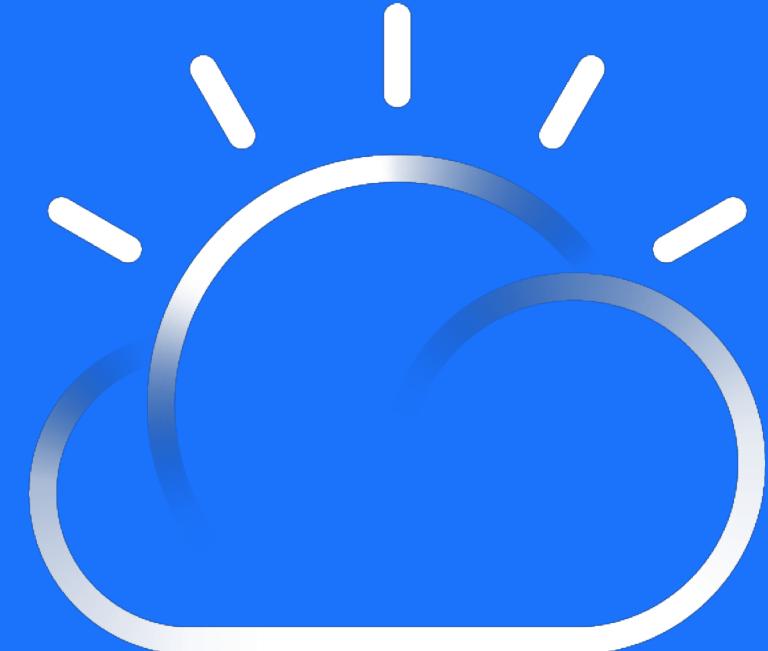


Application Integration

A11 How to tame your Hybrid Cloud using App Connect!

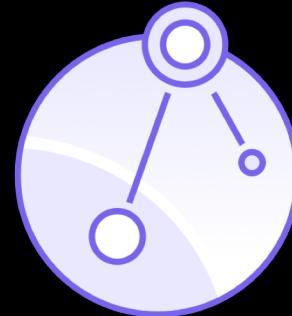


Ben Thompson
bthomps@uk.ibm.com

IBM Cloud

IBM

Run and manage
IBM App Connect Enterprise in any location
or cloud exactly as you
need it



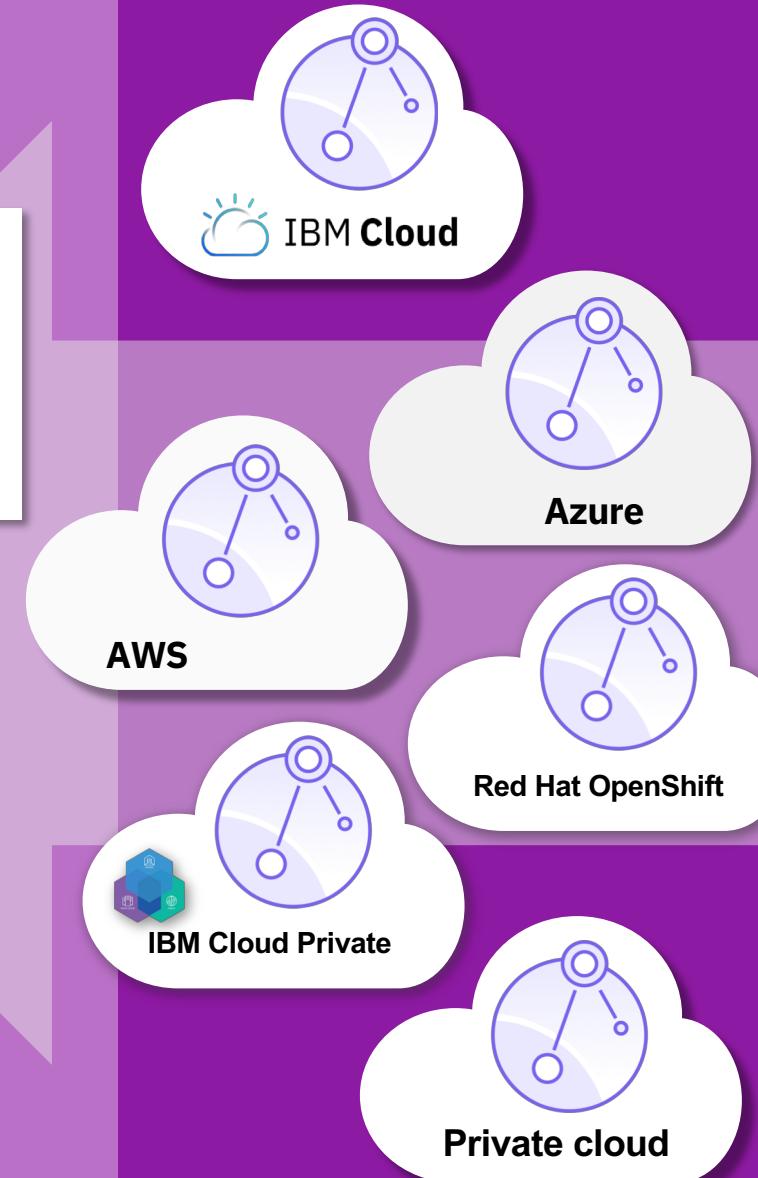
IBM App Connect Enterprise

Celebrating
20
years

On-premise software



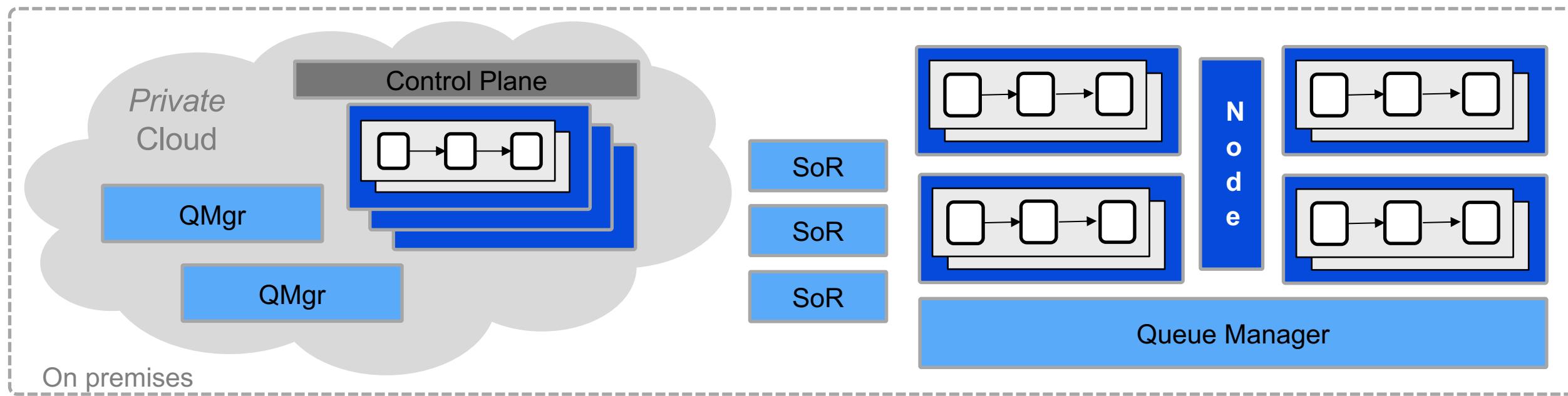
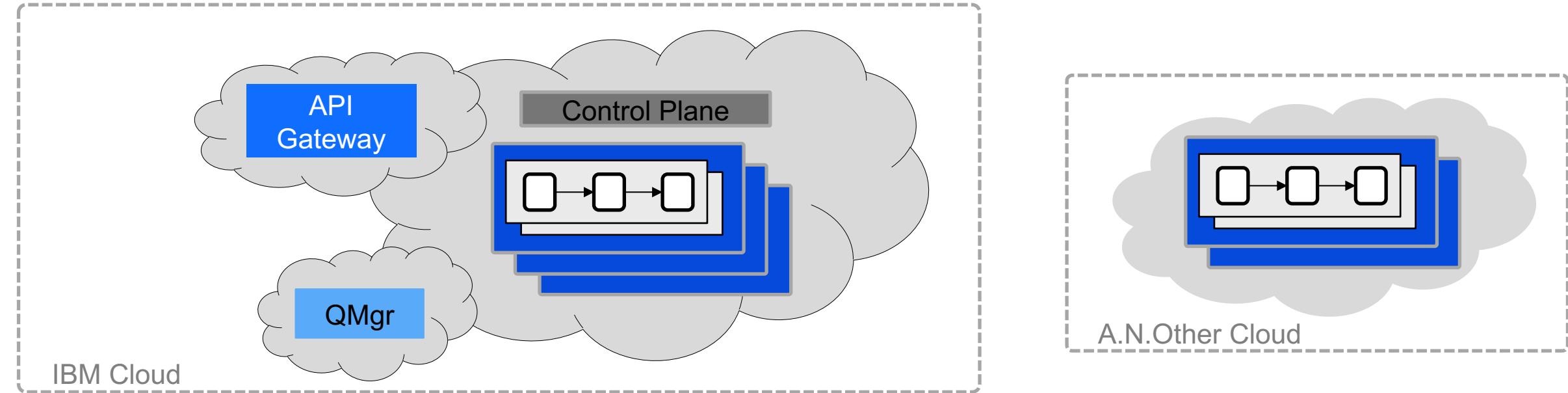
Run it yourself in any
cloud, public or private

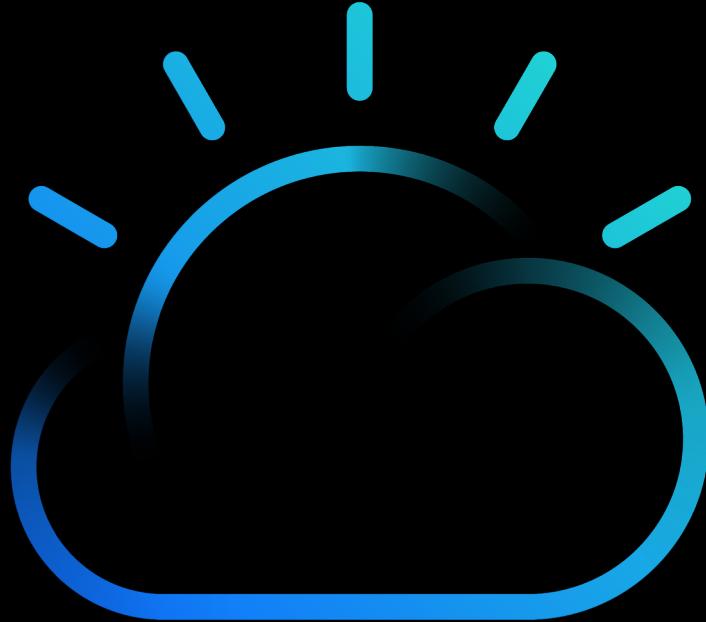


Let IBM host it for you
with its managed SaaS
App Connect service in
public cloud



Clouds, Connections and Administrative Control



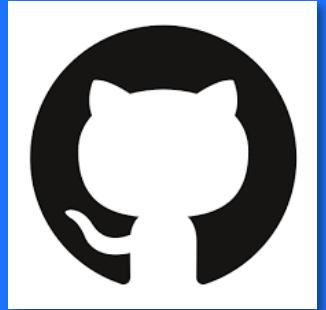


App Connect Enterprise on IBM Cloud Private

The 1 chart summary of ACE on IBM Cloud Private



- Docker, Kubernetes and Helm work together to provide a platform for managing, packaging and orchestrating containerised workloads. For App Connect Enterprise this enables the packaging of an integration server into a standardised unit for deployment that can be promoted through a development pipeline then deployed, managed and scaled.
- ICP is a private cloud platform for developing and running workloads locally. Built on top of Kubernetes and Helm technologies as well as providing a catalog, private image repository, management console and monitoring framework.
- ACE on ICP provides:
 - **Dashboard:** Management of BAR files and integration servers, no need to wait for integration server to start before deploying a BAR file
 - **Monitoring:** Message flow statistics and JVM statistics data provided to the IBM Cloud Private monitoring dashboard
 - **Logging:** Integration with the IBM Cloud Private ELK stack
 - **Configuration:** Greater control of the integration server through configuration



TRY!



THEN BUY!

IBM

[README.md](#)

Overview

ibmcom/ace 

By [ibmcom](#) • Updated 3 months ago
Official IBM App Connect Enterprise for Developers image
[Container](#)

Run IBM® App Connect Enterprise in a container.

You can build an image containing one of the following combinations:

- IBM App Connect Enterprise
- IBM App Connect Enterprise with IBM MQ Advanced
- IBM App Connect Enterprise for Developers with IBM MQ Advanced for Developers
- IBM App Connect Enterprise for Developers

Procedure

Complete the following steps to deploy IBM App Connect Enterprise (Advanced Edition) to IBM Cloud Private:

1. Obtain the IBM App Connect Enterprise compressed file from IBM Passport Advantage.
2. Log in to your cluster from the IBM Cloud Private CLI and log in to the Docker private image registry, as shown in the following command:

```
bx pr login -a https://cluster_CA_domain:8443 --skip-ssl-validation  
docker login cluster_CA_domain:8500
```

where *cluster_CA_domain* is the certificate authority (CA) domain. If you did not specify a CA domain, the default value is *mycluster.icp*.

3. Install the IBM App Connect Enterprise compressed file from Passport Advantage, by entering the following command:

```
bx pr load-ppa-archive --archive compressed_file_name [---clusternamespace cluster_CA_domain] [---namespace namespace]
```

where *compressed_file_name* is the name of the file that you downloaded from Passport Advantage, *cluster_CA_domain* is the (CA) domain, and *namespace* is the Docker namespace that hosts the Docker image.

4. Manually sync the repositories, so that the installed chart appears in the Catalog:

- a. From the menu in the IBM Cloud Private dashboard, select **Manage > Helm Repositories**.
- b. Click **Sync repositories** and then select **OK**.
- c. When it has completed, the **ibm-ace-prod** chart is displayed in the Catalog.

5. You can install and configure the IBM App Connect Enterprise chart from the IBM Cloud Private Catalog, or you can use the command line to access the Helm Charts directly from <https://github.com/IBM/charts>. The following steps show how to access and install the chart by using the Catalog:

- a. From the menu in the IBM Cloud Private dashboard, select **Catalog > Helm Charts**.
- b. Select the **ibm-ace-prod** chart and then click **Configure**.
- c. A configuration page for your new IBM App Connect Enterprise service is displayed.

6. Configure your IBM App Connect Enterprise service, by setting values for the following properties:

- a. Set the **Release name** property to the name of your new service.
- b. Accept the license by ticking the box.
- c. Click **Install**.

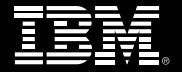
For more information about the IBM App Connect Enterprise Helm Chart, see [ot4i/ace-helm](#).

<input type="checkbox"/> IBM App Connect Enterprise V11.0 For Container Multilingual (CNTJ9ML)	-	View details
Size	550MB	
Date posted	14 Jun 2018	
License agreement	Download estimate	→ eAssembly

Initial Configuration

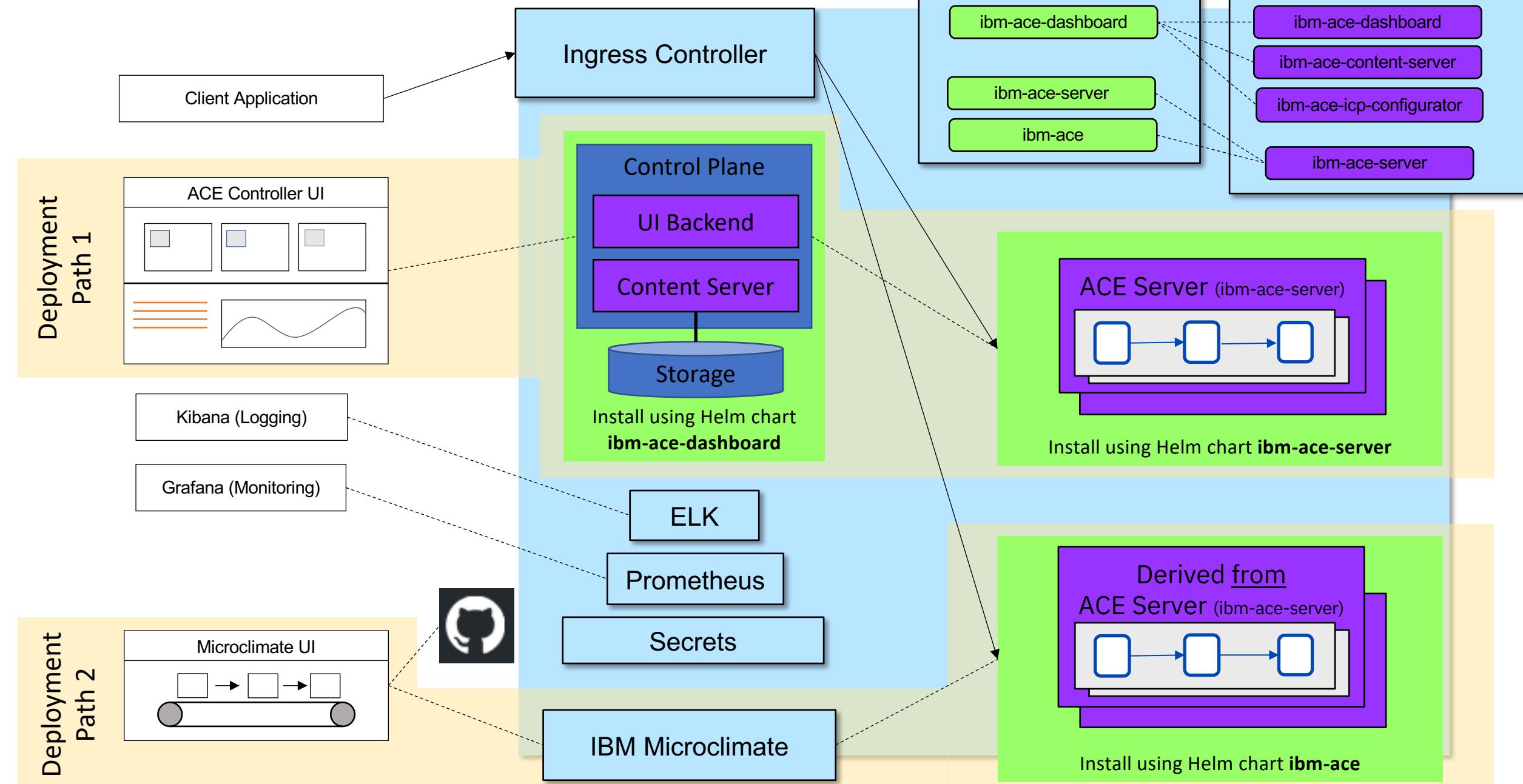
- Before the Integration Server starts, the container is checked for the folder **/home/aceuser/initial-config**
- For each folder in this directory a script called **ace_config_{folder-name}.sh** is run to process the info in the folder. The subfolders of initial-config are as below ...
 - **keystore:** Contains certificates in .pem format
 - **truststore:** Contains certificates in .pem format
 - **odbcini:** Contains an odbc.ini file suitable for the Integration Server to use when connecting to a database.
 - **policy:** A set of .policyxml files, each with the suffix .policyxml, and a single policy.descriptor file. These are copied to a DefaultPolicies in overrides
 - **serverconf:** **server.conf.yaml** overrides file will be copied to /home/aceuser/ace-server/overrides/server.conf.yaml
 - **setdbparms:** Includes a text file called setdbparms.txt with contents matching -n / -u / -p format
 - **webusers:**
 - **admin-users.txt** contains a list of users to be created as admin users using mqsiwebuseradmin. These users will have READ, WRITE and EXECUTE access on the server.
 - **viewer-users.txt** contains a list of users to be created as viewer users using mqsiwebuseradmin. These users will have READ access on the Integration Server.

