

# How to run the SAFE Stack on Kubernetes with a PostgreSQL Backend

Chris Arnott

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# Who am I?

- ▶ Professional software developer since 2011
- ▶ Functional libraries and applications at GResearch
- ▶ Primary language is F#

# What is this talk?

How to run the SAFE Stack on Kubernetes with a PostgreSQL Backend

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How to run the **SAFE Stack** on Kubernetes with a PostgreSQL Backend

- ▶ **SAFE Stack** - Lets you develop full stack web applications entirely in F#

# What is this talk?

How to run the SAFE Stack on **Kubernetes** with a PostgreSQL Backend

- ▶ SAFE Stack - Lets you develop full stack web applications entirely in F#
- ▶ **Kubernetes** - Open-source system for automating deployment, scaling, and management of containerized applications

# What is this talk?

How to run the SAFE Stack on Kubernetes with a **PostgreSQL** Backend

- ▶ SAFE Stack - Lets you develop full stack web applications entirely in F#
- ▶ Kubernetes - Open-source system for automating deployment, scaling, and management of containerized applications
- ▶ **PostgreSQL** - Open source object-relational database

# Takeaways

## Automatic database migrations

- ▶ Write backwards compatible database migrations
- ▶ Migrate your database when your app starts up
- ▶ Kubernetes rolling updates will take care of the rest

