WSO2CON 2024

Why Should You Consider Ballerina for Your Next Integration?



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WSO2



Ballerina is an integration technology developed by WSO2

The Right Approach to Integration

Low-Code-First

- Low-code integration products
- Integrations with DSLs
- Call-out to general purpose languages when necessary

Code-First

- General purpose programming languages and frameworks
- Integrations with general purpose languages
- Visual tools for mundane, time-consuming tasks

Code-First Integration: Advantages

- Highly customizable
- Scalable and Adaptable
- Ability to leverage existing developer skills
- Seamless integration with development ecosystem
- Use of open source technologies
- No vendor lock-in

The Trend...

https://www.gartner.com/en/documents/4706999

Gartner Research

5 Steps to Implement Code-First Integration

Published: 05 September 2023

Summary

A code-first, open-source approach to integration can reduce vendor-related licensing costs, but there ar
safely adopt this approach a
follow the five steps outline

You Can't Buy Integration

Commercial integration tools are a couple decades old now, but there has been little i
way of overarching architectural principles describing when and how to use them. In
article, I argue that "buy" decision mechanics have caused us to exaggerate the value
proposition of such tools, often leading to mandates to use a certain integration tool
a general purpose language. I claim that such tools thrive in a world that views
integration as primarily about connecting systems, but that digital organizations ha
reimagined integration to be primarily about putting clean interfaces in front of digital
capabilities, emphasizing capabilities over systems. Finally, I list some of the key
principles behind a modern view of integration and claim they are best managed with a
general purpose language, reorienting the primary value proposition of commercial
integration tools towards simplifying tactical implementation concerns.

https://martinfowler.com/articles/cant-buy-integration.html

Gartner Research

3 Must-Haves to Safely Support Code-Based Approaches to Enterprise Integration

Published: 31 August 2020

Summary

Developers want to use simpler code-based integration, but application leaders responsible for integration fear its impact on production stability. To safely support this approach, they must define a clear domain architecture, categorize integration patterns and govern when it can be used.

https://www.gartner.com/en/documents/3989650


GENERAL-PURPOSE PROGRAMMING LANGUAGES AND FRAMEWORKS FOR ENTERPRISE INTEGRATION
JAVA
SPRING
APACHE CXF
DIGITAL


Azure SDK for Java
AWS SDK for Java
Gradle
HIBERNATE
MVN REPOSITORY
Maven
Netty project
Java
spring
gson
Spring Boot
GraphQL Java
TestNG
JUnit 5



Other languages are great, but...

- Do not speak integration
- Dependency management
- Inconsistencies in everything
- Integration tooling

There is nothing inherently wrong with other programming languages

However, they are not tailored for integration tasks



A cohesive platform designed for code-first integration

What is Ballerina?

- Open-source technology designed from the ground up for code-first integration
- Familiar programming language that speaks integration
- Batteries-included platform with integration-focused visual tooling to make developers productive.
- Developed by WSO2

Azure SDK for Java

AWS SDK for Java

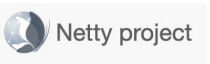
















Spring Boot









“Languages
shapes the way we think and
determines what we think about”