Environment Variables



- **LICENSE** - Set this to accept to agree to the App Connect Enterprise license. If you wish to see the license you can set this to view.
- **LANG** - Set this to the language you would like the license to be printed in.
- **LOG_FORMAT** - Set this to change the format of the logs which are printed on the container's stdout. Set to "json" to use JSON format (JSON object per line); set to "basic" to use a simple human-readable format. Defaults to "basic".
- **USE_QMGR** - Set to true to start a Queue Manager and set the Integration Server to use it.
- **ACE_ENABLE_METRICS** - Set this to true to generate Prometheus metrics for your Integration Server.
- **ACE_SERVER_NAME** - Set this to the name you want your Integration Server to run with.
- **ACE_TRUSTSTORE_PASSWORD** - Set this to the password you wish to use for the trust store (if using one).
- **ACE_KEYSTORE_PASSWORD** - Set this to the password you wish to use for the key store (if using one).

ACE on IBM Cloud Private - details



Getting Started with App Connect Enterprise containers in ICP

IBM Cloud Private Create resource Catalog Docs Support

Catalog

All Categories > Search items Filter

Category	Item Name	Description	Type
Integration	artifactory-ha	Universal Repository Manager supporting all major packaging formats, build tools and CI serv...	local-charts
Operations	ibm-ace-dashboard-dev	App Connect Enterprise Dashboard	local-charts
AI & Watson	ibm-ace-dashboard-prod	App Connect Enterprise Dashboard	local-charts
DevOps	ibm-ace-server-dev	This helm chart is used by the IBM App Connect Dashboard to deploy servers	local-charts
IoT	ibm-ace-server-prod	This helm chart is used by the IBM App Connect Dashboard to deploy servers	local-charts
Data	ibm-aspera-cli	IBM Aspera Command-Line Interface (the Aspera CLI) is a collection of Aspera tools for perfo...	local-charts
Security	ibm-discovery-service	Add a cognitive search and content analytics engine to applications.	local-charts
Runtimes & Frameworks	ibm-eventstreams-dev	IBM Event Streams based on Apache Kafka.	local-charts
Blockchain	ibm-eventstreams-singularity-prod	IBM Event Streams for support of IBM products only.	local-charts
Network	ibm-messagesight-dev	IBM IoT MessageSight	local-charts
Storage	ibm-mongodb-dev	NoSQL document-oriented database that stores JSON-like documents with dynamic schemas,	local-charts
Data Science & Analytics	ibm-mqadvanced-server-integration-prod	IBM MQ queue manager for Cloud Integration	local-charts
Business Automation	ibm-mqadvanced-server-prod	IBM MQ queue manager	local-charts
Tools	ibm-sam-config	The configuration utility which is used to configure the IBM Security Access Manager environ...	local-charts
Other	ibm-sam-dsc	The Distributed Session Cache of IBM Security Access Manager.	local-charts
	ibm-sam-openldap	An OpenLDAP user registry which has been extended with the schema used by IBM Security	local-charts
	ibm-sam-postgres	A PostgreSQL database which has been extended with the database schema used by IBM Security ...	local-charts



Red Hat Container Catalog

Search The Catalog

SEARCH



Explore Get Started FAQ

Service Accounts



IBM App Connect Enterprise

by IBM

Product Overview

IBM App Connect Enterprise enables you to simply connect applications and data across all your environments. It supports a wide range of integration styles and is ideal for use in microservices-based Agile Integration Architectures, APIs Event-driven scenarios and also more traditional SOA. IBM App Connect Enterprise provides a single integration tool for your entire business.

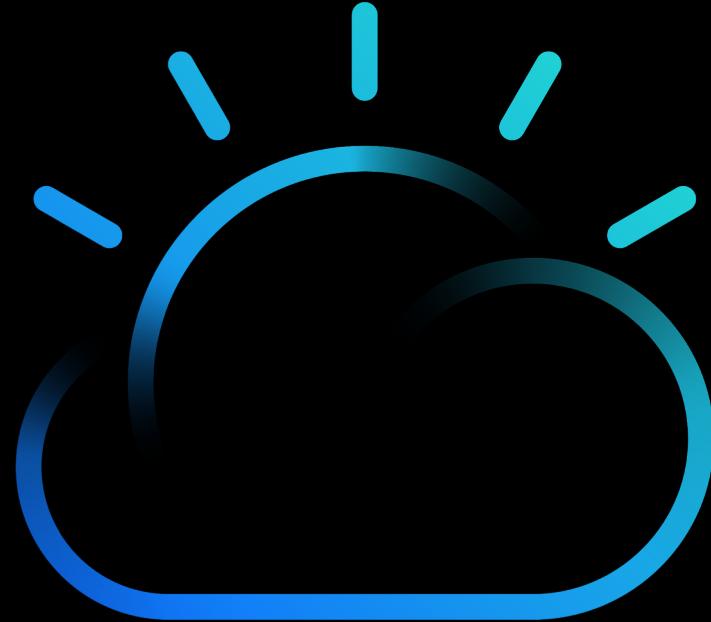
Resources

- [IBM App Connect Enterprise](#)
- [IBM Integration Blog](#)
- [App Connect Enterprise v11 on IBM Cloud Private v3.1](#)

APPLICATION CATEGORY

Application Delivery

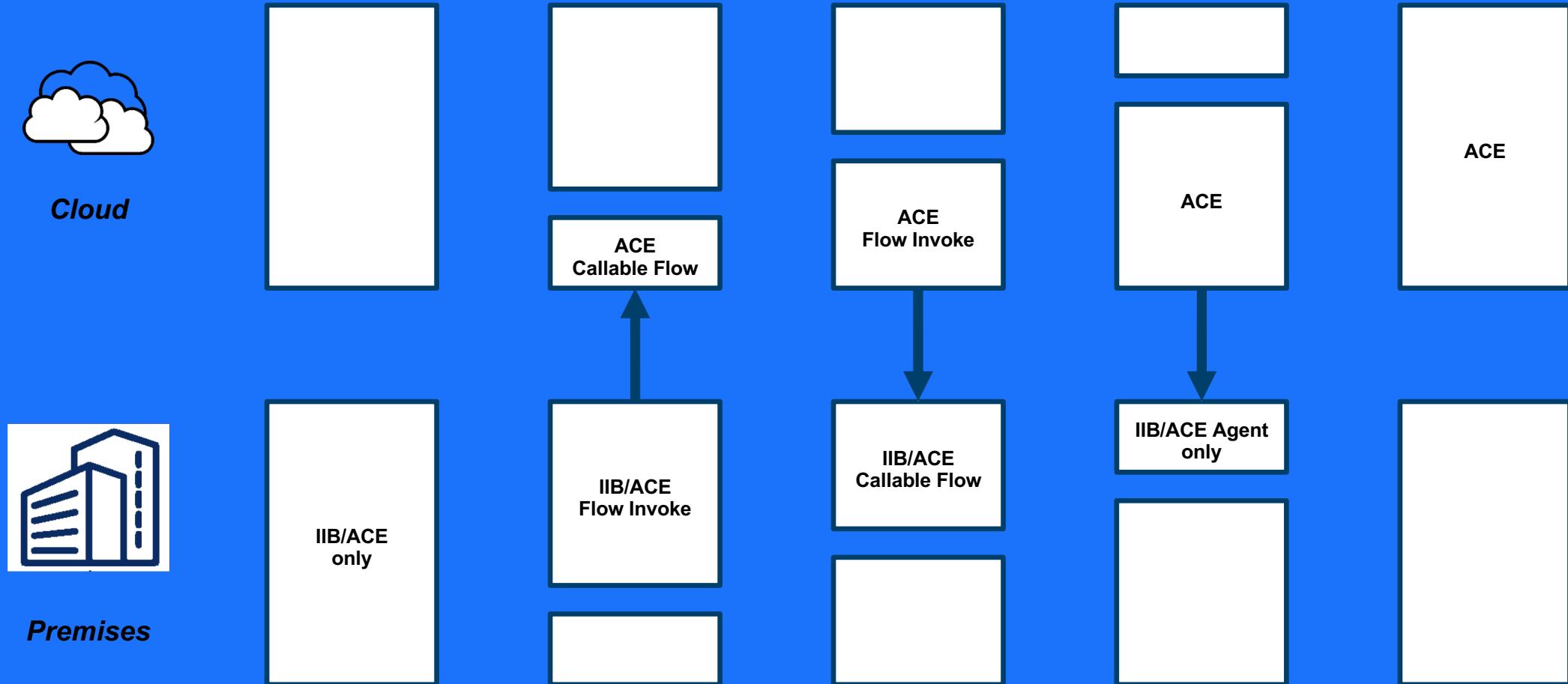
▸ [Product Website](#)



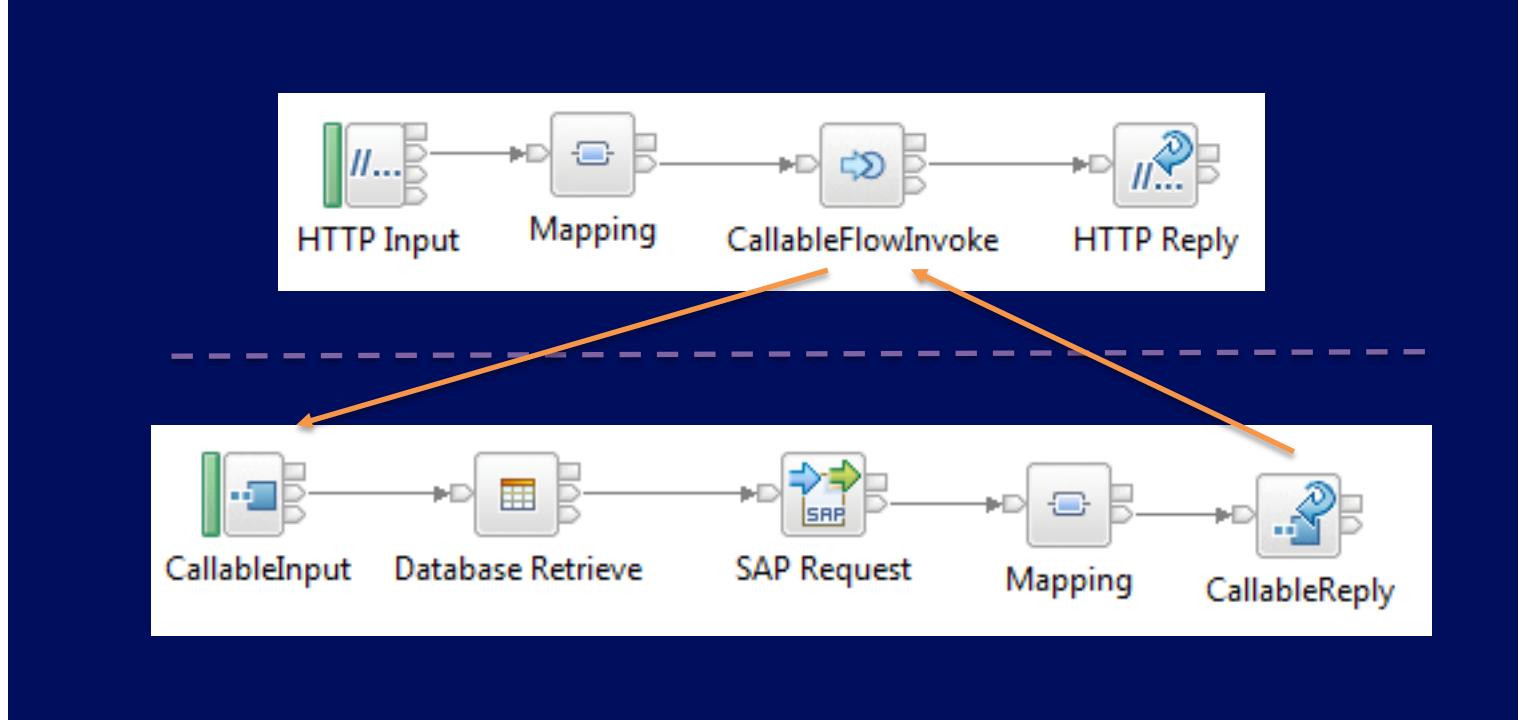
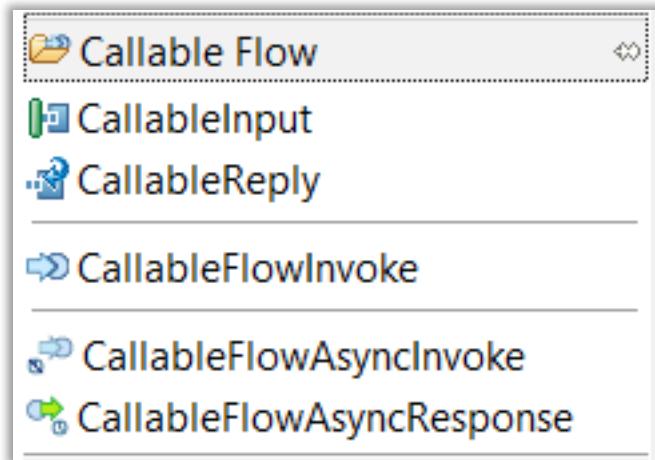
App Connect Callable Flows

Sending data between the cloud and on-premises

IBM



Callable Flows



CallableFlowInvoke Node Properties - CallableFlowInvoke

Description	
Basic	Target Application* App2
Monitoring	Target Endpoint Name* UniqueEndpoint
	Request timeout (sec) 120
	Call Preference <input type="radio"/> Prefer local calls <input checked="" type="radio"/> Prefer local calls <input type="radio"/> Remote calls only

CallableInput Node Properties - CallableInput

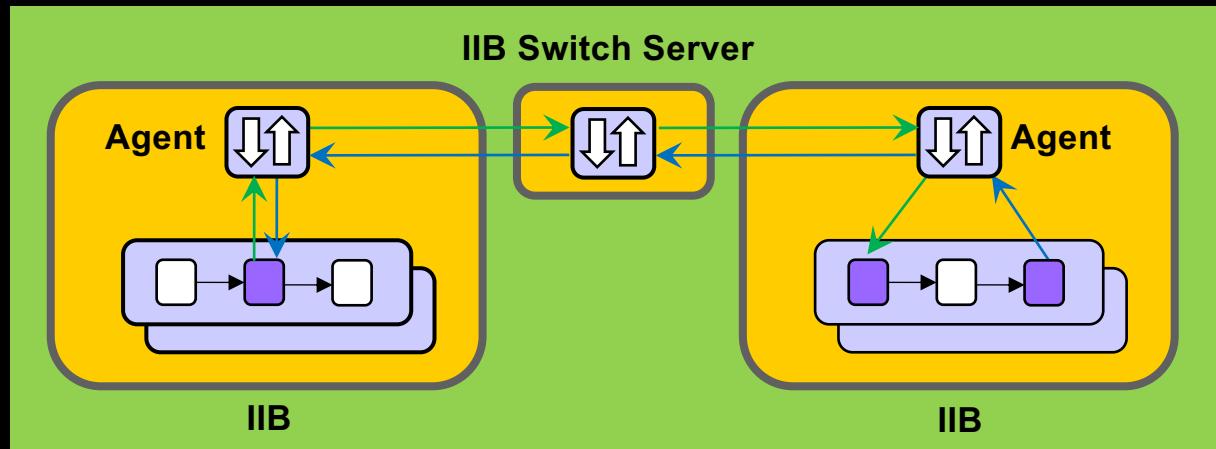
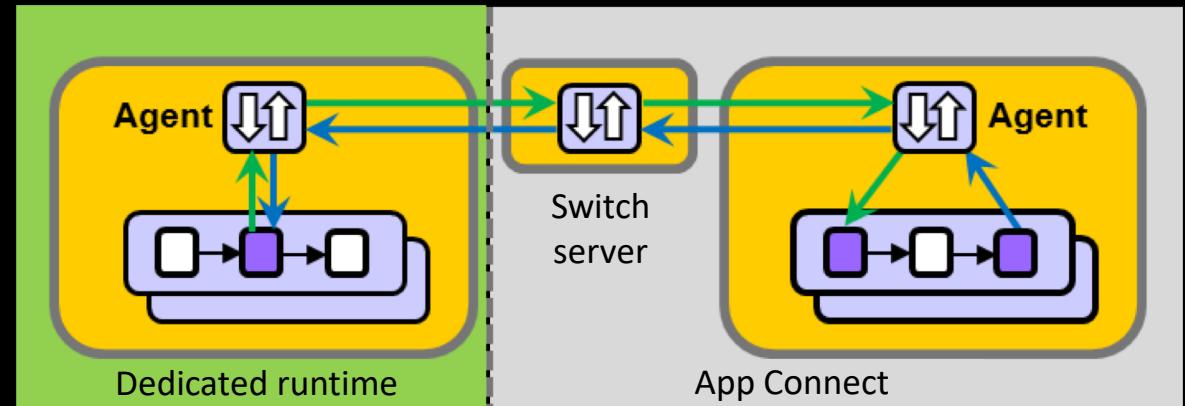
Description	
Basic	Endpoint Name* UniqueEndpoint
Monitoring	

The switch server is the critical part that coordinates calls between flows.

The switch uses secure tunnels between agents.

Callable flows work between on-premise integration servers or on the cloud.

Can also be purely on-premises by running switch on private network.