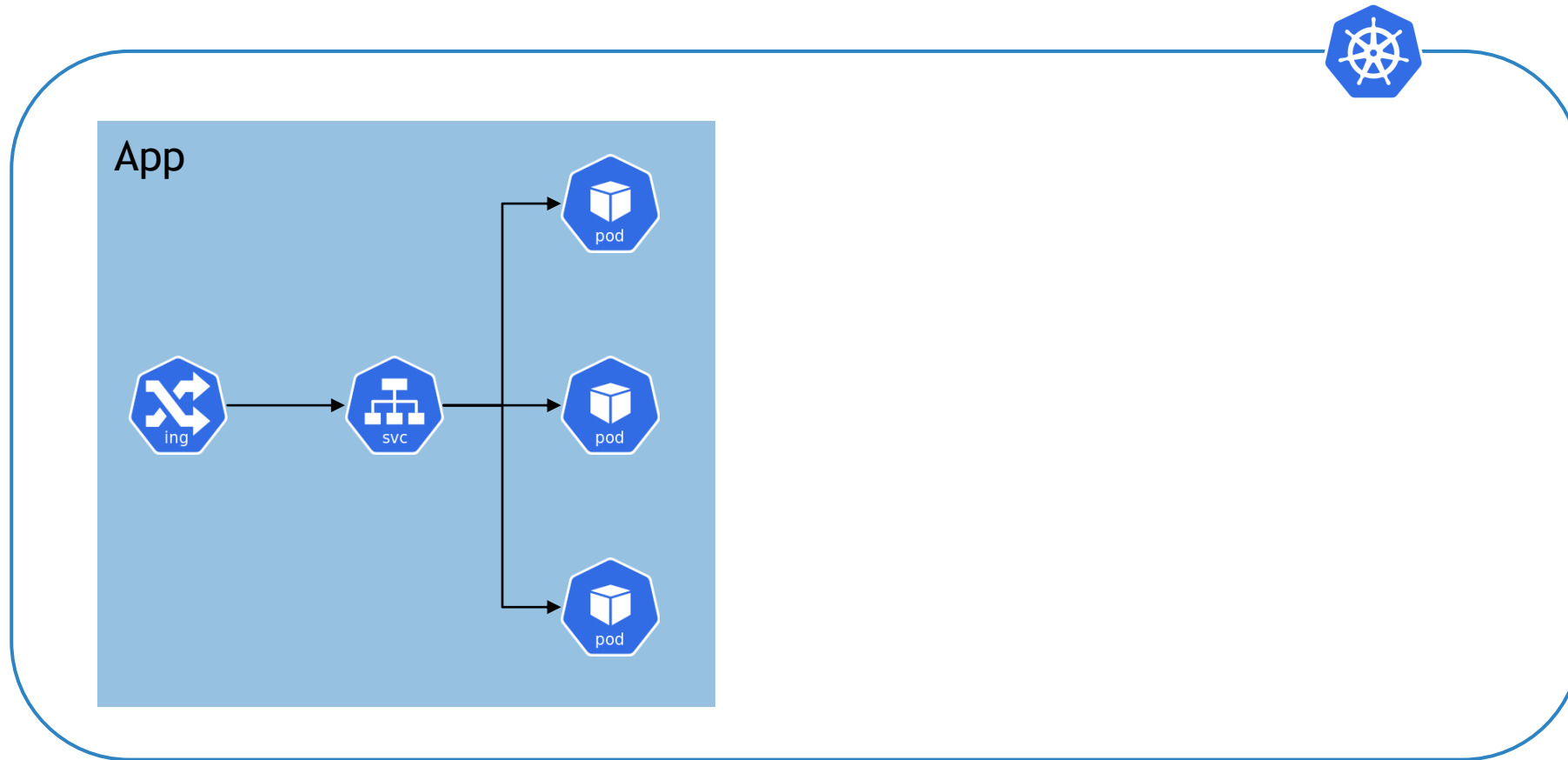
# Takeaways



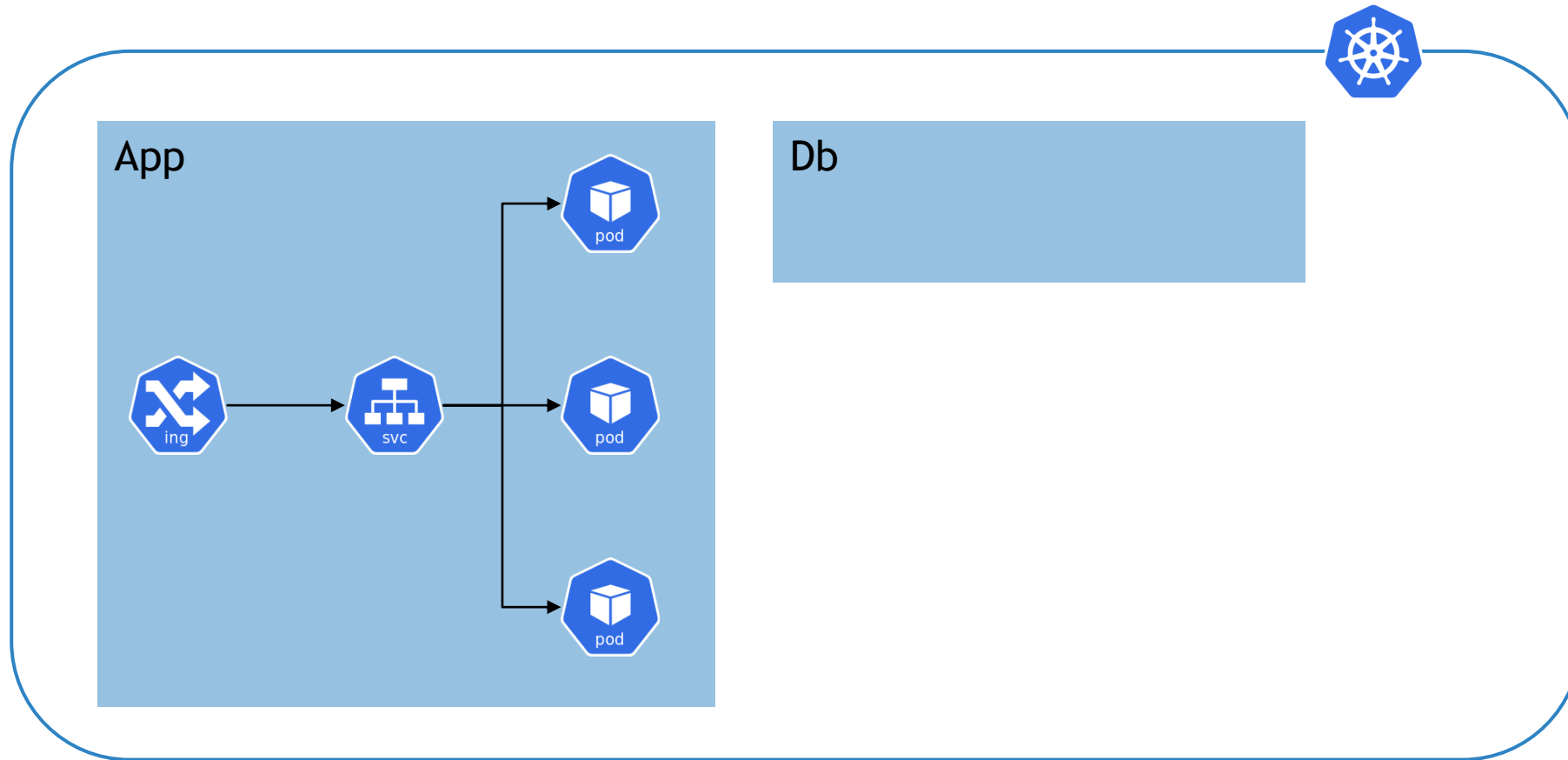
App



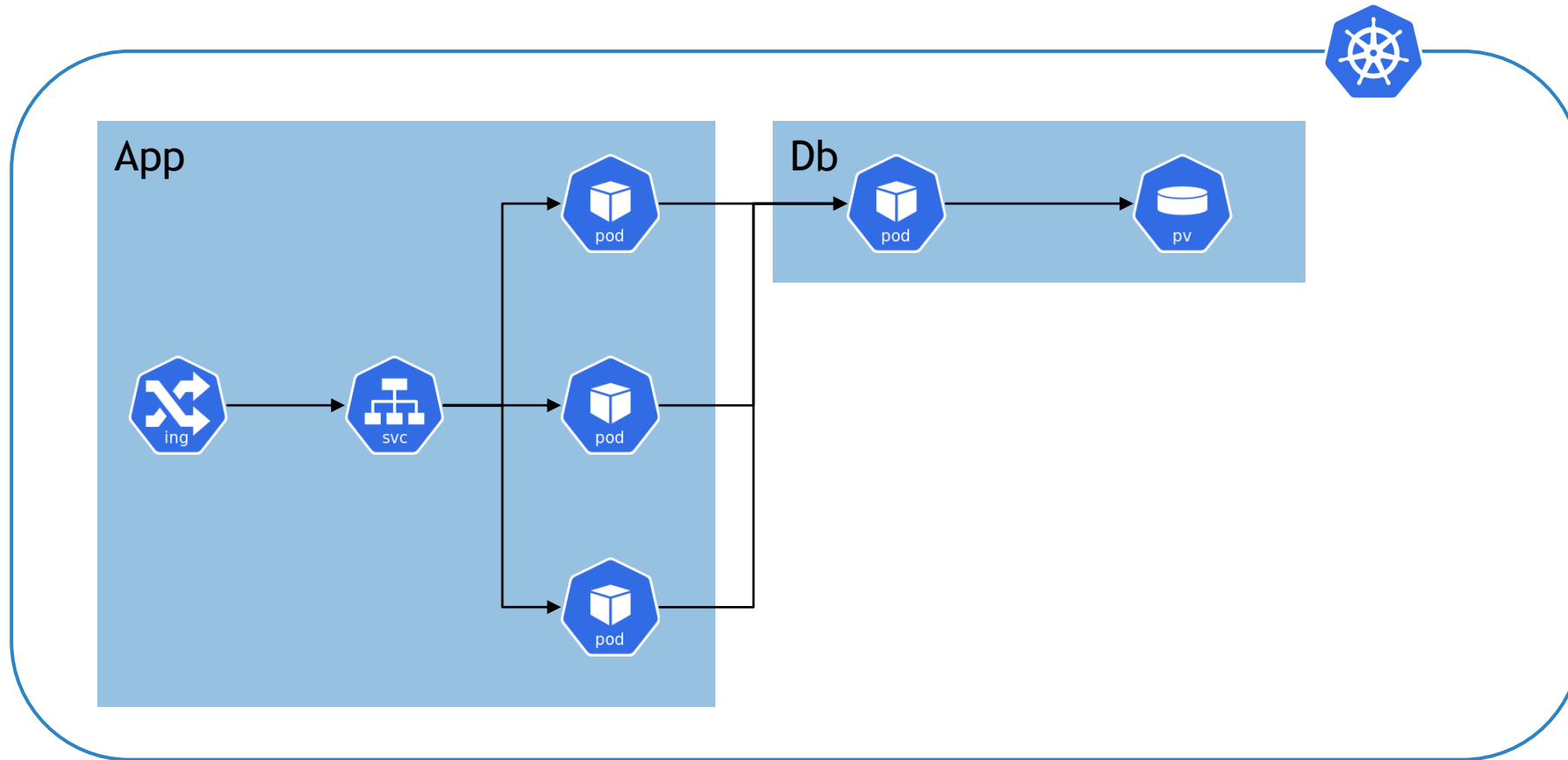
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