

IBM

Red Hat® Ansible® Certified Content for IBM Z





ibm

ibm_zos_ims

The IBM z/OS IMS collection includes modules and sample playbooks to automate tasks for IBM IMS.

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Info

Installation

```
$ ansible-galaxy collection install ibm.ibm_zos_ims
```

NOTE: Installing collections with ansible-galaxy is only supported in ansible 2.9+

Download tarball

Install Version

1.2.0-beta.1 released 8 months ago (latest)

Tags

ibm | z | zos | z_os | core | zos_core | data_set | jcl | uss | mvs | ims | zos_ims

IBM z/OS IMS collection

The **IBM z/OS IMS collection**, also represented as **ibm_zos_ims** in this document, is part of the broader offering **Red Hat® Ansible Certified Content for IBM Z**. The IBM z/OS IMS collection supports tasks such as generating IMS Database Descriptors (DBD), Program Specification Blocks (PSB), Application Control Blocks (ACB), and running IMS type-1 & type-2 commands.

The **IBM z/OS IMS collection** works closely with offerings such as the IBM z/OS core collection to deliver a solution that will enable you to automate tasks on z/OS.

Red Hat Ansible Certified Content for IBM Z

Red Hat® Ansible Certified Content for IBM Z provides the ability to connect IBM Z® to clients\' wider enterprise automation strategy through the Ansible Automation Platform ecosystem. This enables development and operations automation on Z through a seamless, unified

Load full Read Me

Content Score

Community Score 5 / 5

Based on 1 survey. Show Details

Tell us about this collection

Quality of docs? - +

Ease of use? - +

Does what it promises? Y N

Works without change? Y N

Ready for production? Y N

ibm

ibm_zos_ims

The IBM z/OS IMS collection includes modules and sample playbooks to automate tasks for IBM IMS.

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Filter content... Show: Roles Modules Playbooks Plugins

