

Bases de datos en memoria

Casos de uso y soluciones para aplicaciones modernas

Patrocinadores

Patrocinadores Principales



Patrocinadores Platino



Patrocinadores Oro



Patrocinadores Plata



Patrocinadores Bronce



Base de
datos
relacional
colapsada



Escalabilidad
limitada



Latencia en
la web

Top 5 de criterios de una app de calidad en 2025

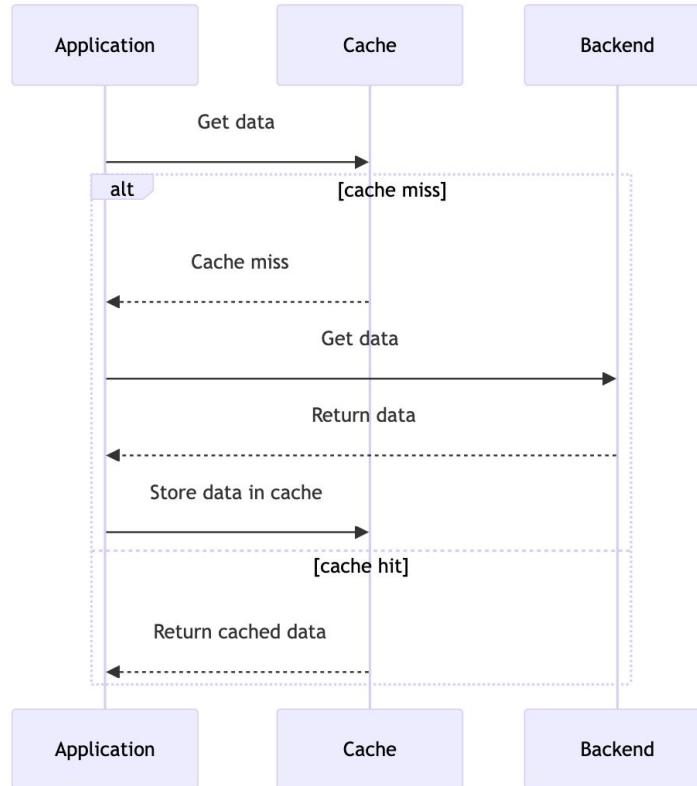
<i>Usuarios</i>	<i>Dev / Ops</i>	<i>Empresas</i>
<ul style="list-style-type: none">● Performance● UX● Fiabilidad● Seguridad● Accesibilidad	<ul style="list-style-type: none">● Mantenible● Automatización● Monitoring● Seguridad● Performance et Escalabilidad	<ul style="list-style-type: none">● Performance y escalabilidad● Seguridad y conforme a normas● Fiabilidad y Disponibilidad● Mantenible y Evolutiva● Coste y rentabilidad

Top 5 de criterios de una app de calidad en 2025

<i>Usuarios</i>	<i>Dev / Ops</i>	<i>Empresas</i>
<ul style="list-style-type: none">● <u>Velocidad</u>● UX● <u>Fiabilidad</u>● <u>Seguridad</u>● Accesibilidad	<ul style="list-style-type: none">● Mantenible● Automatización● Monitoring● <u>Seguridad</u>● <u>Velocidad y Escalabilidad</u>	<ul style="list-style-type: none">● <u>Velocidad y escalabilidad</u>● <u>Seguridad</u> y conforme a normas● <u>Fiabilidad</u> y Disponibilidad● Mantenible y Evolutiva● Coste y rentabilidad

La caché en memoria

Caso de uso: Caché simple



- Alta **velocidad**
- Reducción de carga
- Eficacia **económica**
- **Añade disponibilidad**
- Flexible en la gestión de datos
(expiración)

**Programming
Language**

Library/Framework

Java Caffeine (Java Cache Library)

Python `cachetools, diskcache`

JavaScript `node-cache, lru-cache`

C# `LazyCache, CacheManager`

Go `groupcache, golang-lru`

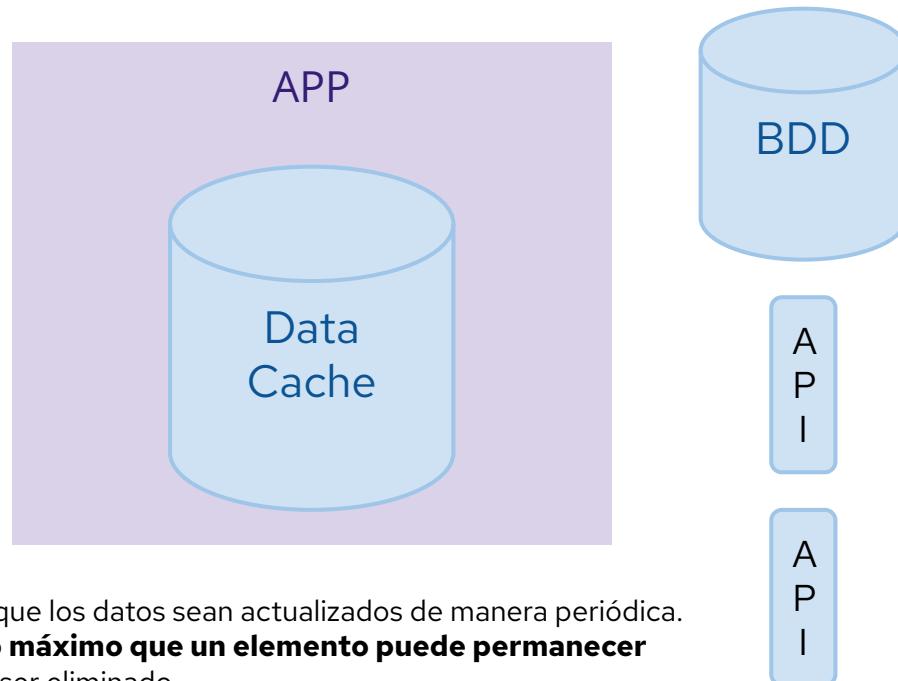
Ruby `Dalli, Ruby-LRU`

PHP `PHP-Cache, Laravel
Cache`

Rust `cached, lru-cache`

Kotlin Caffeine (same as Java)

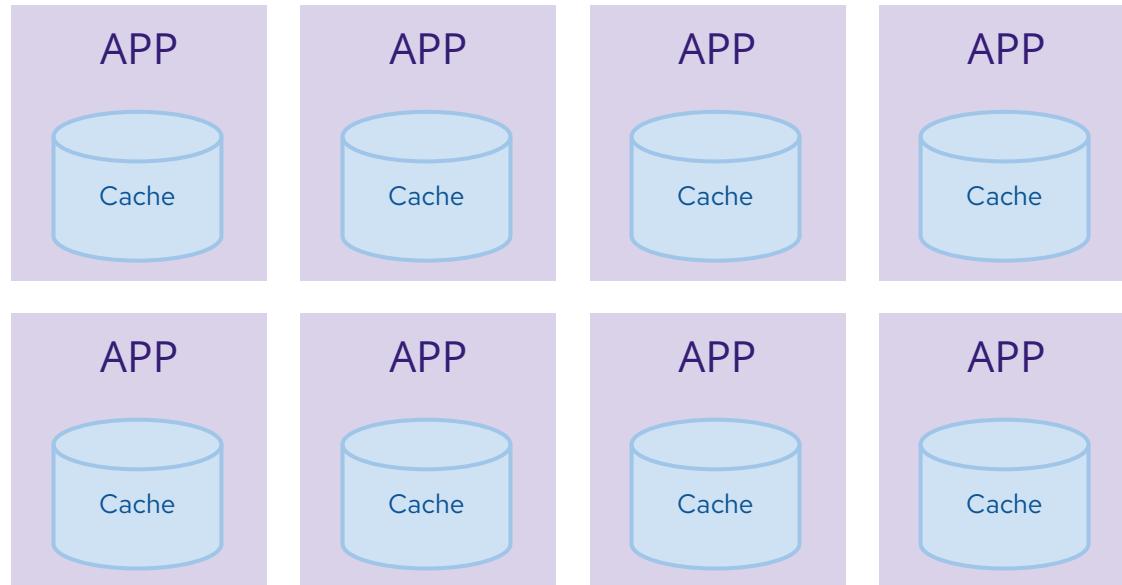
Caché aplicativa



TTL (time-to-live) garantiza que los datos sean actualizados de manera periódica.
MAX IDLE (max idle) tiempo máximo que un elemento puede permanecer inactivo en el caché antes de ser eliminado

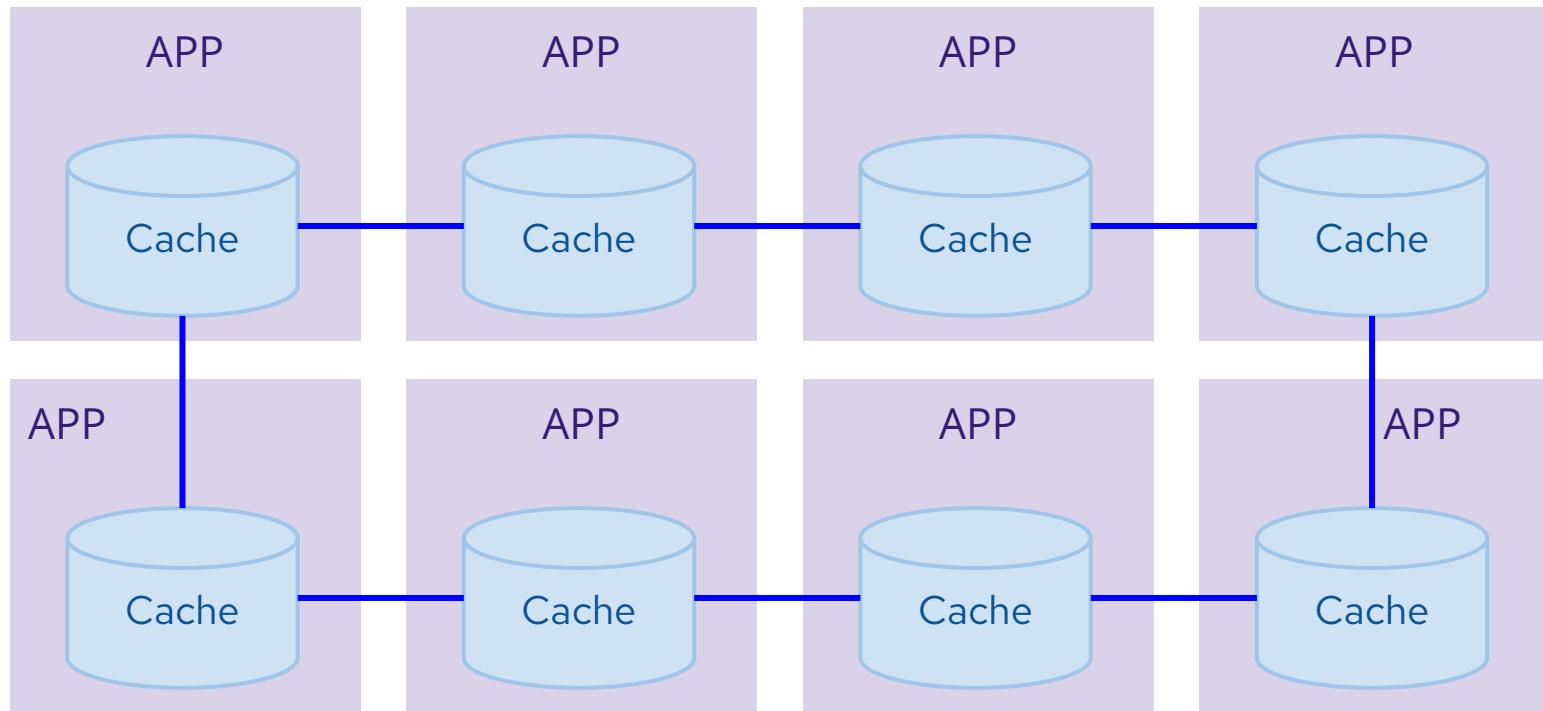
El equipo backend empezó a
utilizar Caffeine