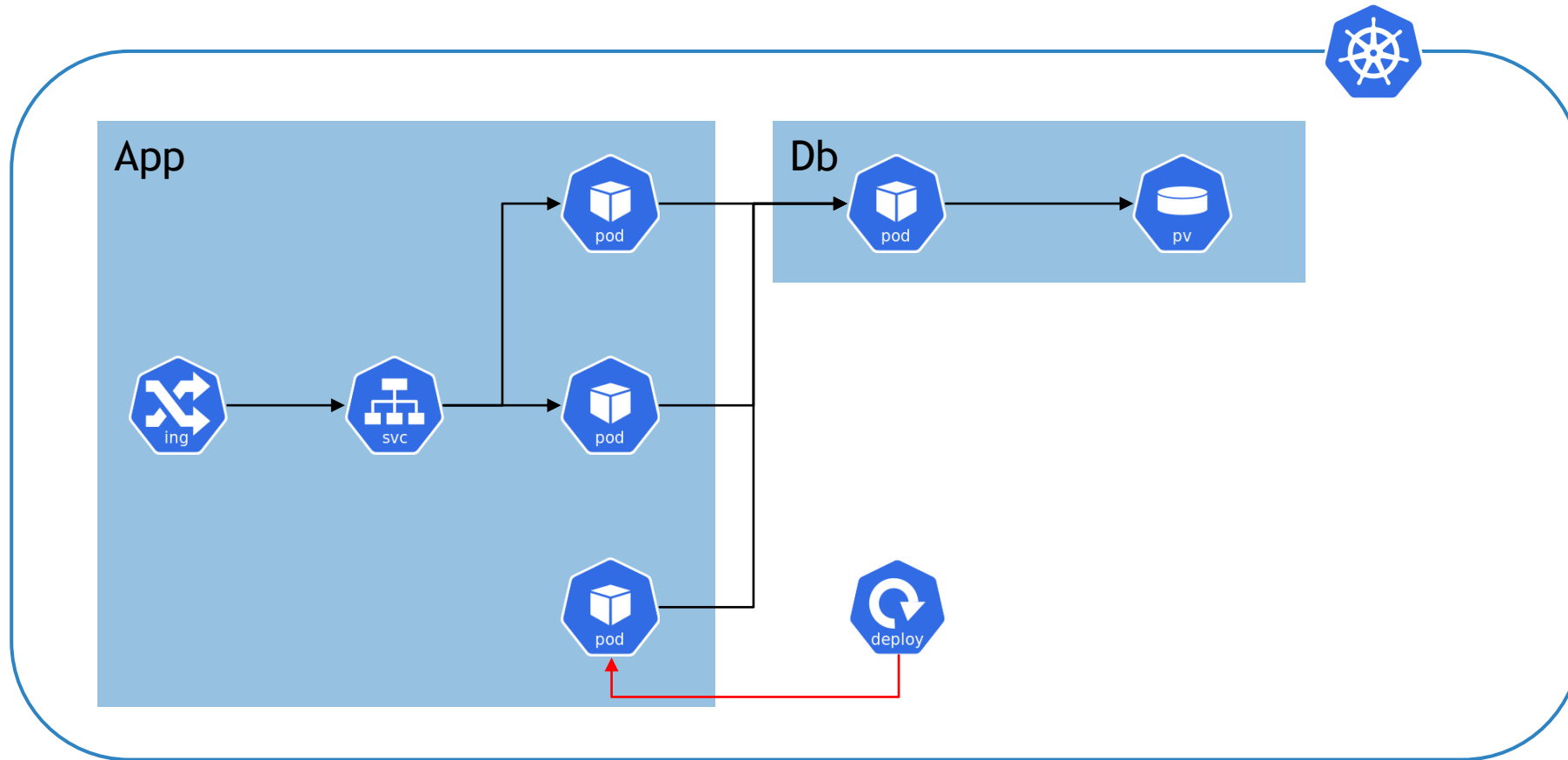
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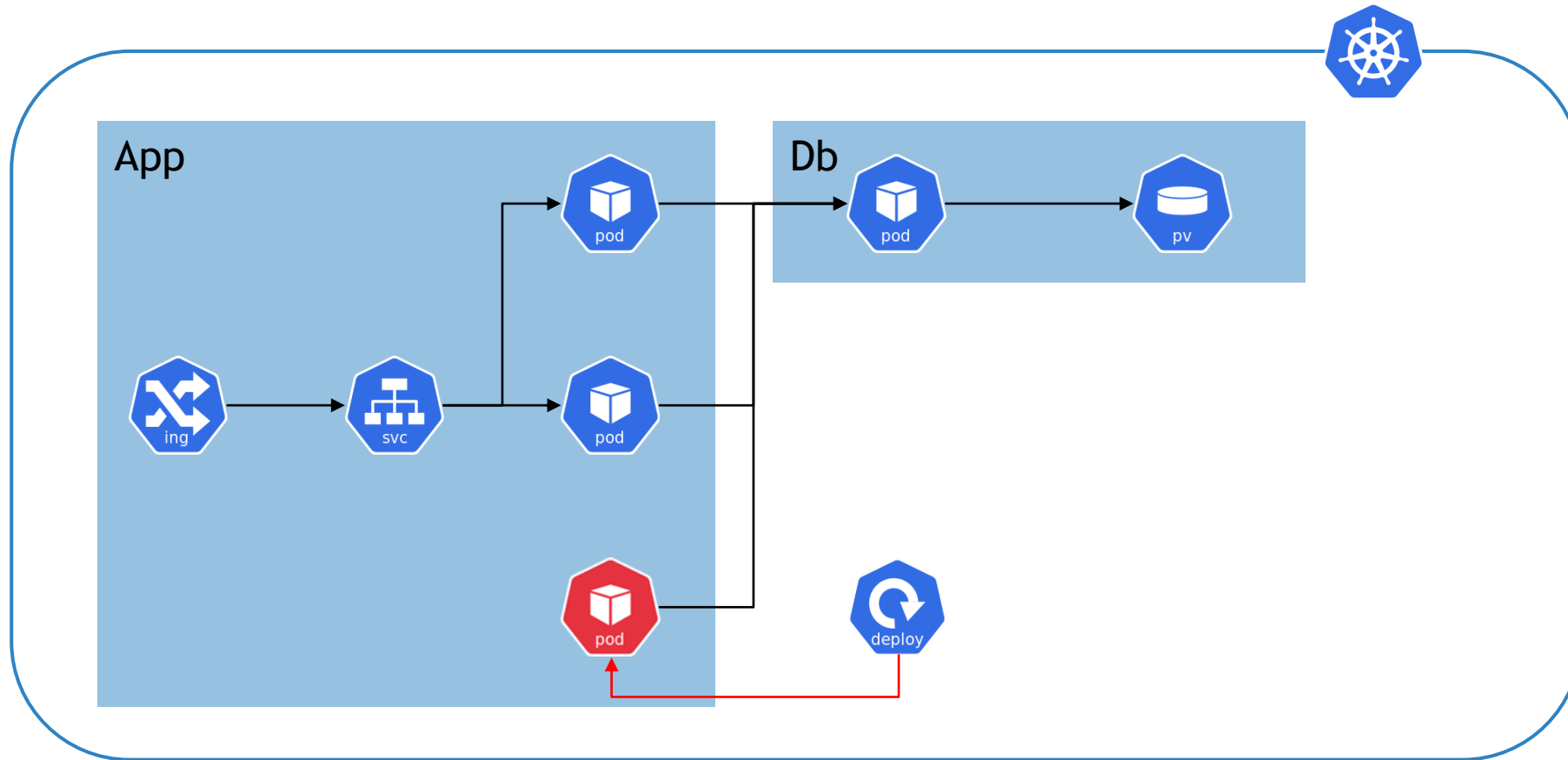