ims_catalog_populate — Module
Add records to the IMS Catalog

ims_acb_gen — Module
Generate IMS ACB

ims_psb_gen — Module
Generate IMS PSB

ims_dbrc — Module
Submit IMS DBRC Commands

ims_command — Module
Submit IMS Commands

ims_dbd_gen — Module
Generate IMS DBD

ims_catalog_purge — Module
Purge records from the IMS Catalog

catalog — Plugin
Type: **module_utils**

ims_module_error_messages — Plugin
Type: **module_utils**

ims_gen_utils — Plugin
Type: **module_utils**

dataset_utils — Plugin
Type: **module_utils**

ims_command_utils — Plugin
Type: **module_utils**

catalog_parser — Plugin
Type: **module_utils**

acbgen — Plugin
Type: **module_utils**

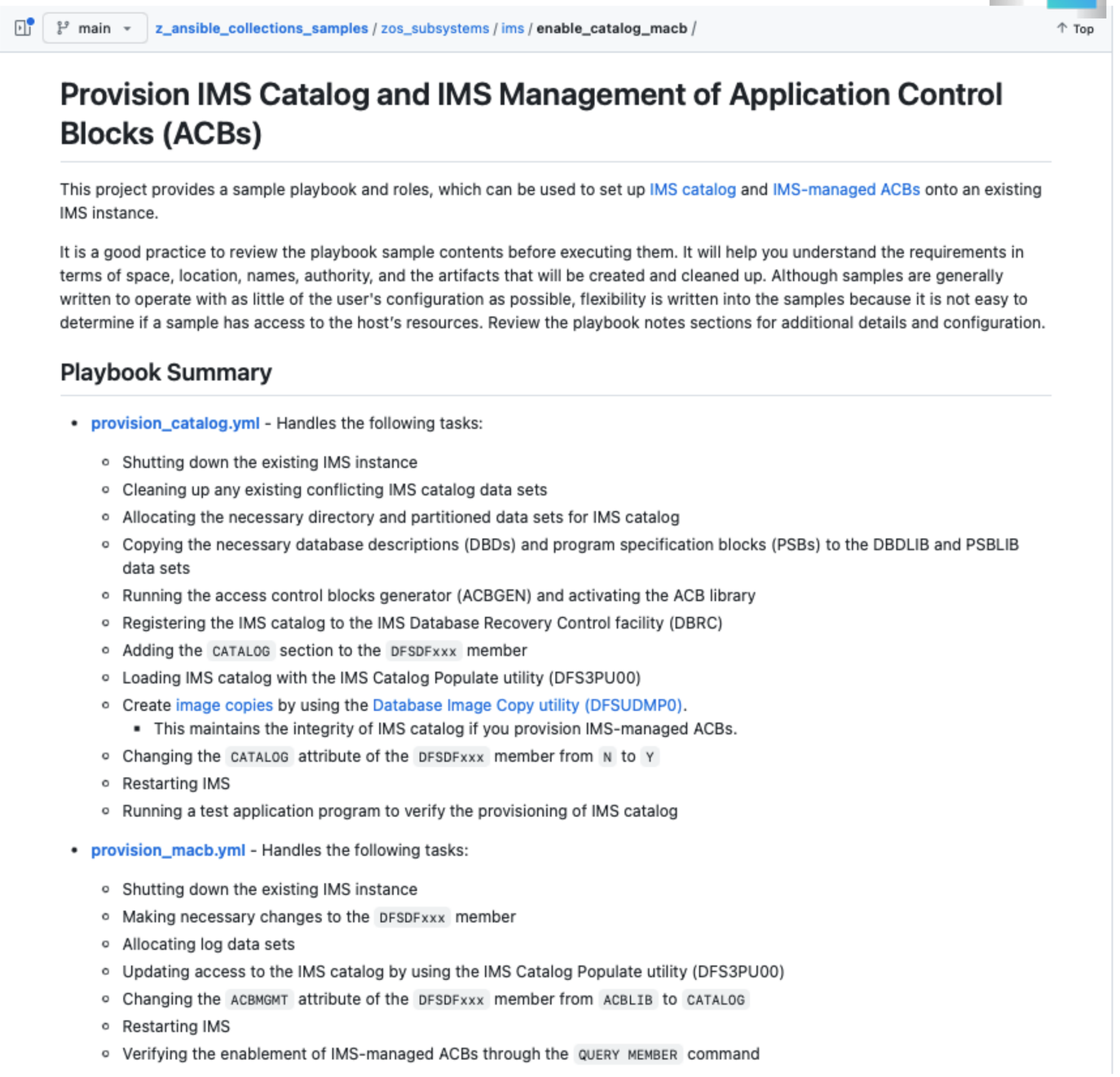
dbrc — Plugin
Type: **module_utils**

Ansible IMS Collection updates

2 new Ansible playbooks are now available to provision and configure IMS Catalog and IMS Managed ACBs onto existing IMS systems

Automate and jump-start IMS Catalog and IMS Managed ACBs setup using Ansible

To get started or for more information - see this blog



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New IMS Ansible playbooks

Setup and configure Managed ACBs & IMS Catalog

IMS Catalog Ansible playbook

1. Prepare the IMS environment to set up catalog by shutting down IMS, cleaning up any potential conflicting datasets, allocating and copying necessary datasets, DBDs, and PSBs
2. Run utilities such as ACBGEN, activating the ACB library, and the IMS Catalog Populate utility
3. Register IMS catalog to IMS DBRC and creating image copies to maintain the integrity of IMS catalog
4. Restart IMS and running a test application program to verify the successful provision of IMS catalog

IMS Managed ACBs playbook

1. Shut down the existing IMS instance
2. Allocate necessary log datasets
3. Update access through IMS catalog by using the IMS Catalog Populate utility (DFS3PU00)
4. Restart IMS and verify the enablement of IMS-managed ACBs through the QUERY MEMBER command