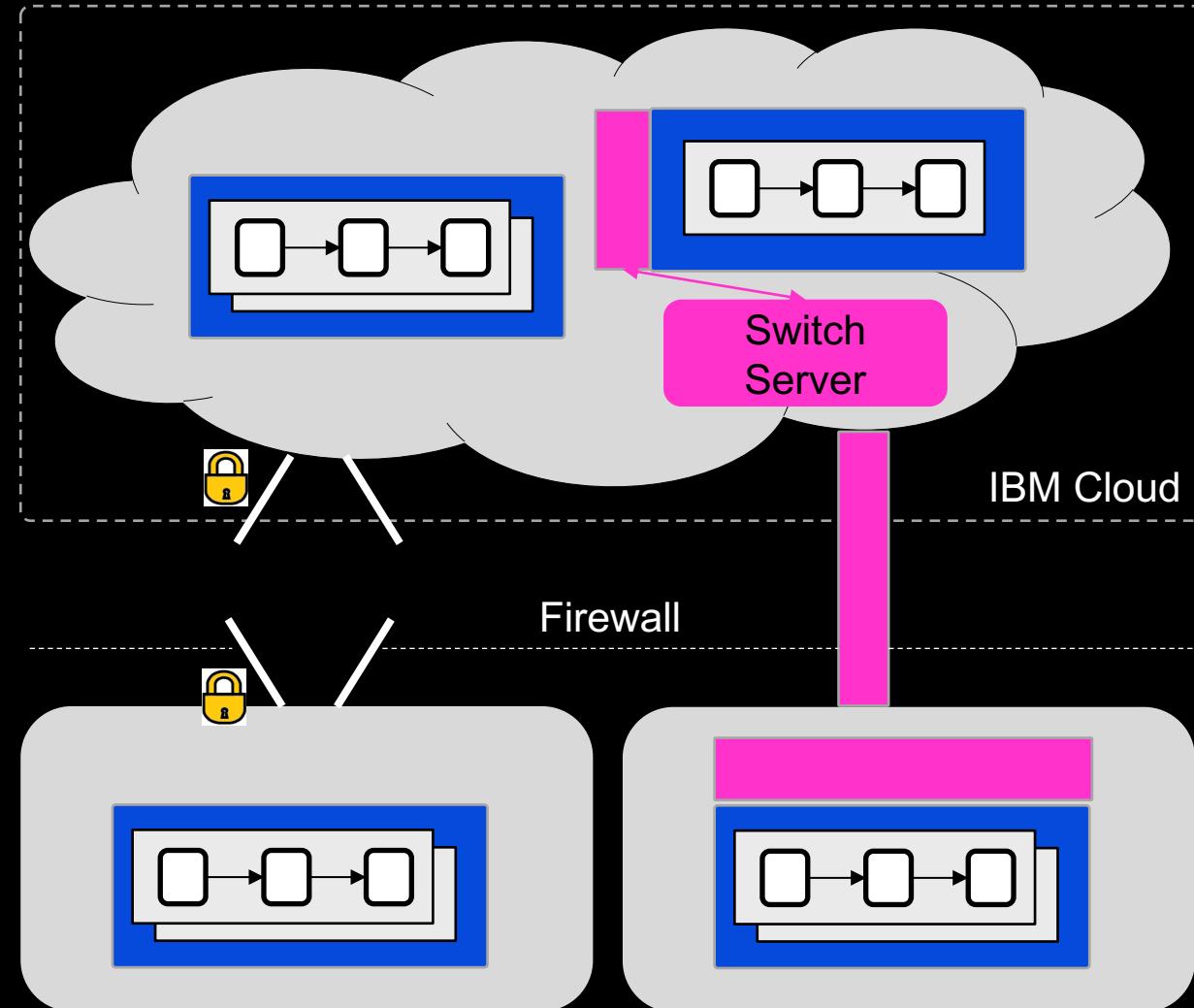


REST versus Callable Flows

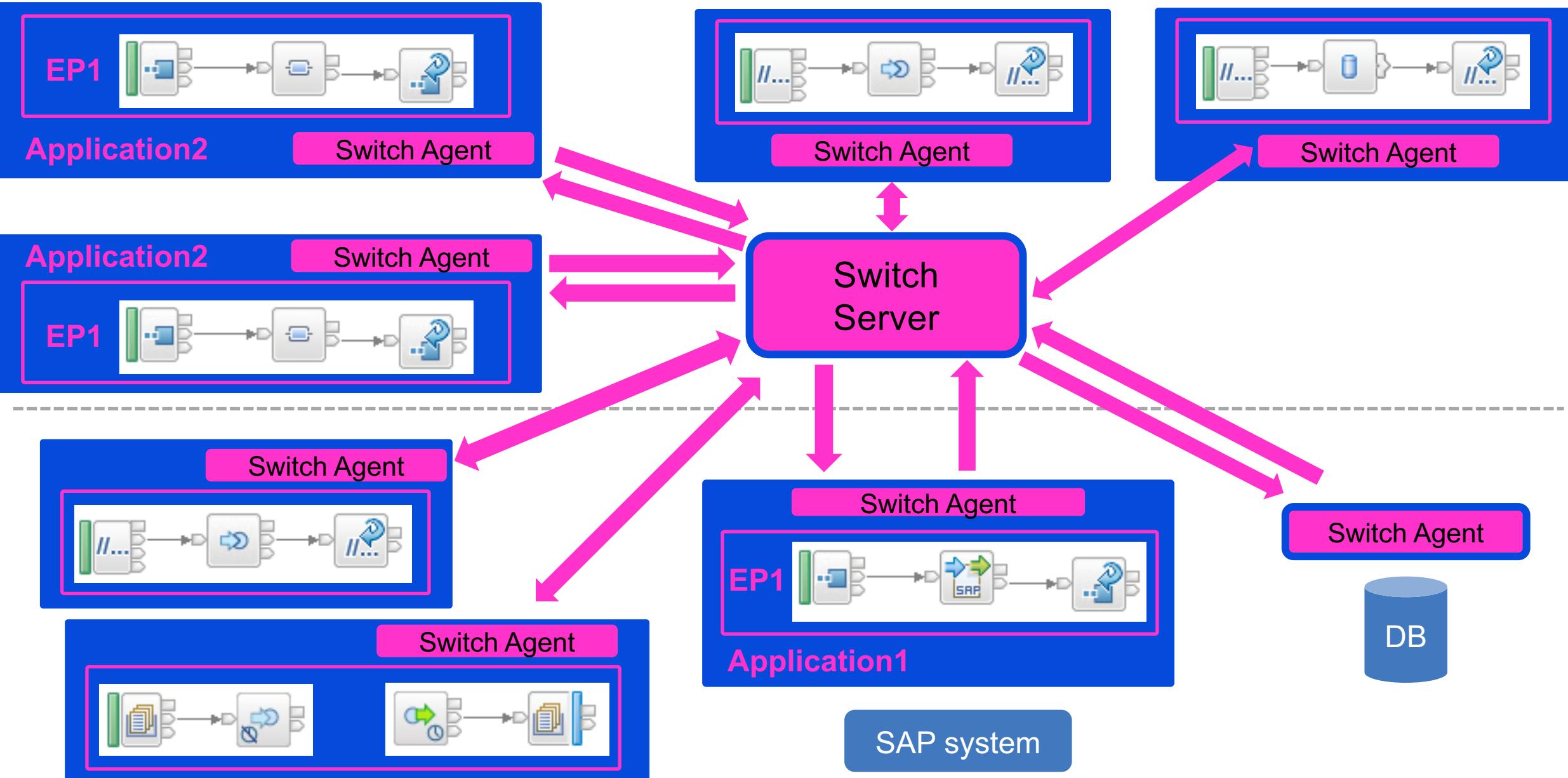
- REST can also be used for splitting processing between two flows.
- Both on-premise and cloud ACE have very good REST support.
- On-premise ACE even has a REST node purely to call cloud ACE.

Reasons why callable flows in many cases is a better choice:

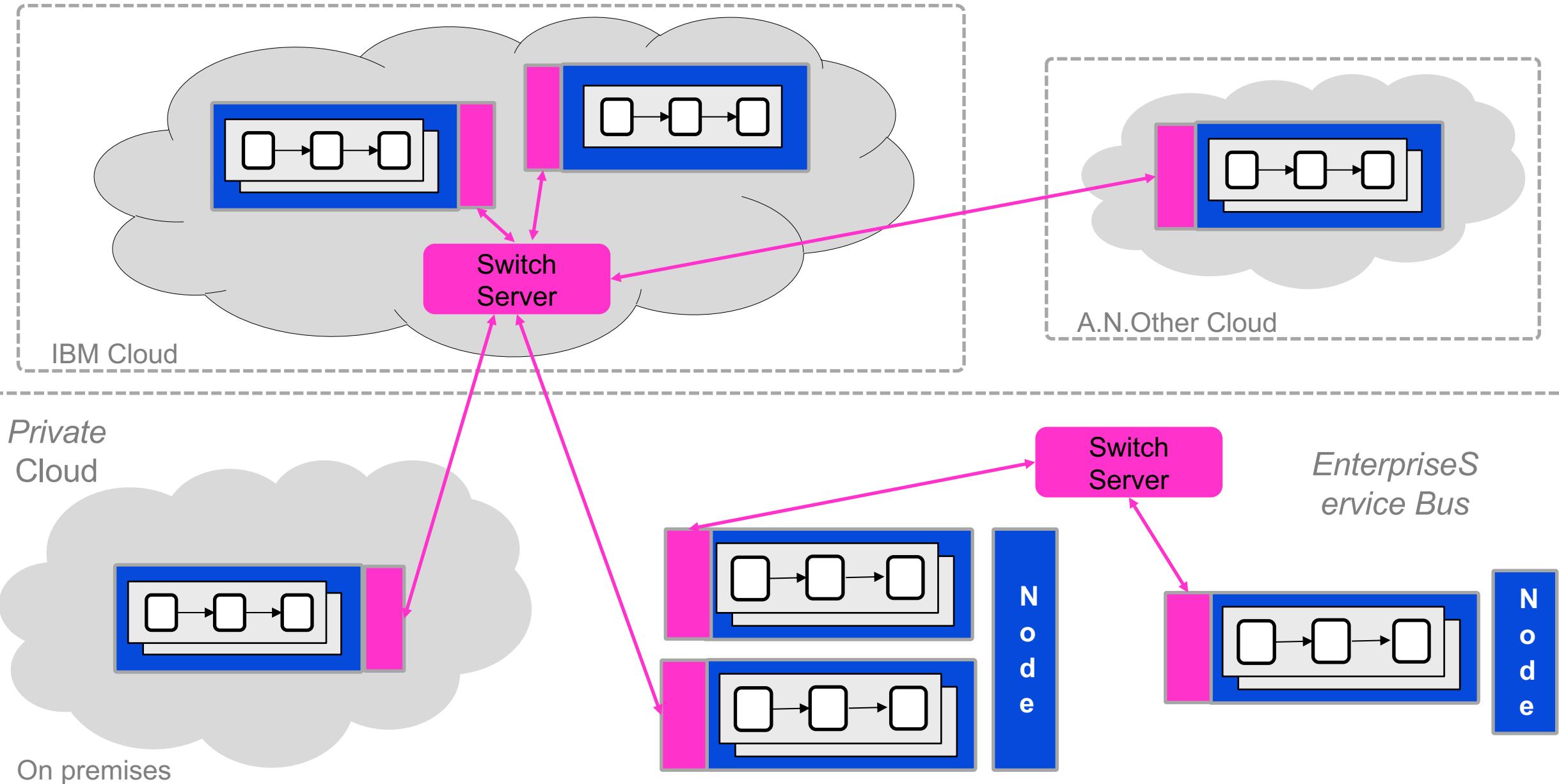
- ✓ Does not require opening up any on-premise ports.
- ✓ Flows can be moved seamlessly between on-premise and cloud servers without the calling flows being changed.
- ✓ Requires less skill to understand how call a callable flow.
- ✓ Removes the need to integrate the integration servers.
- ✓ Allows for future enhancements that could not be simply added on top of REST.