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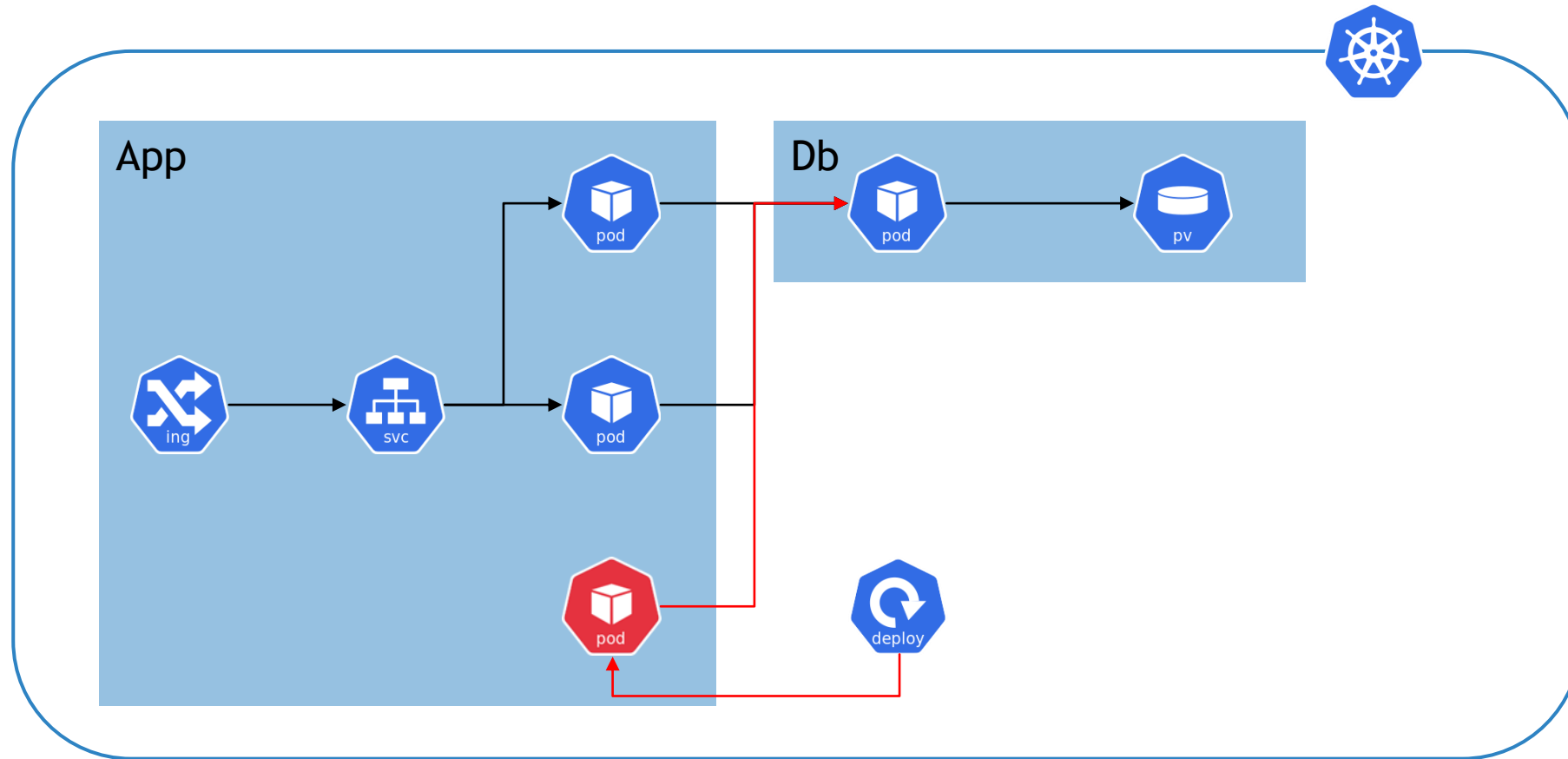
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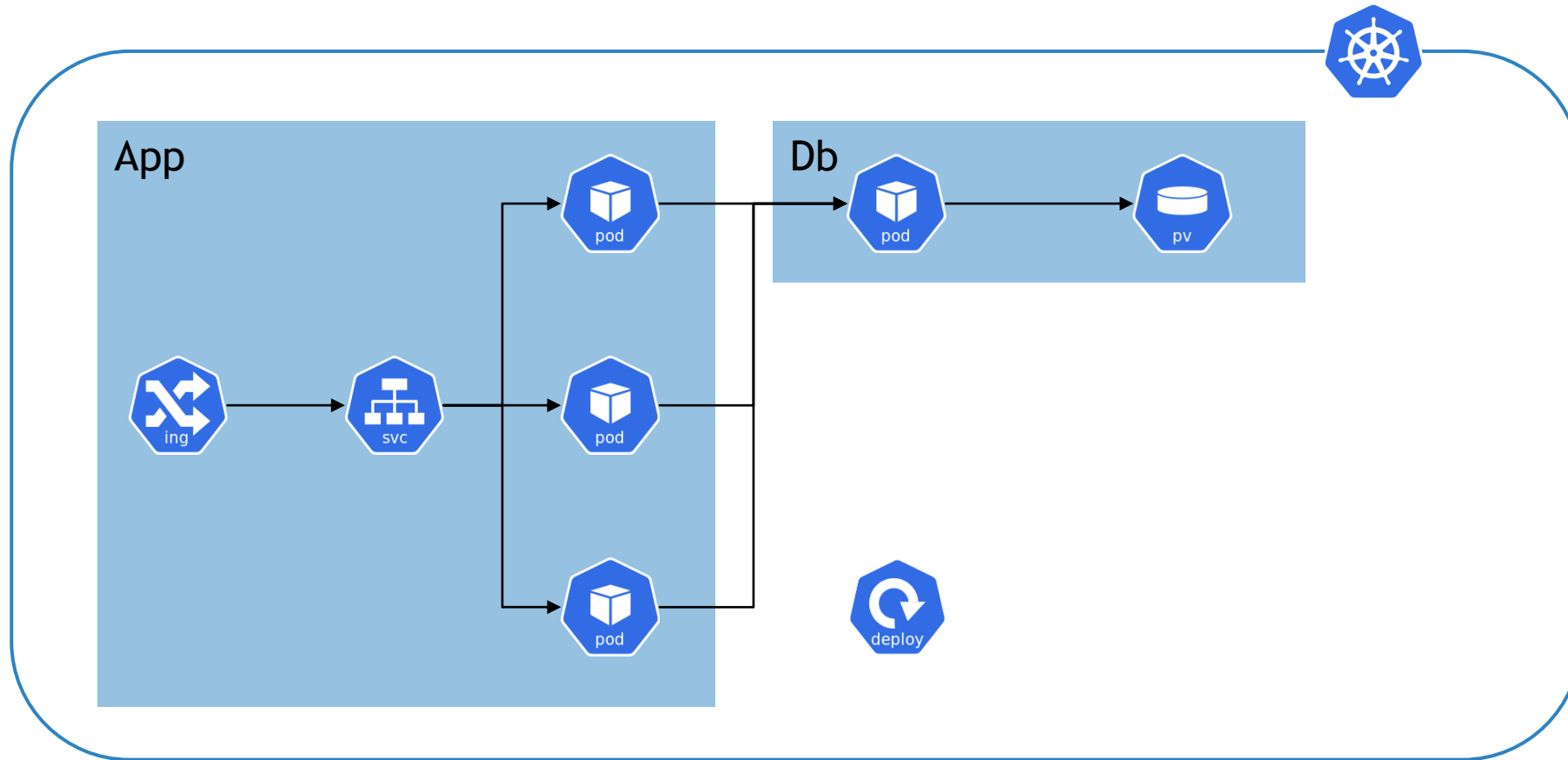