- Benjamin Whorf -

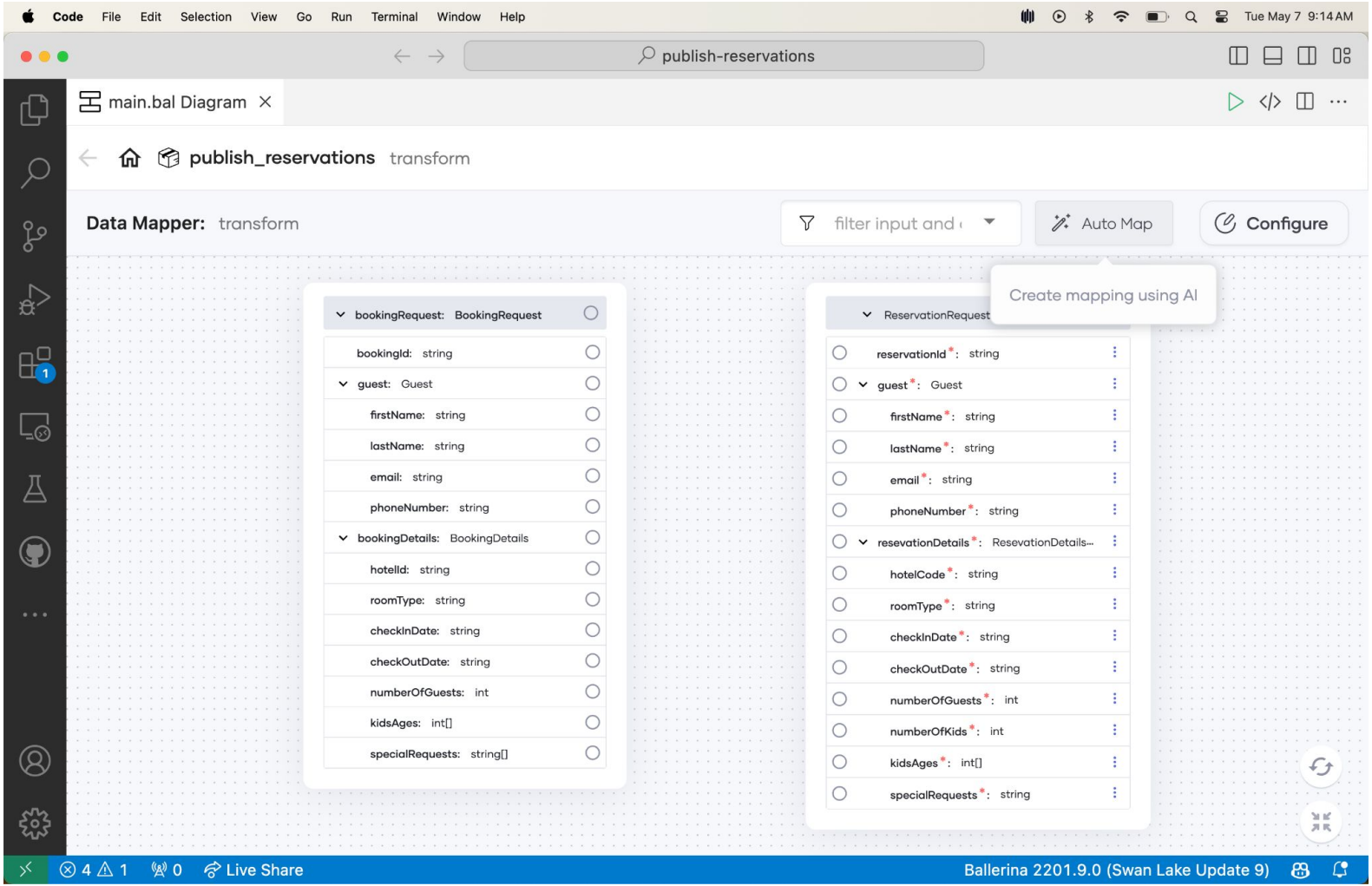


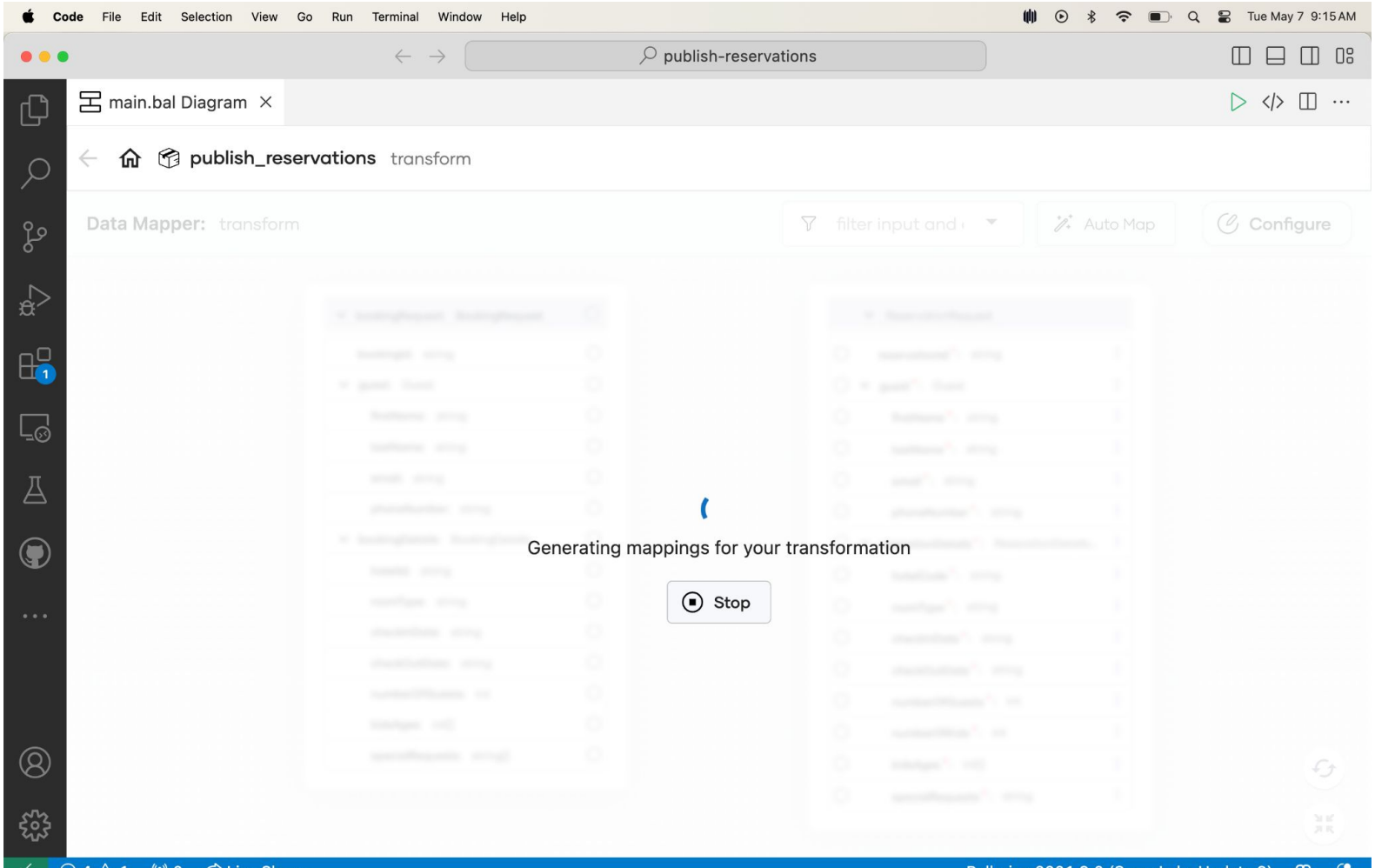
A Language That Speaks Integration

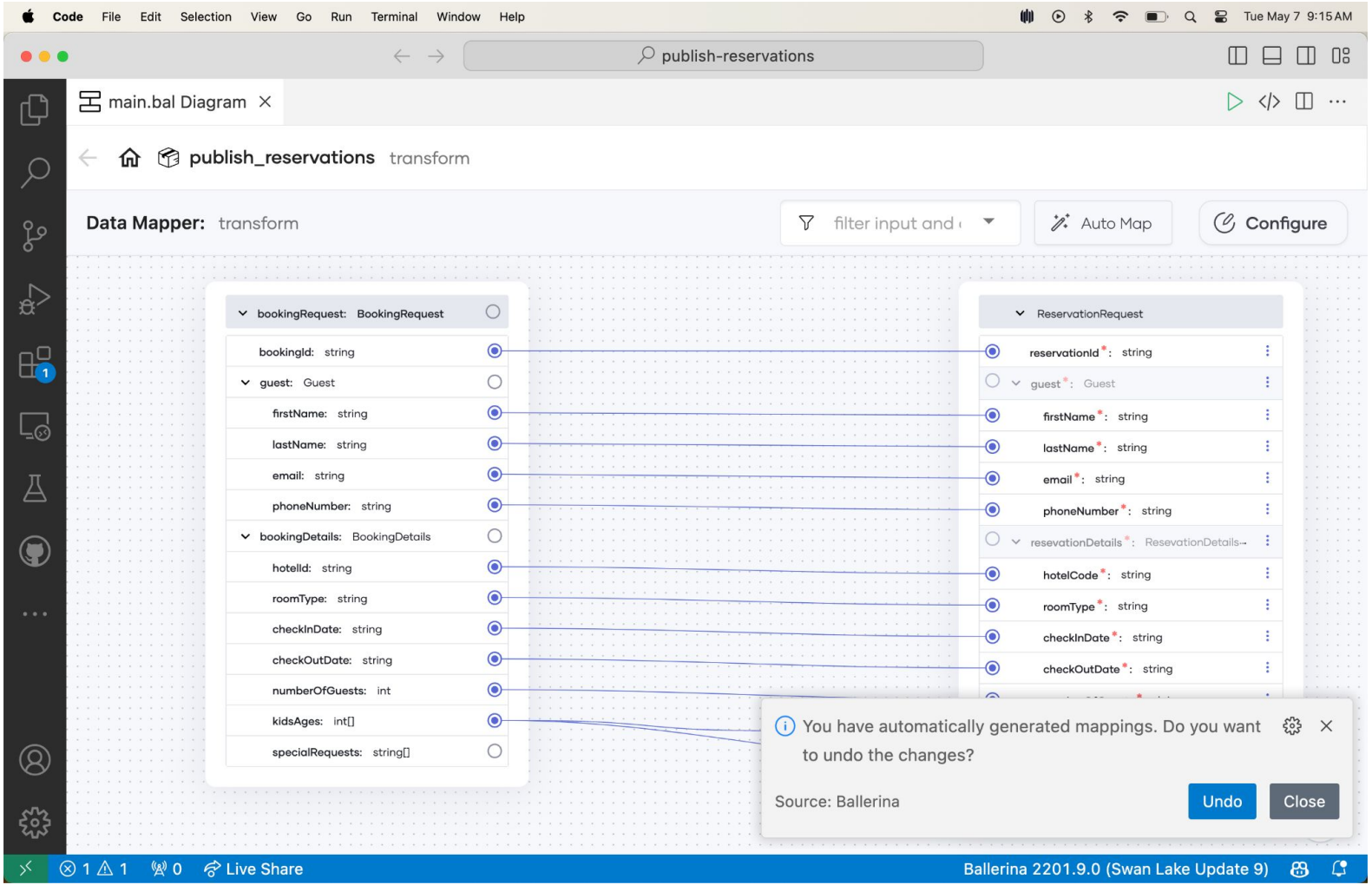
- Integration abstractions are deeply woven into the fabric of the language
  - **Networking**: Treats network interactions as first-class citizens.
  - **Data and types**: Focus on plain data simplifies network data representation and manipulation.
  - **Concurrency**: Simplifies the concurrent code execution by providing a safe, intuitive, and graphical visualization of the concurrent logic.
- Supportive features such as, XML, transactions, explicit errors, language-integrated query and many more.



Let’s dive into the Code!


Code File Edit Selection View Go Run Terminal Window Help
Tue May 7 9:14 AM
publish-reservations
main.bal Diagram
publish_reservations transform
Data Mapper: transform
filter input and
Auto Map
Configure
Create mapping using AI
bookingRequest: BookingRequest
bookingId: string
guest: Guest
firstName: string
lastName: string
email: string
phoneNumber: string
bookingDetails: BookingDetails
hotelId: string
roomType: string
checkInDate: string
checkOutDate: string
numberOfGuests: int
kidsAges: int[]
specialRequests: string[]
ReservationRequest
reservationId*: string
guest*: Guest
firstName*: string
lastName*: string
email*: string
phoneNumber*: string
resevationDetails*: ResevationDetails...
hotelCode*: string
roomType*: string
checkInDate*: string
checkOutDate*: string
numberOfGuests*: int
numberOfKids*: int
kidsAges*: int[]
specialRequests*: string
4 1 0 Live Share
Ballerina 2201.9.0 (Swan Lake Update 9)