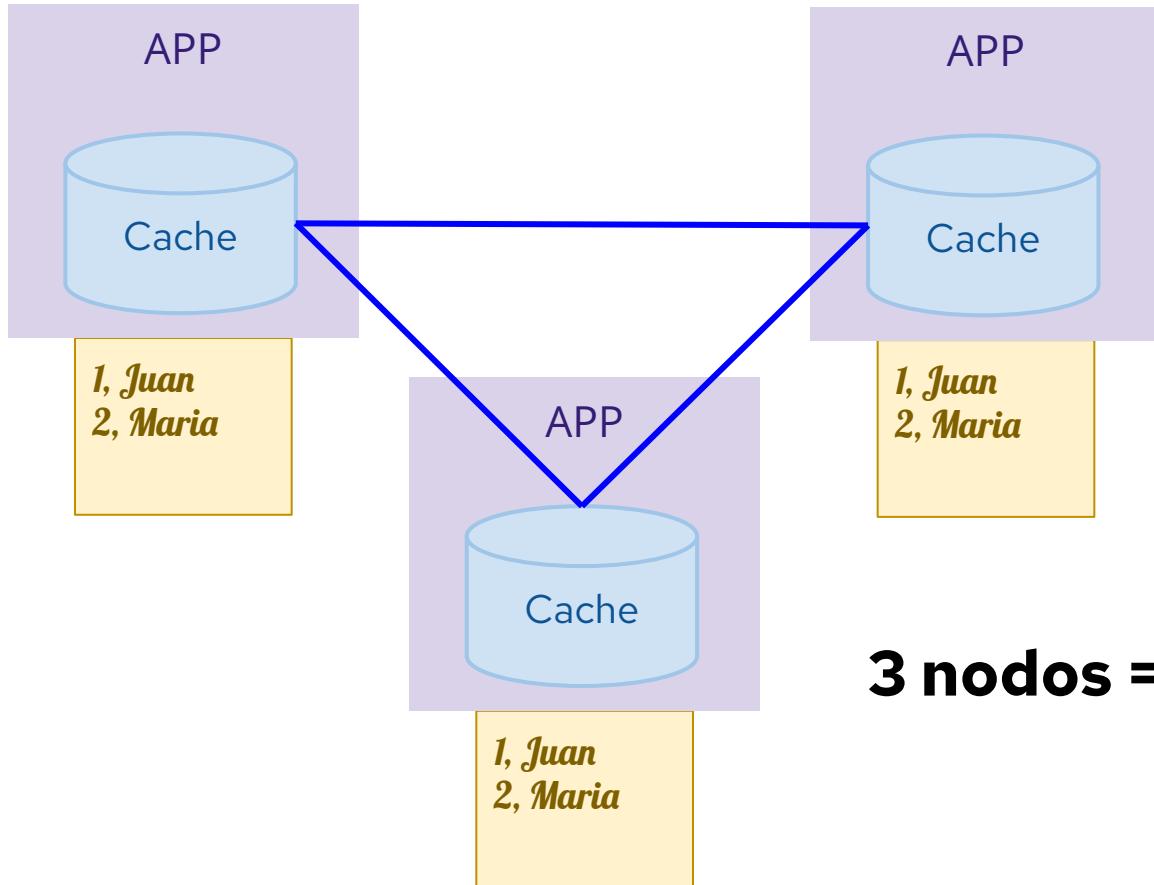
Instancias de las aplicaciones



Caché distribuída

Las cachés y las aplicaciones forman un cluster

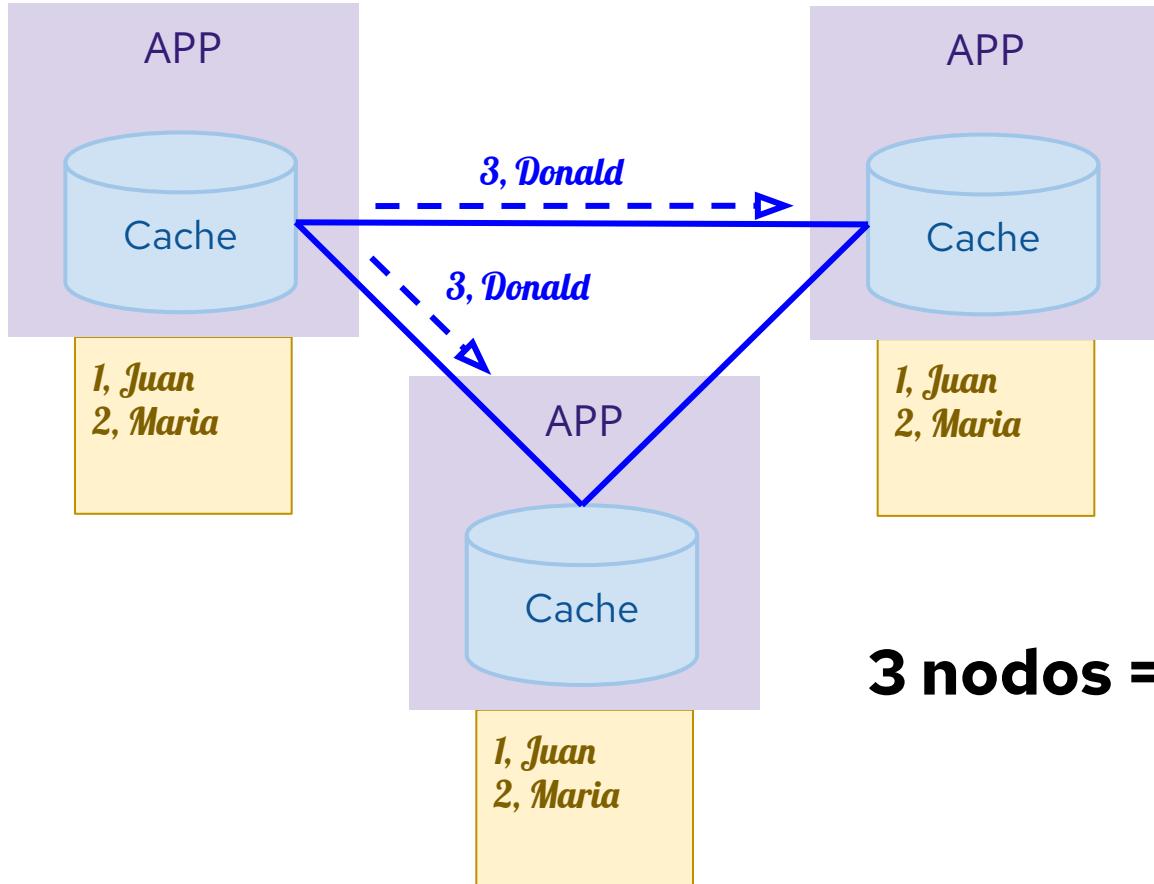




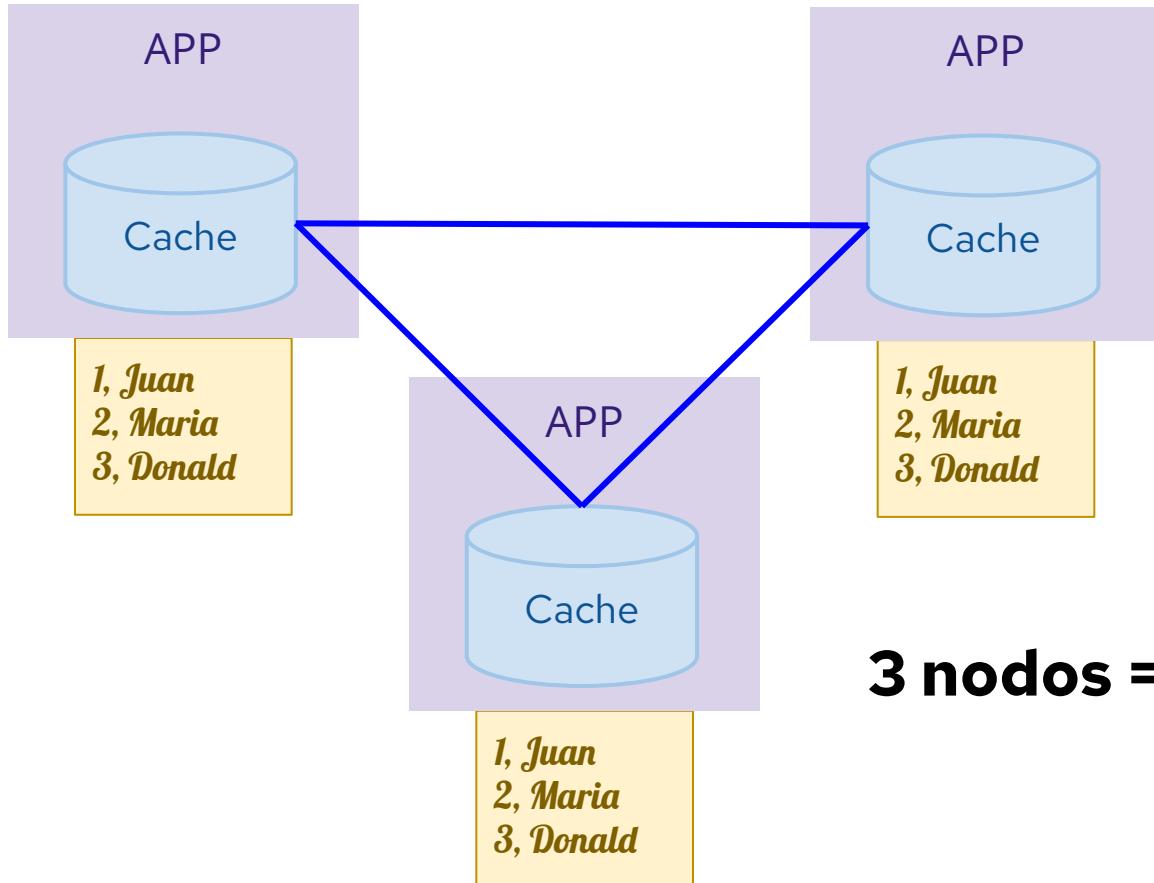
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PUT

3, Donald

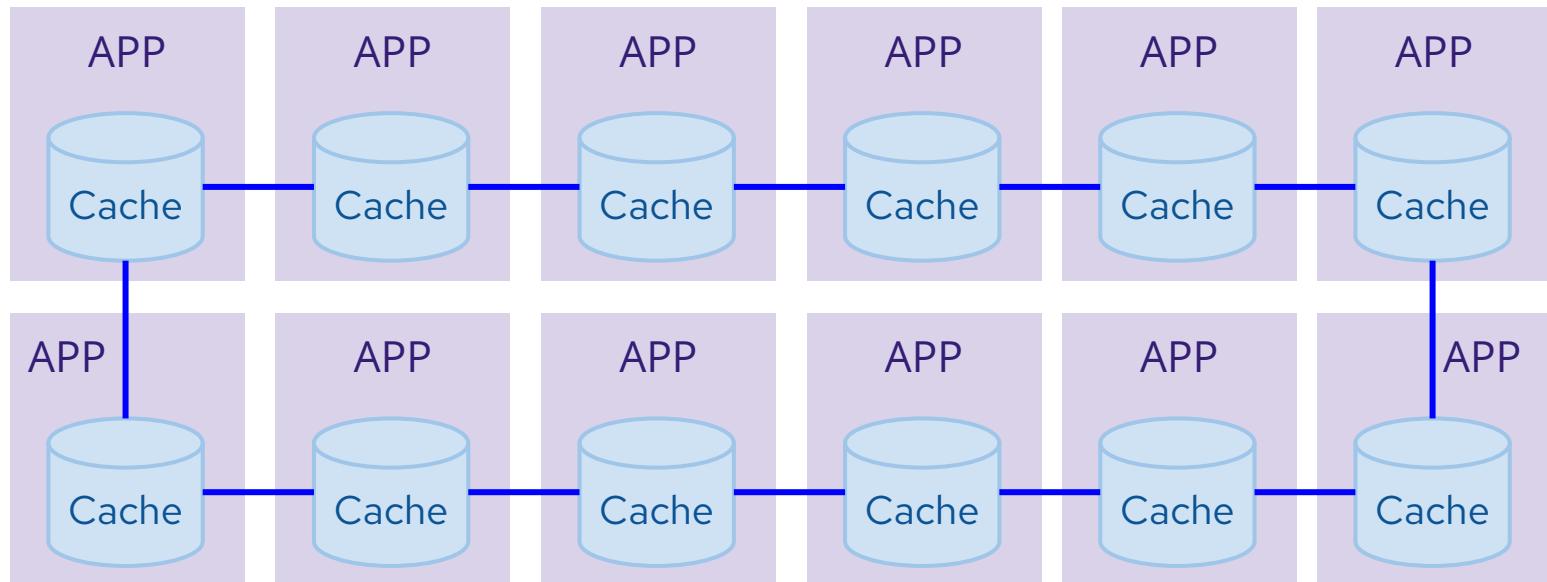


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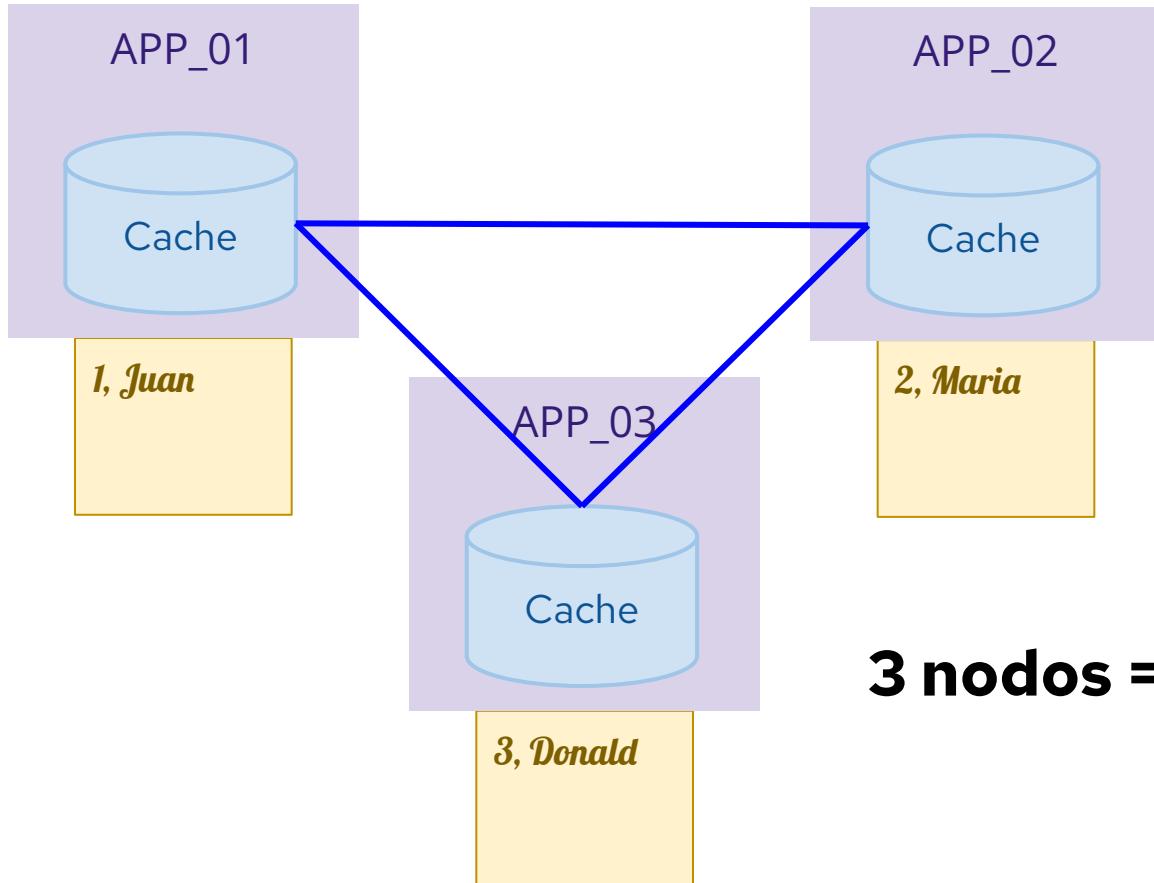


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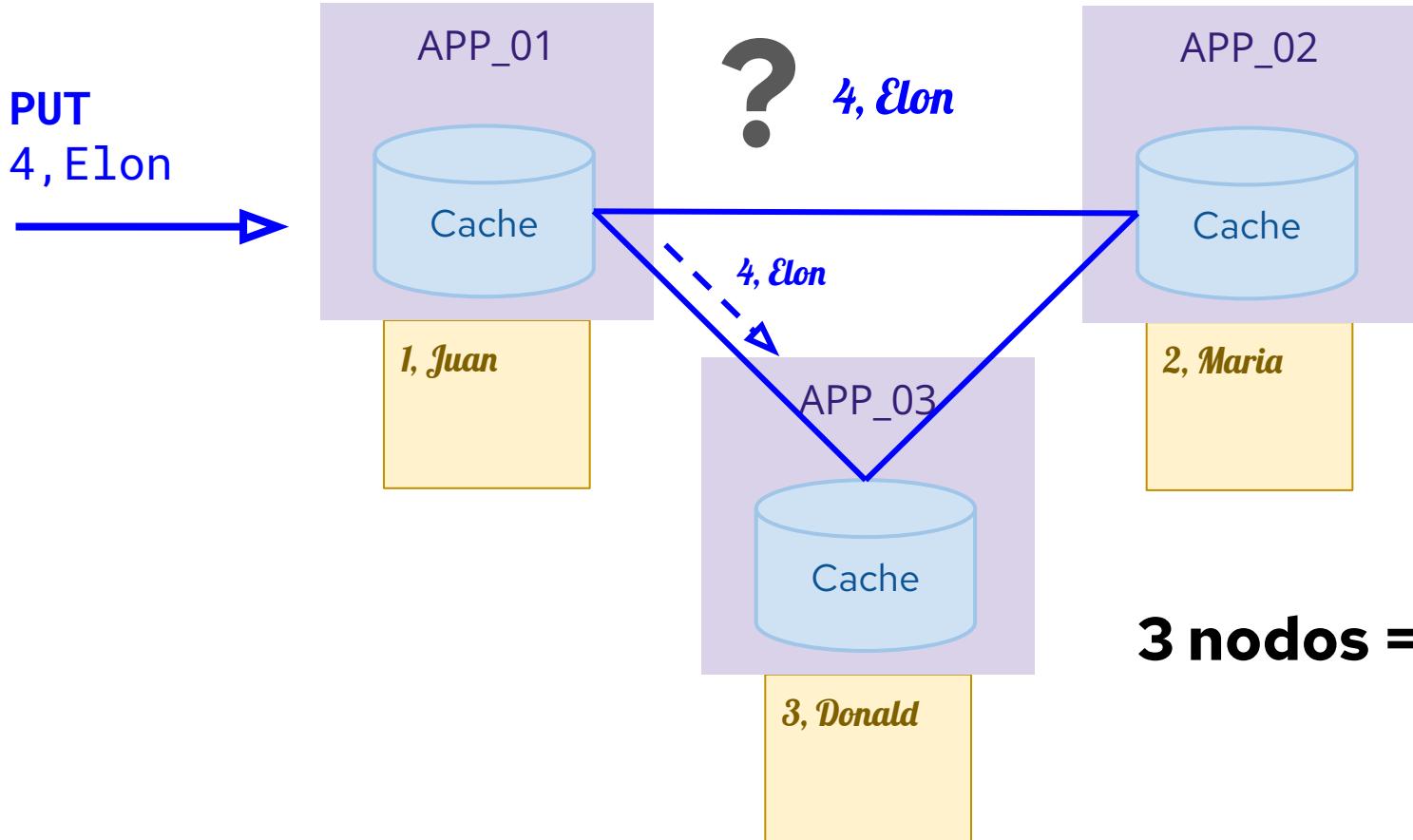
No escala



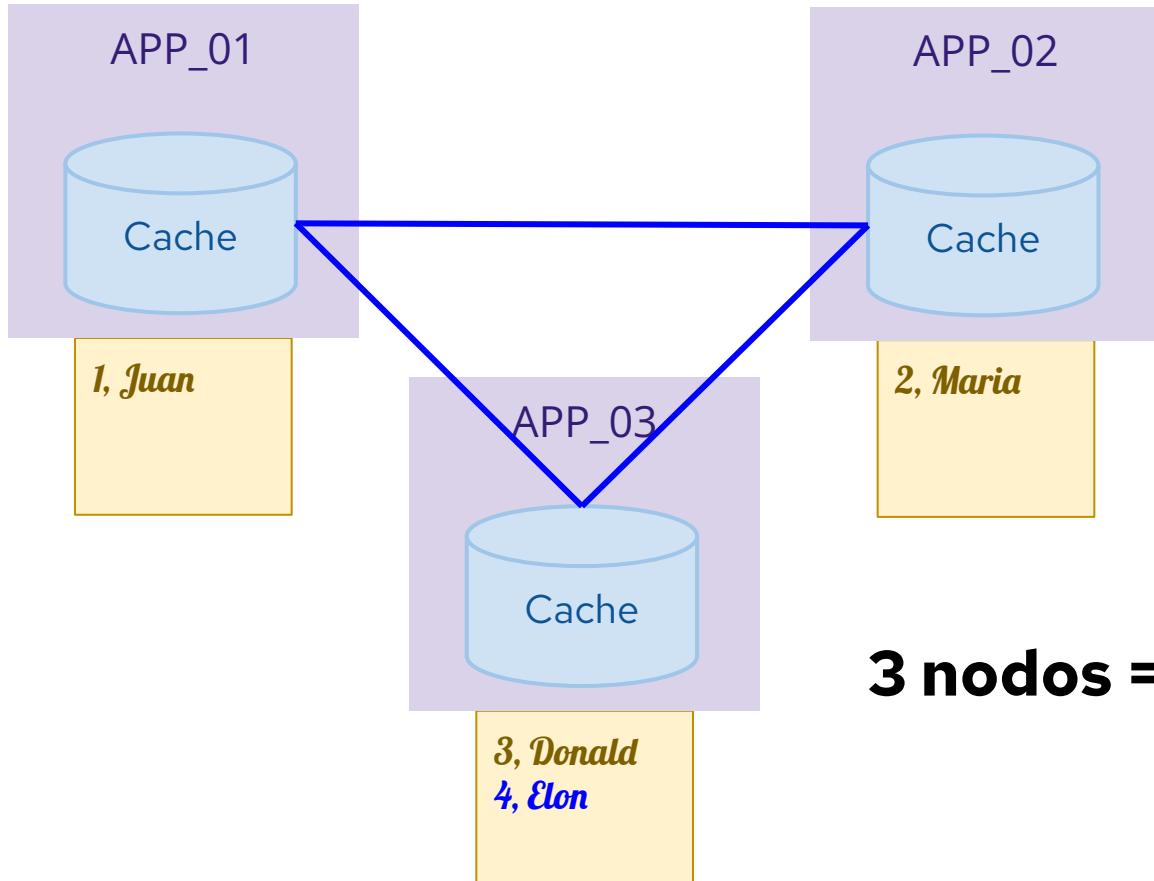
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3 nodos = 1 copia