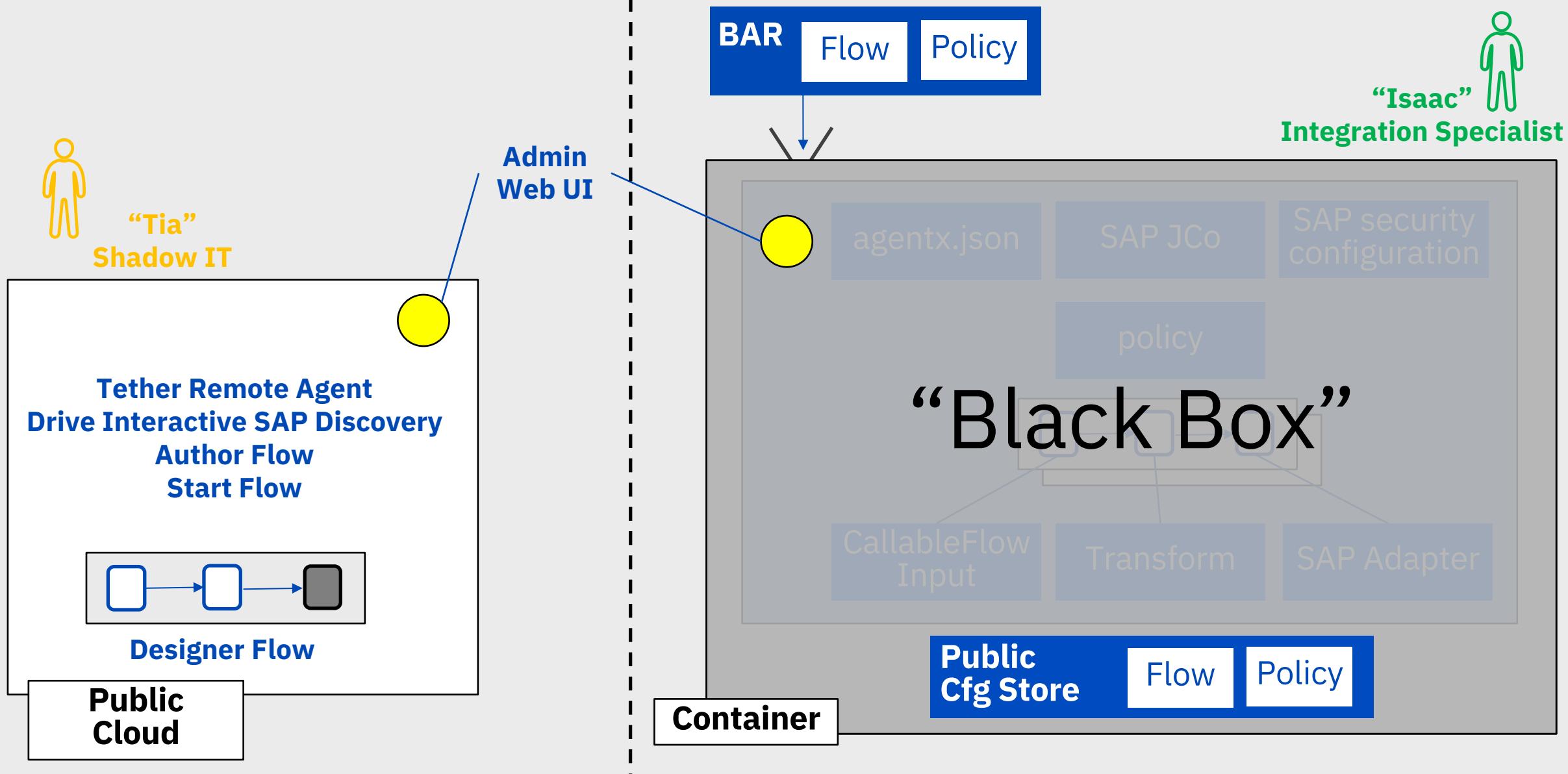


Securing runtime connections with the Switch server and agents

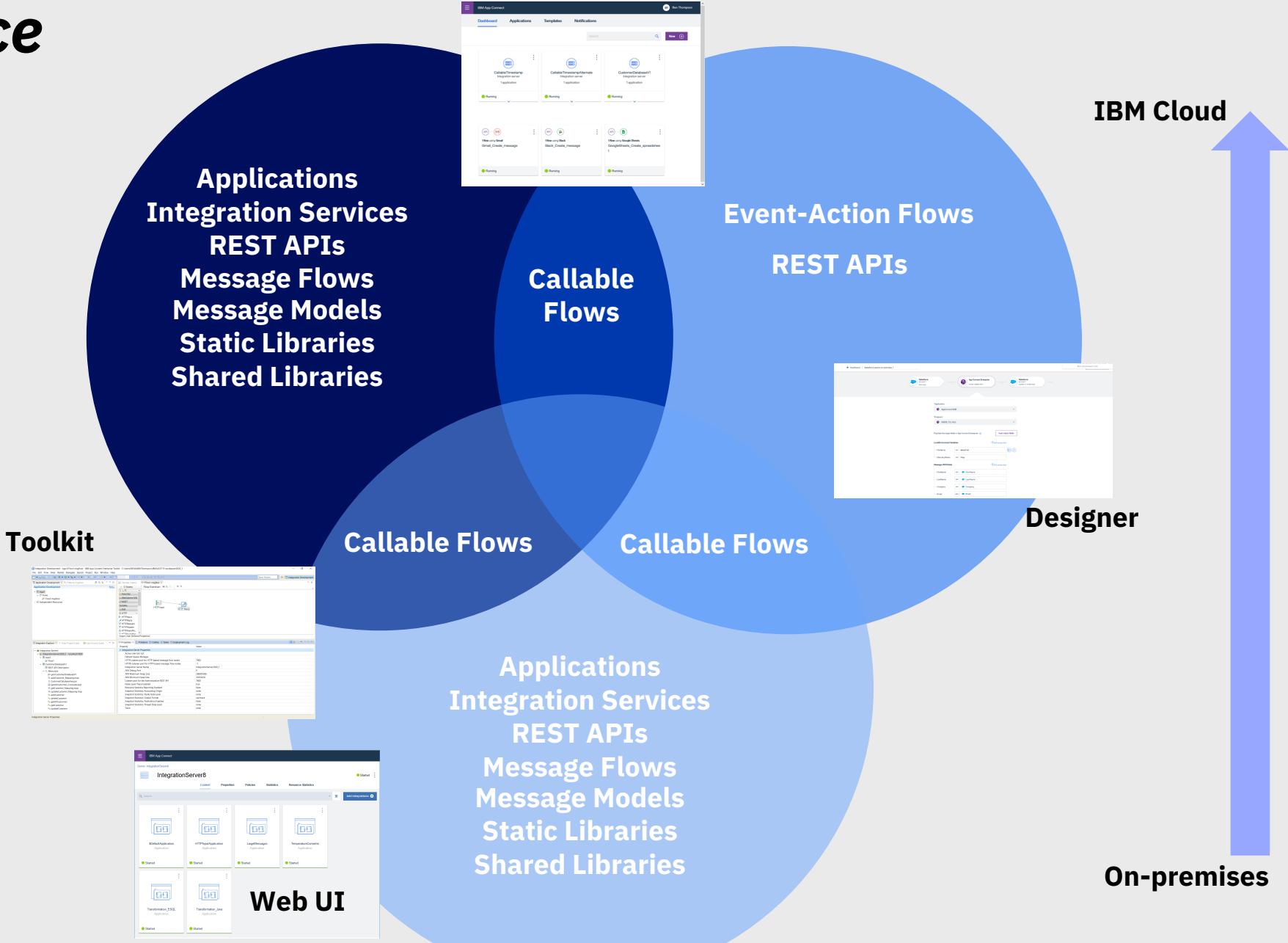


Securing administrative connections with the Switch server and agents

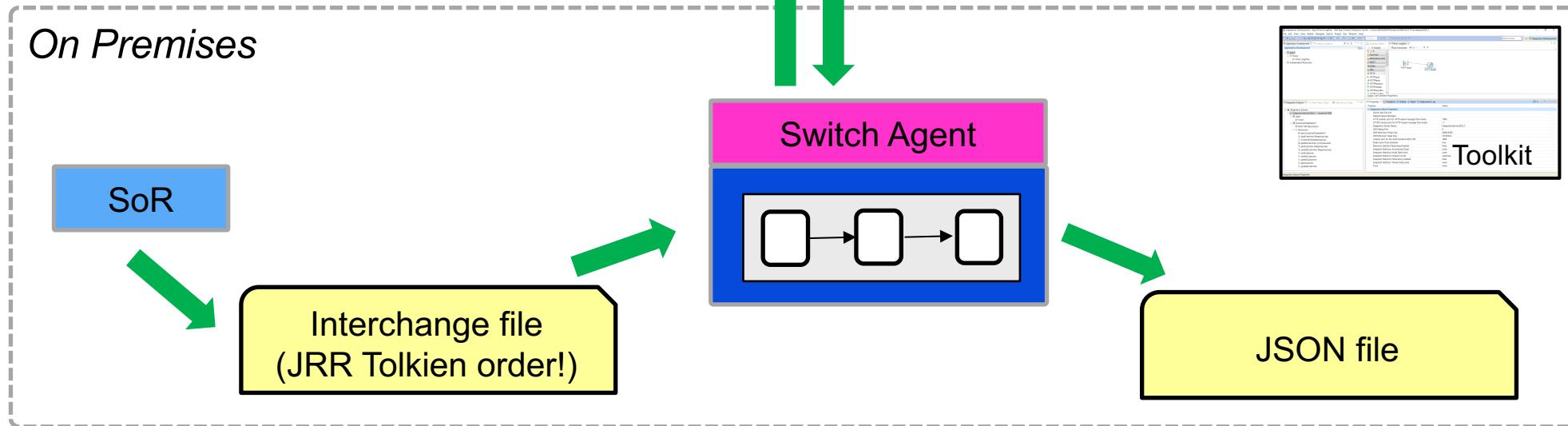
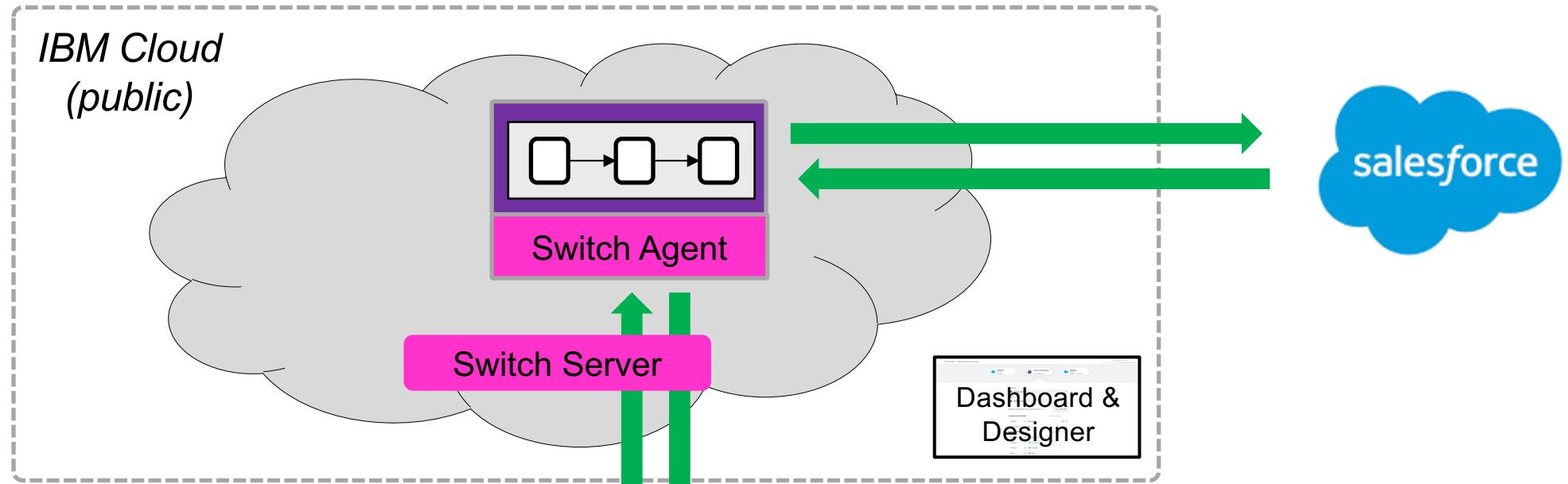




Convergence

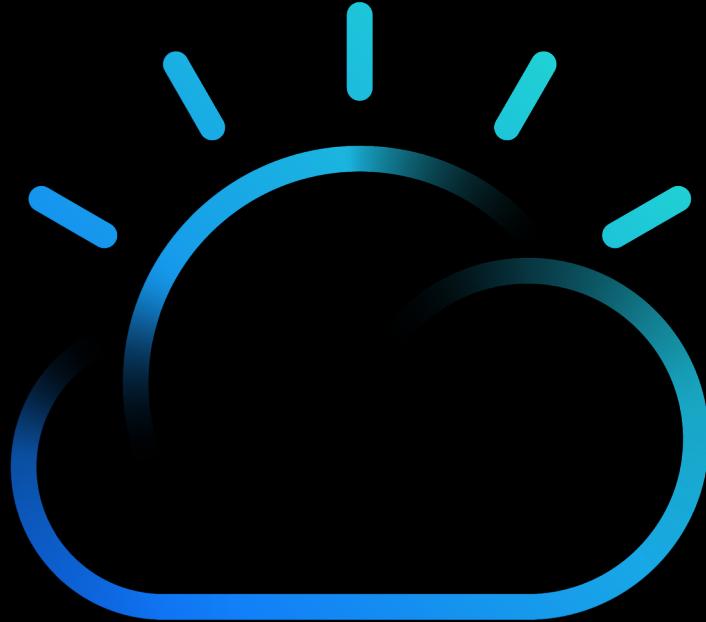


Callable Flows with EDIFACT and Salesforce

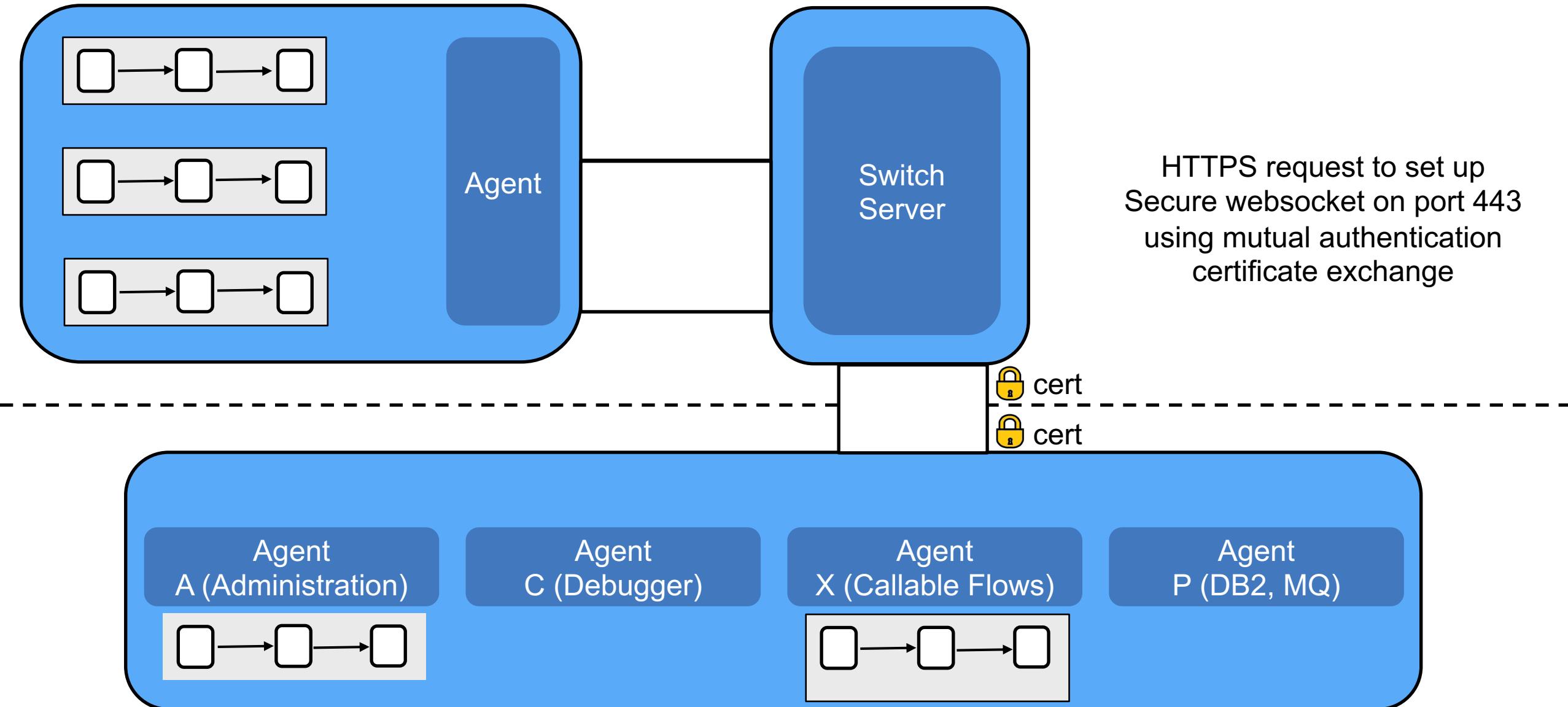




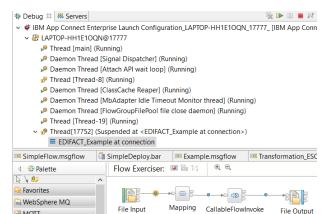
Callable Flows with EDIFACT and Salesforce
(software and IBM Cloud)

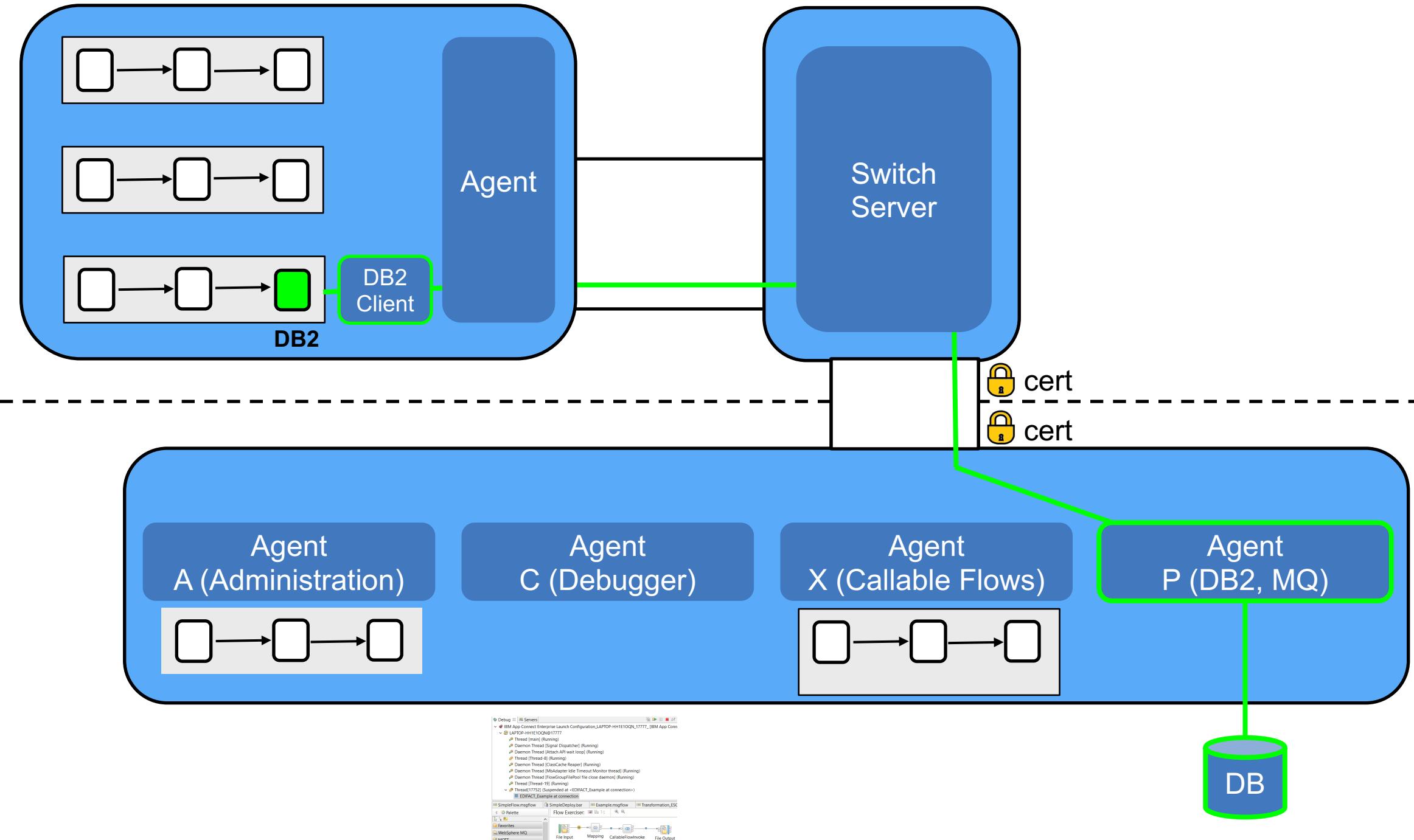


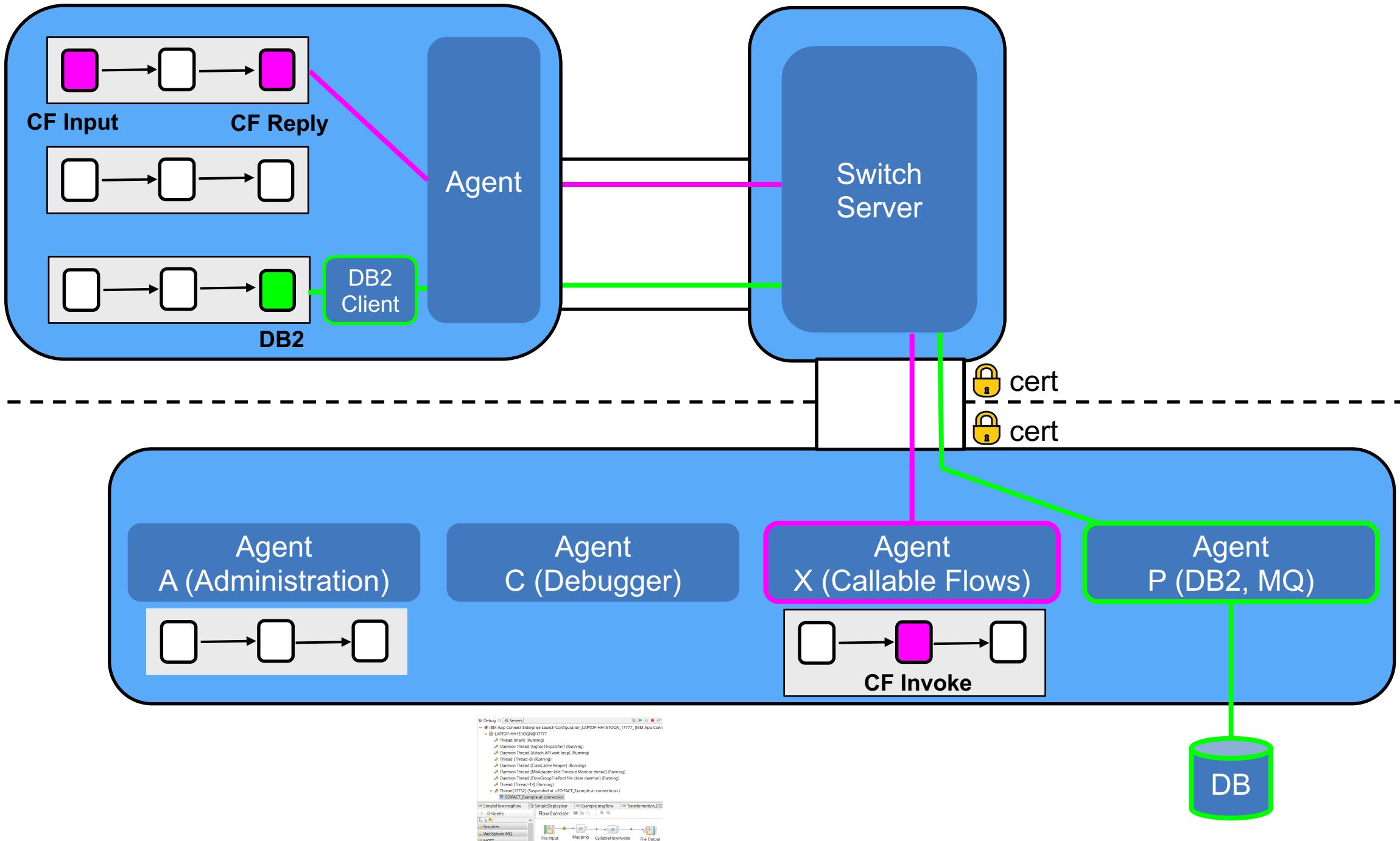
The Switch Server and its Agents
(software and IBM Cloud)