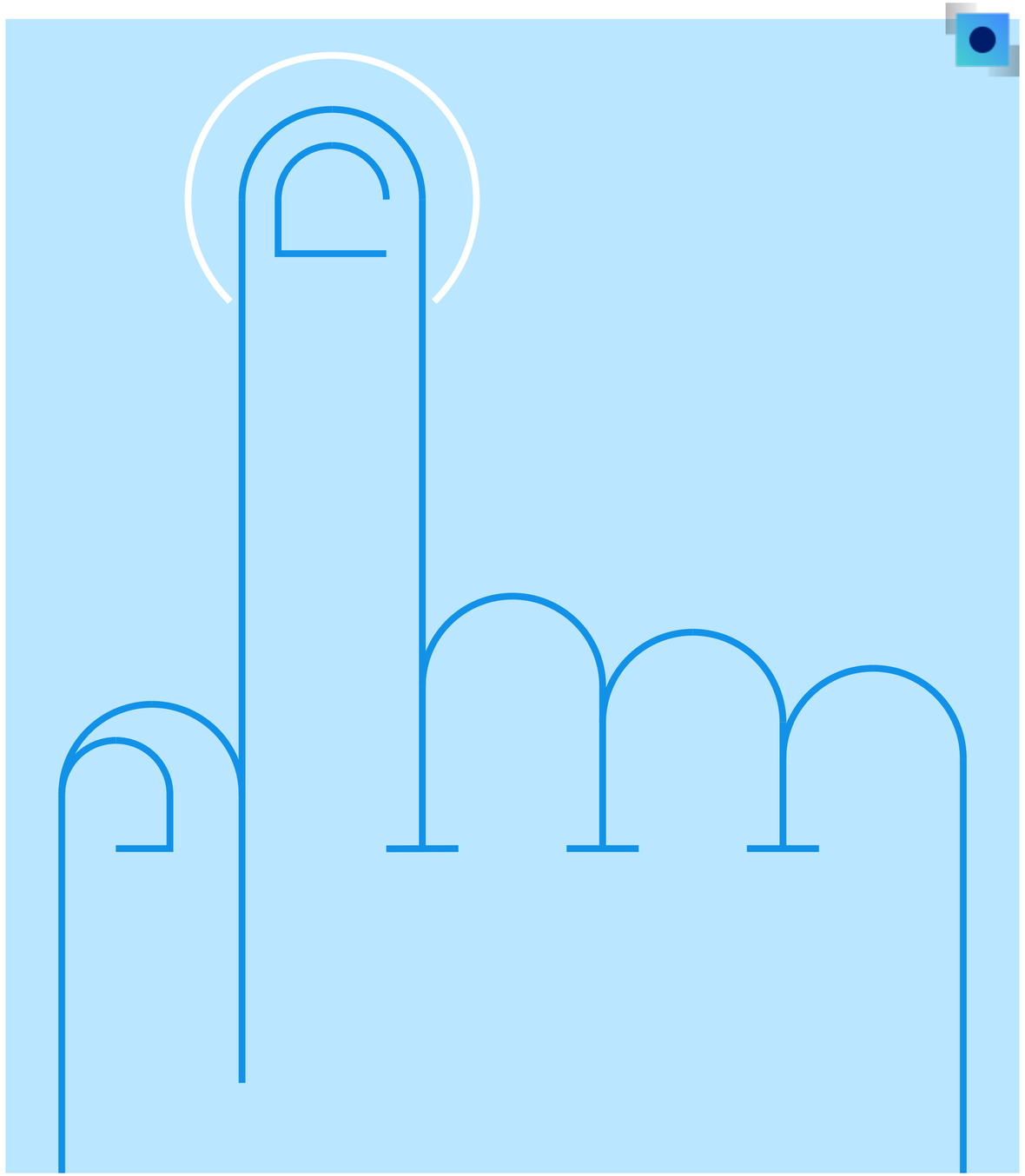
IMS Operator Collection

IBM Z® and Cloud Modernization Stack

(Red Hat OpenShift Container Platform)

IBM Z® and Cloud Modernization Stack

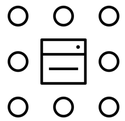
Bring Cloud Native experience to z/OS developers and administrators



IBM Z and Cloud Modernization Stack

A unified experience for developing z/OS & Cloud applications

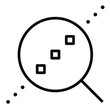
IBM Z and Cloud Modernization Stack



Deliver z/OS PaaS experience

Create secure APIs

Develop and deploy applications

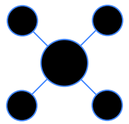


Analyze changes rapidly

Agile enterprise development via open industry standard tools

Red Hat OpenShift Container Platform

Key use cases



Low-code OpenAPIs in minutes
Link to demo

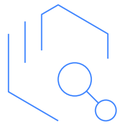
Edit, debug, and build z/OS applications with cloud native tools
Link to demo