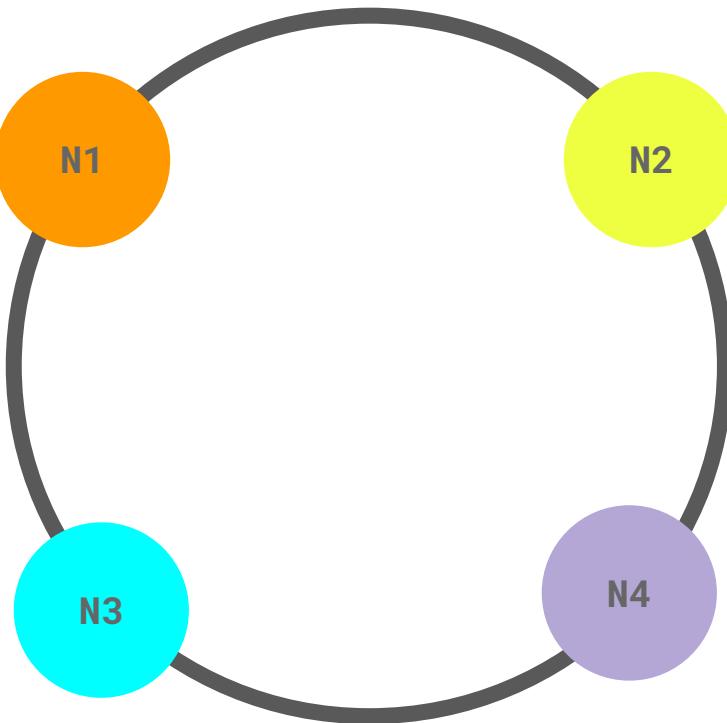


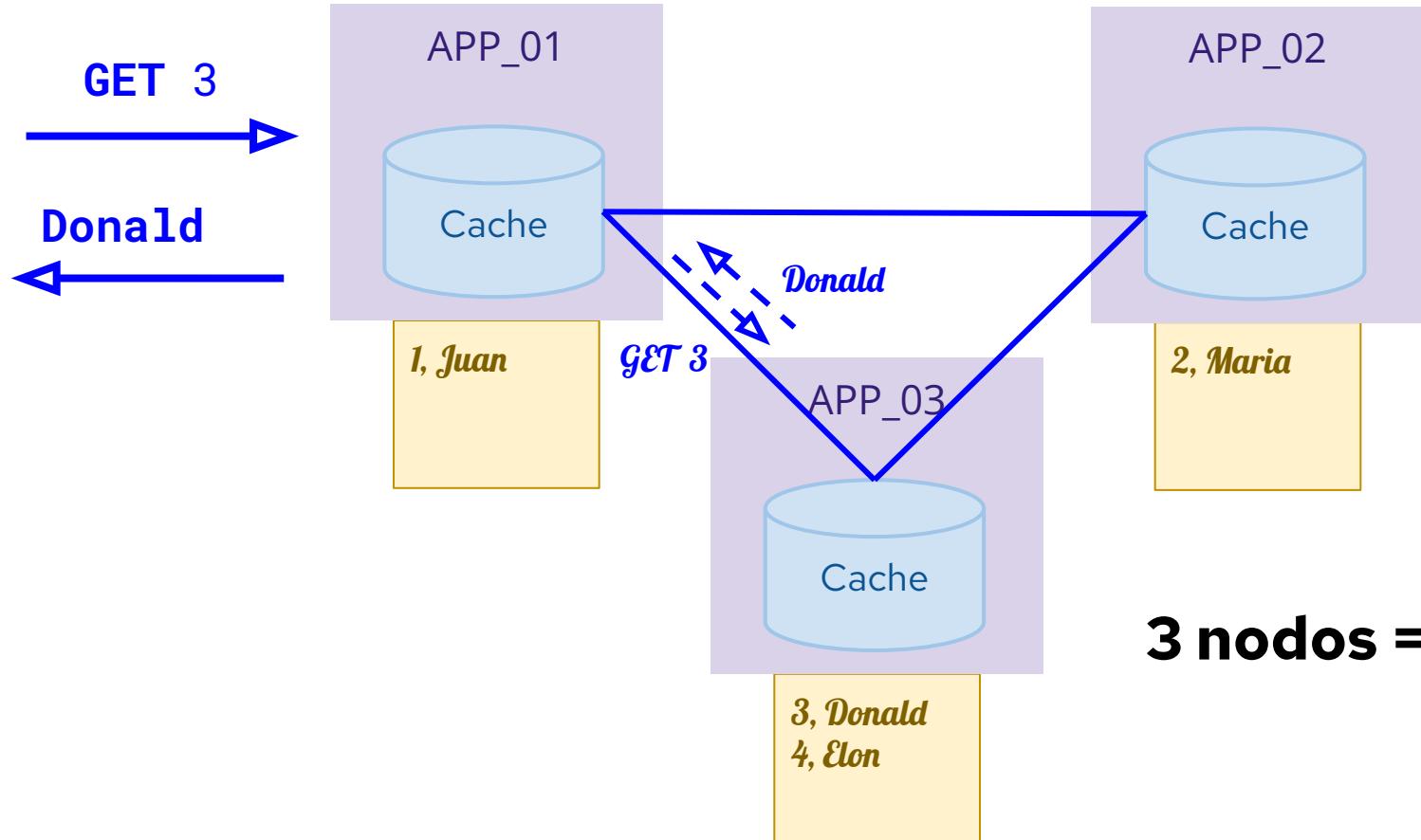
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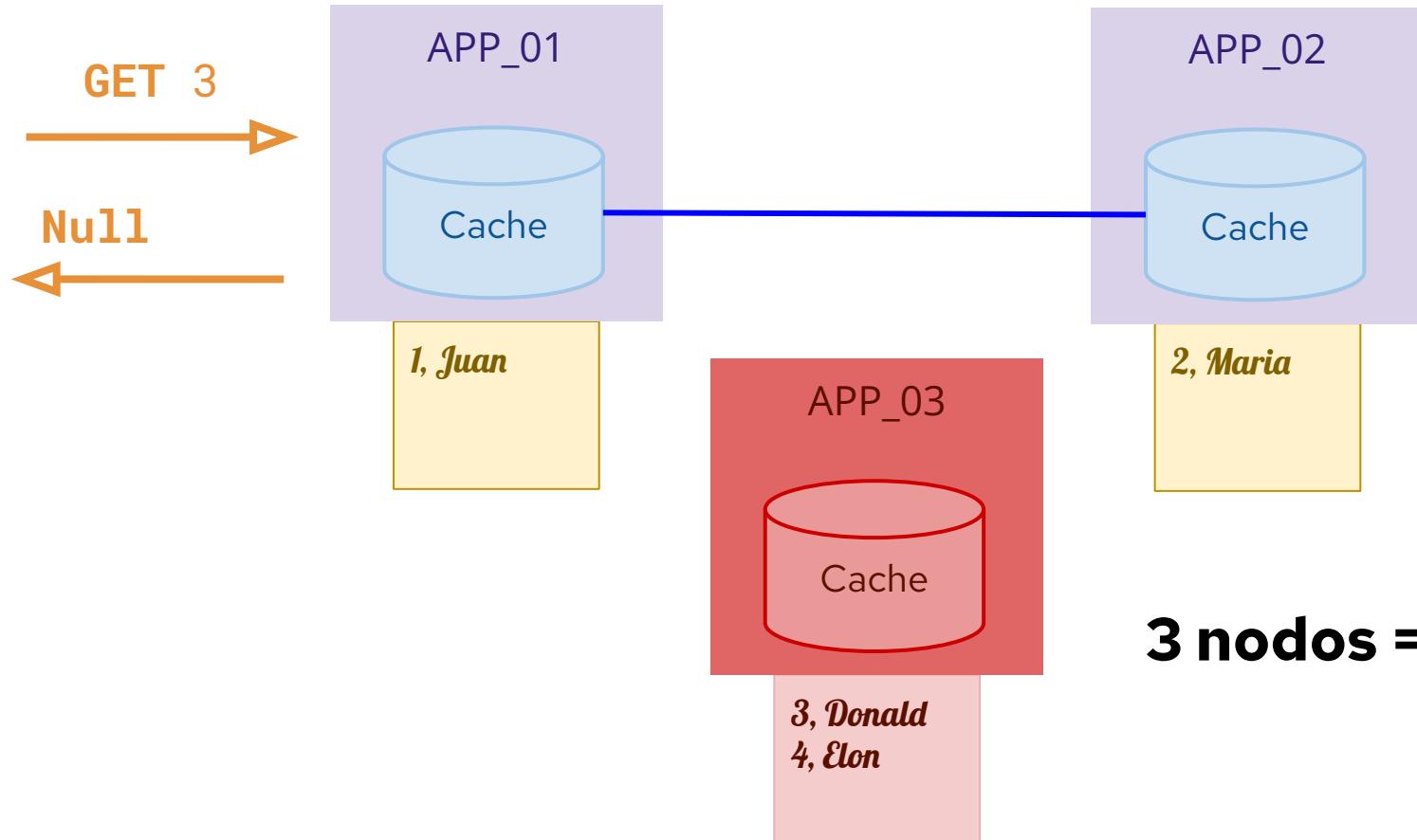
3 nodos = 1 copia

Consistent Hashing (o no...)



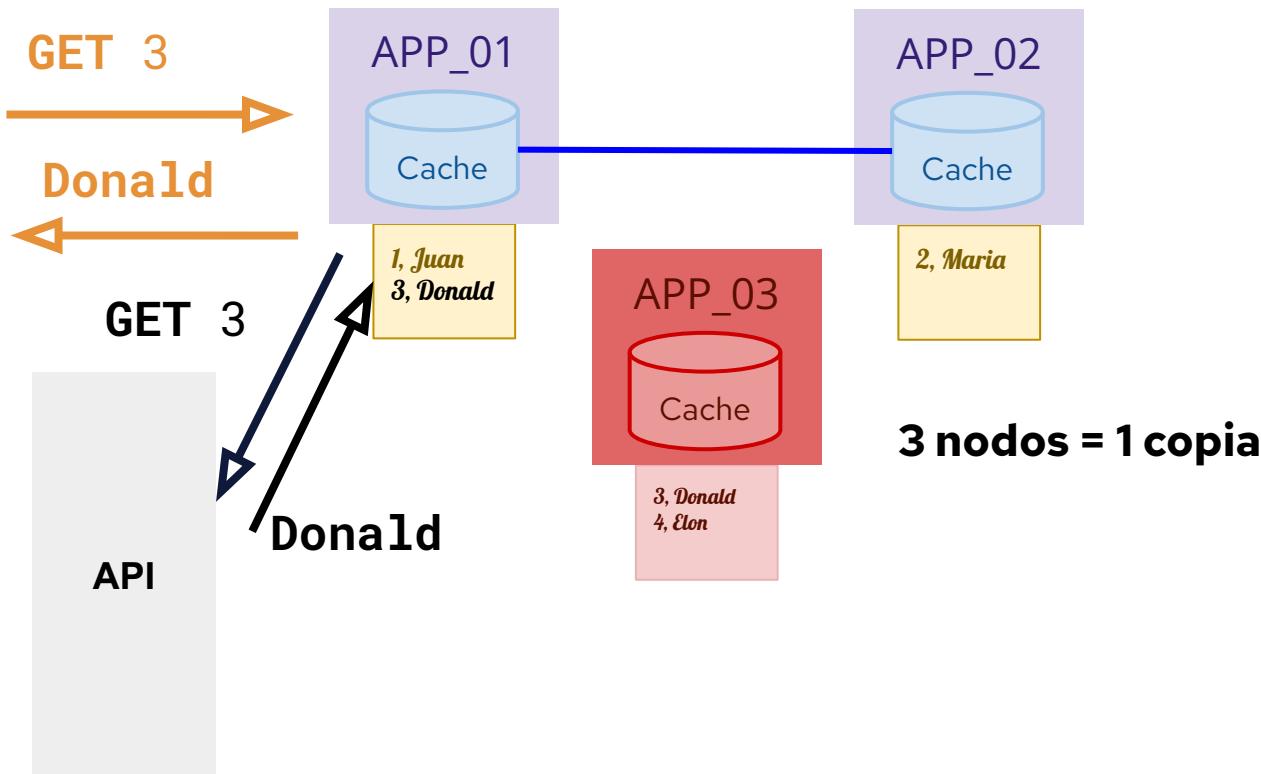


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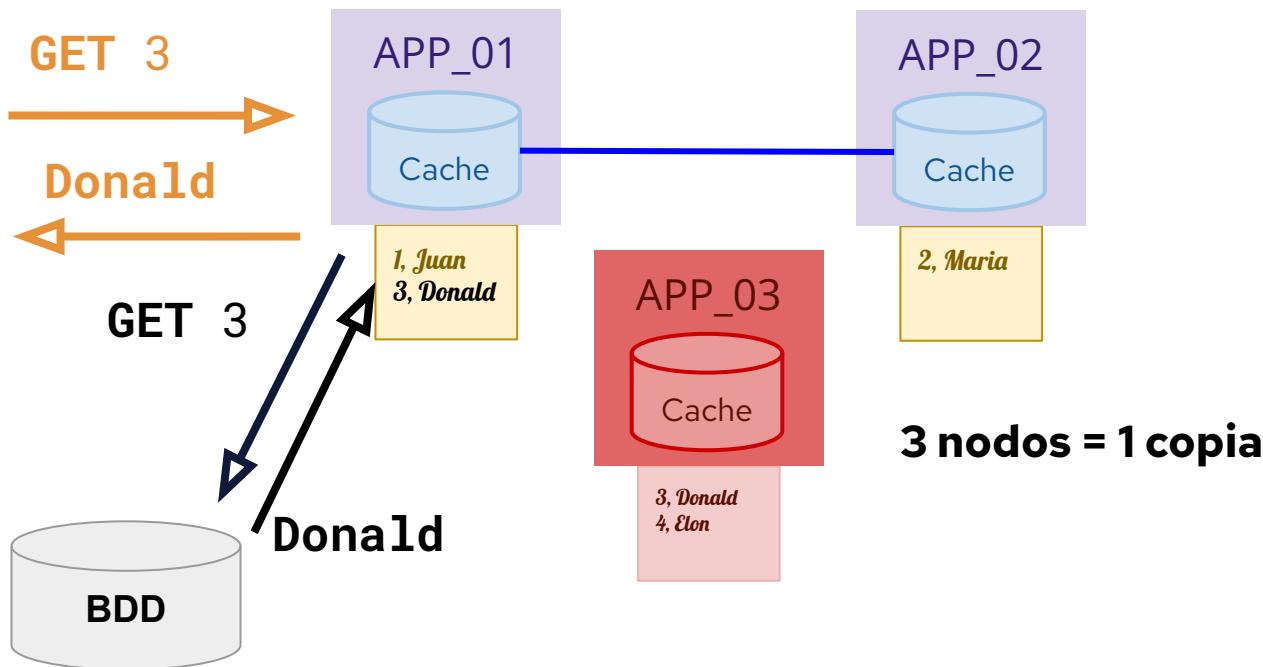


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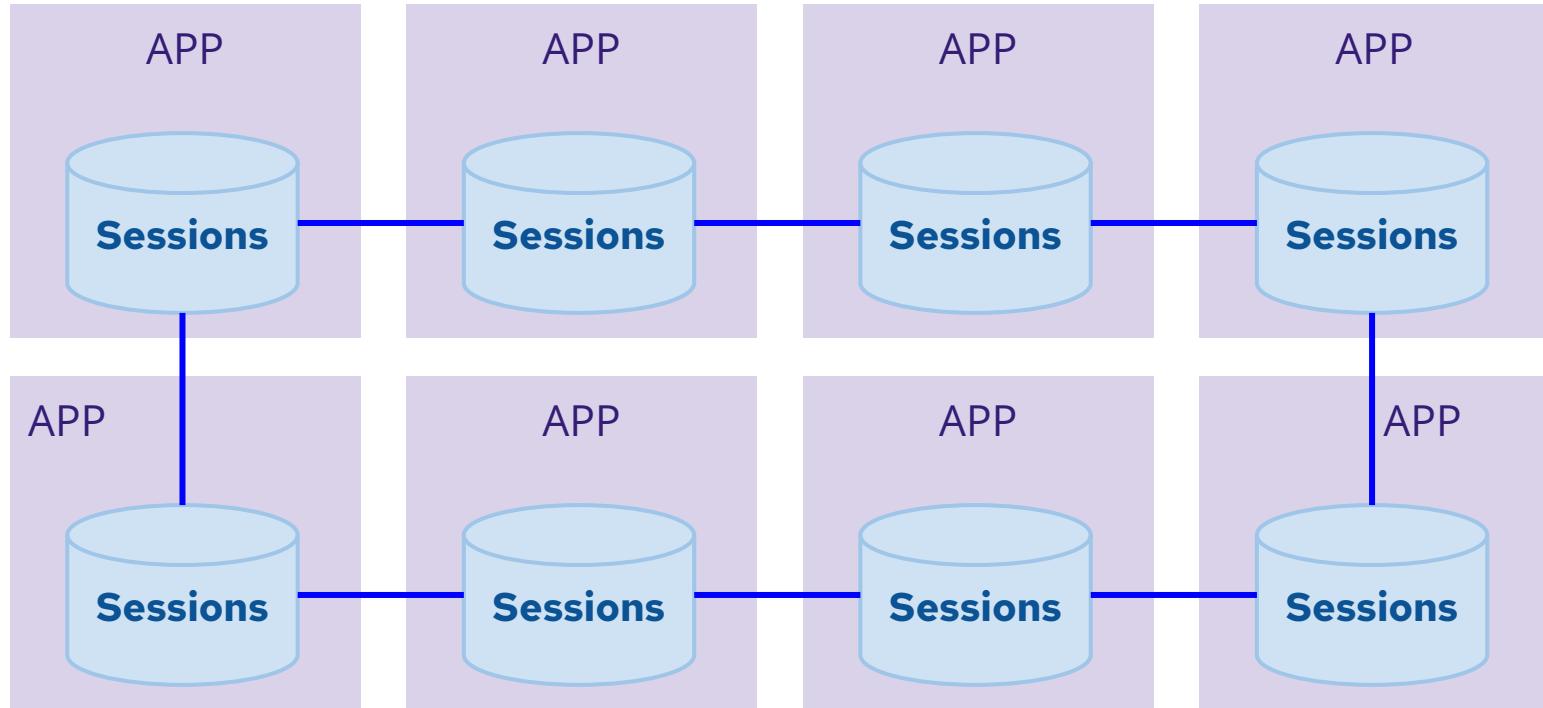
Caso de uso: Almacenamiento datos temporales

