

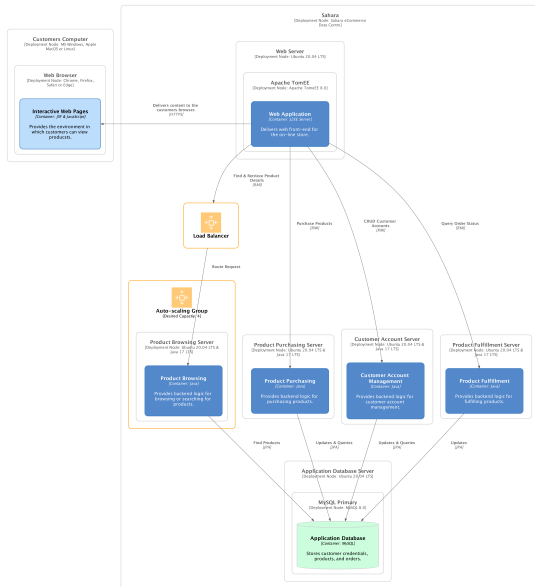
Distributed Computing II

CSSE6400

Brae Webb

April 4, 2022

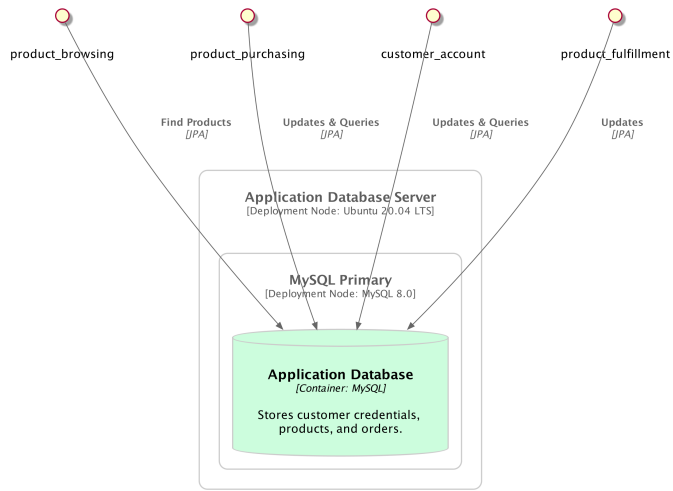
Previously in CSSE6400...



Things start going wrong

What is the likely cause?

Database



Legend

Question

How do we fix database scaling issues?

Question

How do we fix database scaling issues?

Answer

- Replication
- Partitioning (or sharding)
- Independent databases

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Question

What is *replication*?

Definition 1. Replication

Data copied across multiple different machines.

Definition 2. Replica

Database node which stores a copy of the data.

Question

What are the advantages of *replication*?

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Answer

- Scale out our database to cope with load.

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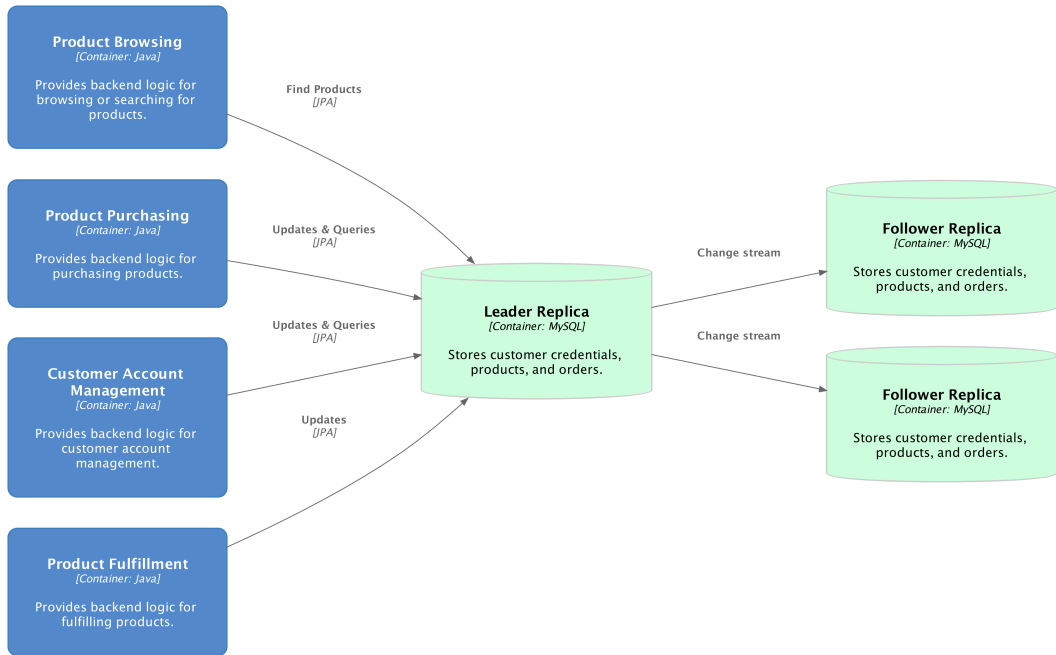
- Scale out our database to cope with load.
- Provide fault tolerance from a single database instance failure.

Question

What are the advantages of *replication*?

Answer

- Scale out our database to cope with load.
- Provide fault tolerance from a single database instance failure.
- Locate databases closer to end-users.



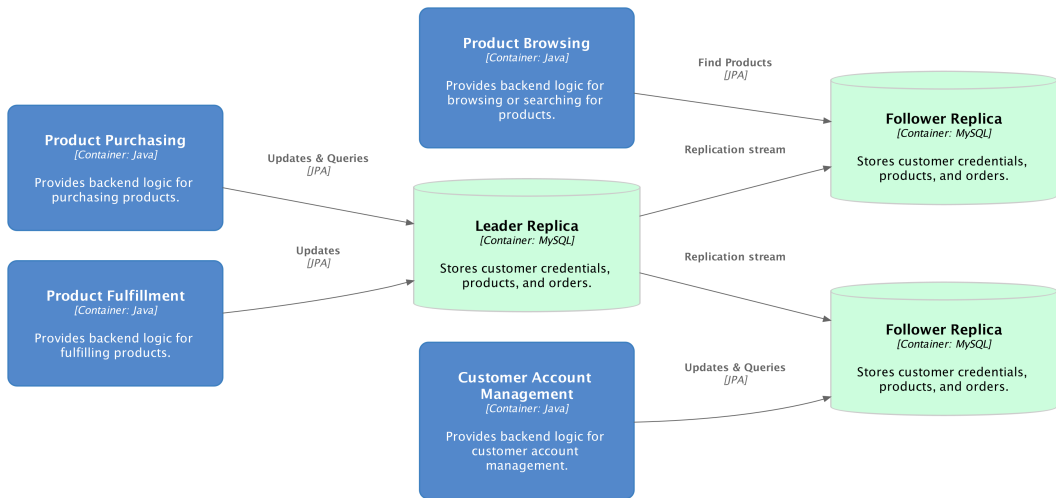
Leader-based Replication

On write Writes sent to leader, change is propagated via change stream.

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On read Any replica can be queried.



Propogating changes

Synchronous **vs.** *Asynchronous*

When things go wrong

Handling outages

Follower failure

Leader failure

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