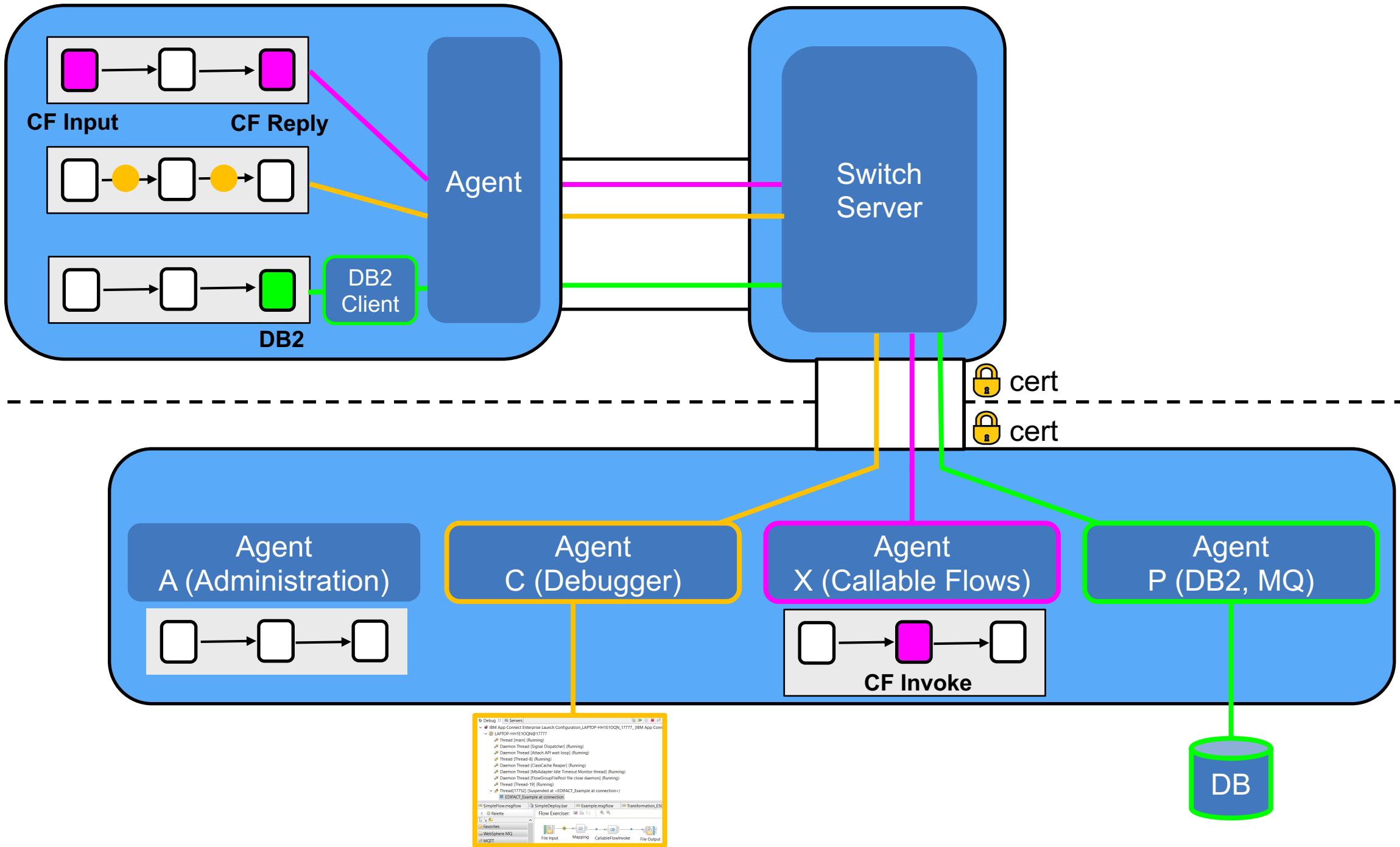


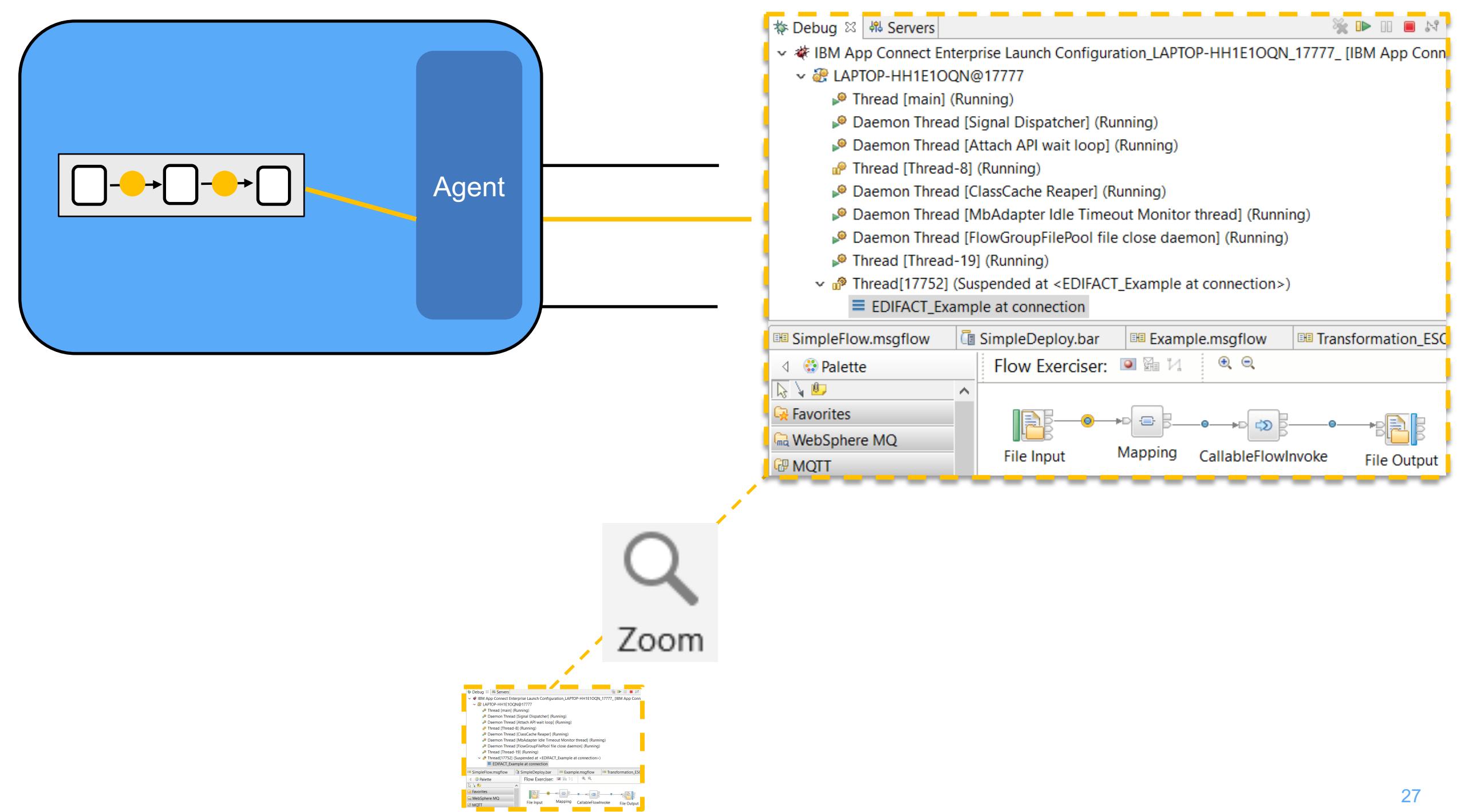
HTTPS request to set up
Secure websocket on port 443
using mutual authentication
certificate exchange

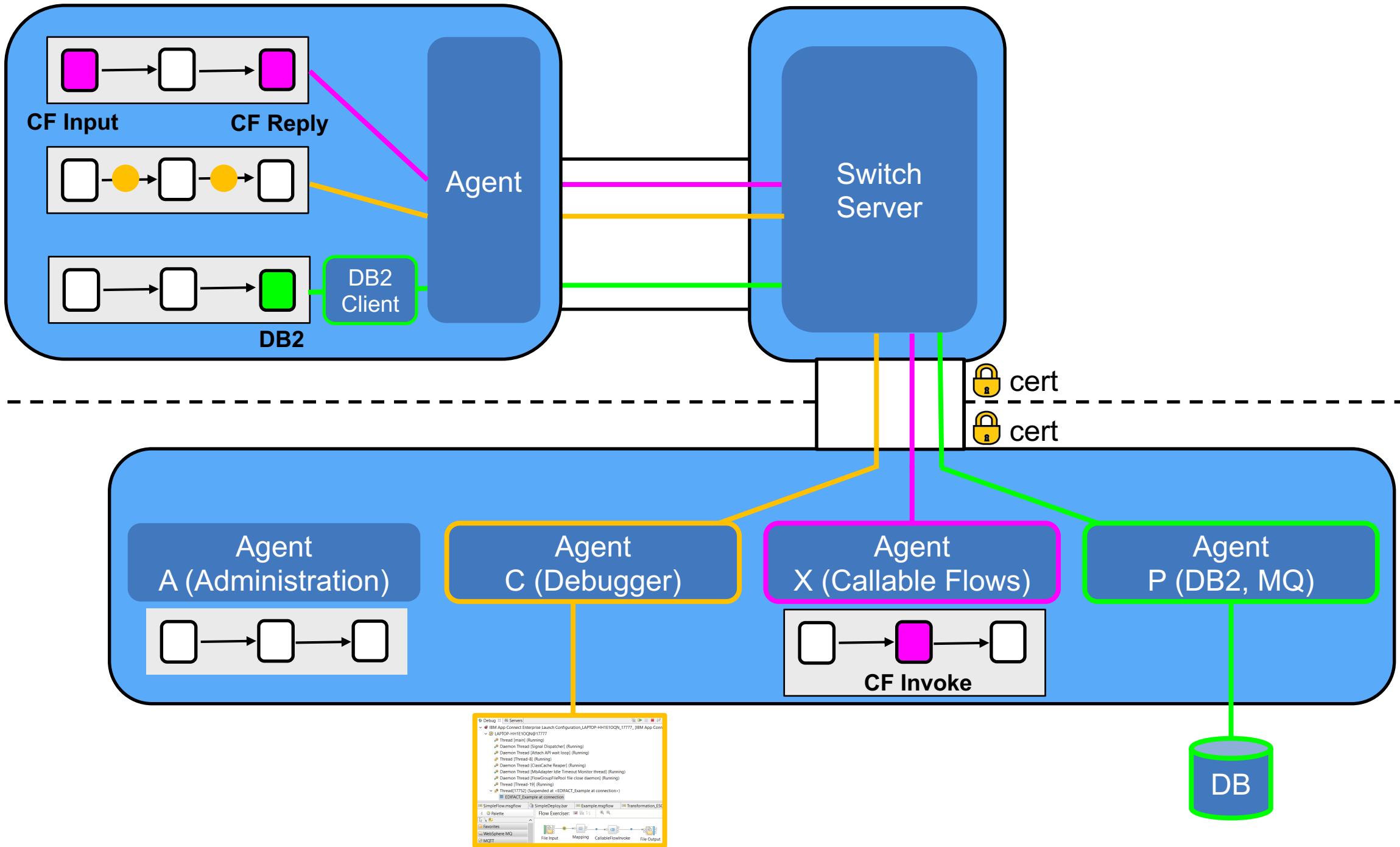


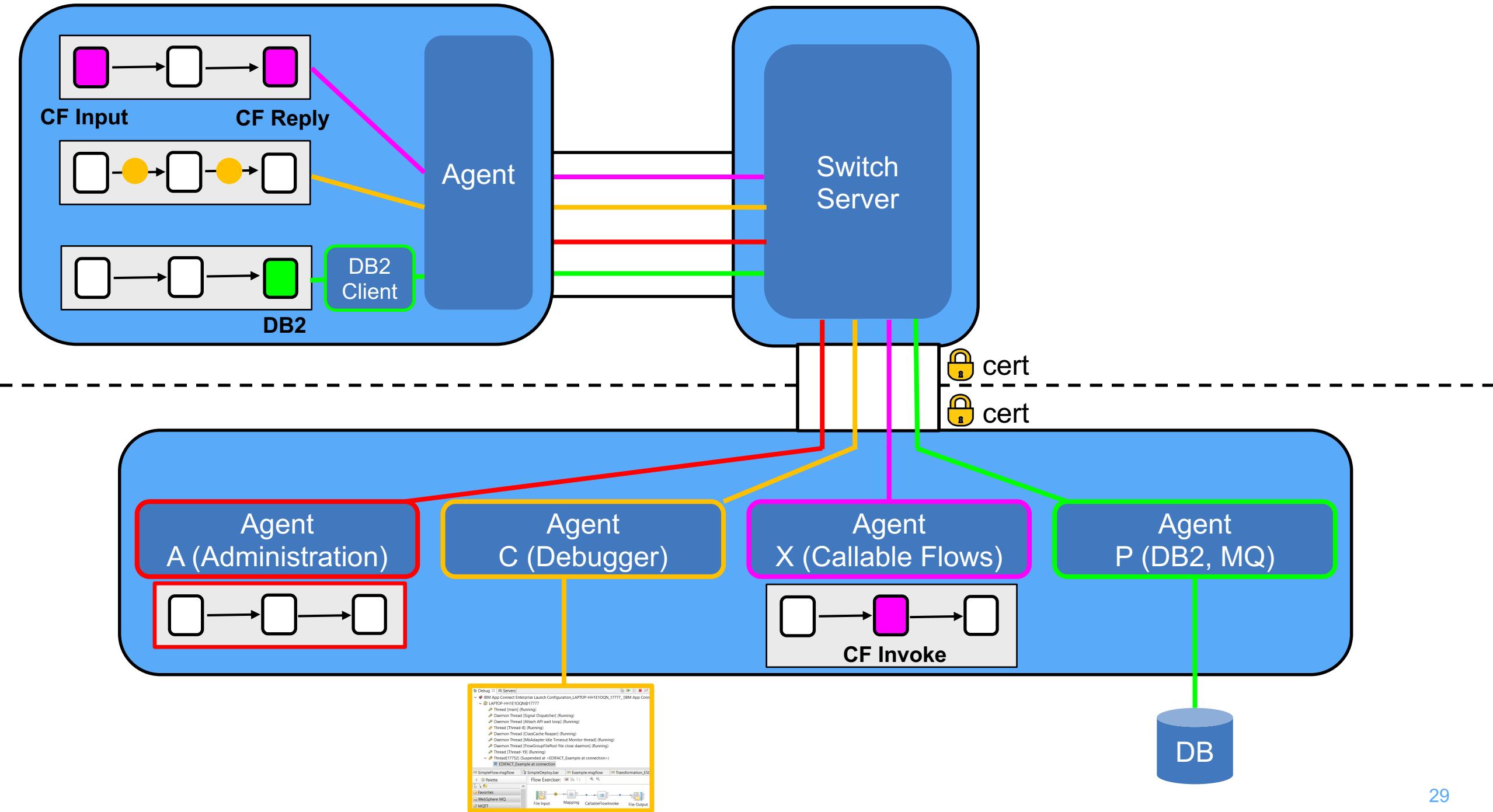














App Connect Enterprise Visual Debugger (for IBM Cloud)

<https://developer.ibm.com/integration/blog/2019/04/30/remotely-debug-your-enterprise-integrations-in-ibm-app-connect/>

Integration Development - RES

File Edit Navigate Search Pr

Application Development New...

- > app1
- > CustomerPostgreSQLDBV
- > DefaultPolicies
- > EDIFACT_Example
- > ExampleApp
- > JDBCinACEoC
- > PolicyProject
- > RESTRequest_API
 - REST API Description
 - > Resources
- > RESTRequest_Client
- > SimpleApp
- > Transformation_ESQL
- > EDIFACT-Common
- > EDIFACT-D03B
- > RESTRequest_SharedLibra
- > BARs

In... Da... Da...

Integration Servers

Integration Nodes

GREATWOLF - localhost:

- > debug
- > default
- > itx

Filter matched 20 of 20 items

Debug Configurations

Create, manage, and run configurations

Name: RemoteDebugACEoC

Connect Source Common

Generic Server(External Launch)

HTTP Properties Problems Outline Tasks Deployment Log Tutorial Steps View Progress

IBM Launching RemoteDebugACEoC

Launching : connecting to the JVM...

J2EE Building workspace (Sleeping)

Java OK

JUnit JUnit

m2 Maven Build

OSGi Framework

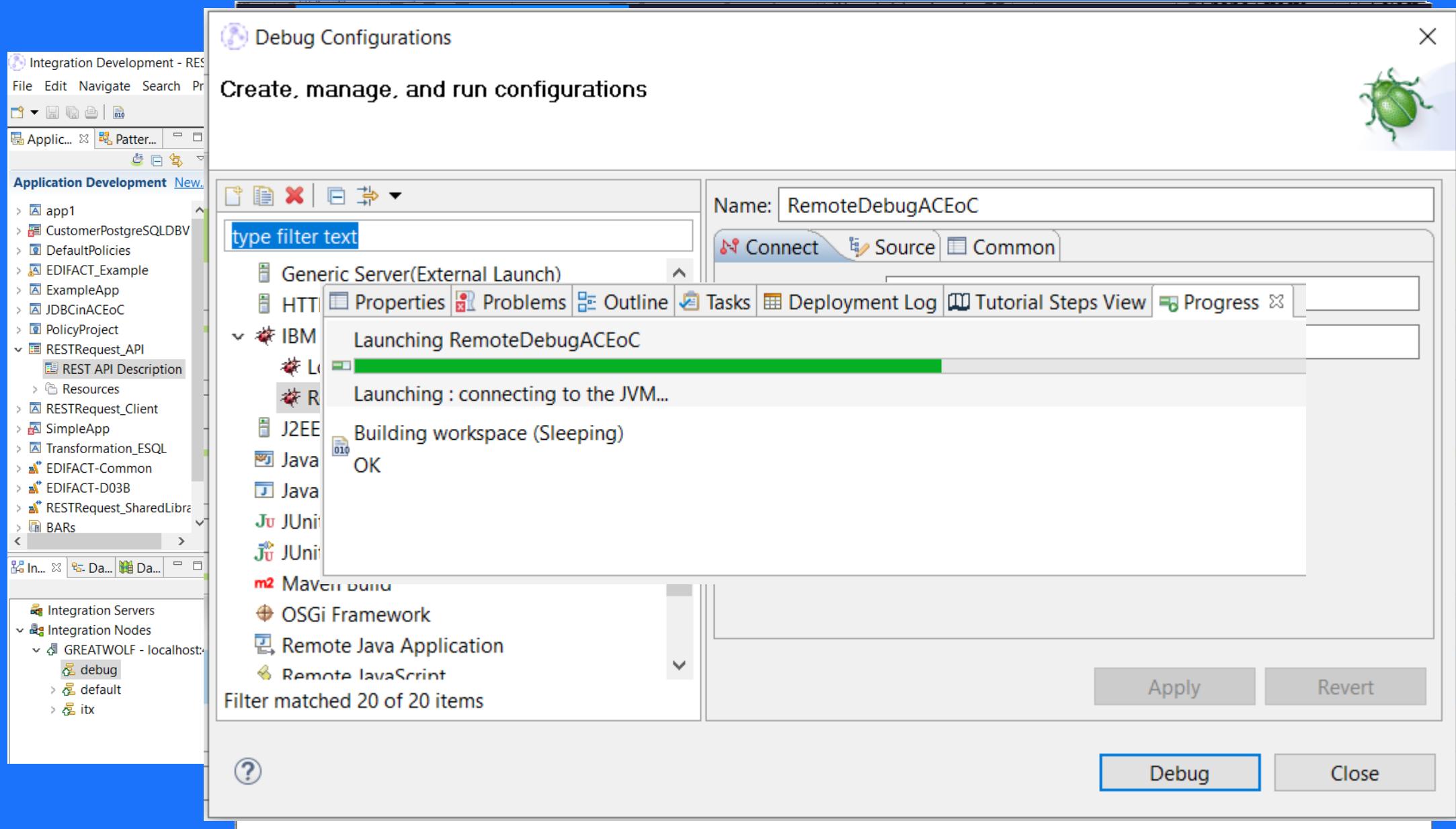
Remote Java Application

Remote JavaScript

Apply Revert

Debug Close

?