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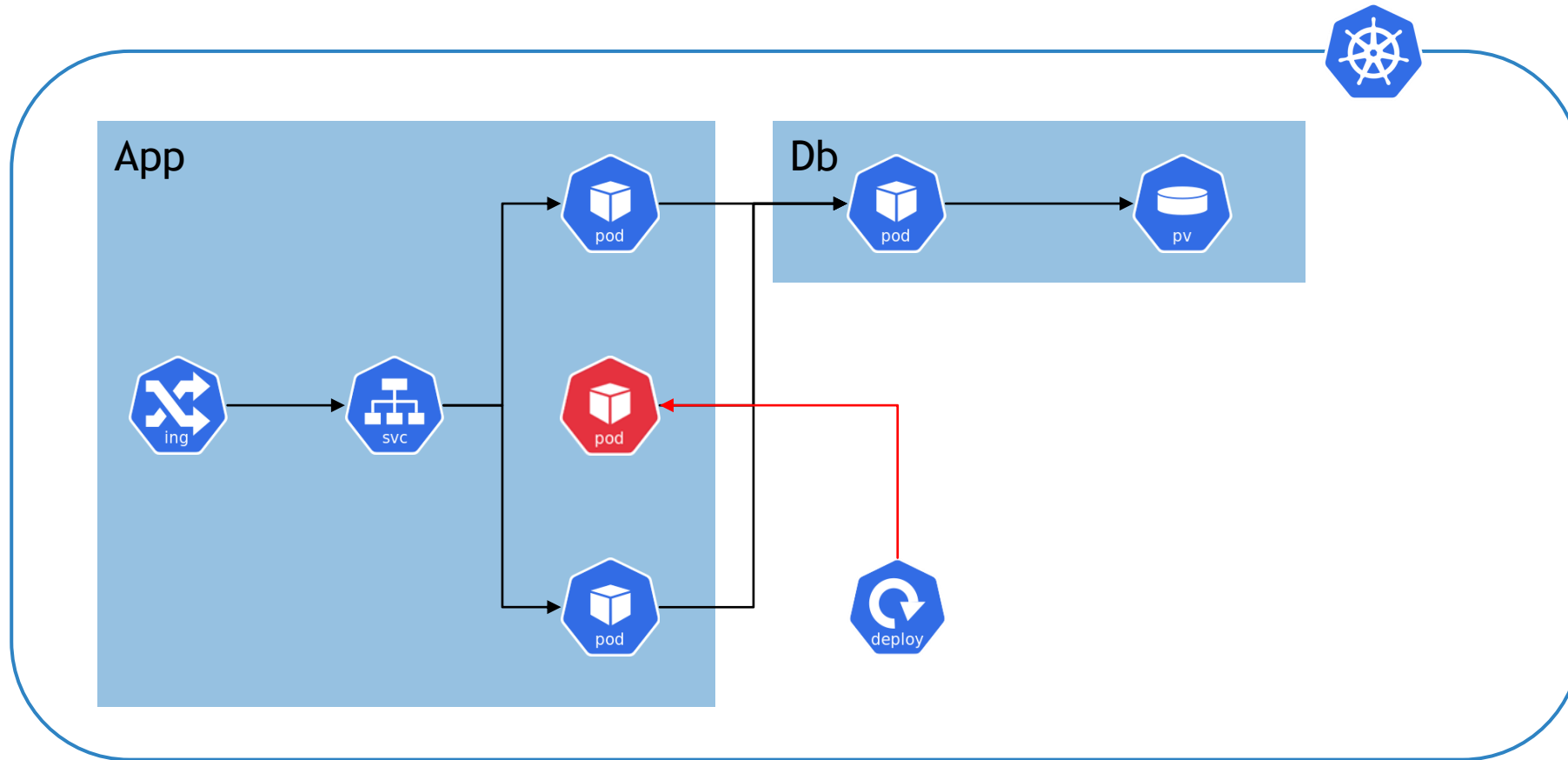
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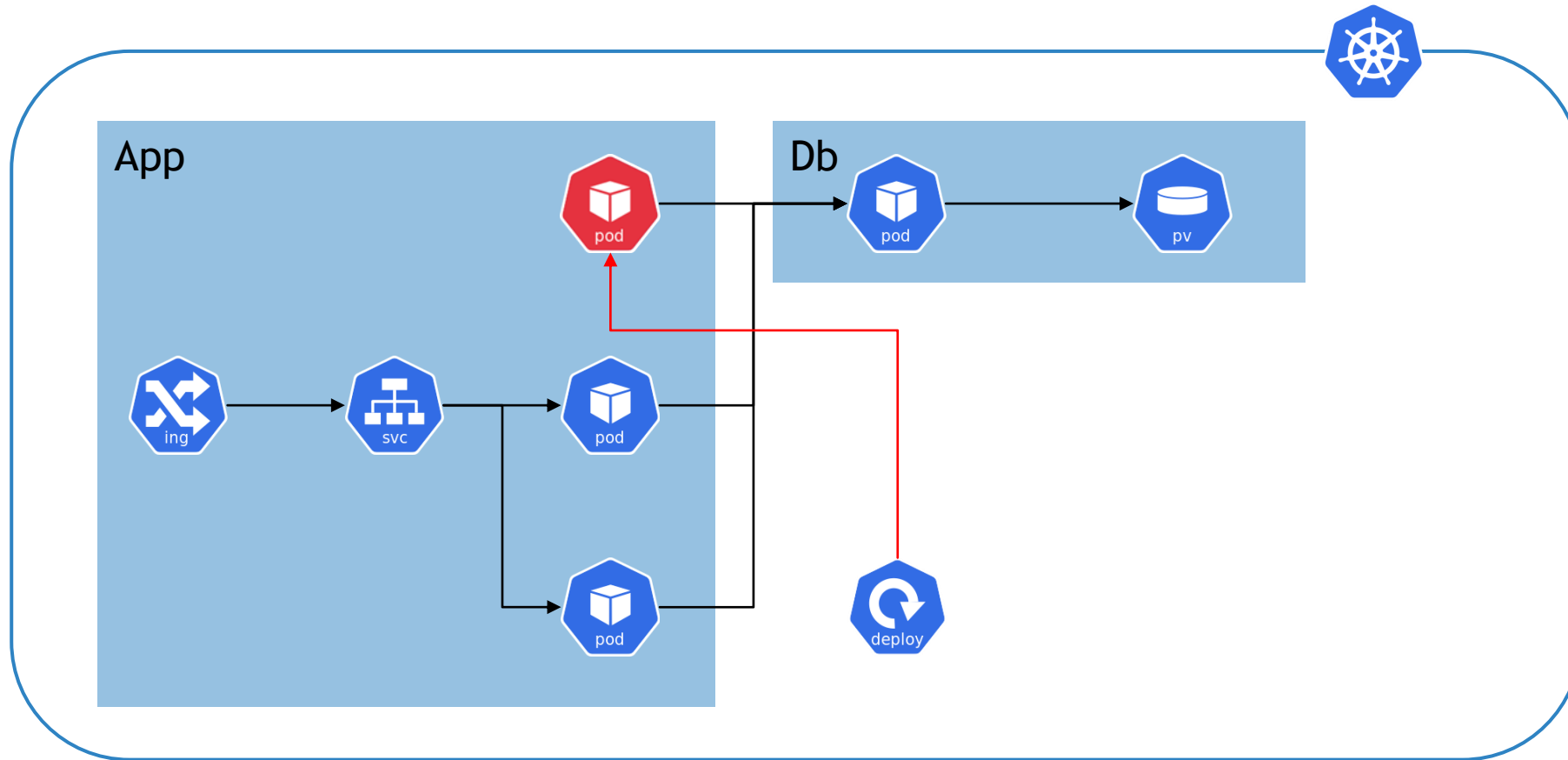