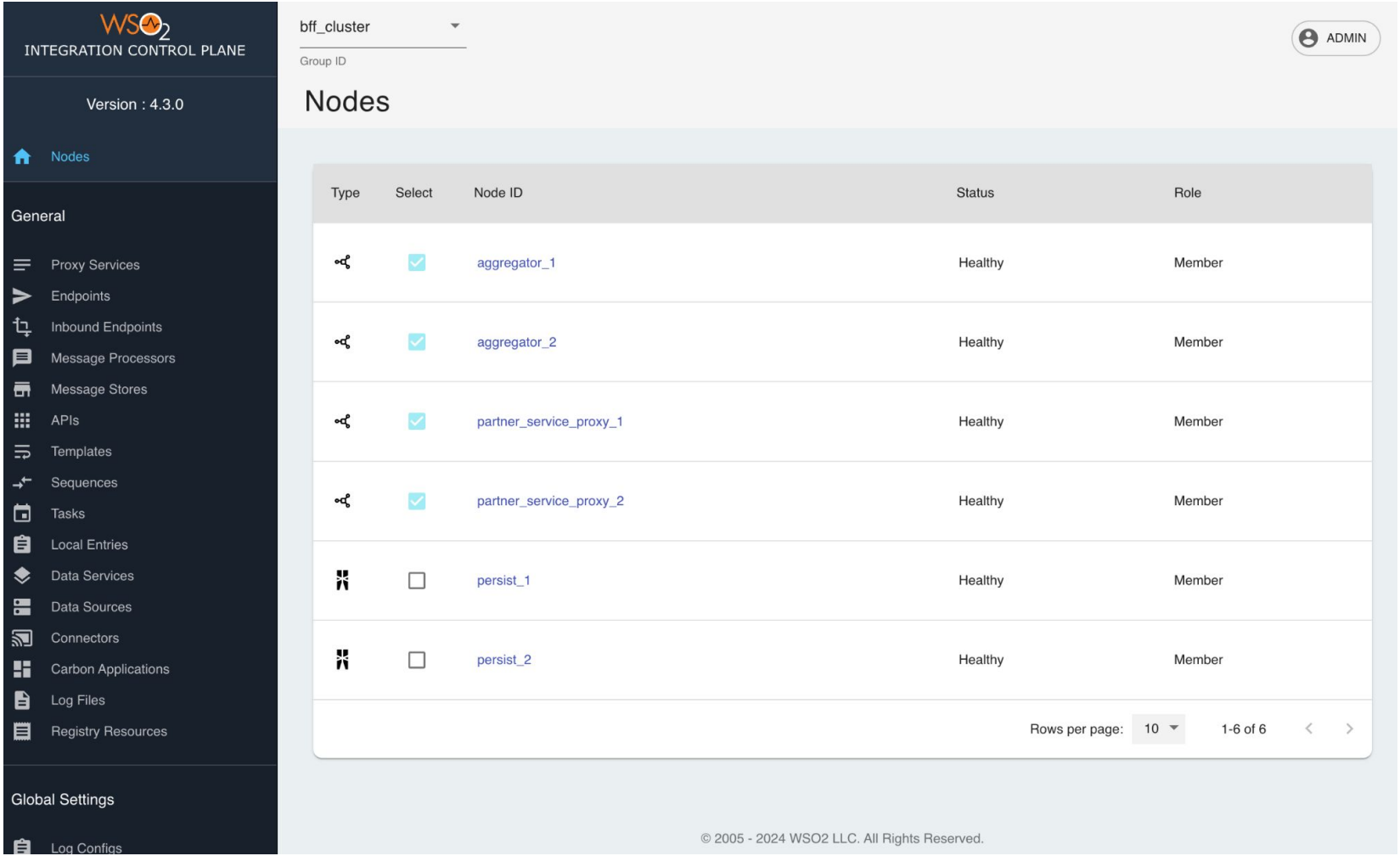

Code File Edit Selection View Go Run Terminal Window Help
Tue May 7 9:15 AM
publish-reservations
main.bal Diagram
publish_reservations transform
Data Mapper: transform
filter input and
Auto Map
Configure
Generating mappings for your transformation
Stop


Code File Edit Selection View Go Run Terminal Window Help
Tue May 7 9:15 AM
publish-reservations
main.bal Diagram
publish_reservations transform
Data Mapper: transform
filter input and
Auto Map
Configure
bookingRequest: BookingRequest
bookingId: string
guest: Guest
firstName: string
lastName: string
email: string
phoneNumber: string
bookingDetails: BookingDetails
hotelId: string
roomType: string
checkInDate: string
checkOutDate: string
numberOfGuests: int
kidsAges: int[]
specialRequests: string[]
ReservationRequest
reservationId*: string
guest*: Guest
firstName*: string
lastName*: string
email*: string
phoneNumber*: string
resevationDetails*: ResevationDetails
hotelCode*: string
roomType*: string
checkInDate*: string
checkOutDate*: string
You have automatically generated mappings. Do you want to undo the changes?
Source: Ballerina
Undo
Close
1 1 0 Live Share
Ballerina 2201.9.0 (Swan Lake Update 9)