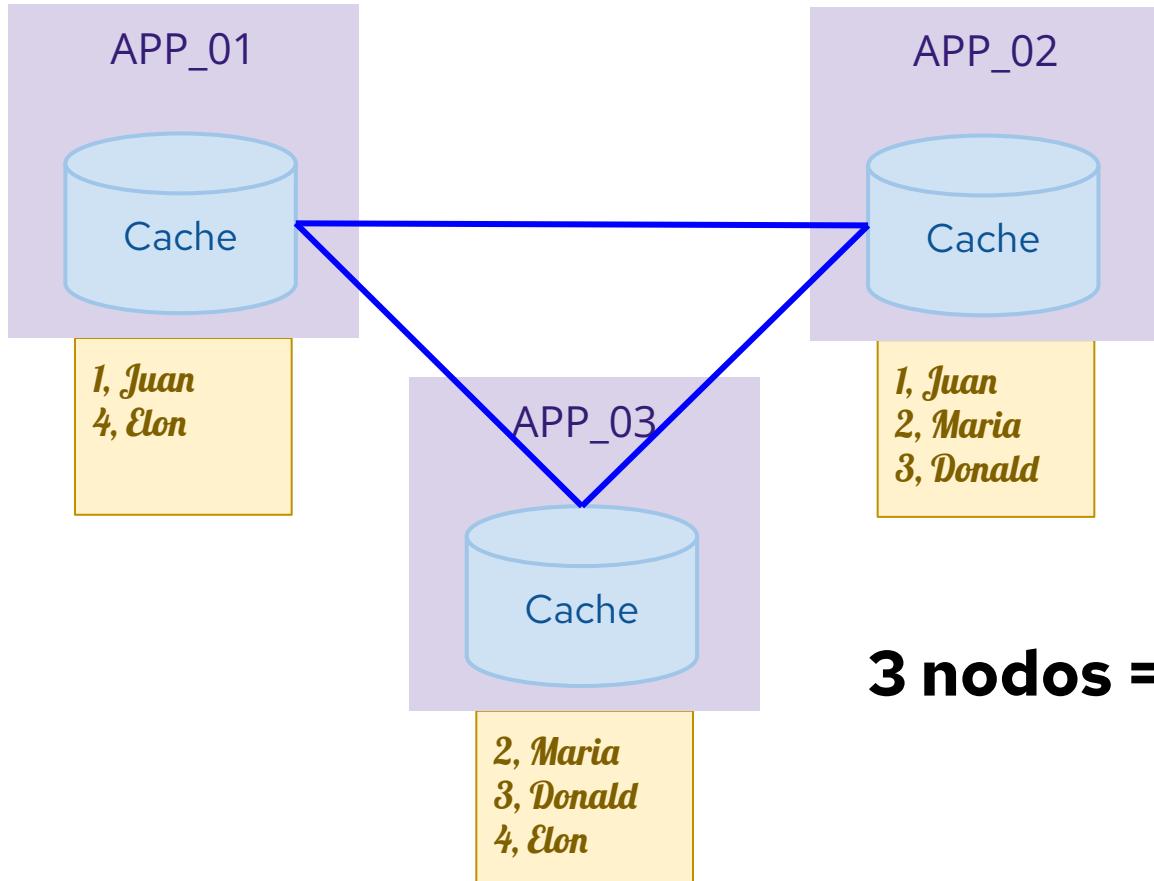


Caso de uso: Almacenamiento datos temporales



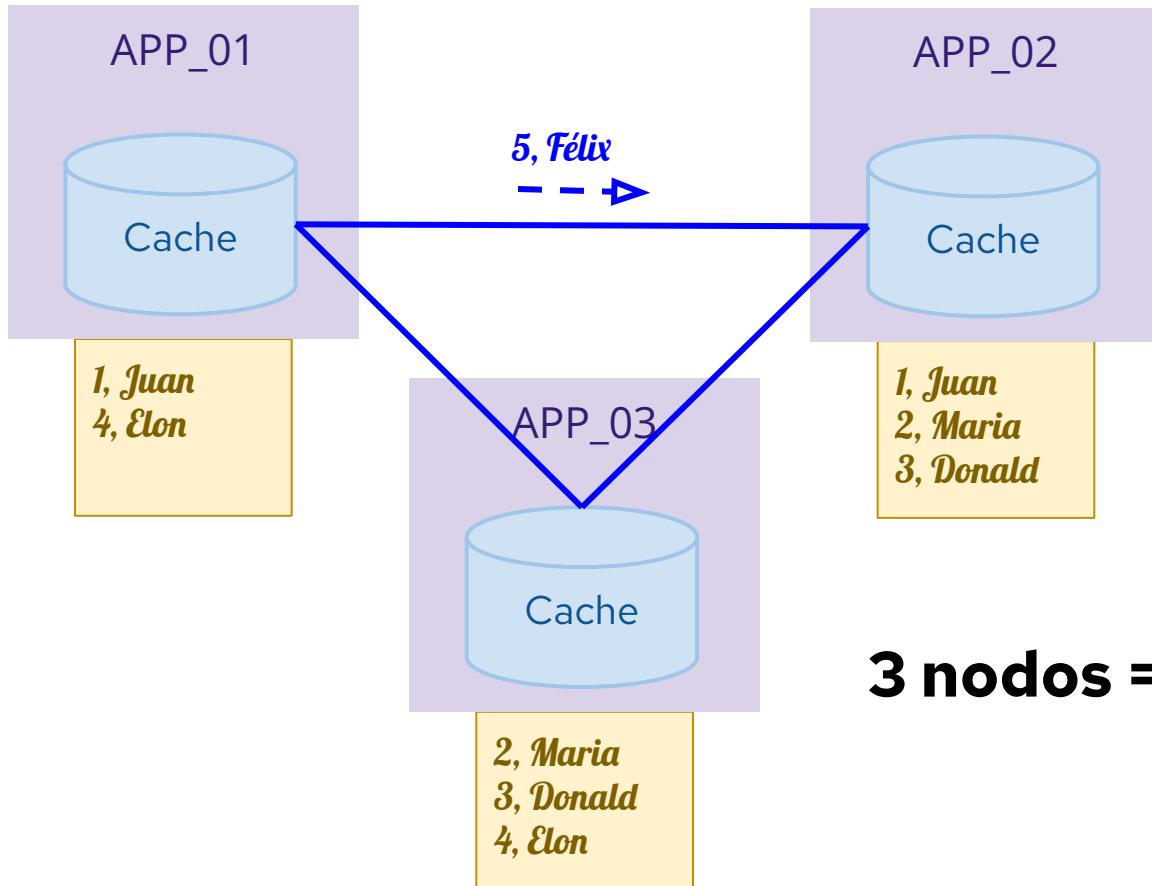
Caso de uso: Almacenamiento de datos sesión



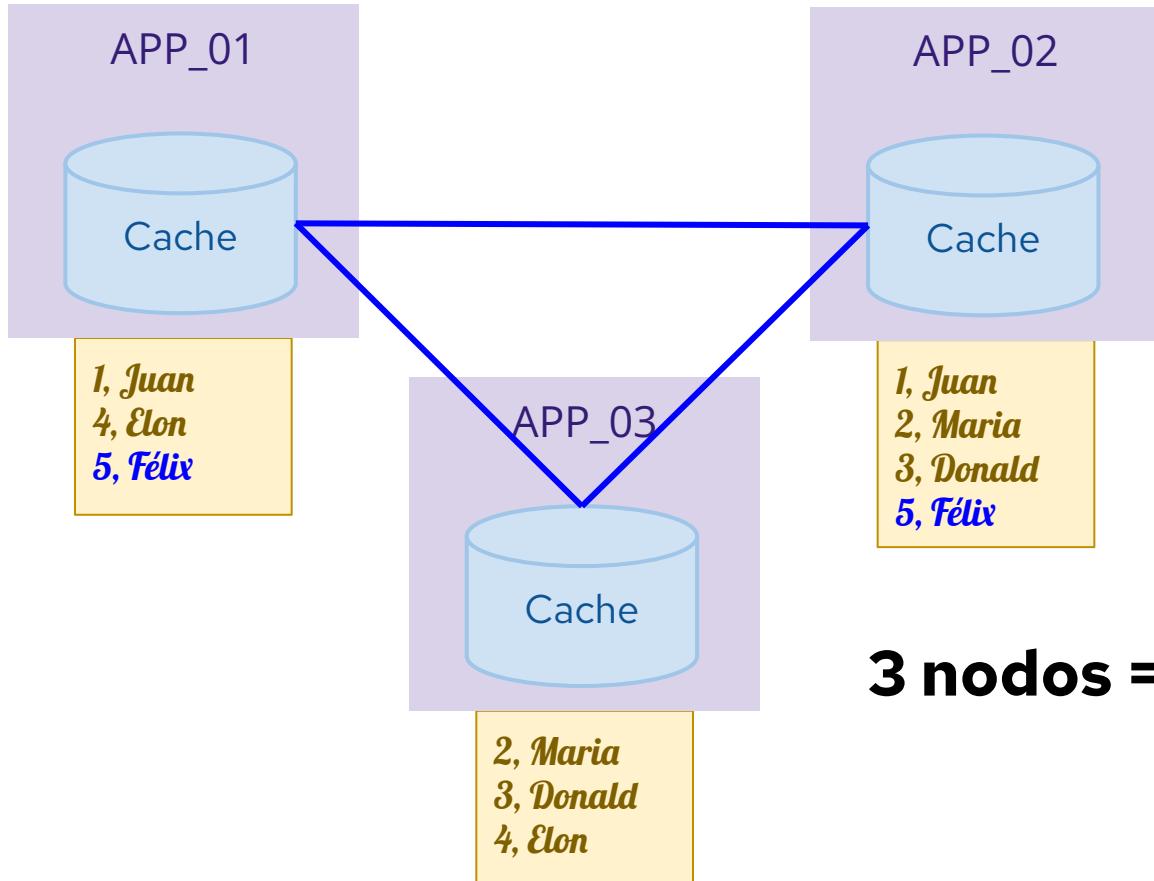


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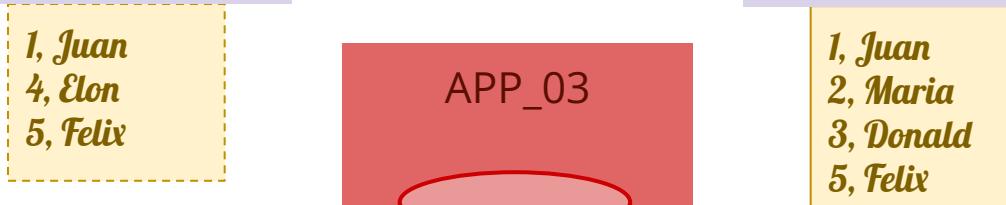
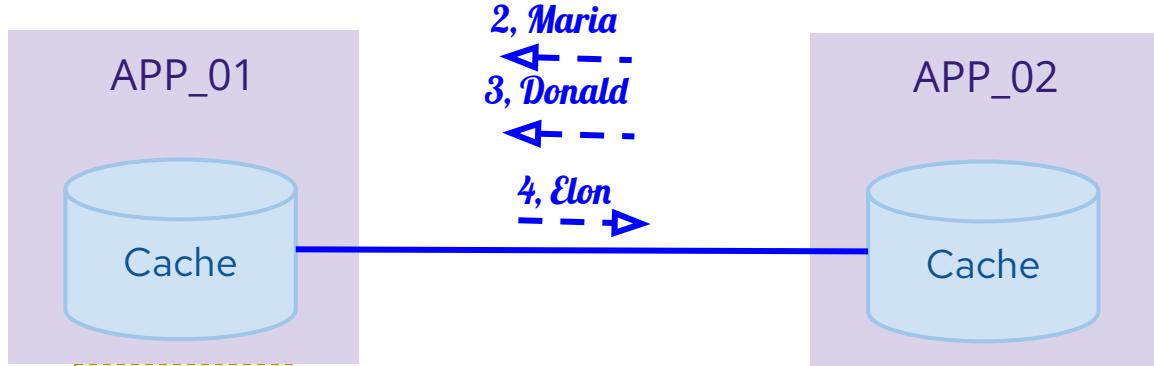
PUT
5, Félix



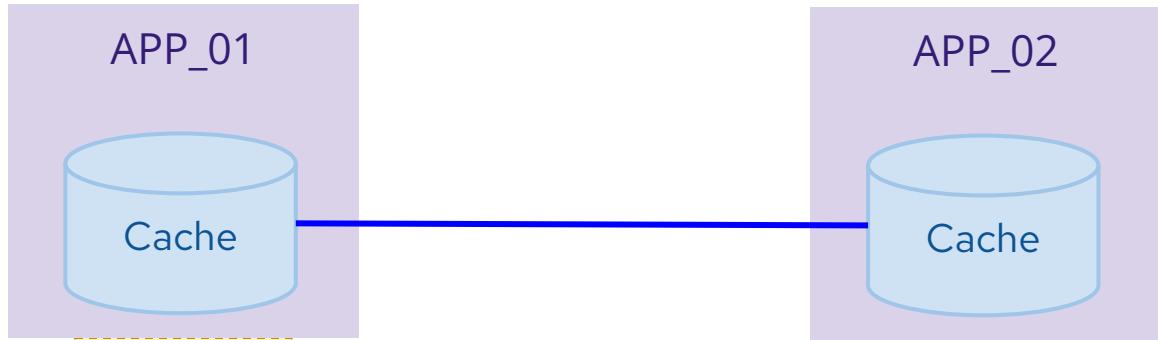
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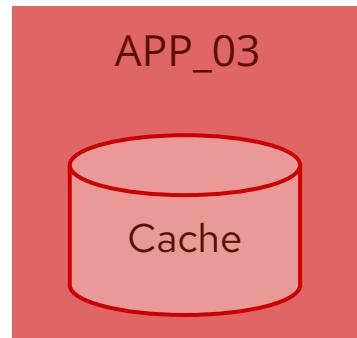
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3 nodos = 2 copias



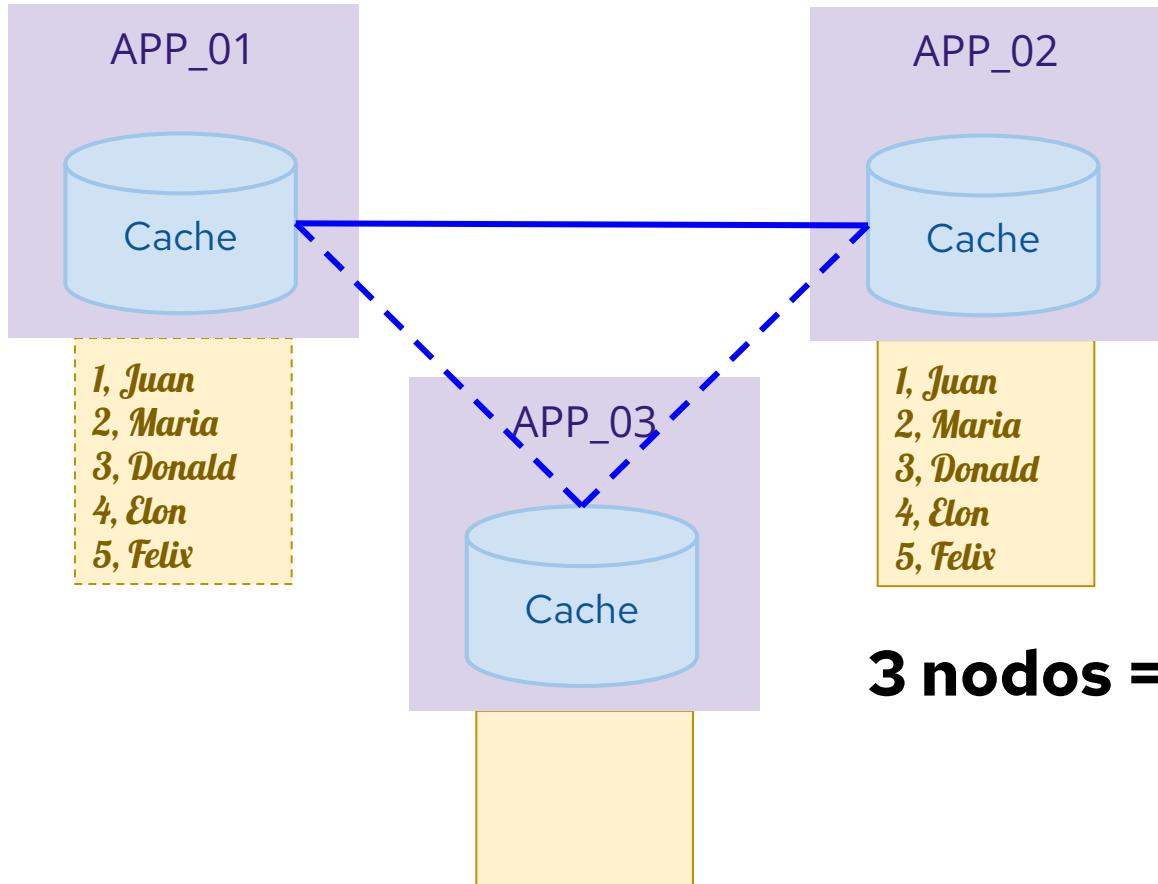
*1, Juan
2, Maria
3, Donald
4, Elon
5, Felix*