Rapid application analysis
Link to demo

Automate the deployment of z/OS applications
Link to demo *

Enhance applications on z/OS with open enterprise languages
Link to demo

Self-service management of z/OS environment
Link to demo



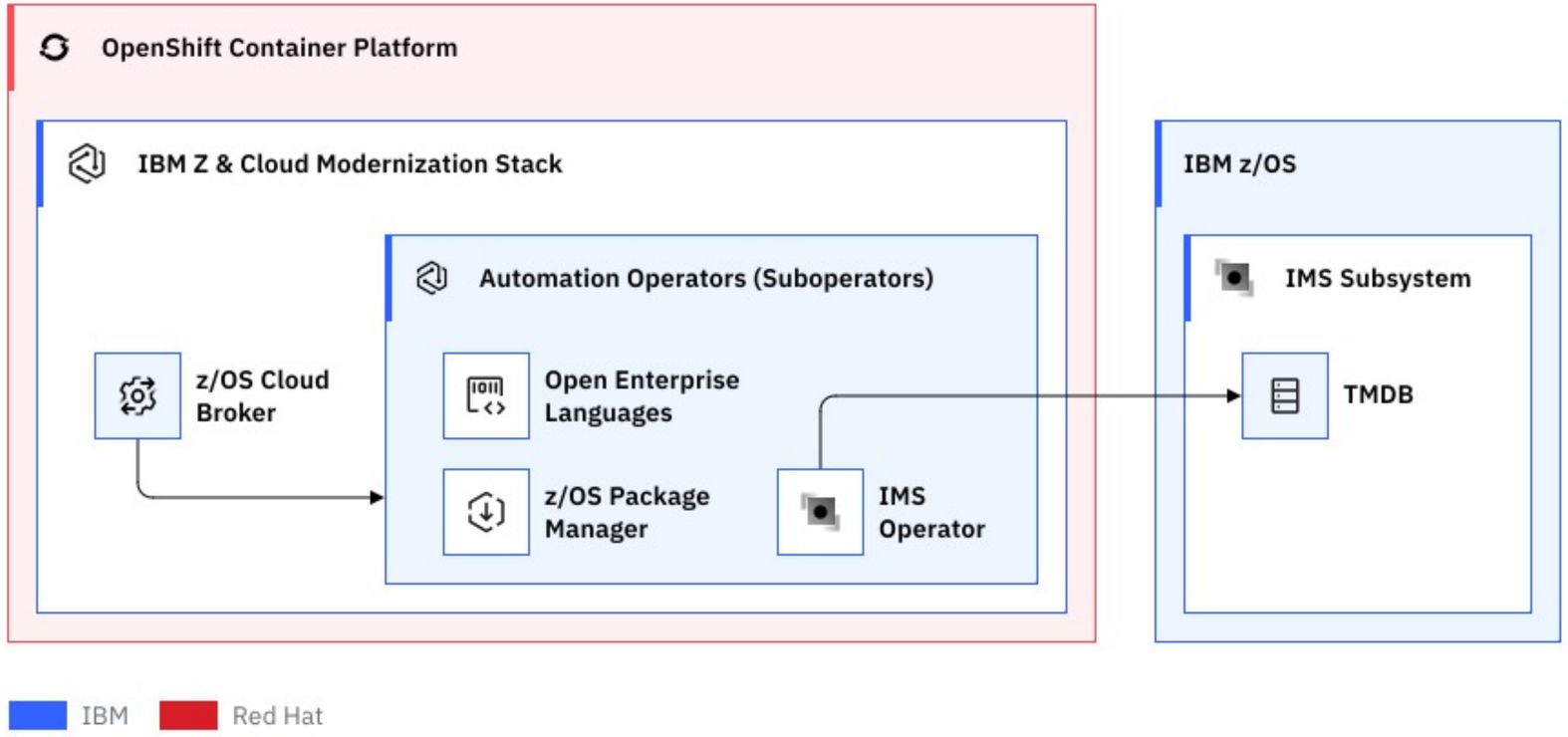
On-demand z/OS environments and resources
Link to demo