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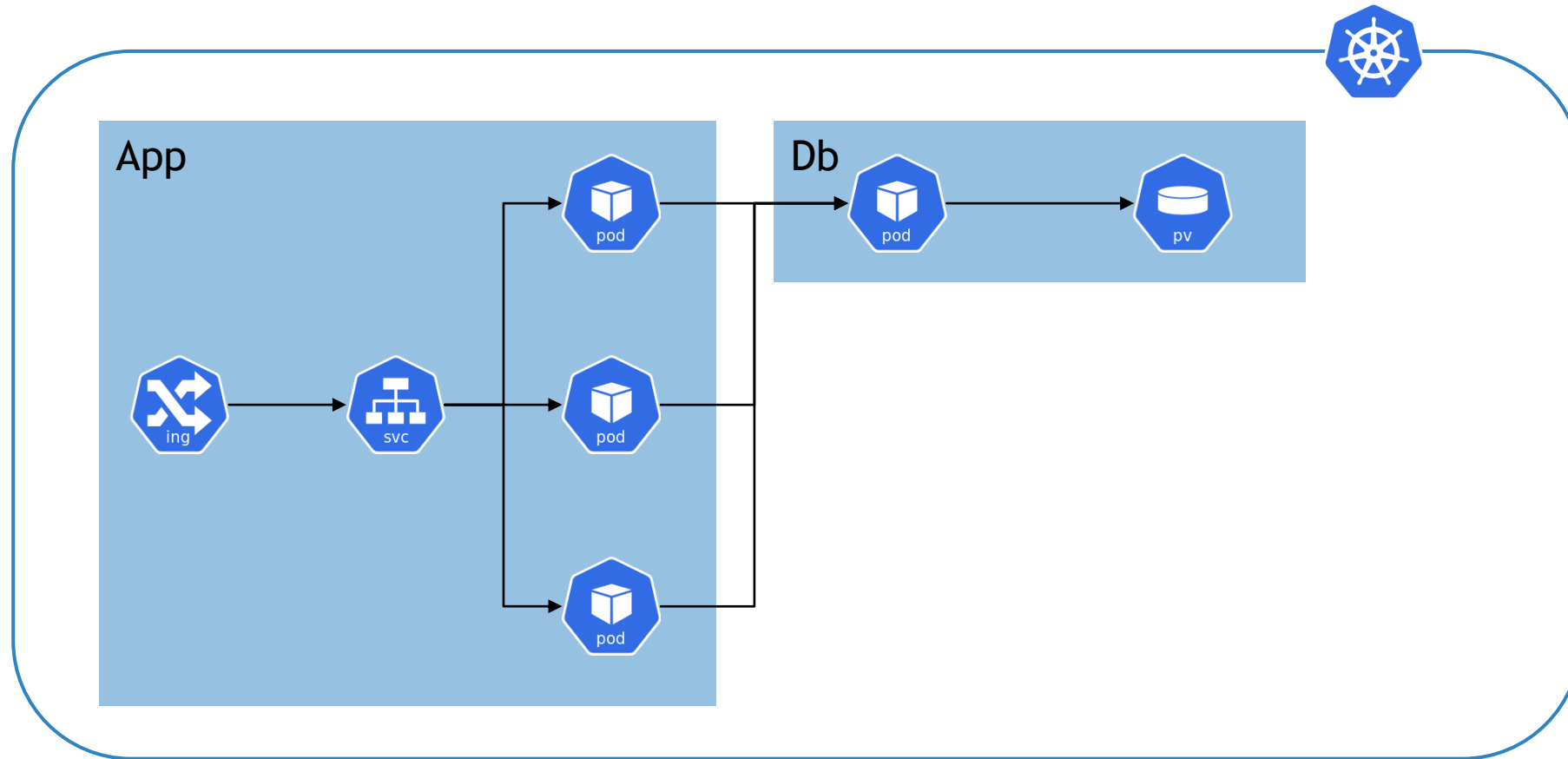