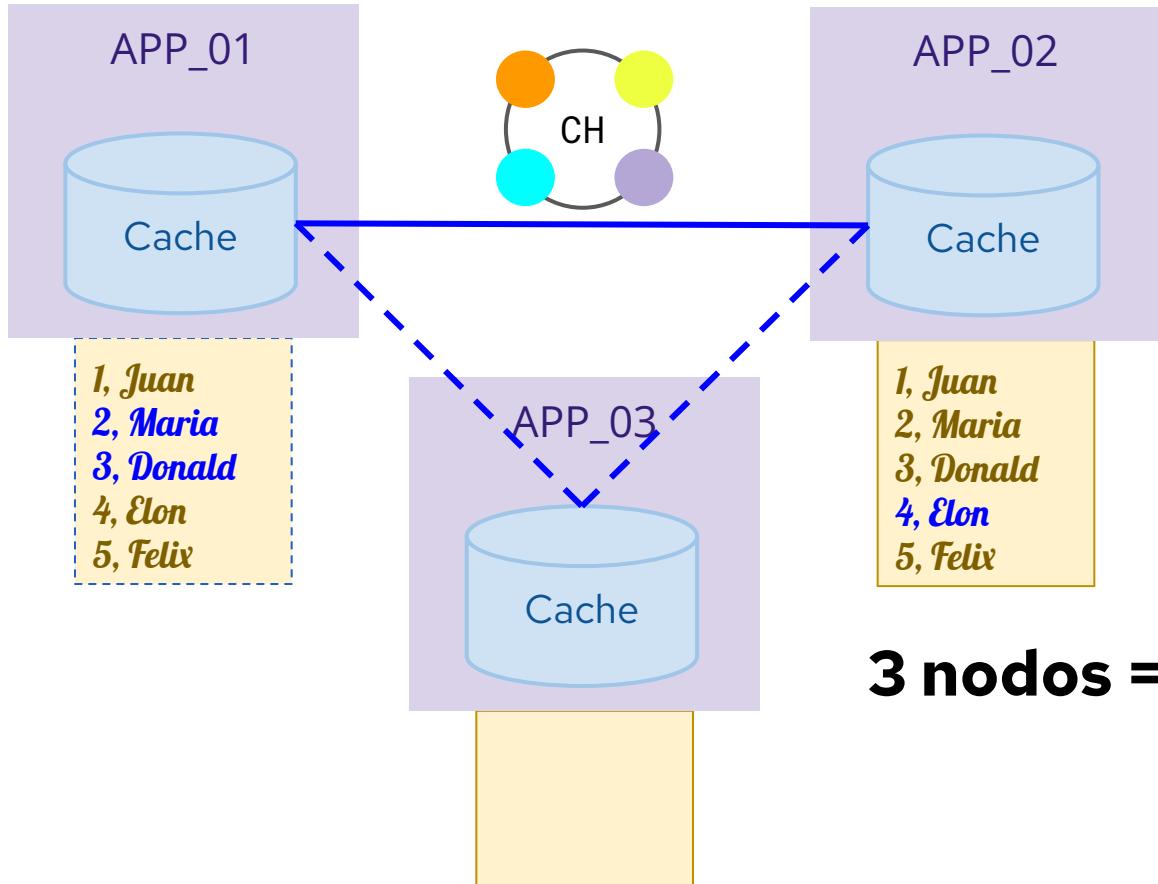
*1, Juan
2, Maria
3, Donald
4, Elon
5, Felix*

*2, Maria
3, Donald
4, Elon*

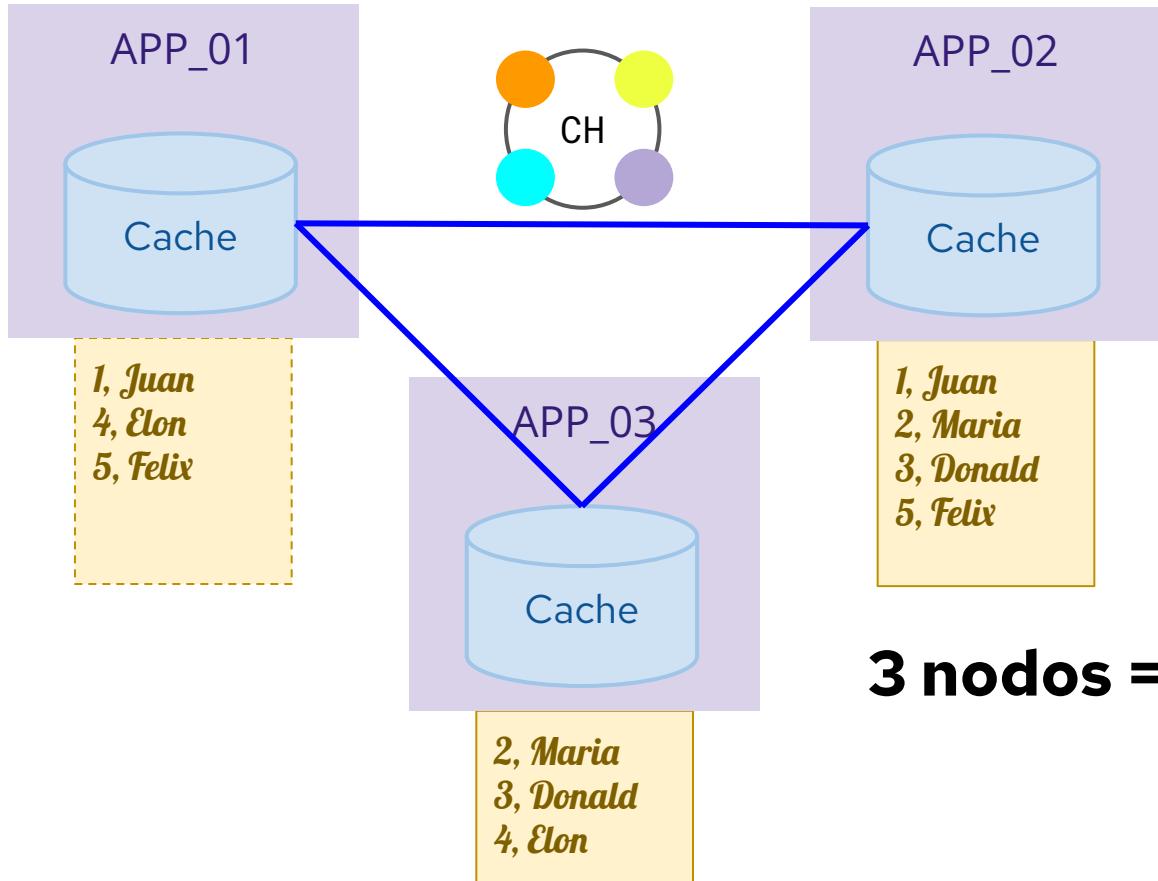
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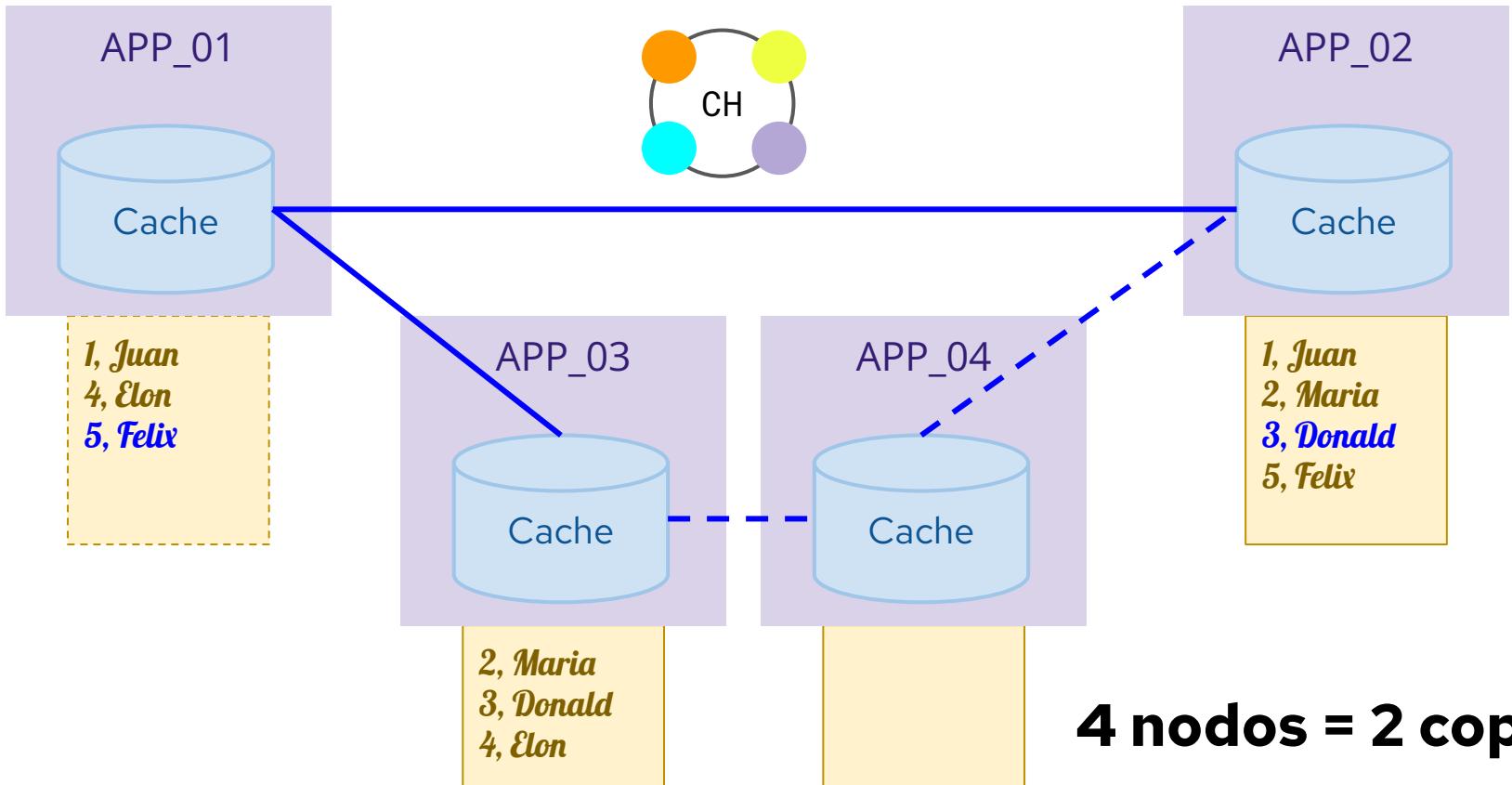
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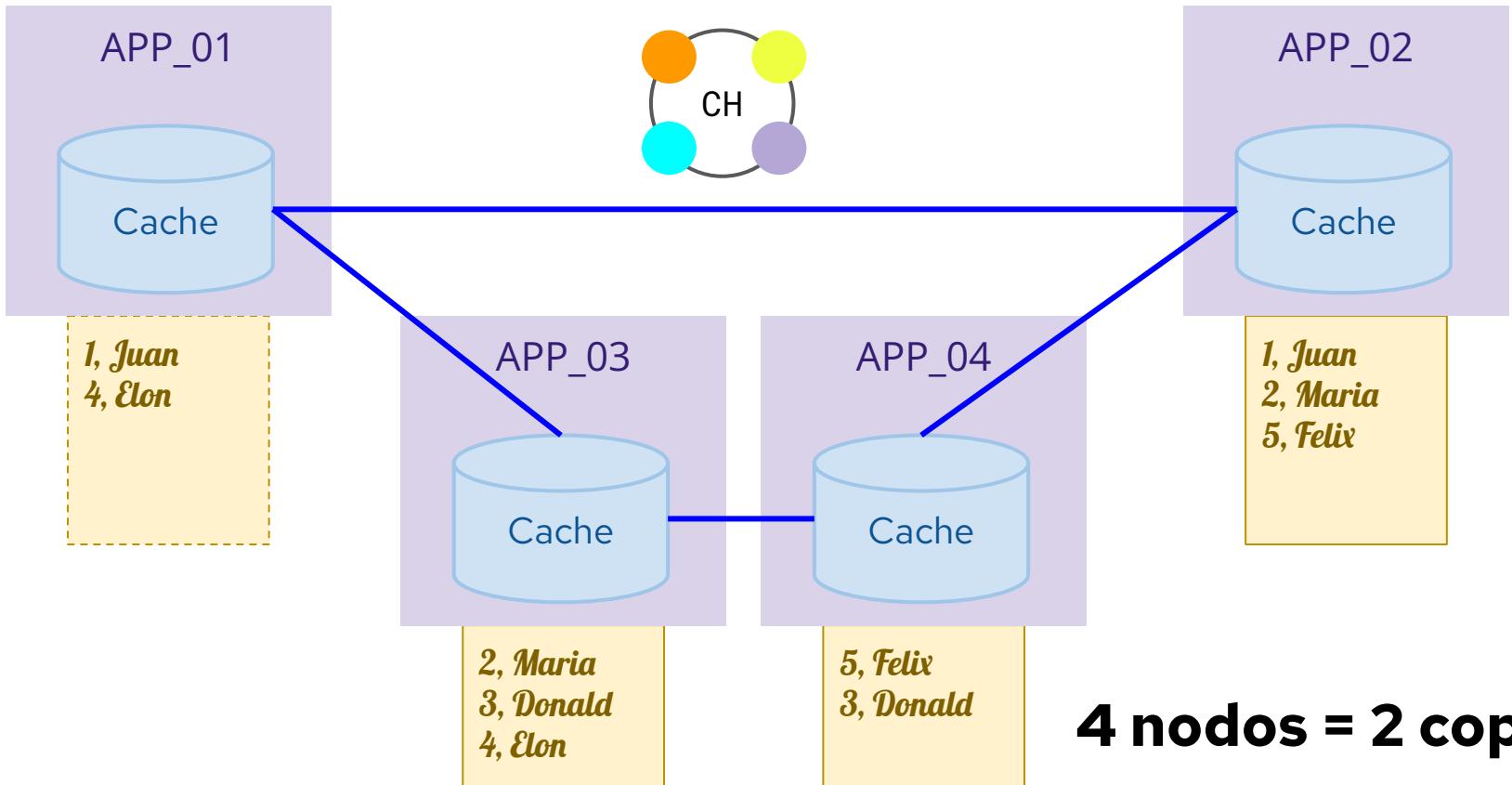


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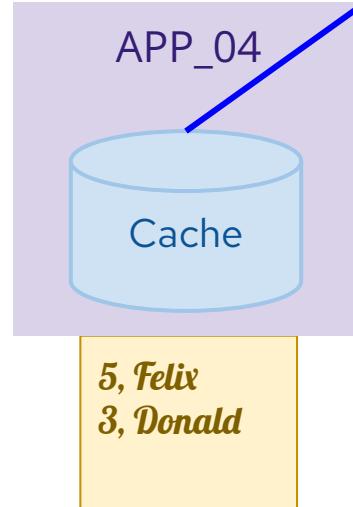
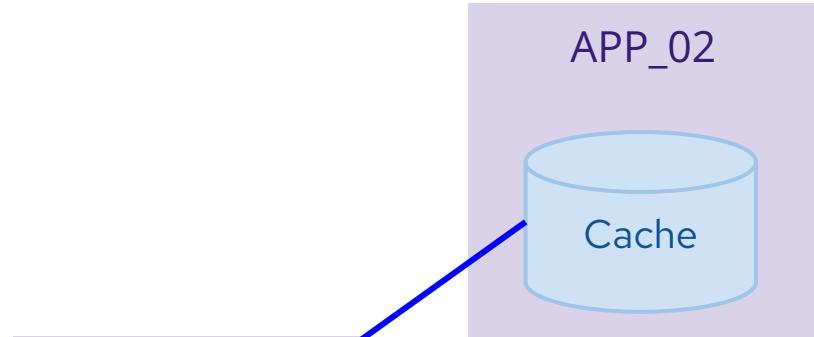
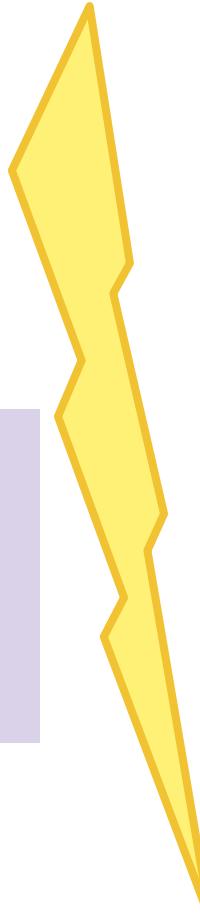
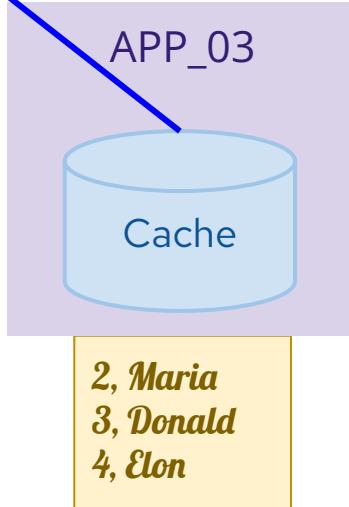
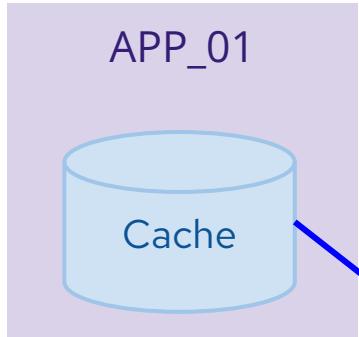