*Demo coming soon

IMS Operator Collection

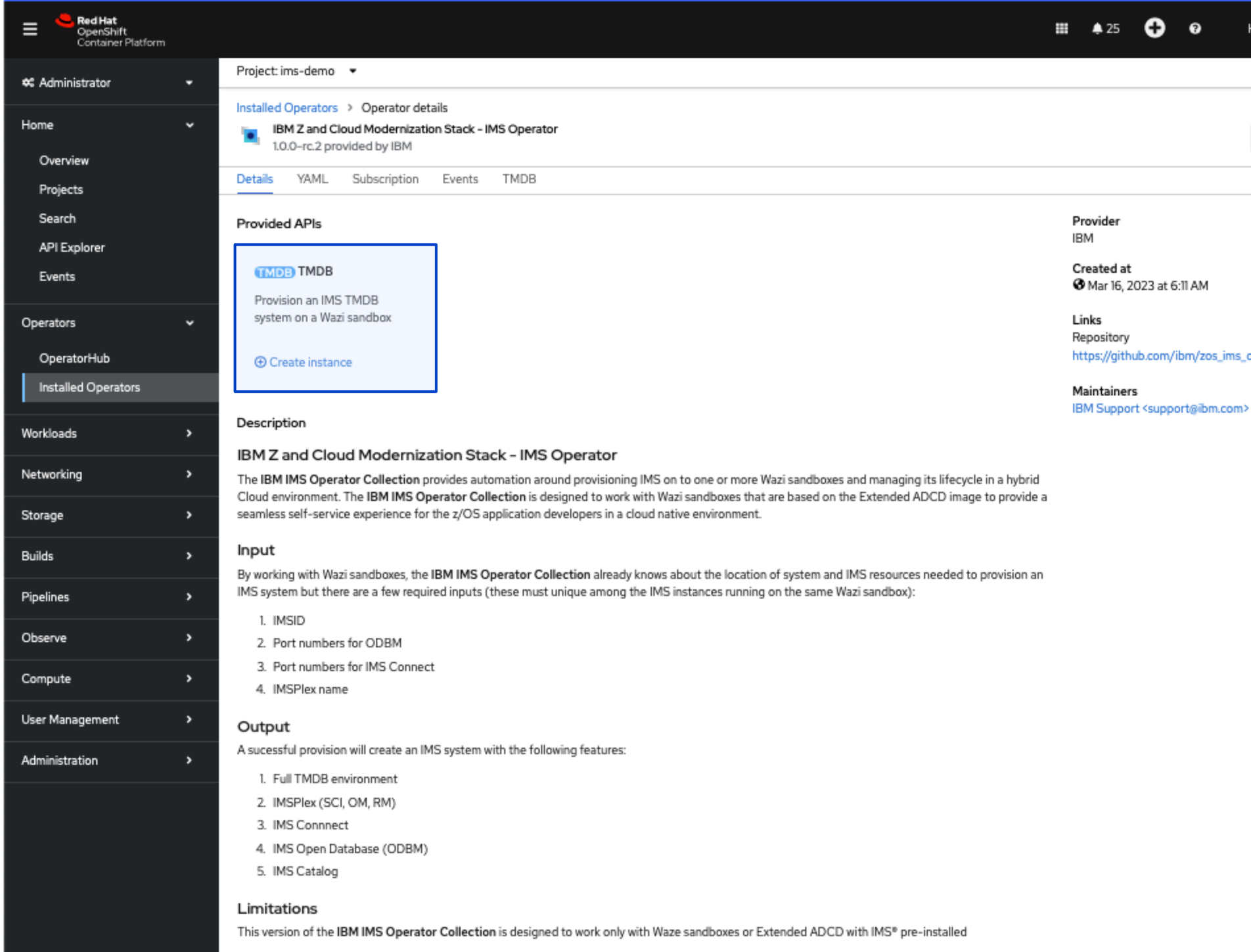
Self-service provision IMS systems

- Enable z/OS administrators and IMS system programmers to provision and manage IMS resources from the Red Hat OpenShift Container Platform environment
- Powered by Ansible and z/OS Cloud Broker
- Available with IBM Z and Cloud Modernization Stack 2023.1 release
- New in 2023.2 – Open-source and customizable IMS Operator



Provision IMS TM DB systems from Red Hat OpenShift Container Platform

- Self-service provision a full IMS TM DB system (with defaults) on a Wazi sandbox
- Developer can have their own IMS system in Wazi sandbox running in Red Hat OpenShift Container platform for Dev/Test
- System administrator can now create their own customized IMS Operator to provision IMS systems specific to their environment needs



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IMS and AI

The AI Ladder

IBM's prescriptive approach to artificial intelligence

Infuse

Operationalize AI throughout the enterprise

Analyze

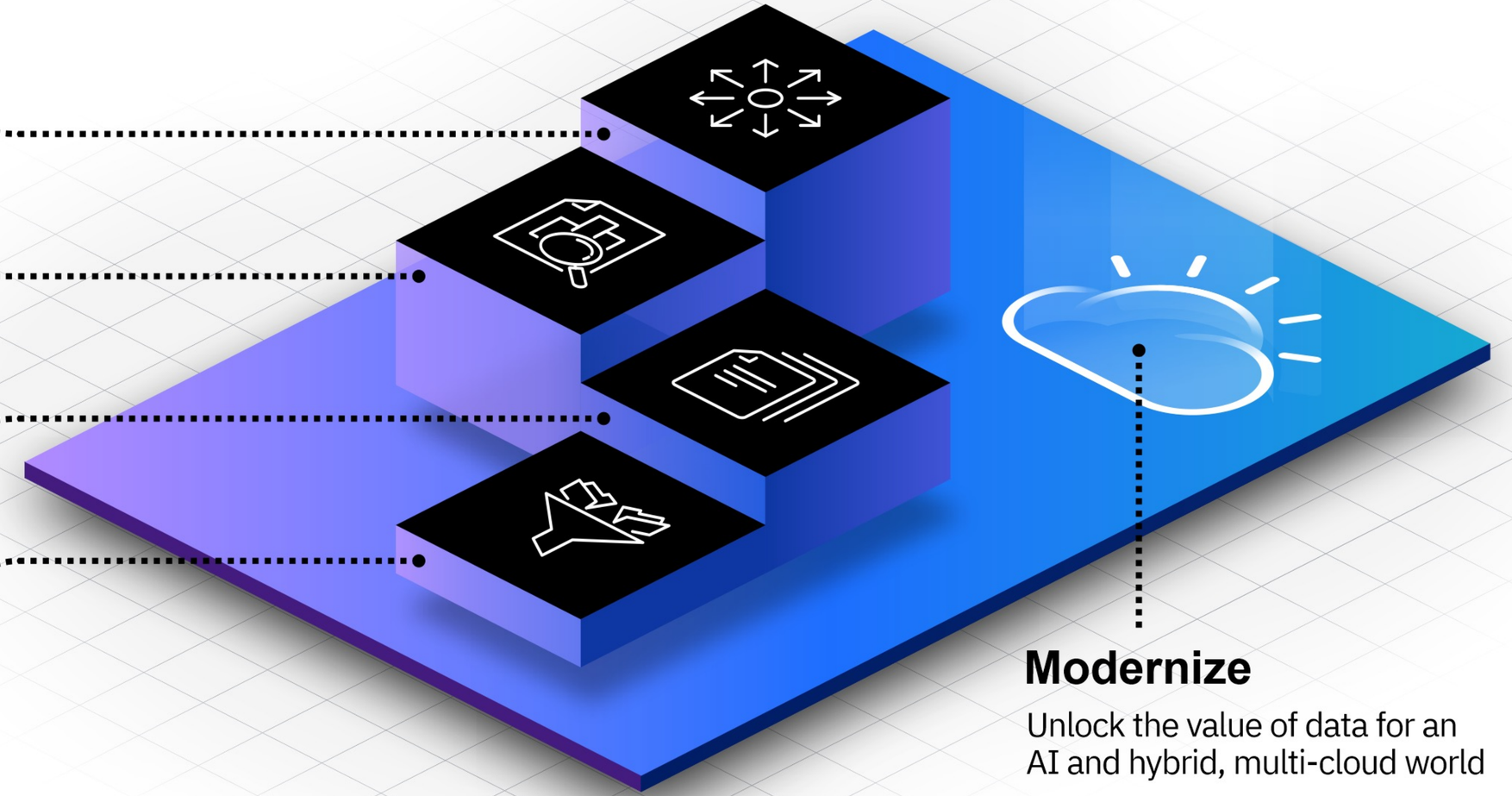
Build and scale AI with trust and transparency