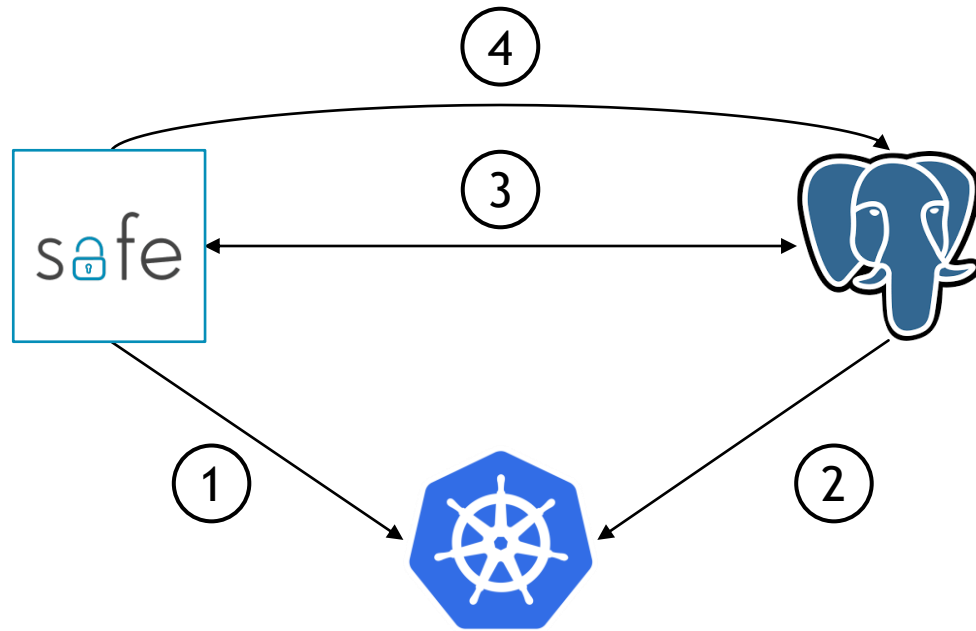
# Takeaways



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# Automatic Migrations Demo



# Takeaways

## Automatic database migrations

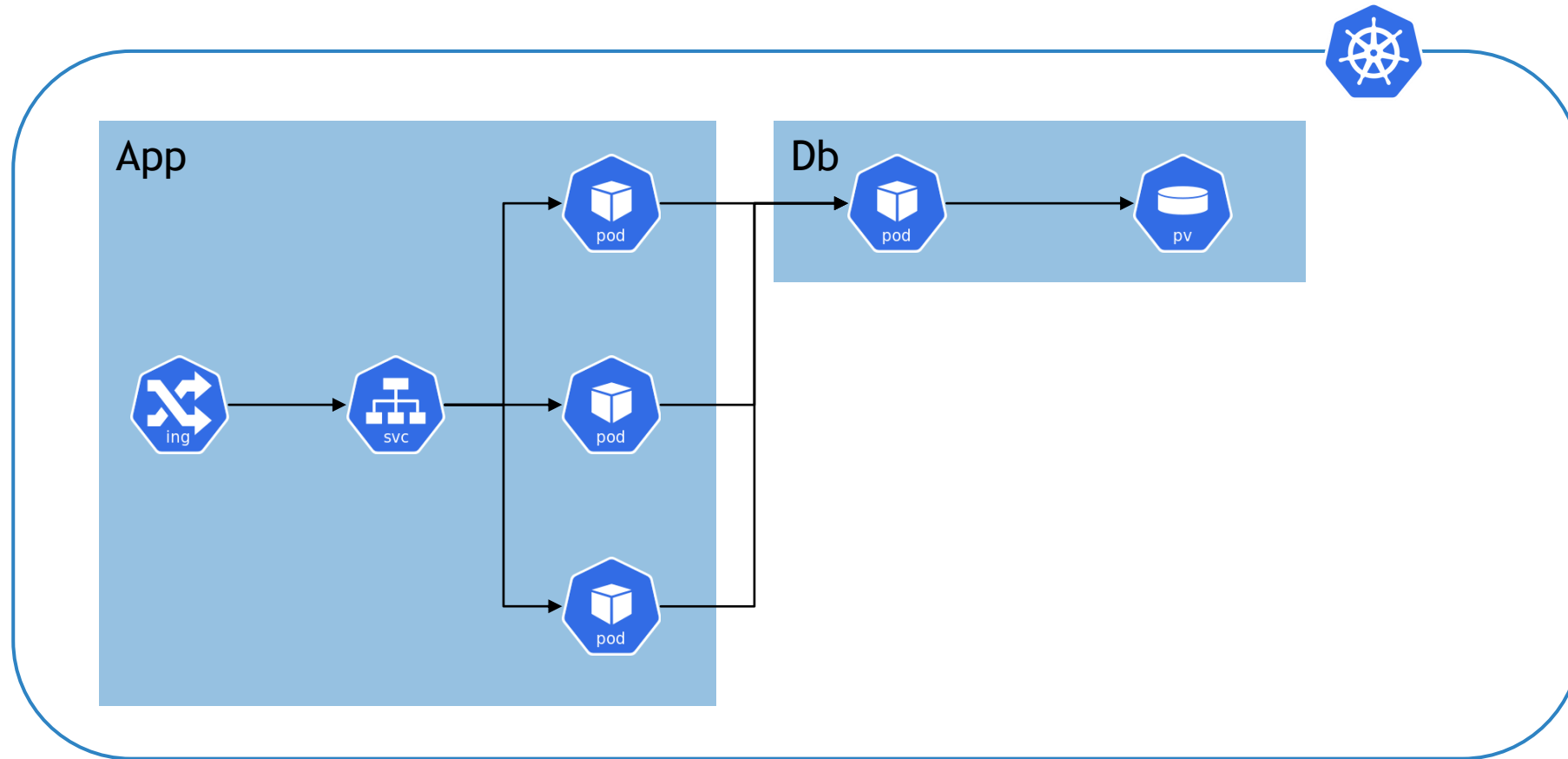
- ▶ Write backwards compatible database migrations
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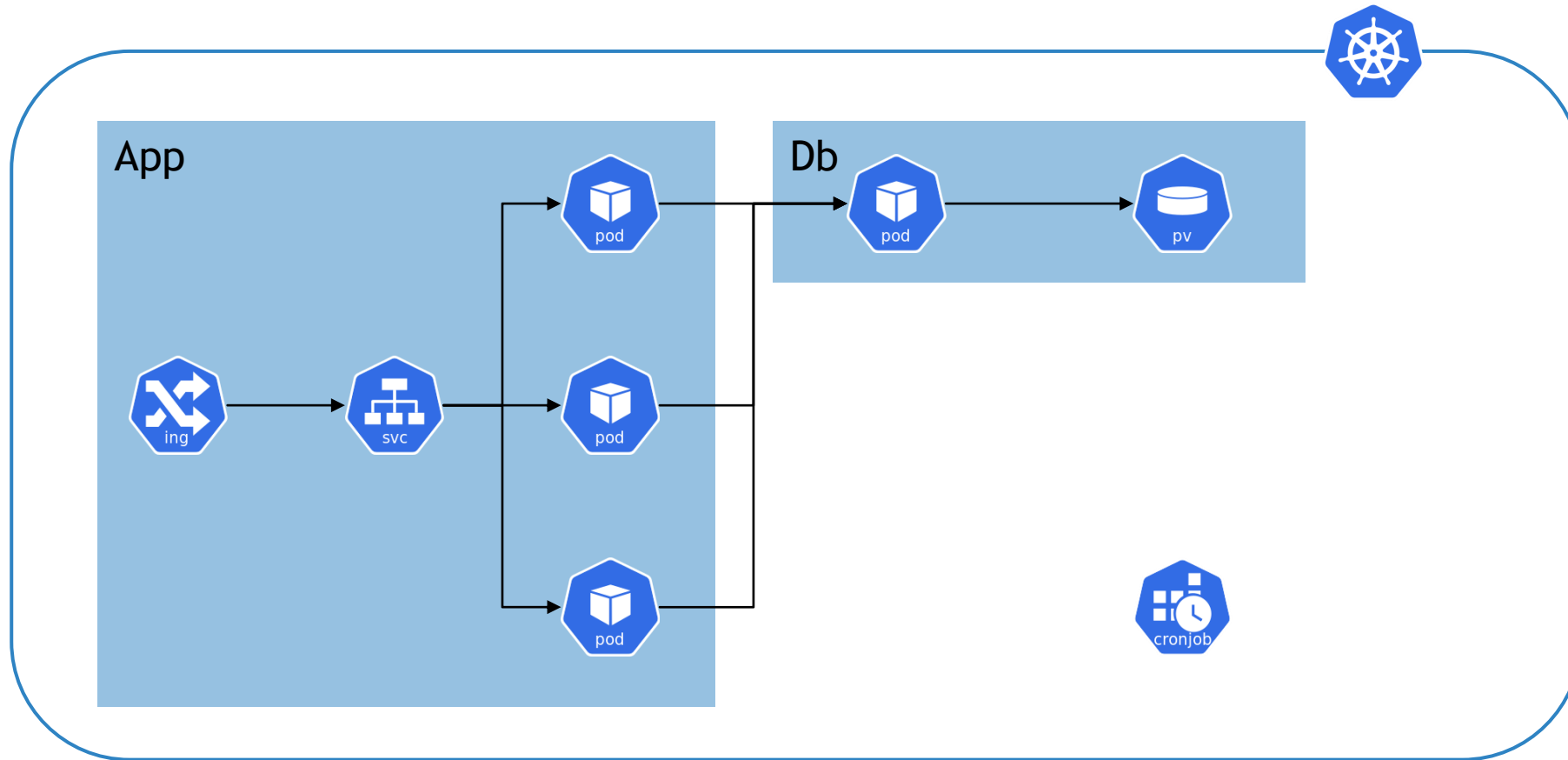
## Automatic data deletion