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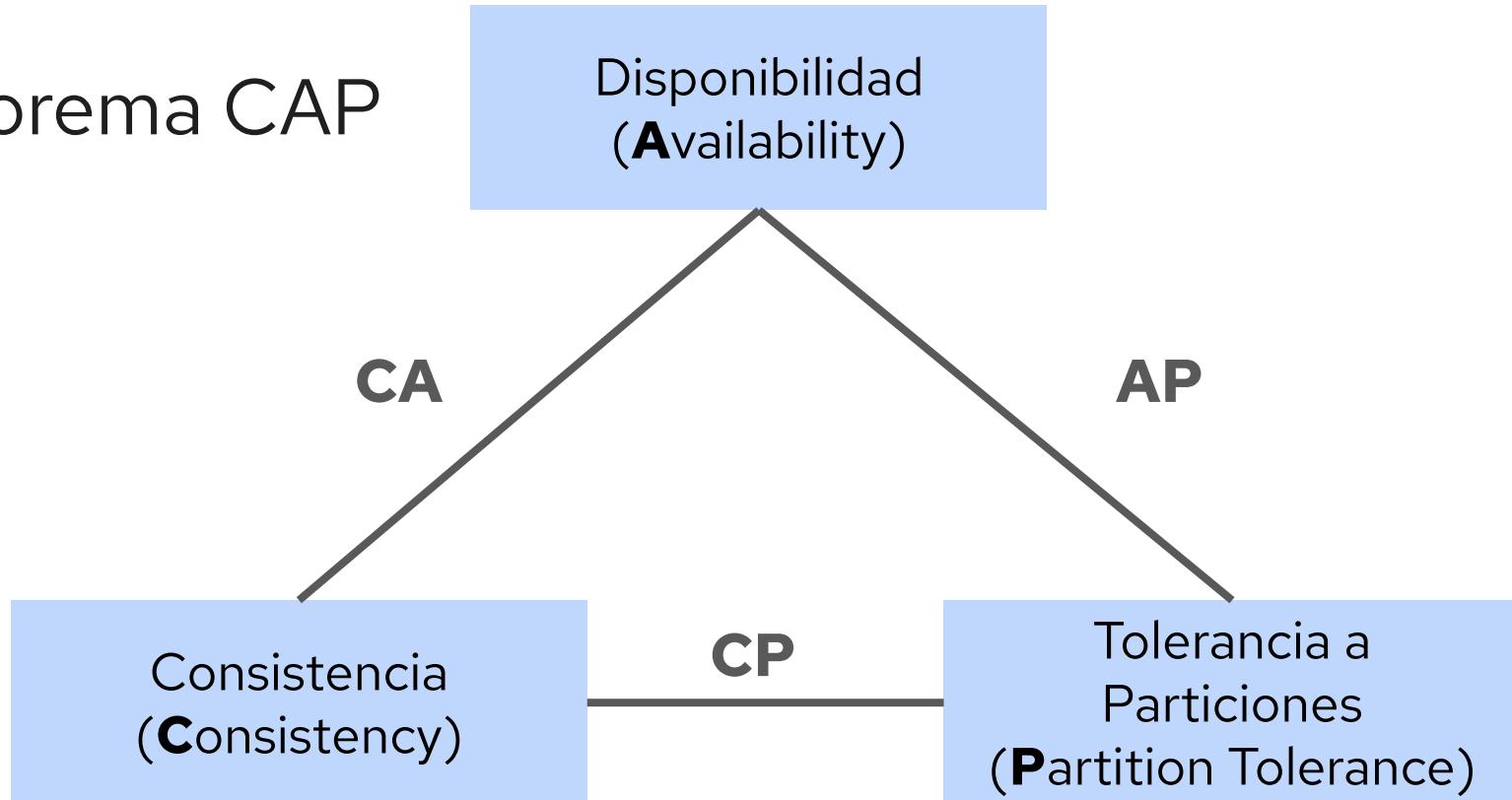




4 nodos = 2 copias



Teorema CAP



Language	Libraria / Framework
Java	Hazelcast, Infinispan, Ignite
C#	NCache
Kotlin	Hazelcast, Infinispan, Ignite
Otros	-



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¿QUÉ QUEREMOS?



APPS STATELESS



¿CÓMO LAS QUEREMOS?



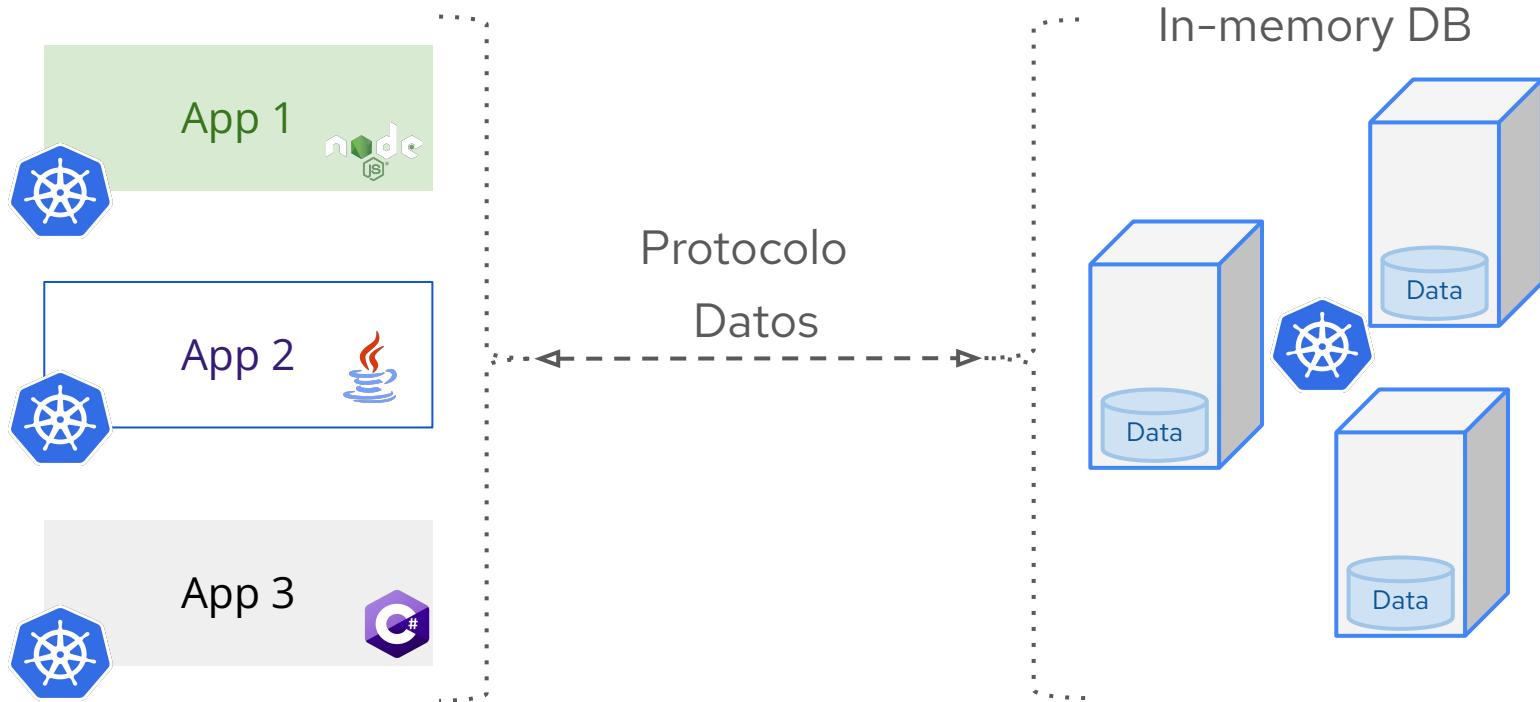
STATEFULL



Base de datos en memoria

Funcionan también como cachés distribuidas y grid de datos

Base de datos en memoria



Caso de uso: fuente de datos principal

- Rendimiento elevado y baja latencia
- Procesamiento rápido de transacciones
- Soporte para operaciones complejas
- Durabilidad de los datos
- Escalabilidad horizontal
- Seguridad avanzada

Ejecución en cluster

Seguridad

Búsquedas Full-Text

Transacciones en memoria

Casos de uso genericos

- Cachés distribuidas para velocidad de tratamiento
- Almacenamiento de sesiones
- Recomendaciones en tiempo real
- Herramientas colaborativas
- Sectores: banca (detección de fraude...), seguros, compra/venta de productos, transportes, telecom. más.



redis



Tarantool

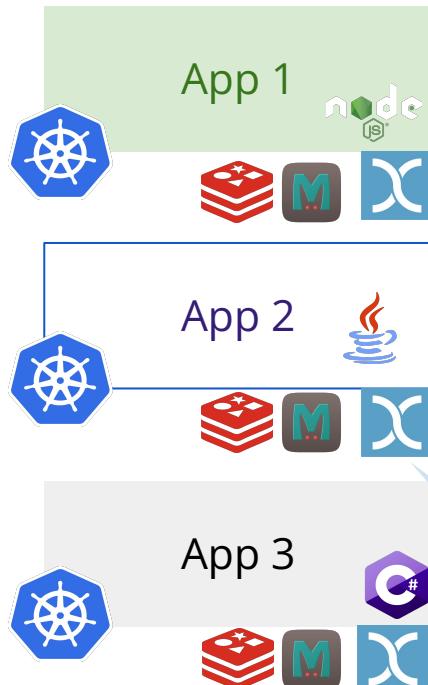


Infinispan



Couchbase

Base de datos en memoria, ej. Infinispan



Protocólos:

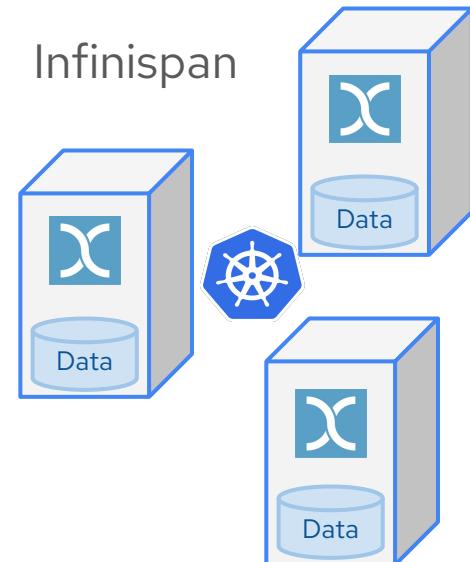
- HotRod
- RESP (2,3)
- Memcached
- REST

Datos:

- Protobuf
- Texto, JSON, XML
- Java

 Near Cache

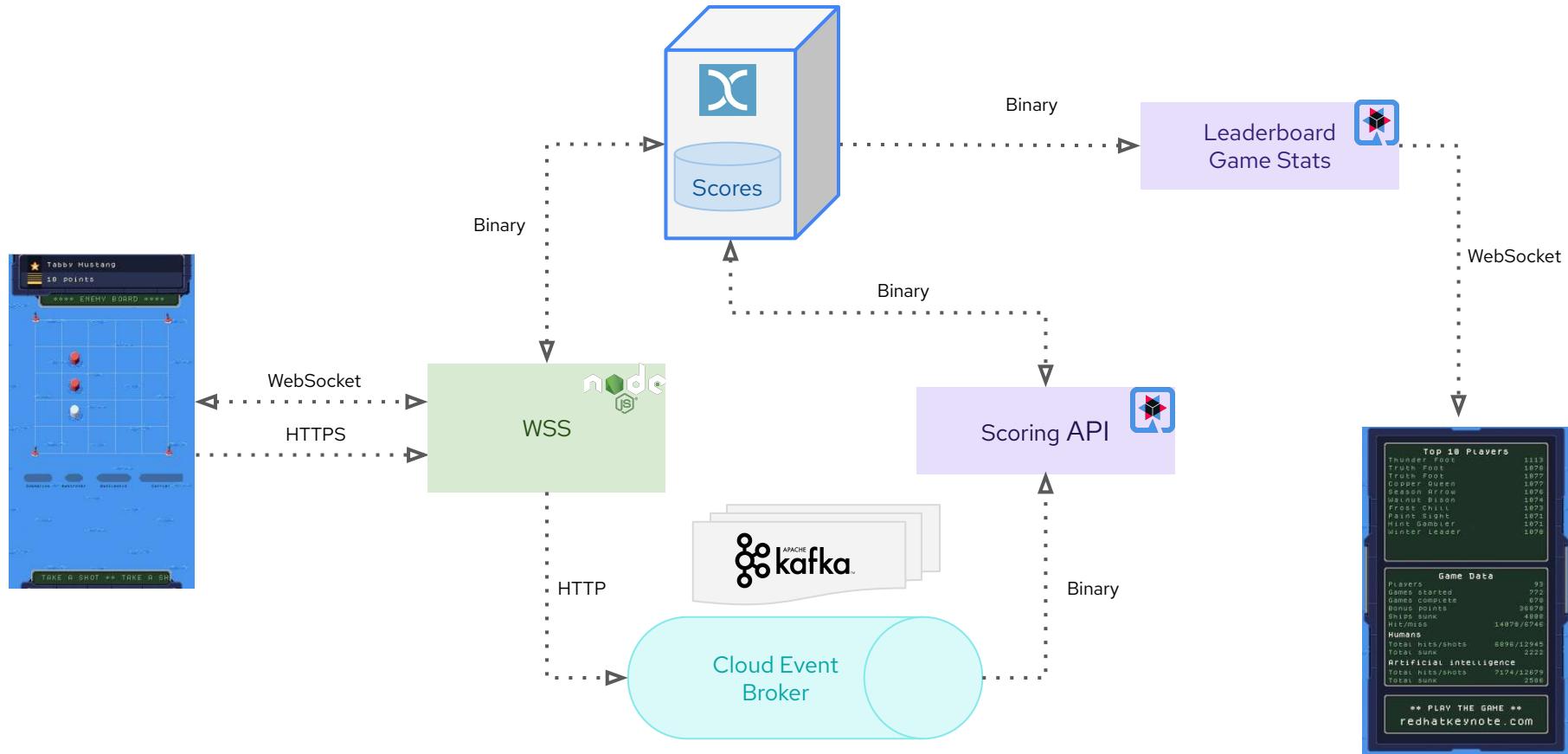
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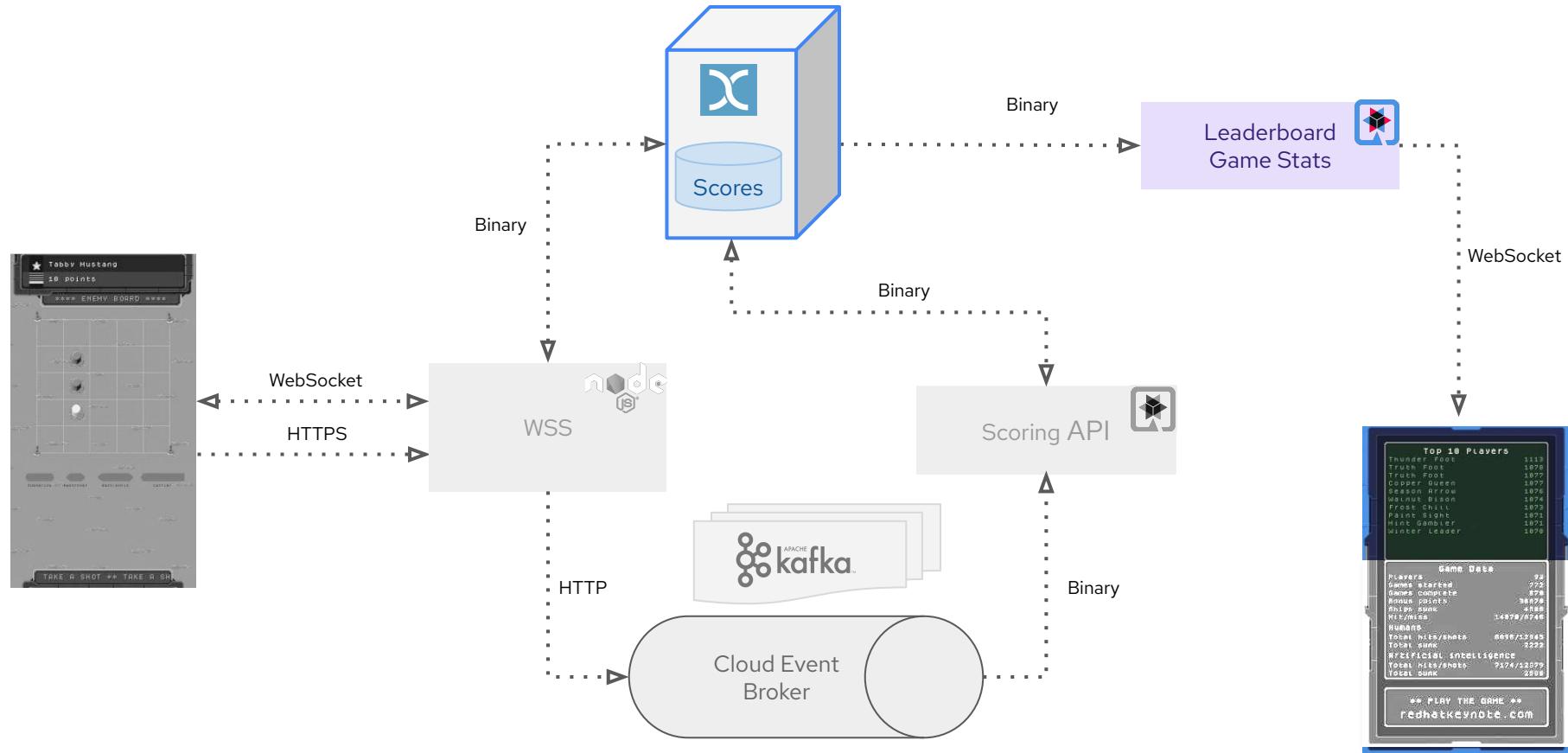
Caso de uso: analíticas en tiempo real