Organize

Create a business-ready analytics foundation

Collect

Make all data simple and accessible



Modernize

Unlock the value of data for an AI and hybrid, multi-cloud world

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Infusing AI

with IBM Watson Machine Learning for z/OS v2.4

- Enable data scientists to train AI models with data in place on any platform (including IBM Cloud Pak for Data)
- Efficiently and cost effectively execute ML and DL models without impacting operational processes or SLAs
- Score/inference *every* transaction in *real-time* for optimal outcomes
- Continuously monitor model accuracy and programmatically refresh models
- Take advantage of the security, availability, resiliency, and performance available with IBM Z

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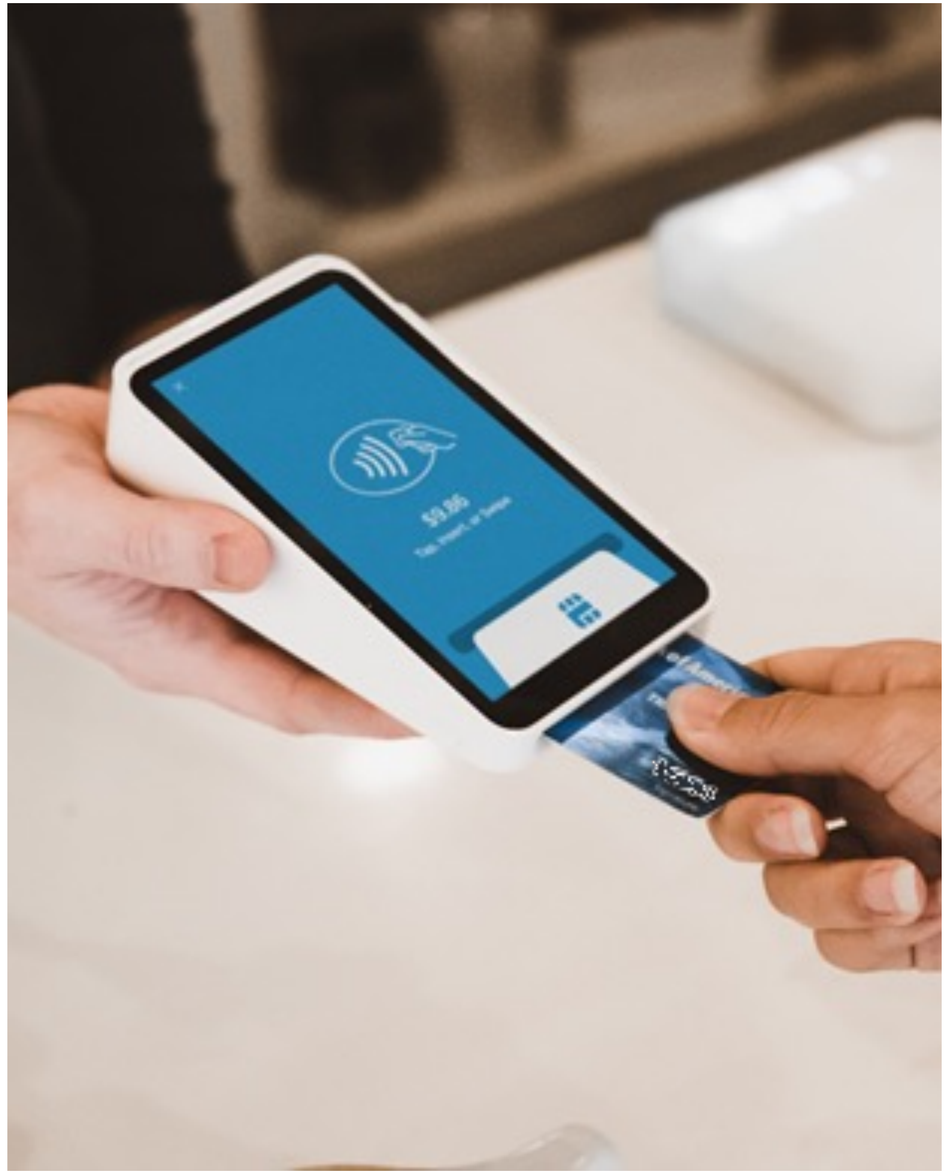
IMS Integrated Scoring Capability