WSO2 and Ballerina

WSO2 and Ballerina

- Ballerina is deeply integrated into the WSO2 platform
  - WSO2 Integration Control Plane
  - WSO2 APIM Service catalog

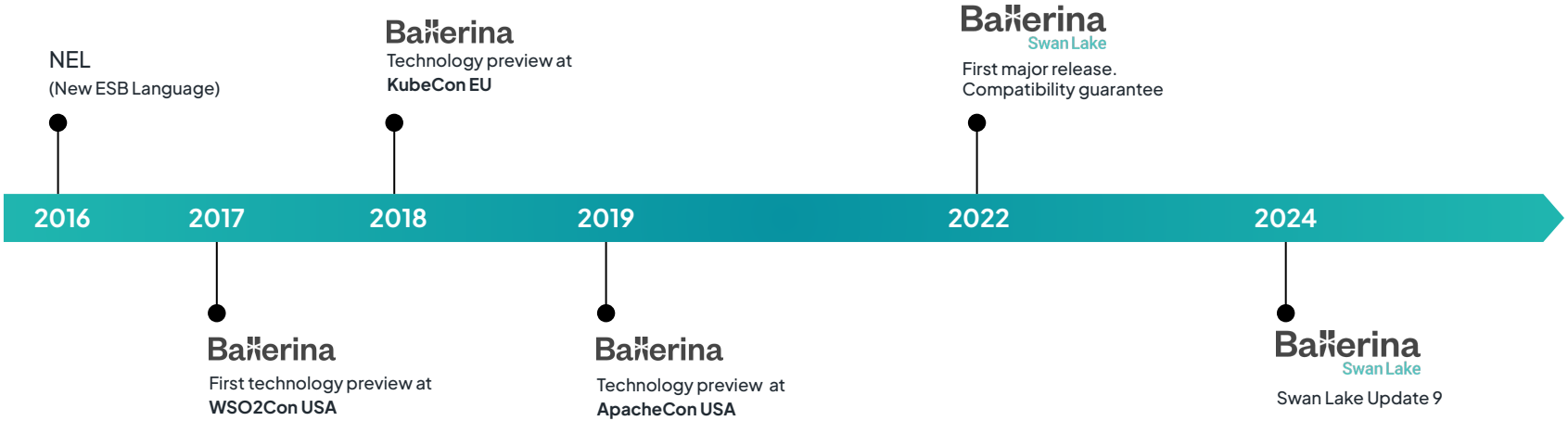

WSO2
INTEGRATION CONTROL PLANE
Version : 4.3.0
Nodes
General
Proxy Services
Endpoints
Inbound Endpoints
Message Processors
Message Stores
APIs
Templates
Sequences
Tasks
Local Entries
Data Services
Data Sources
Connectors
Carbon Applications
Log Files
Registry Resources
Global Settings
Log Configs
bff_cluster
Group ID
ADMIN
Nodes
Type
Select
Node ID
Status
Role
aggregator_1
Healthy
Member
aggregator_2
Healthy
Member
partner_service_proxy_1
Healthy
Member
partner_service_proxy_2
Healthy
Member
persist_1
Healthy
Member
persist_2
Healthy
Member
Rows per page:
10
1-6 of 6
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WSO2 and Ballerina

- WSO2 heavily leverages Ballerina
  - WSO2's internal operations are automated with Ballerina
  - Choreo's system services are written in Ballerina
- Offers development and production support for Ballerina users
  - Learn more: https://wso2.com/ballerina

The journey of innovation

The Journey of Innovation



Swan Lake Update 9

- data.json and data.xml packages
  - Support for data conversion, projection and navigation
  - Support for JSONPath.
- AI-assisted data mapping
- Support for post-quantum crypto algorithms
- Introspection in bal persist tool.
- Ability to integrate client generation tools such as OpenAPI, bal persist with the package build process
- Enhanced worker send/receive semantics

It’s always good to be cautious!

https://twitter.com/i/status/1784677418810089536


B'
Ballerina
Swan Lake



https://neurohacker.com/you-never-know-what-you-can-do-until-you-try

Question Time!



Thank You!

Choose Ballerina for Your Next Integration

1. Are you planning or already using code-first integration?
2. Give Ballerina a twirl
3. Experience the tooling and productivity boost