IBM

POST



Request

```
POST https://dmhjbtgf.demo.ace.ibm.com/restrequest_api/v1/User  
Headers:  
Content-Type: application/json  
Accept: application/json  
Authorization: Basic aWliOmRGdDcwYTFBV1E=
```

Response

```
Code: 200 OK  
Headers:  
content-type: application/json  
  
{  
  "userNumber": 4,  
  "firstName": "Rob",  
  "lastName": "Nicholson",  
  "userDetails": "BLUE"  
}
```

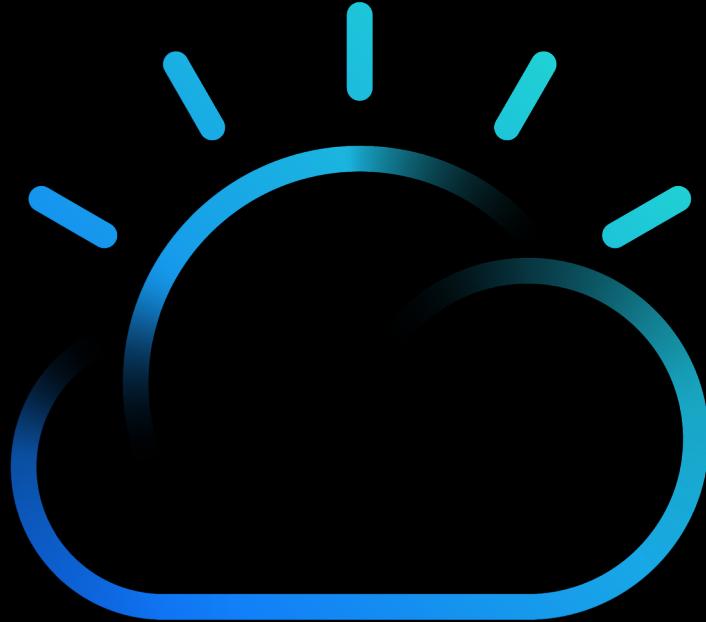
GET

Request

```
GET https://dmhjbtgf.demo.ace.ibm.com/restrequest_api/v1/User/4  
Headers:  
Content-Type: application/json  
Accept: application/json  
Authorization: Basic aWliOmRGdDcwYTFBV1E=
```

Response

```
Code: 200 OK  
Headers:  
content-type: application/json  
  
{  
  "userNumber": 4,  
  "firstName": "Rob",  
  "lastName": "Nicholson",  
  "userDetails": "BLUE"  
}
```



App Connect Enterprise Diagnostic Tracing
(in IBM Cloud)

Description

Route short name

https:// bbnctehd .ace.ibm.com

Logs



Download logs



View logs



To view logs, you'll need to create a Logging policy and attach it to this integration. To do this go to [Attached policies](#)



CustomerPostgreSQLDBV1

Description

Route short name

https:// bbnctehd .ace.ibm.com

Logs



Download logs



View logs

Opening integration.log

You have chosen to open:

integration.log

which is: Text Document (3.3 KB)

from: blob:

What should Firefox do with this file?

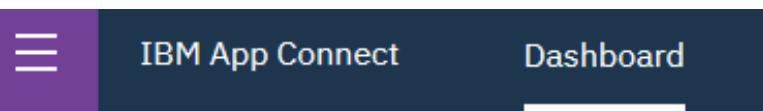
Open with Notepad (default)

Save File

Do this automatically for files like this from now on.

OK

Cancel

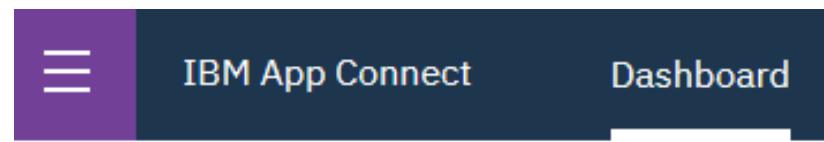


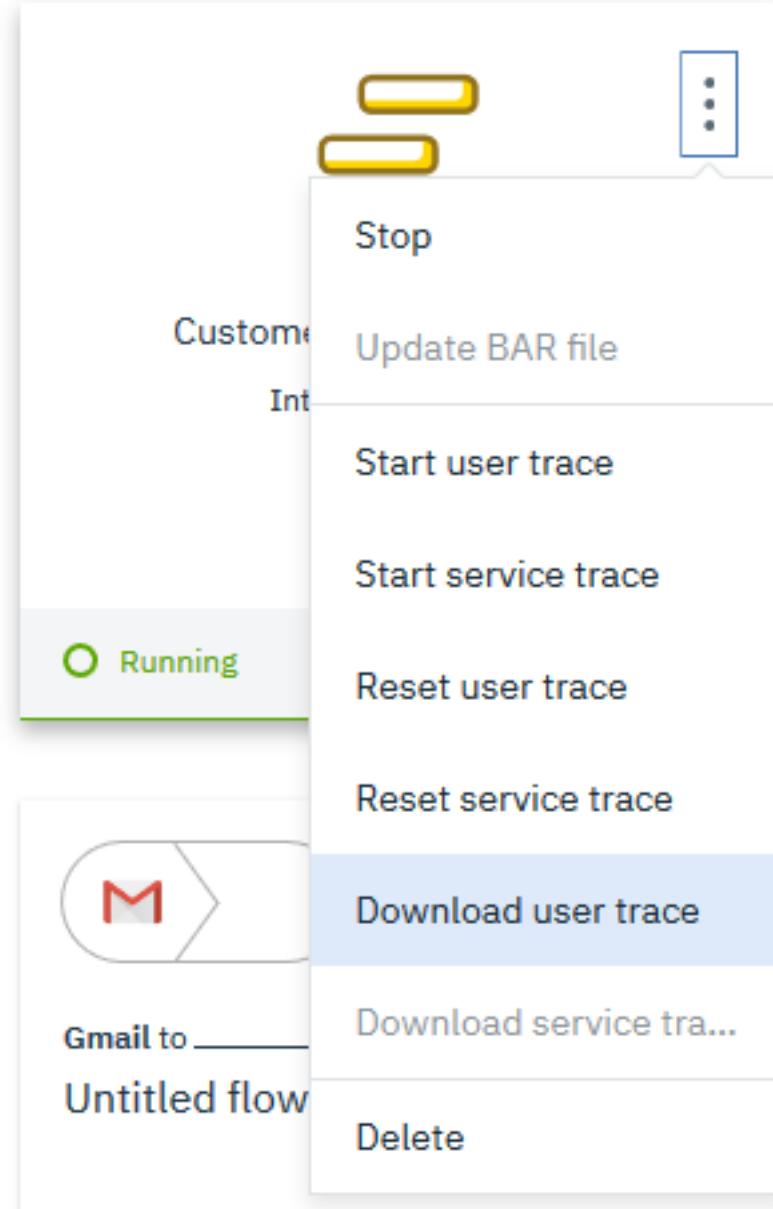
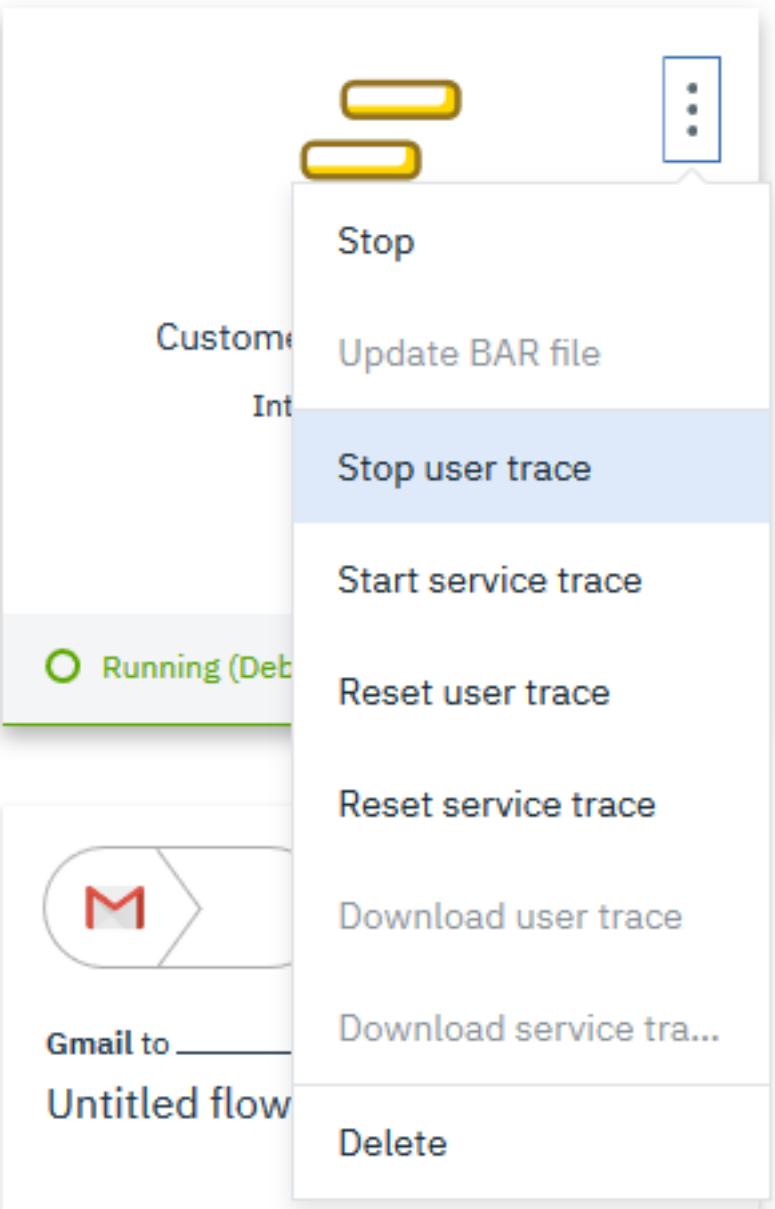
A screenshot of the IBM App Connect interface. On the left, there's a sidebar with a purple icon, followed by the text "IBM App Connect" and "Dashboard". Below this, a list of flows is shown:

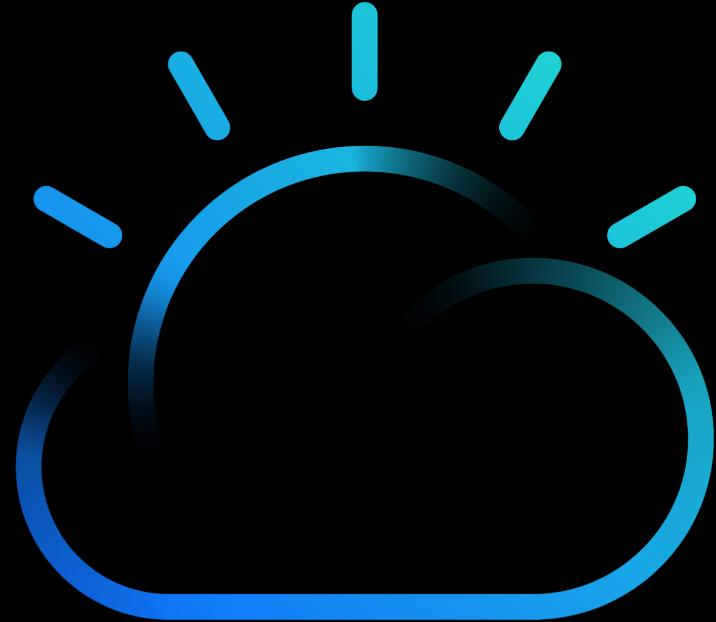
- CustomerPostgreSQLDBV1** (Integration server, 1 API, Running)
- Gmail to _____ (Untitled flow, Running)

For the first flow, a context menu is open, showing the following options:

- Stop
- Update BAR file
- Start user trace** (highlighted in blue)
- Start service trace
- Reset user trace
- Reset service trace
- Download user trace
- Download service tra...
- Delete







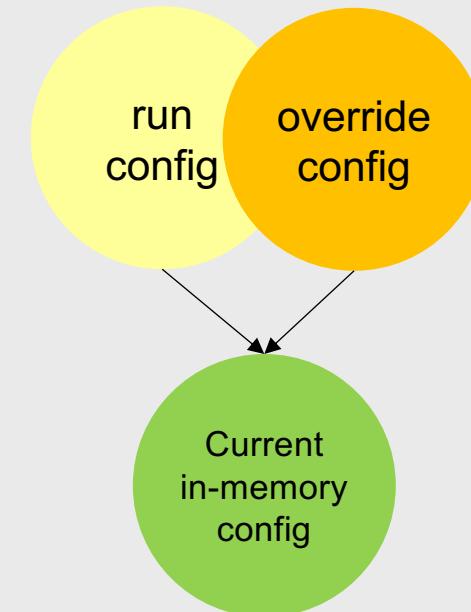
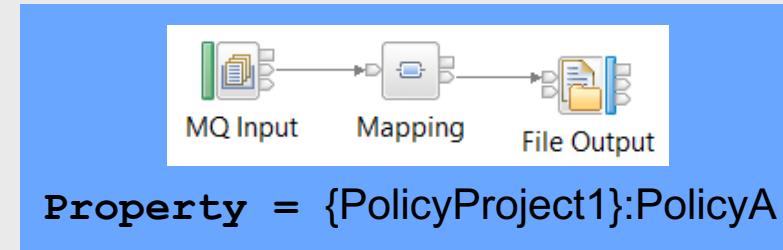
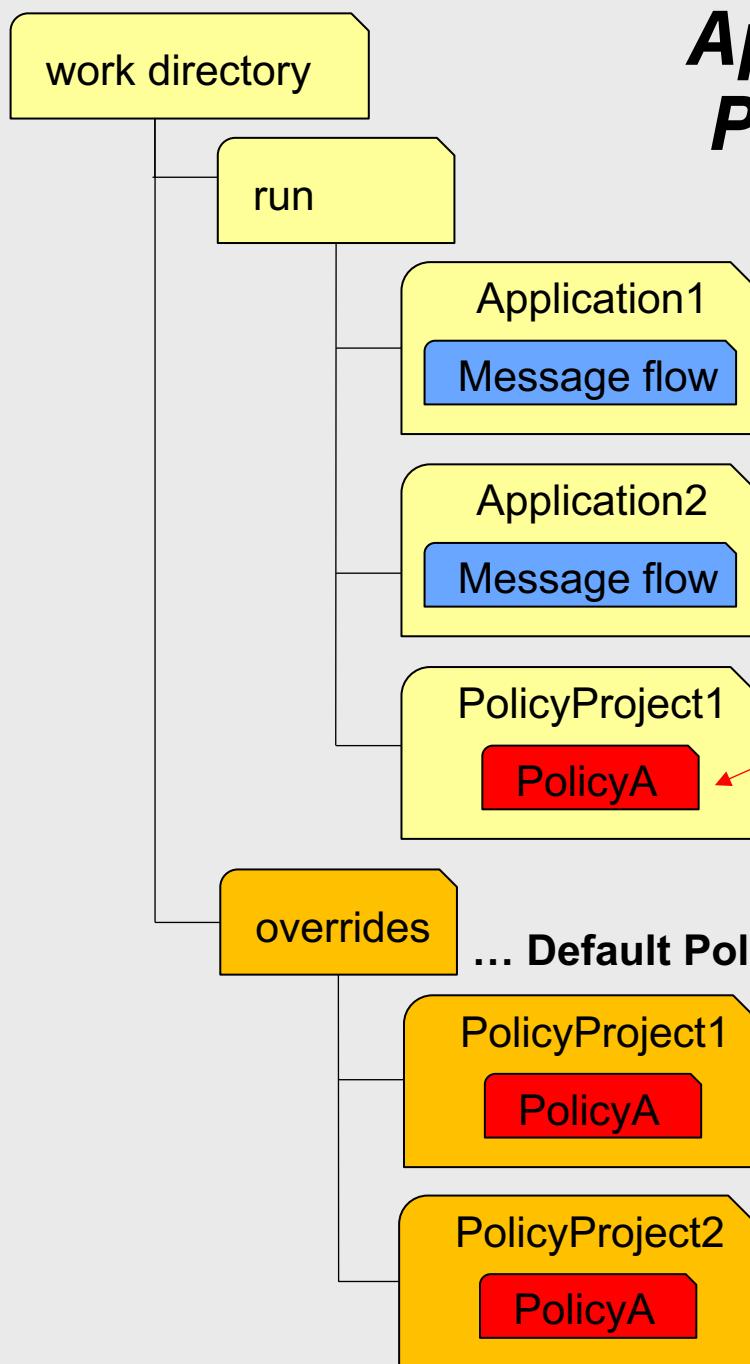
App Connect Enterprise Policies
(On-premises and IBM Cloud)

ACEv11 Policy Creation

The screenshot shows the IBM App Connect Enterprise Toolkit interface with the following details:

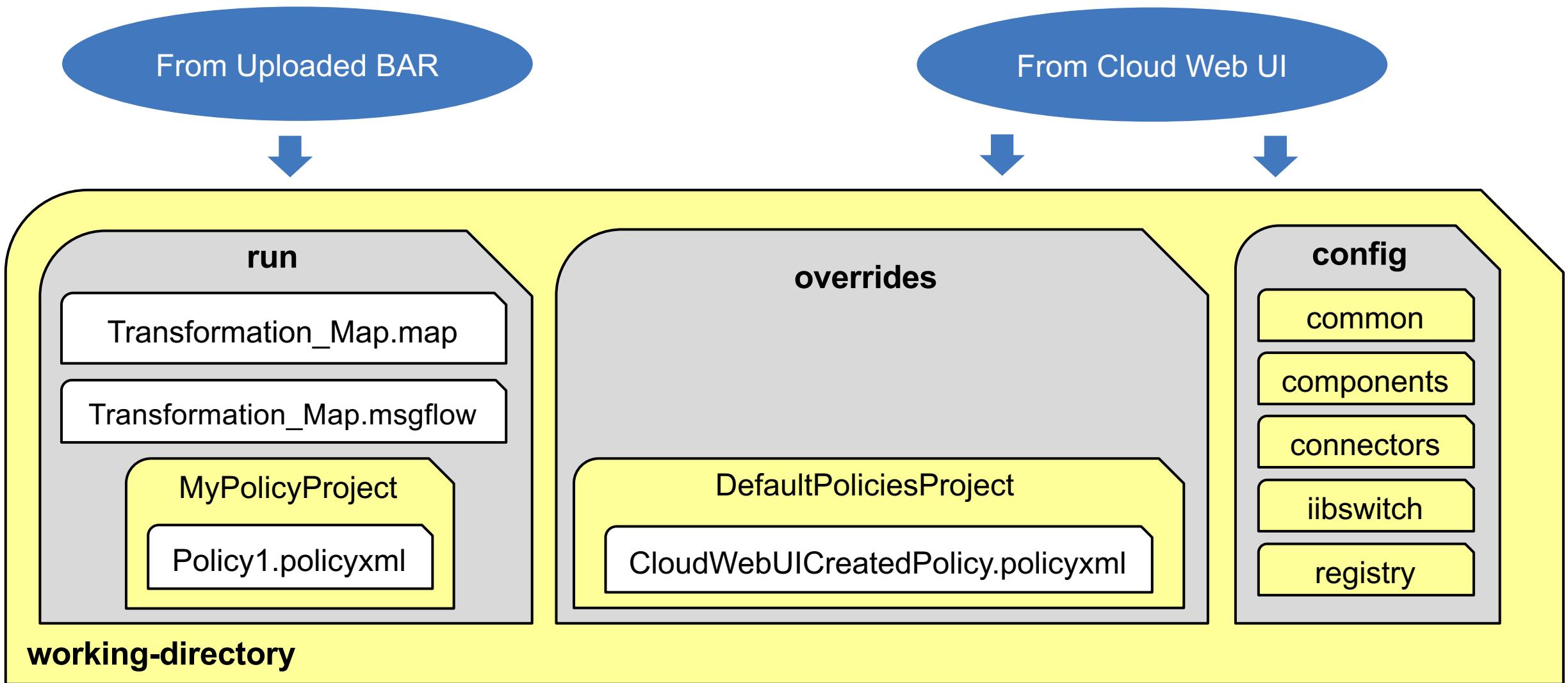
- Title Bar:** Integration Development - Getting Started - IBM App Connect Enterprise Toolkit - IBM App Connect Enterprise Toolkit - C:\Users\BENJAMINT...
- Menu Bar:** File Edit Navigate Search Project Run Window Help
- Toolbar:** Standard toolbar icons for file operations.
- Quick Access:** A search bar labeled "Quick Access" with a magnifying glass icon.
- Perspective Switcher:** Application Development (selected), Patterns Explorer, Integration Explorer, Data Project Explorer, Data Source Explorer.
- Application Development View:** Lists various resources:
 - RESTRequest_API
 - RESTRequest_Client
 - TemperatureConverter
 - Transformation_ESQL
 - Transformation_Java
 - Transformation_Map
 - RESTRequest_SharedLibrary
 - BARs
 - Independent Resources
- Getting Started - IBM App Connect Enterprise Toolkit View:** A "Quick Starts" section with the following items:
 - Start by exploring tutorials**: Use the **Tutorials** to learn more about the features in IBM App Connect Enterprise. [More...](#)
 - Start by creating an application**: An **Application** is a container for all the resources that are required to create a solution. [More...](#)
 - Start by creating an integration service**: An **Integration Service** is an application with a well-defined interface and structure. [More...](#)
 - Start by creating a REST API**: A REST API is an application with a well-defined interface and structure.
 - Start by creating a library**: A **Library** is a logical grouping of related code, data, or both. [More...](#)
- Properties View:** Shows a table with columns "Property" and "Value".

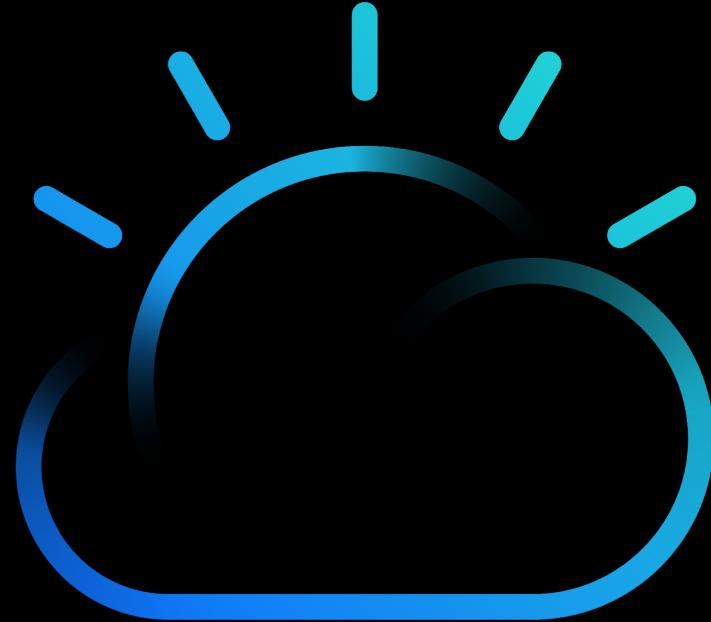
App Connect Enterprise Policies and Overrides



Controlling App Connect on Cloud (Enterprise Plan)

Container Policies





ODBC and JDBC to DB2 on Cloud
(IBM Cloud)



Using IBM App Connect enterprise capabilities with IBM Db2 on Cloud

IBM_Rob

Published on January 15, 2019 / Updated on February 27, 2019

0

[Hide TOC](#)[All Documentation](#)[▼ IBM App Connect \(IBM Cloud\)](#)

- [What's new in IBM App Connect](#)
- [Frequently asked questions about IBM App Connect](#)
- [Choosing and upgrading IBM App Connect](#)
- [IBM App Connect status](#)
- [Get started with IBM App Connect on IBM Cloud](#)
- [Extensive built-in connectivity using IBM App Connect](#)

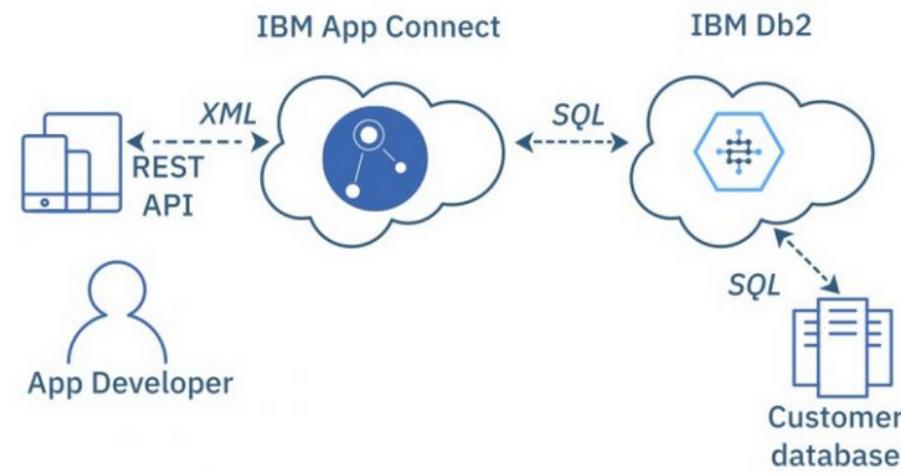
[▶ Integration use cases](#)[▶ Event-driven flows](#)[▶ APIs](#)[▶ Enterprise integrations](#)[▶ How-to guides for apps](#)[▶ Toolbox utilities](#)[▼ Tutorials for IBM App Connect](#)

- [Introduction: Creating an event-driven flow](#)
- [Introduction: Creating flows for an API \(Part 1\)](#)
- [Introduction: Creating flows for an API \(Part 2\)](#)
- [Adding a Mailchimp subscriber when a new message is added to Slack](#)
- [Adding a new record in Trello when a new](#)

Learn how to use IBM® App Connect on IBM Cloud™ (with a plan that provides enterprise capabilities) to retrieve data in IBM Db2® on IBM Cloud™.

Scenario:

Your company wants to process some personal data stored within a Db2 database that is hosted in Db2 on Cloud. An integration solution needs to be constructed that retrieves all the database records and returns them to the user. The integration solution is imported to run in IBM App Connect on IBM Cloud (with a plan that provides enterprise capabilities). This scenario could easily be extended to then process the data and send it to a REST application for example.



ODBC: <https://developer.ibm.com/integration/docs/app-connect/tutorials-for-ibm-app-connect/using-ibm-app-connect-enterprise-capabilities-with-ibm-db2-on-cloud/>

JDBC: <https://developer.ibm.com/integration/blog/2019/01/15/connecting-integrations-to-jdbc-endpoints-on-app-connect/>

```

MbMessage inMessage = inAssembly.getMessage();

// create new empty message
MbMessage outMessage = new MbMessage();
MbMessageAssembly outAssembly = new MbMessageAssembly(inAssembly,
    outMessage);
try {
    // optionally copy message headers
    copyMessageHeaders(inMessage, outMessage);
    // -----
    // Add user code below

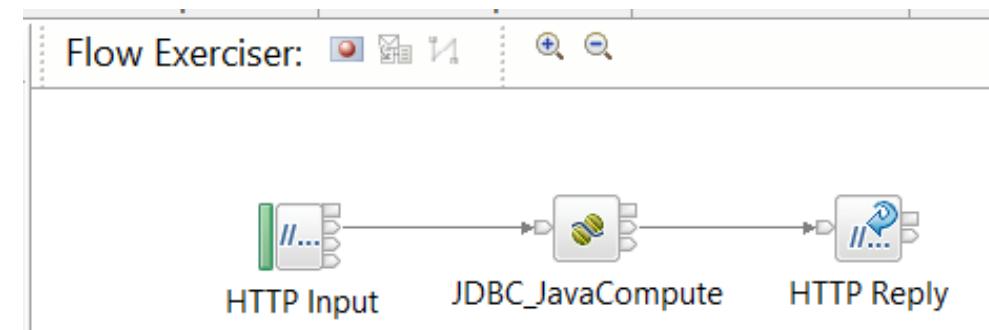
    MbElement outRoot = outMessage.getRootElement();
    MbElement outBody = outRoot.createElementAsLastChild(MbXMLNSC.PARSER_NAME);
    MbElement results = outBody.createElementAsLastChild(MbElement.TYPE_NAME, "Results", null);

    Connection conn = getJDBCType4Connection("BLUDB",
        JDBC_TransactionType.MB_TRANSACTION_AUTO);

    // Example of using the Connection to create a java.sql.Statement
    Statement stmt = conn.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,
        ResultSet.CONCUR_READ_ONLY);
    ResultSet rs = stmt.executeQuery("SELECT * FROM TEST");
    while (rs.next()) {
        MbElement customer = results.createElementAsLastChild(MbElement.TYPE_NAME, "Customer", null);
        customer.createElementAsLastChild(MbElement.TYPE_NAME_VALUE, "Number", rs.getInt("NUMBER"));
        customer.createElementAsLastChild(MbElement.TYPE_NAME_VALUE, "Name", rs.getString("NAME"));
    }
}

// End of user code
// -----

```



Policy

Set the attributes for a Policy

Name	BLUDB
Type	JDBC Providers
Template	DB2_91
Property	Value
Name of the database*	BLUDB
Type of the database	DB2 Universal Database
Version of the database	9.1
JDBC driver class name*	com.ibm.db2.jcc.DB2Driver
JDBC type 4 data source class name*	com.ibm.db2.jcc.DB2XADataSource
Connection URL format*	jdbc:db2://dashdb-txn-sbox-yp-lon02-01.services.eu-gb.bluemix.net:50000/BLUDB:user=rgn44746;password=54t0...
Connection URL format attribute 1	
Connection URL format attribute 2	
Connection URL format attribute 3	
Connection URL format attribute 4	
Connection URL format attribute 5	
Database server name*	dashdb-txn-sbox-yp-lon02-01.services.eu-gb.bluemix.net
Database server port number*	50000
Type 4 driver class JARs URL	
Name of the database schema	useProvidedSchemaNames
Data source description	
Maximum size of connection pool	0
Security identity (DSN)	default_User@default_Server
Environment parameters	
Supports XA coordinated transactions	false
Use JAR files that have been deployed in a .bar file	true

IBM Db2 Warehouse on Cloud

Storage: 2%

RUN SQL

Run ▾ Script ▾ Edit ▾ Favorites ▾ New tab

```
1 CREATE TABLE TEST (NUMBER int, NAME varchar(255));
2 INSERT INTO TEST (NUMBER, NAME) VALUES (10, 'Ben');
3 INSERT INTO TEST (NUMBER, NAME) VALUES (1, 'Rob');
4
5 SELECT * FROM TEST
```

Saved scripts

Result

Filter by status:

All

Delete All

▼ All(1), Failed(0)



✓ SELECT * FROM TEST

▼ All(3), Failed(0)



✓ CREATE TABLE TEST (NUMBER int, NAME varchar(255))

✓ INSERT INTO TEST (NUMBER, NAME) VALUES (10,'Ben')

✓ INSERT INTO TEST (NUMBER, NAME) VALUES (1,'Rob')

Result set Log

NUMBER	NAME
--------	------

10	Ben
----	-----

1	Rob
---	-----

Db2 Warehouse
IBM • Dedicated

Db2 Warehouse on Cloud is a flexible and powerful data warehouse for enterprise-level analytics.

JDBCinACEoC.bar

Manage

Rebuild, remove, edit, add resources to BAR and configure their properties

Filter by: <Type filter text>

Name	Type	Modified	Size	Path
BLUDB.policyxml	POLICYXML file	15-Jan-2019 10:35:14	560	DefaultPolicies
JDBCinACEoC	Application	15-Jan-2019 10:35:14	4050208	
application.descriptor	15-Jan-2019 10:35:14	15-Jan-2019 10:35:14	134	
db2jcc4.jar	JAR file	15-Jan-2019 10:35:14	4043939	
JDBC.msgflow	Message flow	15-Jan-2019 10:35:14	665	
JDBCJava.jar	JAR file	15-Jan-2019 10:35:14	2734	
policy.descriptor	15-Jan-2019 10:35:14	15-Jan-2019 10:35:14	150	DefaultPolicies



IBM App Connect

Dashboard

Catalog

Templates

Notifications



Ben Thompson

Dashboard / JDBCinACEoC

Contents

Attached policies

Stopped



Attached policies

[Manage](#)

You haven't attached any policies yet. [Attach a policy](#)

A policy holds a set of configuration information that extends the properties on the message flow nodes, and can be attached to an integration server.

Command Prompt

```
C:\Users\BENJAMINThompson>curl -X POST https://jwhzcmej.ace.ibm.com/jdbc -u iib:eSLJ272Nr0
<Results><Customer><Number>10</Number><Name>Ben</Name></Customer><Customer><Number>1</Number><Name>Rob</Name></Customer></Results>
C:\Users\BENJAMINThompson>
```

Notifications  Ben Thompson

New 

 JDBCinACEoC
Integration server
1 application

 Running

HTTPS basic authentication settings

Basic authentication On

Regenerate credentials

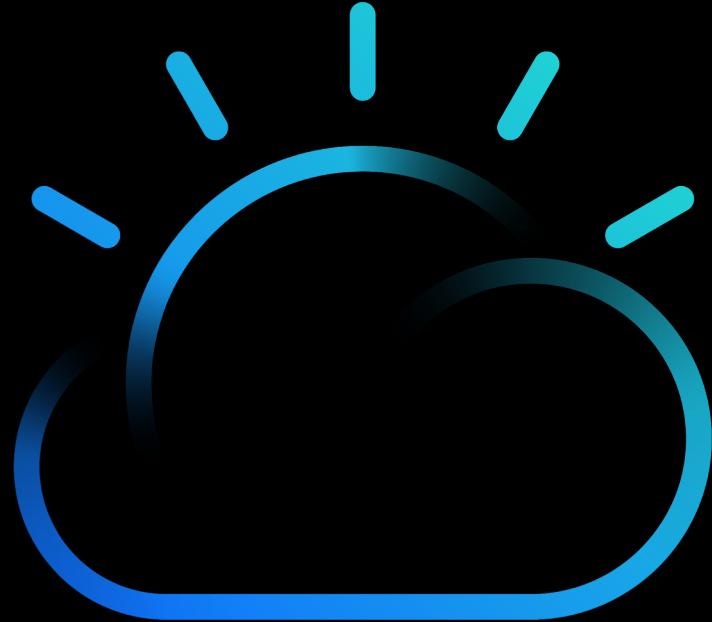
Host: `https://jwhzcmej.ace.ibm.com`

User name: `iib` Password: 