New capability of WMLz v2.4 Dec PTFs:

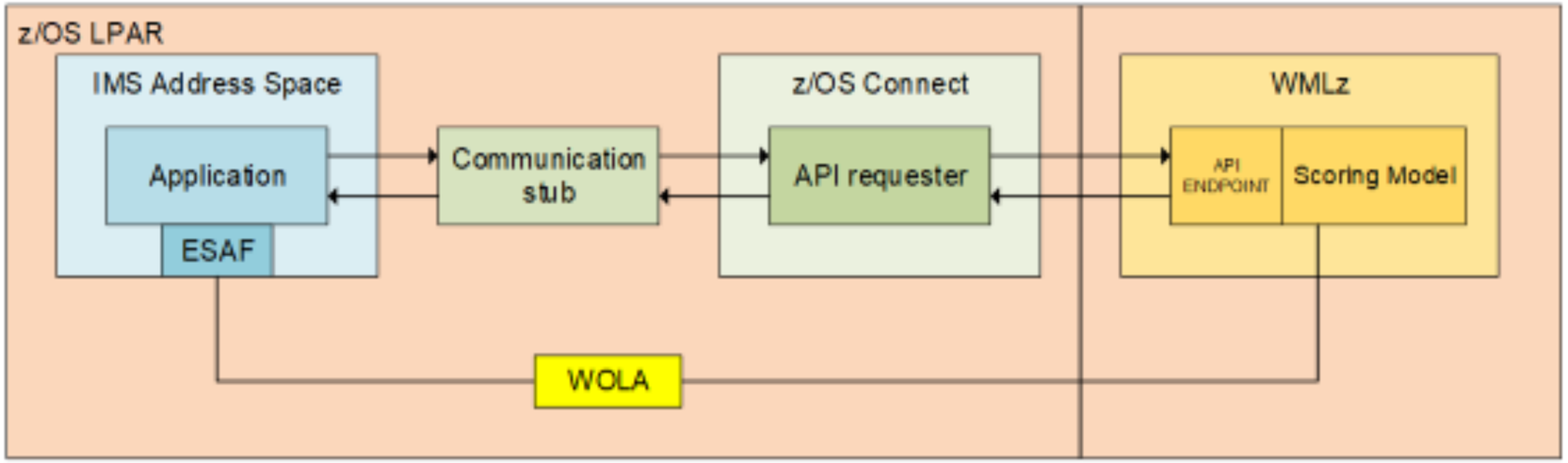
- Ability to invoke WMLz scoring service for real-time inferencing in IMS COBOL applications through the WebSphere Optimized Local Adapter (WOLA) interface:
  - Optimized performance to support embedding real-time ML and DL model inferencing in a high volume of IMS transactions
  - Minimized impact to existing applications to infuse AI model inferencing
- Supported model types: SparkML, PMML, ONNX
  - For ONNX model, a fixed length of input/output is required for this first version.
    - Restrictions can be lifted in future
- Also available for Batch and CICS COBOL applications



Infusing AI into IMS application

Watson Machine Learning for z/OS © 2022 IBM Corporation

Scoring IMS Applications with WML for z/OS (WMLz)



Generative AI

IBM watsonx Code Assistant

- Leverage generative AI to accelerate code generation and increase developer productivity.
- Purpose-built for targeted use cases, watsonx Code Assistant uses AI to support Application Modernization and IT Automation.

Watsonx Code Assistant for Z

- IBM Z Application Modernization leveraging watsonx Code Assistant technology to enable faster translation of COBOL to Java. Check out this Press release for details.