Caso de uso: analíticas en tiempo real

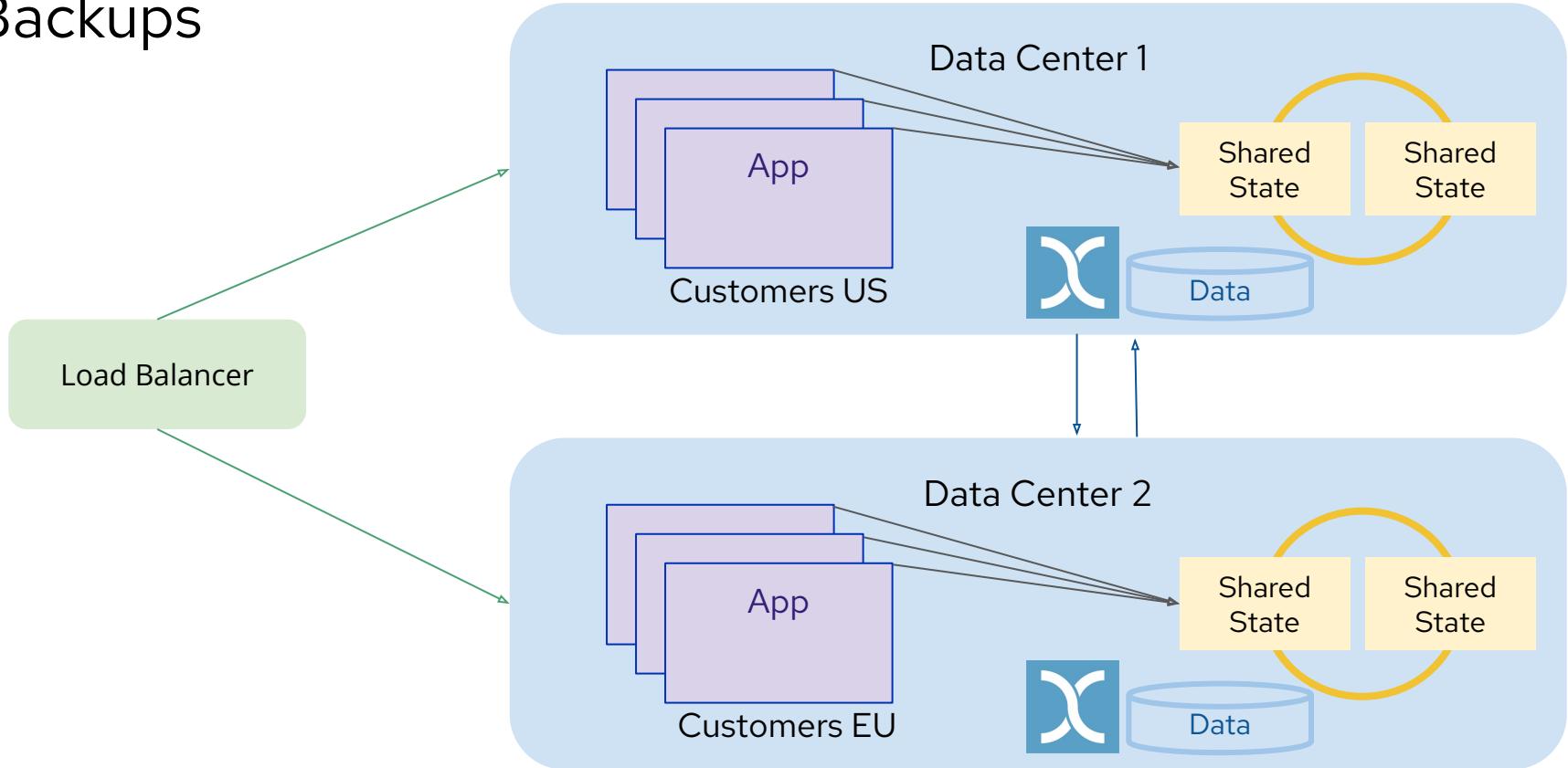


Caso de uso: analíticas en tiempo real



Seguridad Backups

Backups



Característica	Redis Enterprise	Infinispan	Couchbase
Tipo de sistema	Base de datos en memoria	Base de datos en memoria	NoSQL distribuida (memoria + disco)
Replicación entre sitios	Sí (CRDT, activo-activo)	Sí (Cross-Site Replication)	Sí (XDCR - Cross Data Center Replication)
Licencia	Comercial	Open Source	Open Source + Comercial

Caso de uso: Keycloak HA (High Availability)

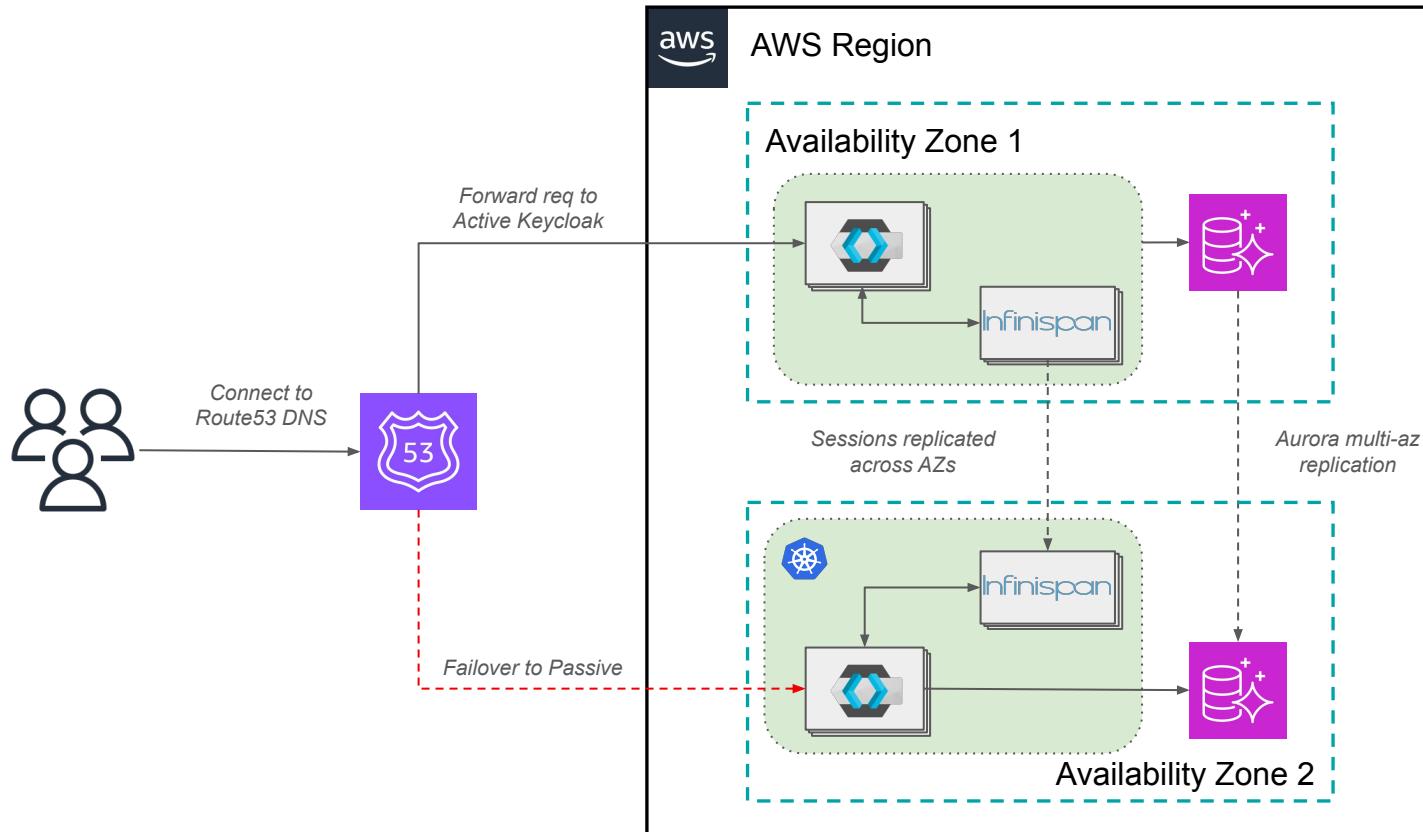
<https://www.youtube.com/watch?v=y1yE7Rd3lGE&t=5s>

The video player displays a presentation slide titled "HA Architecture". On the left, a speaker is visible on stage at the DEVOXX France 2024 event. The slide itself contains a diagram illustrating the Keycloak HA architecture within an AWS Region.

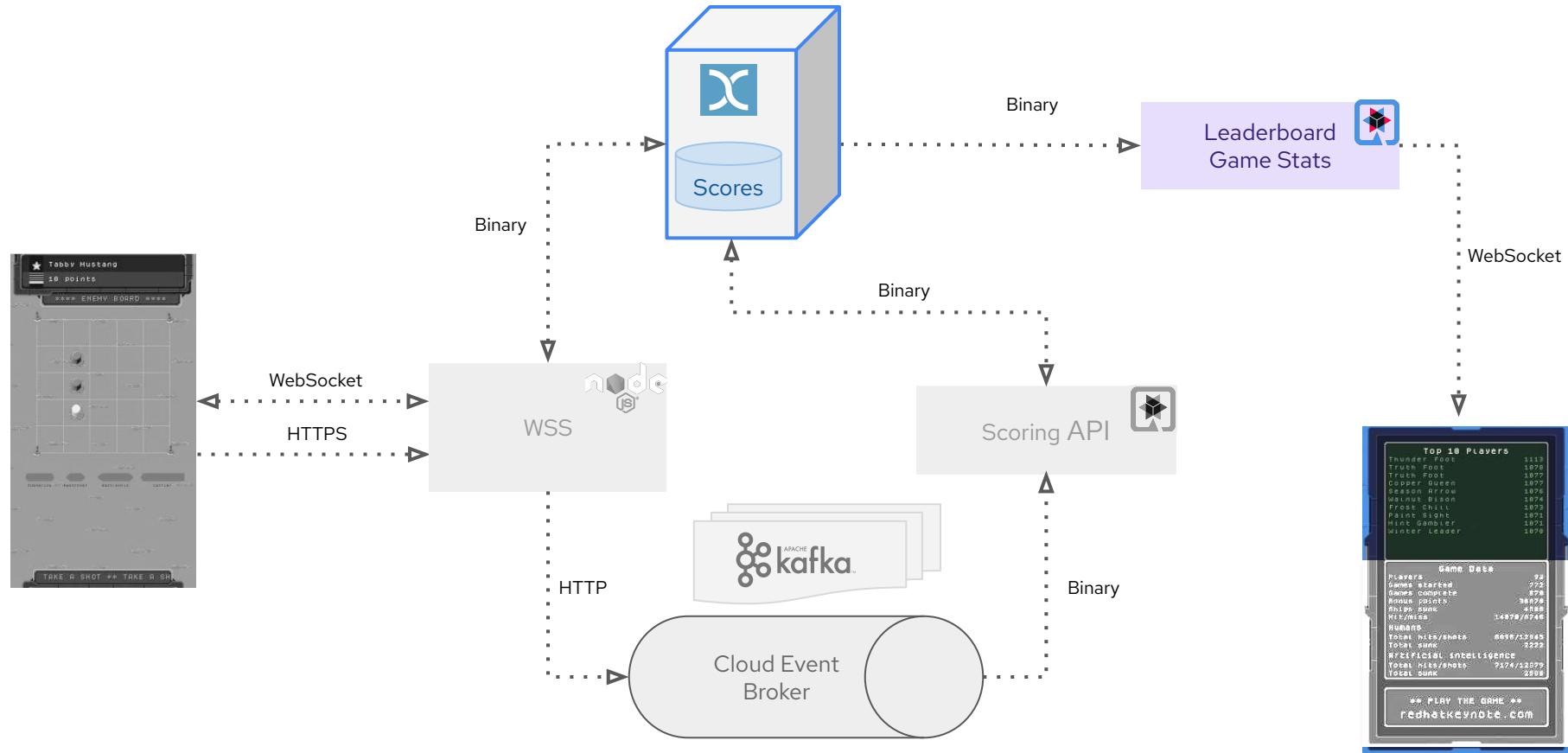
The diagram shows two Availability Zones (AZ1 and AZ2) separated by a dashed line. In each zone, there is a "Keycloak" icon. A "Forward req to Active Keycloak" arrow points from the Keycloak icon in AZ1 to the "Active" Keycloak icon. A "Failover to Passive" arrow points from the "Passive" Keycloak icon in AZ1 to the Keycloak icon in AZ2. A dashed arrow labeled "Sessions replicated across AZs" connects the two Keycloak icons. Another dashed arrow labeled "Asynchronous replication" points from the "Active" Keycloak icon in AZ1 to the "Passive" Keycloak icon in AZ2.

Below the slide, the video player interface includes a progress bar showing "23:42 / 46:10" and various control icons.