 Copy to clipboard

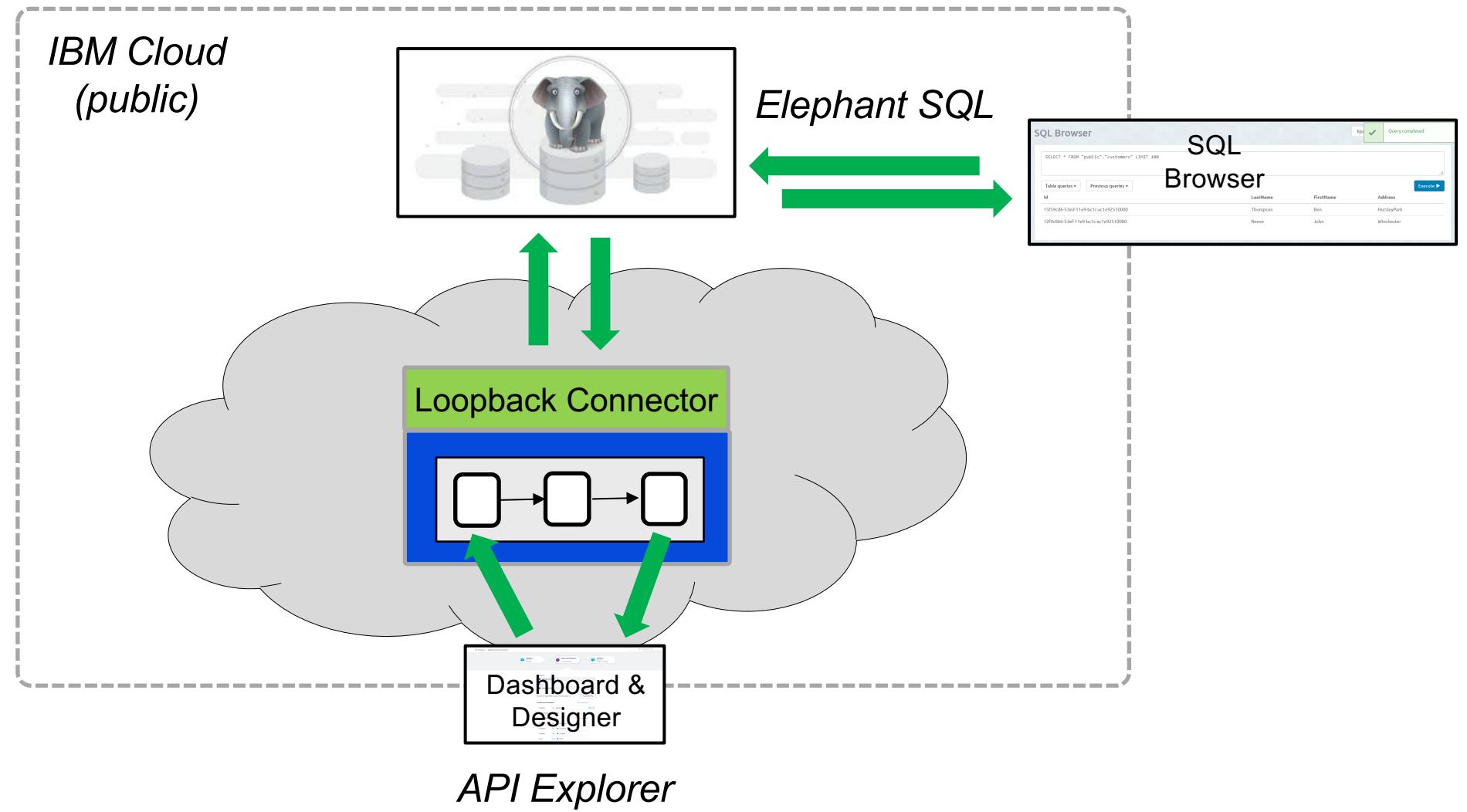
HTTPS basic authentication header: 

 Copy to clipboard



App Connect Enterprise and NoSQL Databases
(IBM Cloud)

Using App Connect Enterprise to integrate with PostgreSQL



Using IBM App Connect enterprise capabilities to invoke REST operations on a PostgreSQL database

CU99_john_reeve

Published on March 13, 2019

0

[Hide TOC](#)

[All Documentation](#)

▼ [IBM App Connect \(IBM Cloud\)](#)

- [What's new in IBM App Connect](#)
- [Frequently asked questions about IBM App Connect](#)
- [Choosing and upgrading IBM App Connect](#)
- [IBM App Connect status](#)
- [Get started with IBM App Connect on IBM Cloud](#)
- [Extensive built-in connectivity using IBM App Connect](#)
- ▶ [Integration use cases](#)
- ▶ [Event-driven flows](#)
- ▶ [APIs](#)
- ▶ [Enterprise integrations](#)
- ▶ [How-to guides for apps](#)
- ▶ [Toolbox utilities](#)
- ▼ [Tutorials for IBM App Connect](#)

Learn how to use IBM® App Connect on IBM Cloud™ (with a plan that provides enterprise capabilities) to expose a REST API to a PostgreSQL database table.

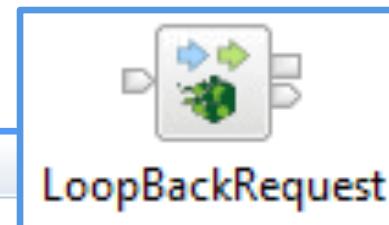
Scenario:

You want to store customer details in a database and would like to be able to invoke REST operations to create, retrieve, and delete customers. You've chosen PostgreSQL as the database and want to construct a REST API to allow controlled access to the customer data.

To achieve this, we've provided a [BAR file](#) for you to import into App Connect on IBM Cloud, to deploy an integration solution that implements a REST service to create, retrieve, and delete customer data in a PostgreSQL data source. In the integration solution, a [LoopBackRequest node](#) is used to issue synchronous requests through a LoopBack connector for PostgreSQL, to perform CRUD operations on a PostgreSQL database table. You'll need to configure the LoopBackRequest node to add a data-source stanza that defines the PostgreSQL instance to be accessed, and to provide a LoopBack model for the data source. You'll also need to specify security credentials that the LoopBackRequest node can use to connect to the PostgreSQL data source. You can define the data-source stanza, the model of the LoopBack object, and the security identity by creating policies in App Connect on IBM Cloud.

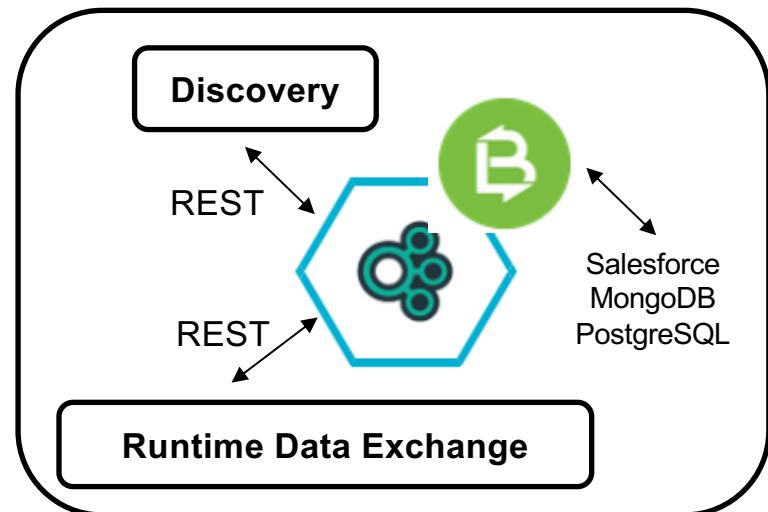
Loopback Request Node Reminder

- Create, Retrieve, Update, Delete data records in external systems
- Interact with NoSQL databases such as MongoDB, Cloudant and PostgreSQL
- LoopBack is an Open Source node.js framework for authoring connectors – large open source catalog available on line
- npm tool helps you download and install LoopBack connectors which others have already written



LoopBackRequest

Loopback Request Node Properties - Loopback Request	
Description	
Basic	Location of the datasources.json file*
Request	Name of the data source in the datasources.json file to connect to*
Result	
Loopback object*	
Response Message Parsing	
Monitoring	
Security identity	
Timeout (milliseconds)	



IIB LoopBack Request node: https://youtu.be/rUK_OQ5-Anw

Using IIB to integrate with MongoDB and Cloudant: <https://youtu.be/lS1pphngUIM>

PostgreSQL as a Service

Perfectly configured and optimized PostgreSQL databases ready in 2 minutes.



Get a managed database today



https://customer.elephantsql.com/instance/



Search



ElephantSQL

List all instances ▾



bthomps@uk.ibm.com ▾

Instances

+ Create New Instance

Name	Host	Plan	Datacenter	Actions
ACEinstance	isilo	Turtle	Amazon Web Services US-East-1 (Northern Virginia)	Edit

Setting up the Service

Dashboard /

 ElephantSQL-k7 ⋮

Resource Group: default Location: Dallas

DETAILS **ALARMS** **BROWSER** **STATS** **SLOW QUERIES** **BACKUP** **LOG** **METRICS** **ADMIN** **INTEGRATIONS**

Details

Server isilo.db.elephantsql.com (isilo-01)

User & Default database kjuvxwij Reset

Password TY93cFDZvheoquHAE6mR96QhZqjT8b1a ↻ Rotate password

URL postgres://kjuvxwij:TY93cFDZvheoquHAE6mR96QhZqjT8b1a@isilo.db.elephantsql.com:5432/kjuvxwij

Active Plan



Tiny Turtle

Creating a Simple Table Structure

The screenshot shows a window titled "SQL Browser". In the top right corner, there is a search bar containing the text "kjuvxwijj" with a dropdown arrow icon. The main area contains a code editor with the following SQL query:

```
CREATE TABLE Customers (
    "Id" varchar(255),
    "LastName" varchar(255),
    "FirstName" varchar(255),
    "Address" varchar(255)
);
```

The code editor has scroll bars on the right side. At the bottom of the window, there are three buttons: "Table queries ▾", "Previous queries ▾", and a large blue "Execute ▶" button.

Details

Server isilo.db.elephantsql.com (isilo-01)

User & Default database kjuvwxwij

Password TY93cFDZvheoquHAE6mR96QhZqjT8b1a

URL postgres://kjuvwxwij:TY93cFDZvheoquHAE6mR96QhZqjT8b1a@isilo.db.elephant
xwij

Current database size 16 KB

Max database size 20 MB

```
graph LR; Input[Input] --> GenerateId[Generate id]; GenerateId --> CreatePostgreSQL[CreatePostgreSQL]; CreatePostgreSQL --> Output[Output]
```

LoopBackRequest Node Properties - CreatePostgreSQL

Description	Data source name*
Basic	postgresqlsds
Request	customers
Result	Create
Response Message Parsing	postgresqlsi
Monitoring	30000
Timeout (milliseconds)	

Create a policy

*Policy type: PostgreSQL (LoopBack)

*Policy name: ElephantSQL datasource

*Datasource name: postgresqlsds

Host: isilo.db.elephantsql.com

*Port: 5432

Database name: kjuvwxwij

Create

Details

Server isilo.db.elephantsql.com (isilo-01)

User & Default database kjuvxwij

Password TY93cFDZvheoquHAE6mR96QhZqjT8b1a

URL postgres://kjuvxwij:TY93cFDZvheoquHAE6mR96QhZqjT8b1a@isilo.db.elephant...
xwij

Current database size 16 KB

Max database size 20 MB

```
graph LR; Input[Input] --> GenerateId[Generate id]; GenerateId --> CreatePostgreSQL[CreatePostgreSQL]; CreatePostgreSQL --> Output[Output]
```

LoopBackRequest Node Properties - CreatePostgreSQL

Description	Value
Basic	Data source name* postgresqls
Request	LoopBack object* customers
Result	Operation Create
Response Message Parsing	Security identity postgresqlsi
Monitoring	Timeout (milliseconds) 30000

Create a policy

*Policy type: PostgreSQL (LoopBack)

5432

Database name: kjuvxwij

Models:

customers.json [Delete](#)

Add Model:
Select a file...
or drag and drop here

Connect to PostgreSQL via the public internet

Use SSL

Custom properties

[Cancel](#) [Create](#)

Create a Generic Security Identity Policy

Create a policy

*Policy type:
Generic (Security Identity)

*Policy name:
ElephantSQL security identity

*Security Identity:
postgreslsi
This should match the value set in your node

*Security Identity Type:
loopback
This should match the type of security identity you want like loopback or mqtt

*User name:
kjuvxwjj

*Password:

[Cancel](#) [Create](#)

Generic Security Identity Policy Name

Security Identity Name

Type of Security Identity

Username

[← Dashboard](#) / Policies

Search policies



New

Name	Status	Type	Used by
BLUDB	Not connected	Db2 (ODBC)	1 integration server
ElephantSQL datasource		PostgreSQL (LoopBack)	1 integration server
ElephantSQL security identity		Generic (Security Identity)	1 integration server



CustomerPostgreSQLDBV1

Integration server

1 API

 Preparing

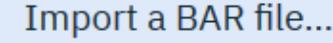
Search 



Event-driven flow

Flows for an API

Import flow...

 Import a BAR file...

Integration server

 Import a BAR file

A BAR file contains integration assets that you create in the IBM App Connect Enterprise Toolkit. [Learn more.](#)

 CustomerPostgreSQLDBV1.bar

 Cancel  Import Bar

Dashboard / **CustomerPostgreSQLDBV1**

[Contents](#) **Attached policies** Stopped ⋮

Description

Route short name <https://bbnctehd.ace.ibm.com>

Logs [Download logs](#) [View logs](#) [i](#)

CustomerPostgreSQLDBV1 [Show API Explorer](#)

Flow	Inputs
deleteCustomer	-
addCustomer	-
getAllCustomers	-
gen.CustomerPostgreSQLDBV1	HTTP Input: https://bbnctehd.ace.ibm.com/customerdb/v1* Copy to clipboard Credentials



Manage attached policies

Cancel

Save

Name	Status	Type
<input checked="" type="checkbox"/> ElephantSQL datasource		PostgreSQL (LoopBack)
<input checked="" type="checkbox"/> ElephantSQL security identity		Generic (Security Identity)
<input type="checkbox"/> BLUDB	⚠ Not connected	Db2 (ODBC)
(+ Create and attach a policy)		

Attached policies

[Manage](#)

Name	Status	Type
ElephantSQL datasource		PostgreSQL (LoopBack)
ElephantSQL security identity		Generic (Security Identity)



- [Start](#)
- [Update BAR file](#)
- [Delete](#)

Customer
Integration server

Stopped



CustomerPostgreSQLDBV1

Integration server

1 API

Starting



CustomerPostgreSQLDBV1

Integration server

1 API

Running

HTTPS basic authentication settings

Description

Route short name

<https://bbnctehd.ace.ibm.com>

Logs

[Download logs](#)

[View logs](#)



API CustomerPostgreSQLDBV1

Show API Explorer

Flow

Inputs

deleteCustomer

-

addCustomer

-

getAllCustomers

-

gen.CustomerPostgreSQLDBV1

HTTP Input: https://bbnctehd.ace.ibm.com/customerdb/v1*

[Copy to clipboard](#) [Credentials](#)

Search

Operations by name

getAllCustomers

addCustomer

deleteCustomer

Definitions

Customer

CustomerCreate

addCustomer
Add a customer to the database

Security

Basic Auth basic Basic Auth

Body

CustomerCreate CustomerCreate, required in body schema
The customer to add to the database

POST https://bbnctehd.ace.ibm.com/customerdb/v1/customers

Examples Try it

Authorization

Username iib

Password *****

Type Headers

Content-Type application/json

Accept application/json

Parameters

body *

```
{  
  "firstname": "Ben",  
  "lastname": "Thompson",  
  "address": "HursleyPark"  
}
```

Generate

Call operation

First Insert

Parameters

body *

```
{  
  "firstname": "John",  
  "lastname": "Reeve",  
  "address": "Winchester"  
}
```

Generate

Call operation

SQL Browser

Req
POS
Hea
Con
Acc
Auth

```
SELECT * FROM "public"."customers" LIMIT 100
```

kju



Query completed

Resp

		Last Name	First Name	Address
	15f59cd6-53ed-11e9-bc1c-ac1e92510000	Thompson	Ben	Hursley Park
	12f9c866-53ef-11e9-bc1c-ac1e92510000	Reeve	John	Winchester

Cod
Hea

Content-type: application/json; charset=UTF-8

Second Insert

SQL Browser



Query completed



```
SELECT * FROM "public"."customers" LIMIT 100
```



Table queries ▾

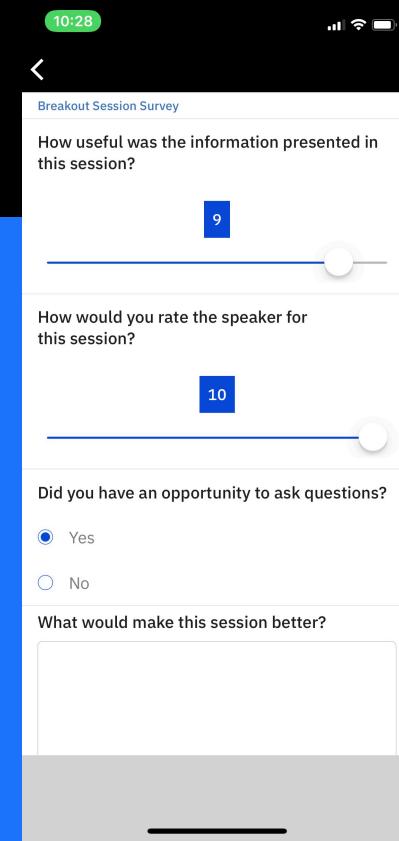
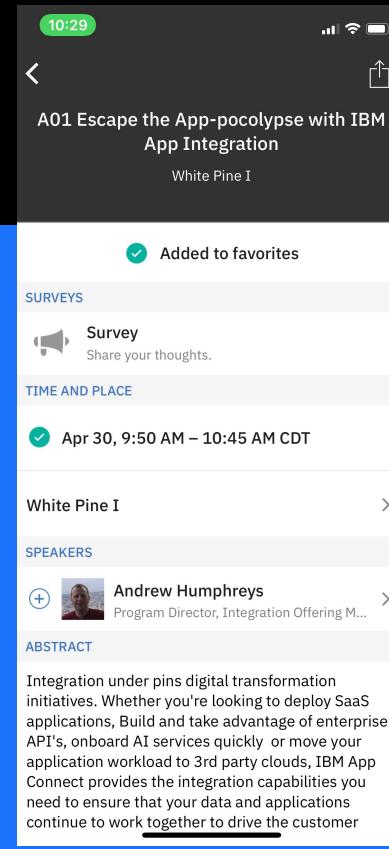
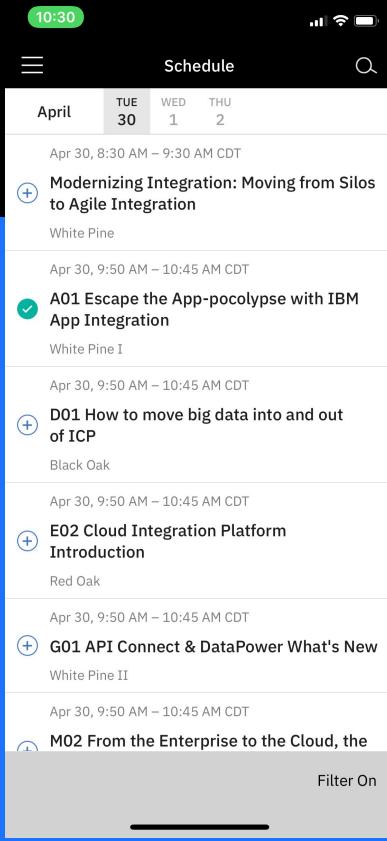
Previous queries ▾

Execute ►

Id	Lastname	Firstname	Address
15f59cd6-53ed-11e9-bc1c-ac1e92510000	Thompson	Ben	HursleyPark
12f9c866-53ef-11e9-bc1c-ac1e92510000	Reeve	John	Winchester

Thank You





IBM

A11

A11

Don't forget to fill out the survey!
Select your session, select survey, rate the session and submit!