IBM watsonx Code Assistant

Red Hat Ansible Lightspeed

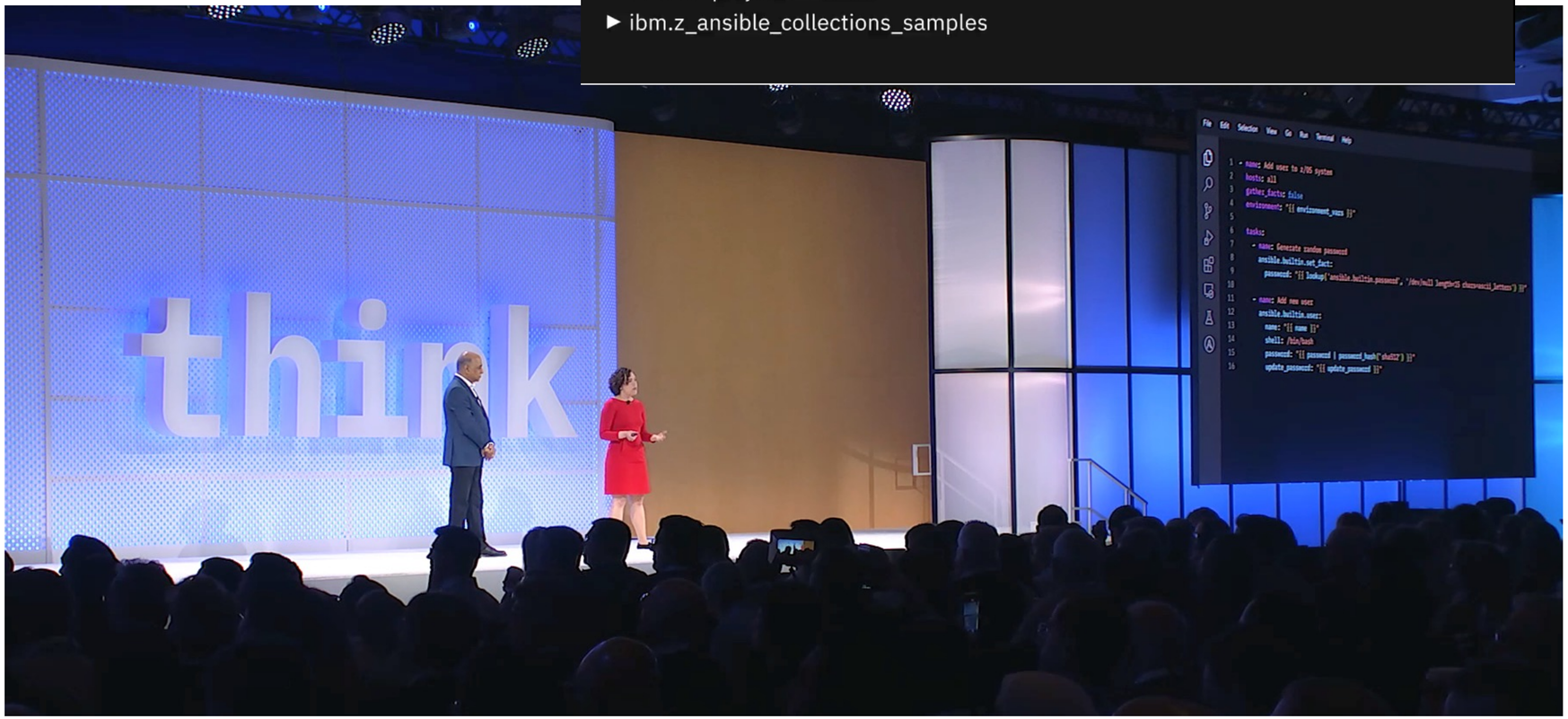
IBM watsonx Code Assistant for Red Hat Ansible Lightspeed enables developers of all skill levels to write Ansible playbooks with AI-generated recommendations.

Tech Preview

```
20                PHRASE('{{ passphrase }}')
21                SECLABEL({{ security_label | upper }})
22                SECLEVEL({{ security_level | upper }})
23                ADDCATEGORY({{ category | upper }})
24                TSO(ACCTNUM('{{ tso_account_number | upper }}')
25                DFP(DATAAPPL('{{ dfp_data_application }})DATACLA
26                OMVS(UID({{ omvs_uid }})
27                HOME('{{ omvs_home_directory }}')"
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL TRAINING MATCHES

- ansible-collections-cio.zos
- ansible-projects-cio.zos
- ibm.z_ansible_collections_samples



More AI solutions to come…

Call for Sponsor Users

Contact: Haley Fung (hfung@us.ibm.com)

Any Questions?

Thank you.

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