Caso de uso: HA Keycloak

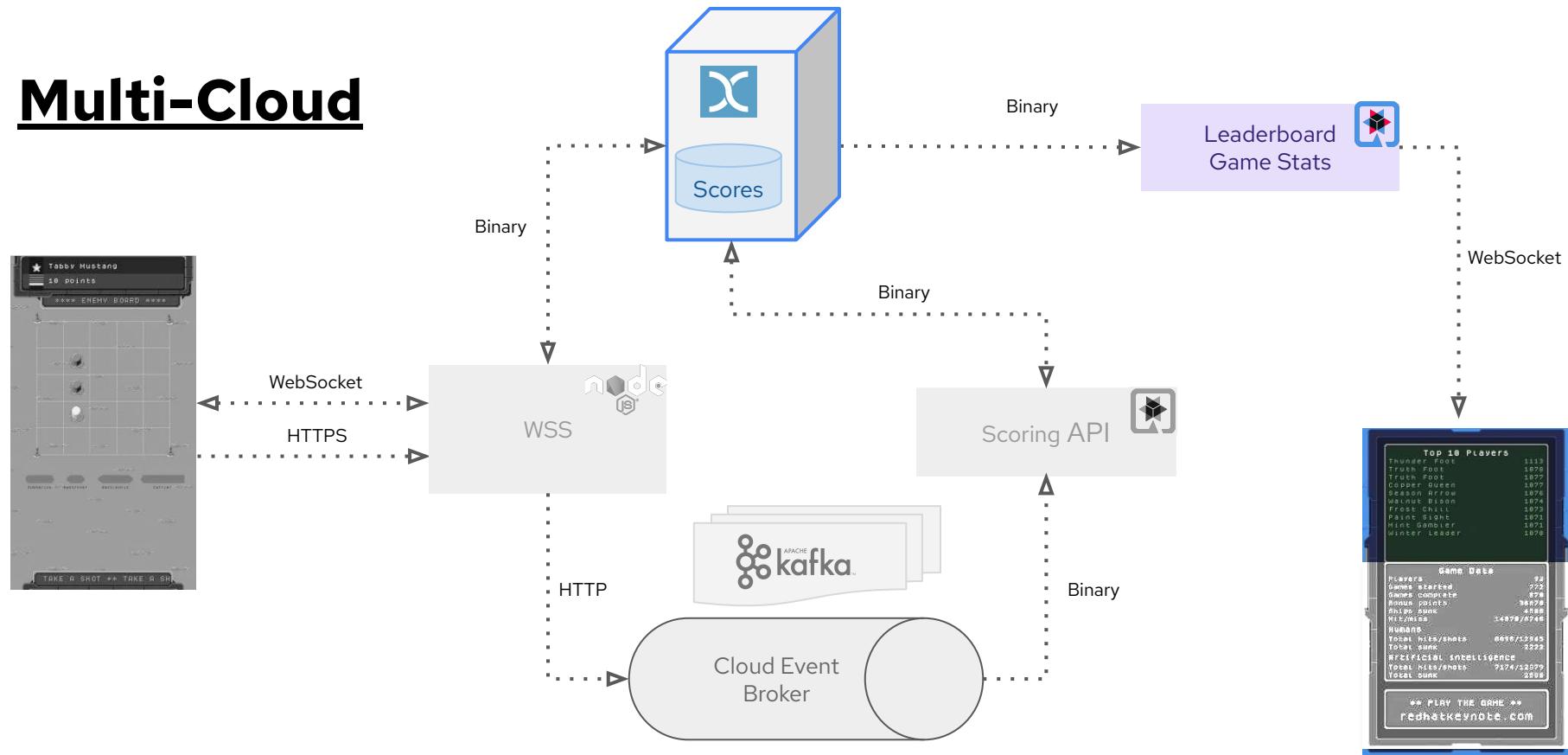


Caso de uso: analíticas en tiempo real



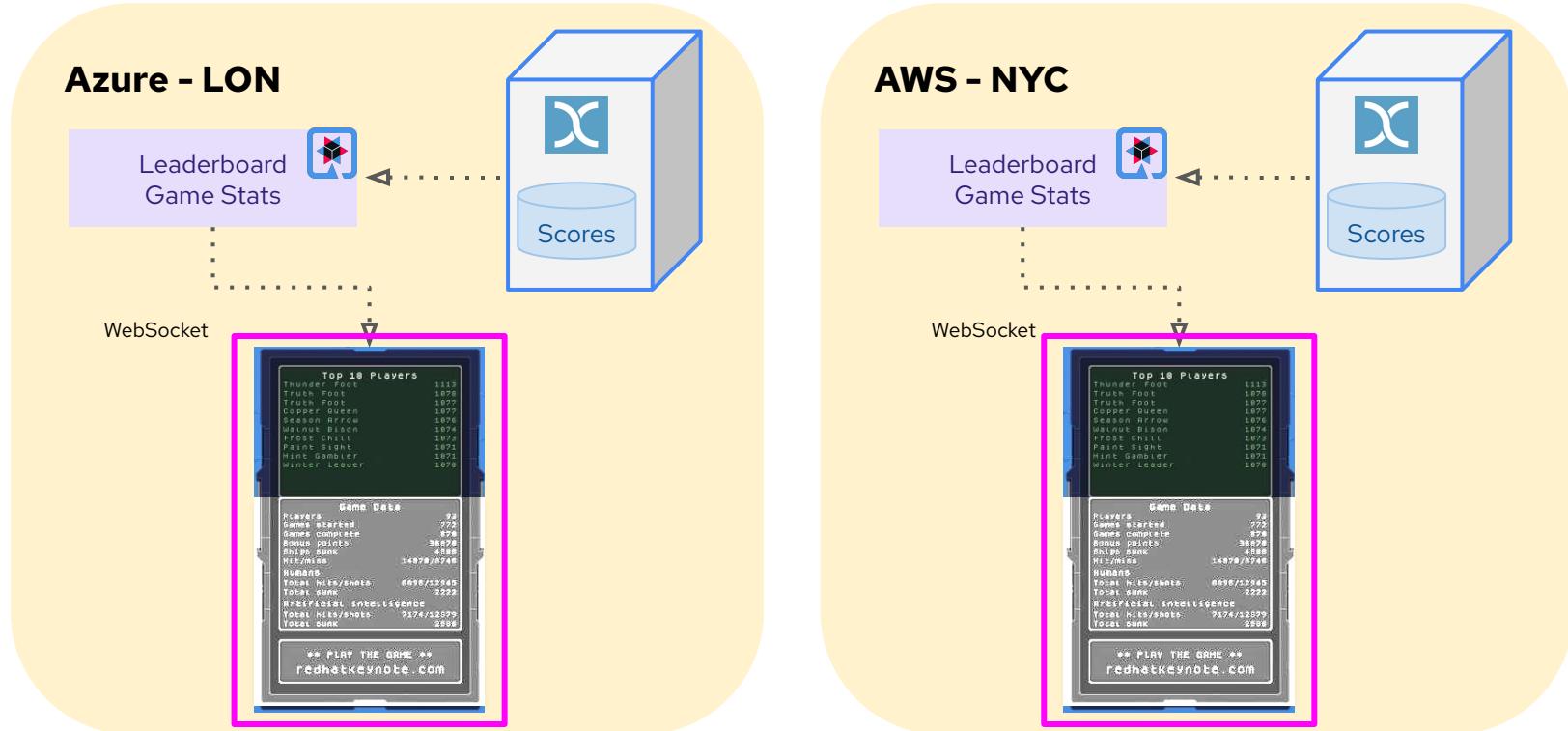
Caso de uso: analíticas en tiempo real

Multi-Cloud

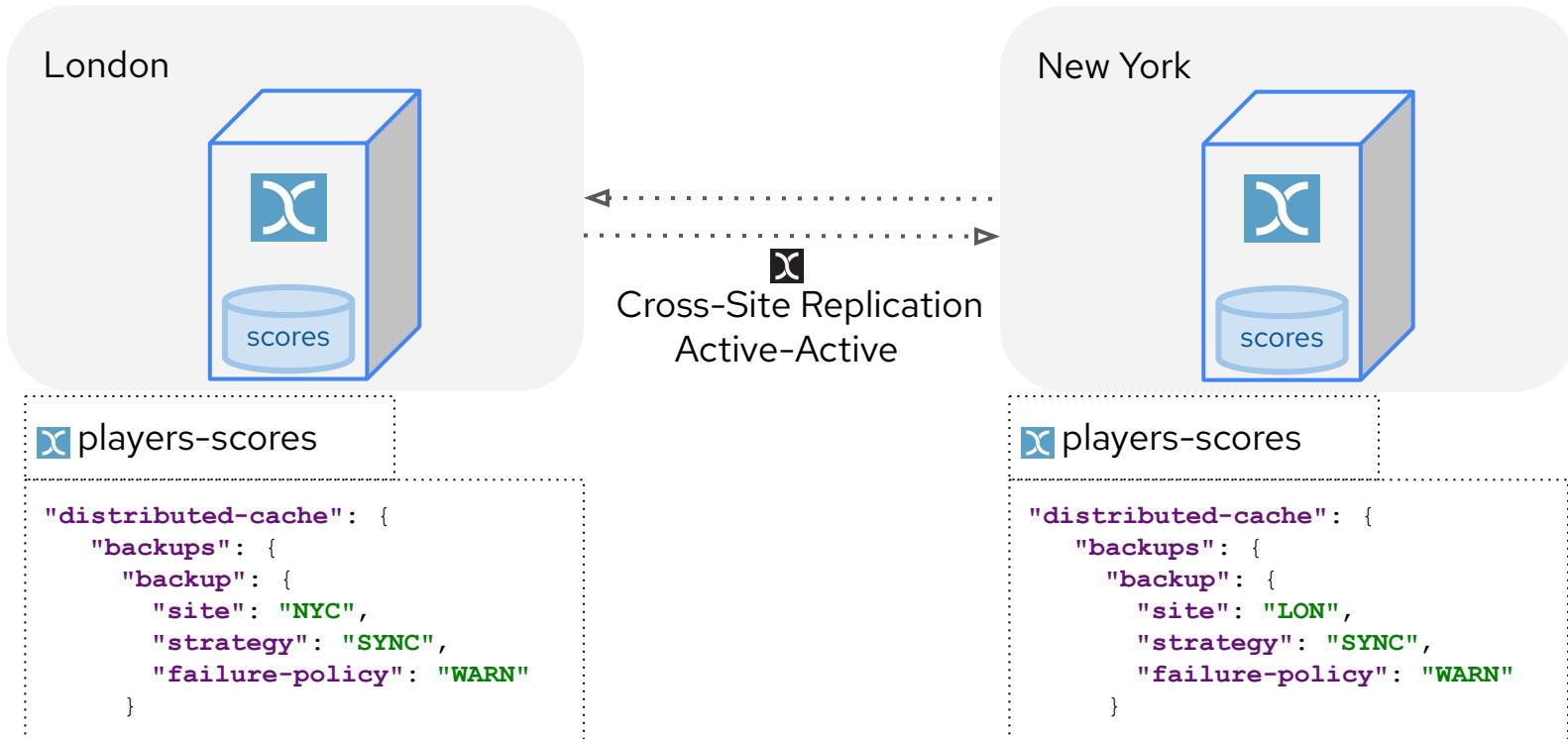


Caso de uso: analíticas en tiempo real

Multi-Cloud = 2 clusters

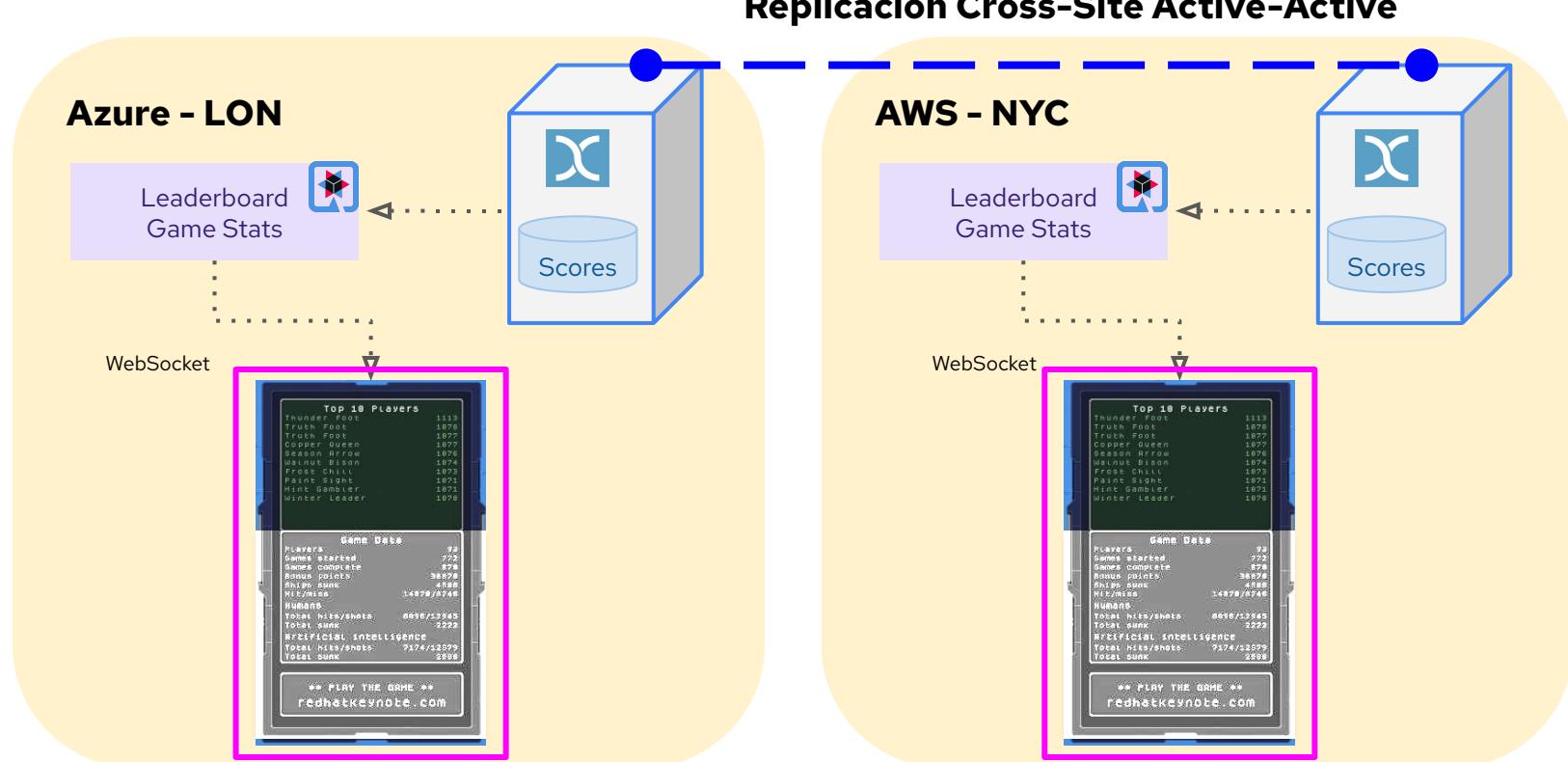


Cluster Backup Configuration

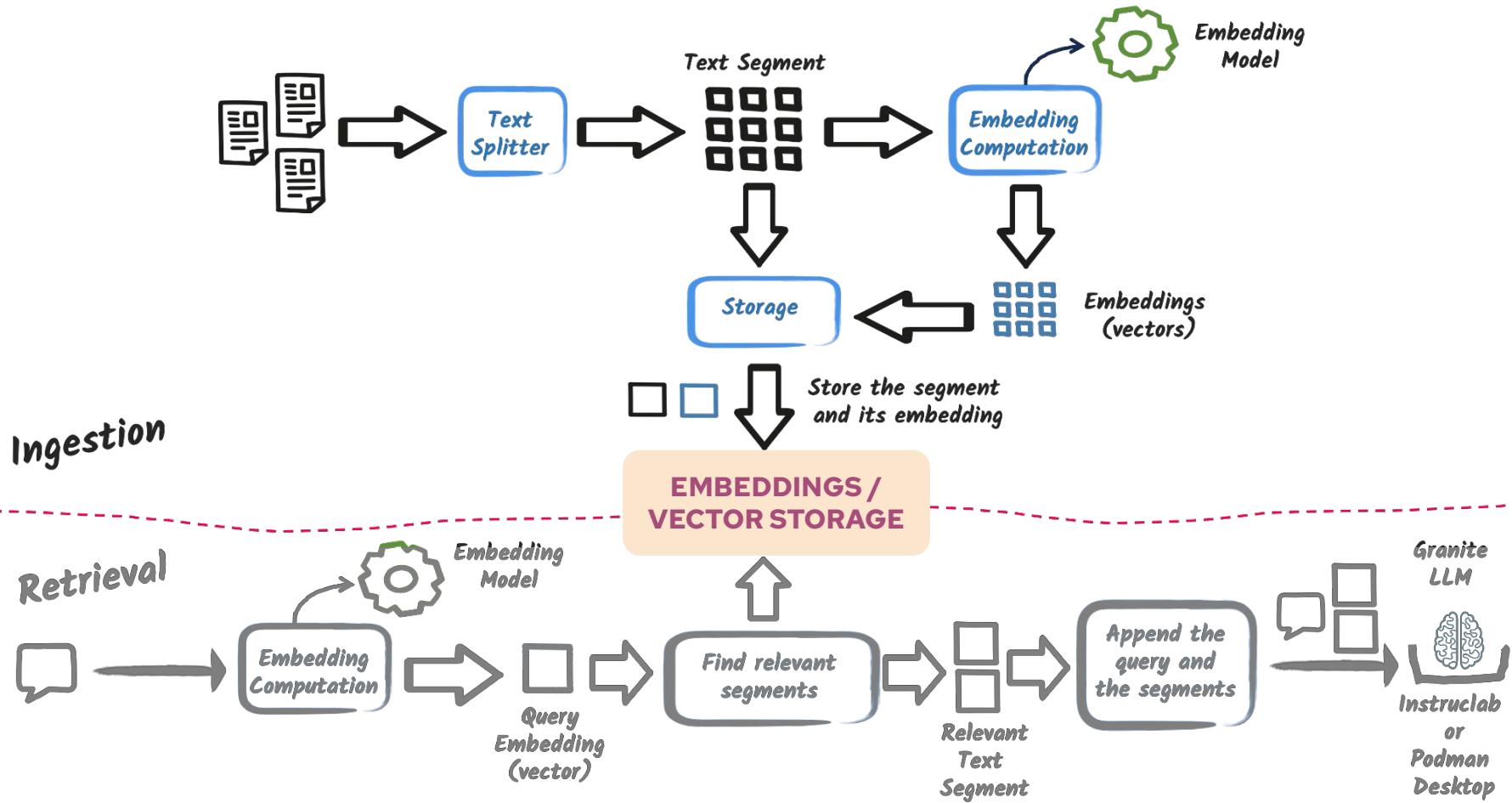


Caso de uso: analíticas en tiempo real

Multi-Cloud = 2 clusters



Búsqueda Vectorial



Providers

Anthropic

AWS

Google

Hugging Face

Microsoft

OpenAI

More

Components

Chat models

Retrievers

Tools/Toolkits

Couchbase

Couchbase is an award-winning distributed NoSQL cloud database that provides scalability, and financial value for all of your cloud, mobile, AI, and edge needs. It includes built-in search and indexing, and provides coding assistance for developers and vector search for their applications.

Vector Search is a part of the Full Text Search Service (Search Service).

This tutorial explains how to use Vector Search in Couchbase. You can follow along with the code examples in this notebook or run them directly on a managed Couchbase Server.

Providers

Anthropic

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More

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Tools/Toolkits

Infinispan

Infinispan is an open-source key-value data grid, it can work as single node as well as distributed.

Vector search is supported since release 15.x For more: [Infinispan Home](#)

```
# Ensure that all we need is installed
# You may want to skip this
%pip install sentence-transformers
%pip install langchain
%pip install langchain_core
%pip install langchain_community
```

Redis Vector Store

This notebook covers how to get started with the Redis vector store.

Redis is a popular open-source, in-memory data structure store that can be used as a database, cache and queue. It now includes vector similarity search capabilities, making it suitable for building search engines and recommendation systems.

<https://python.langchain.com/docs/integrations/vectorstores/>

<https://quarkus.io/blog/granite-rag/>

Mona Museum

M

Mona

Welcome, my name is Mona, how can I help you today?

M

Me

What exhibitions do you propose?

M

Mona

Based on the descriptions provided, here are some suggested exhibitions for your youth group:

1. ****Isabella Vanderwood Exhibition****: As an Impressionist inspired by African trips, Isabella's exhibit would be perfect for your group. Encourage them to observe her loose brushwork and vibrant colors, and discuss how they capture the fleeting impressions of light and atmosphere.
2. ****Elijah Montrose Exhibition****: Elijah's Surrealist portraits and whimsical style would spark curiosity and imagination. His artworks, inspired by dreams and the subconscious mind, can lead to fascinating discussions about the power of the unconscious and creativity.
3. ****Adelaide Delacroix Exhibition****: For a unique blend of futuristic symbolism and Renaissance art, Adelaide's exhibit would be an excellent choice. Her inspirations from her pet chinchilla named C-3PO can lead to conversations about the intersection of technology and art, as well as the influence of animals on human creativity.

For larger youth groups, we offer customized tours and overnight experiences. Our overnight tour includes a special scavenger hunt to encourage exploration, refreshments, and a more intimate learning environment. Make sure to have each individual bring their own sleep bag and pillow for a comfortable and engaging experience.

Eskerrik asko

-  <https://infinispan.org/>
-  <https://quarkus.io/guides/infinispan-client>
-  <https://quarkus.io/guides/infinispan-client-reference>
-  <https://quarkus.io/blog/granite-rag/>
-  <https://github.com/infinispan-demos/riviera-dev-2024-demo>
-  <https://github.com/infinispan-demos/harry-potter-quarkus>
-  [Real time data on the open hybrid cloud with Quarkus and Infinispan](#)
-  [Highly available Identity and Access Management with multi-site Keycloak deployments](#)
-  [Create and manage Red Hat Data Grid services in the hybrid cloud](#)