- ▶ Use a cron job to clean up old data

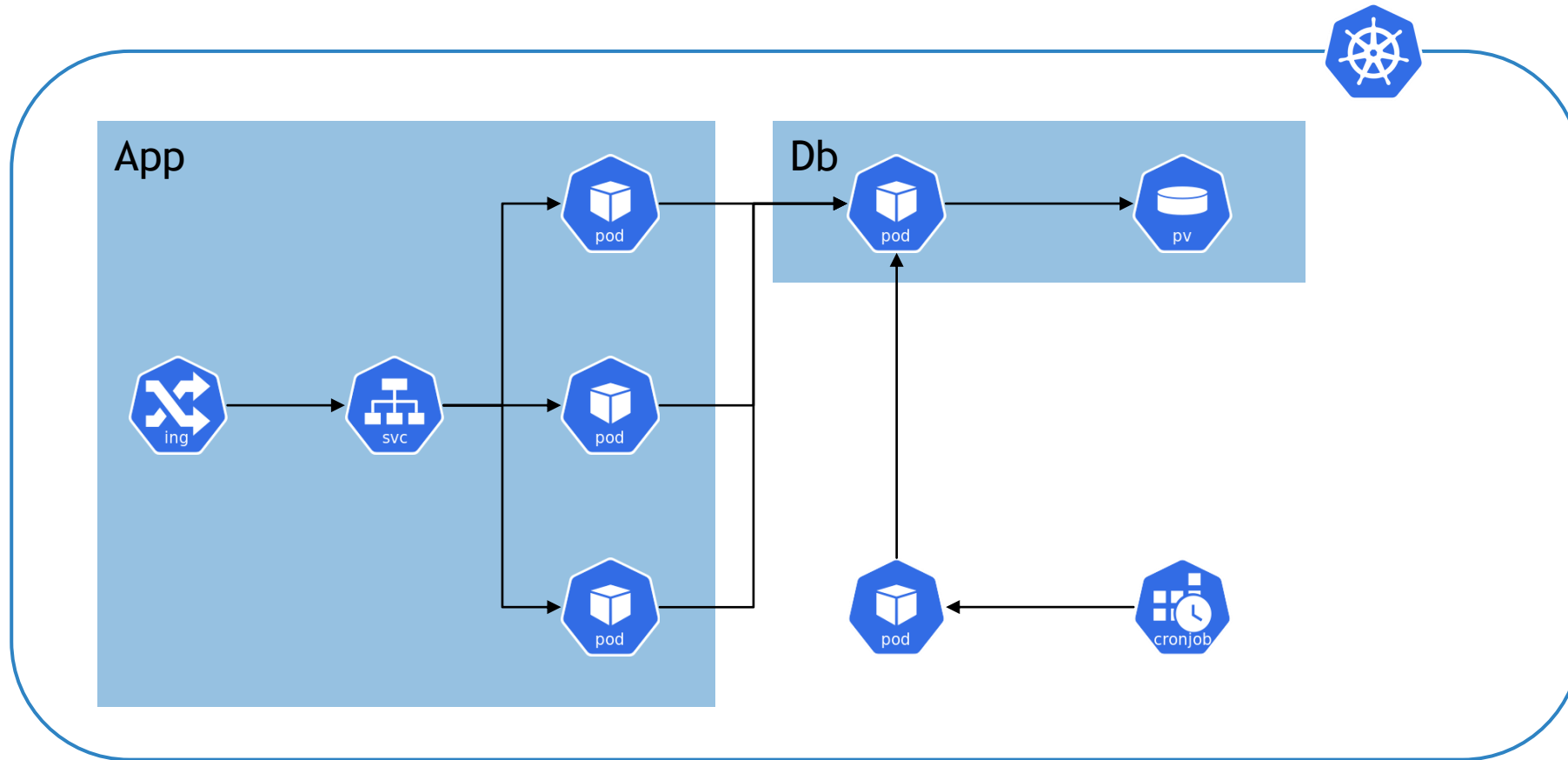
# Takeaways



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# CronJob Demo



# Takeaways

## Automatic data deletion

- ▶ Use a cron job to clean up old data

# Thank you for listening

## Further resources

- ▶ <https://github.com/ChrisCanCompute/SAFE-BookStore>
- ▶ <https://docs.docker.com/get-started/>
- ▶ <https://kubernetes.io/docs/tutorials/>
- ▶ <https://github.com/CompositionalIT/SAFE-Dojo/blob/master/README.md>
- ▶ <https://github.com/npgsql/npgsql>
- ▶ <https://github.com/canton7/Simple.Migrations>



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