Distributed System

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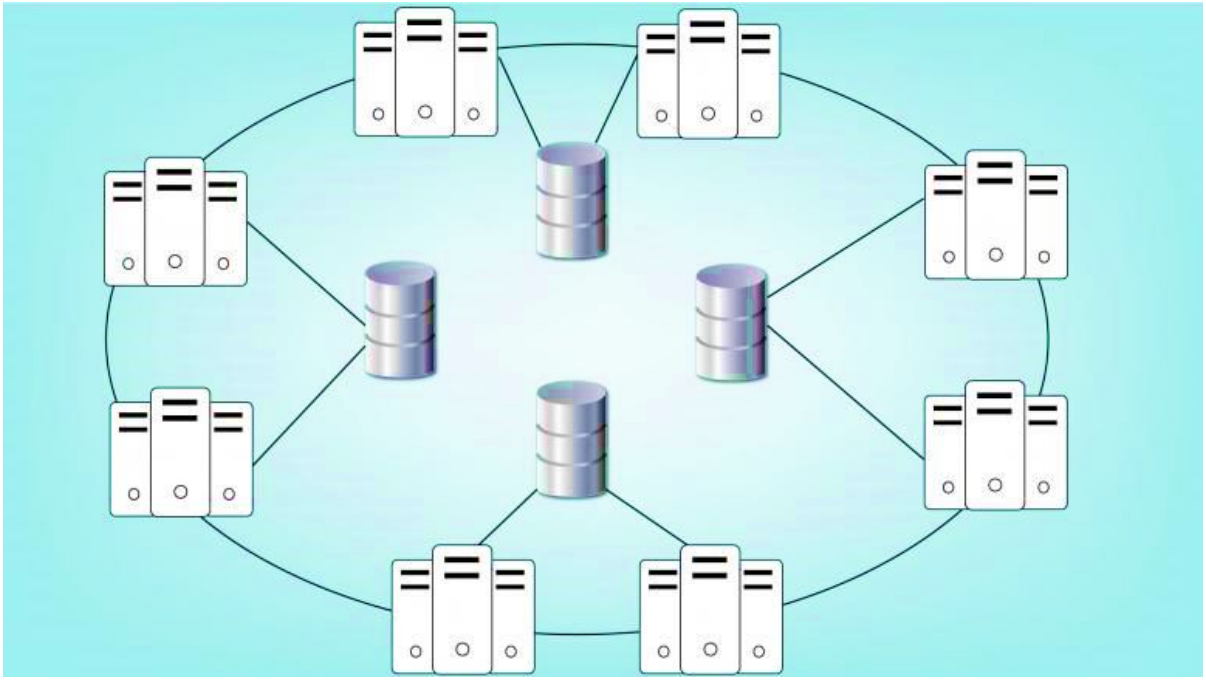


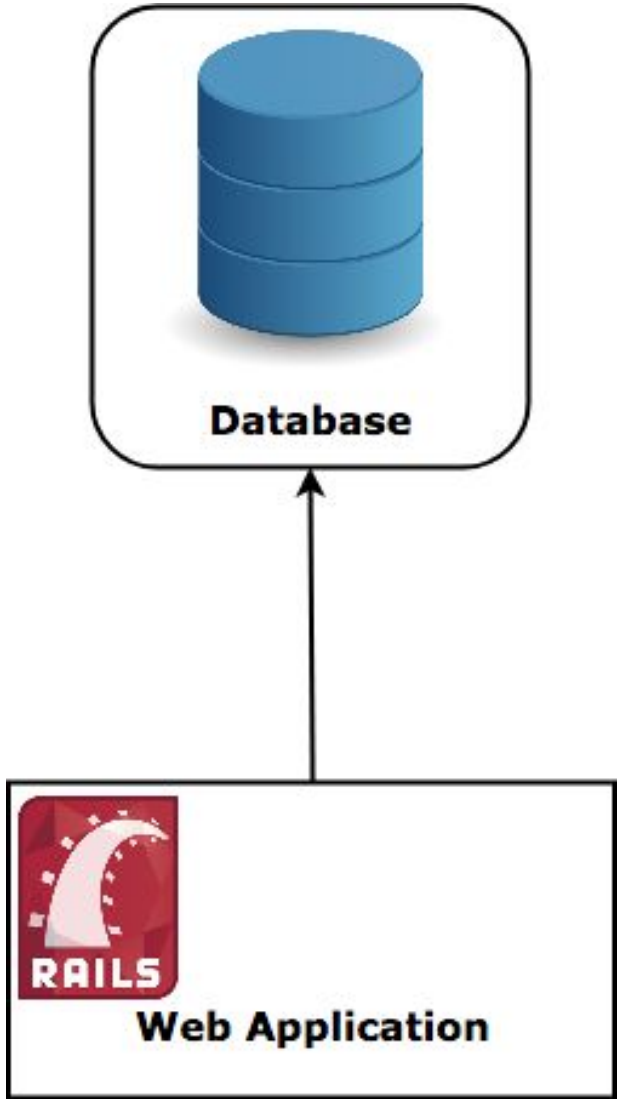
Distributed System

A collection of independent computers
that appears to its users
as a single coherent system

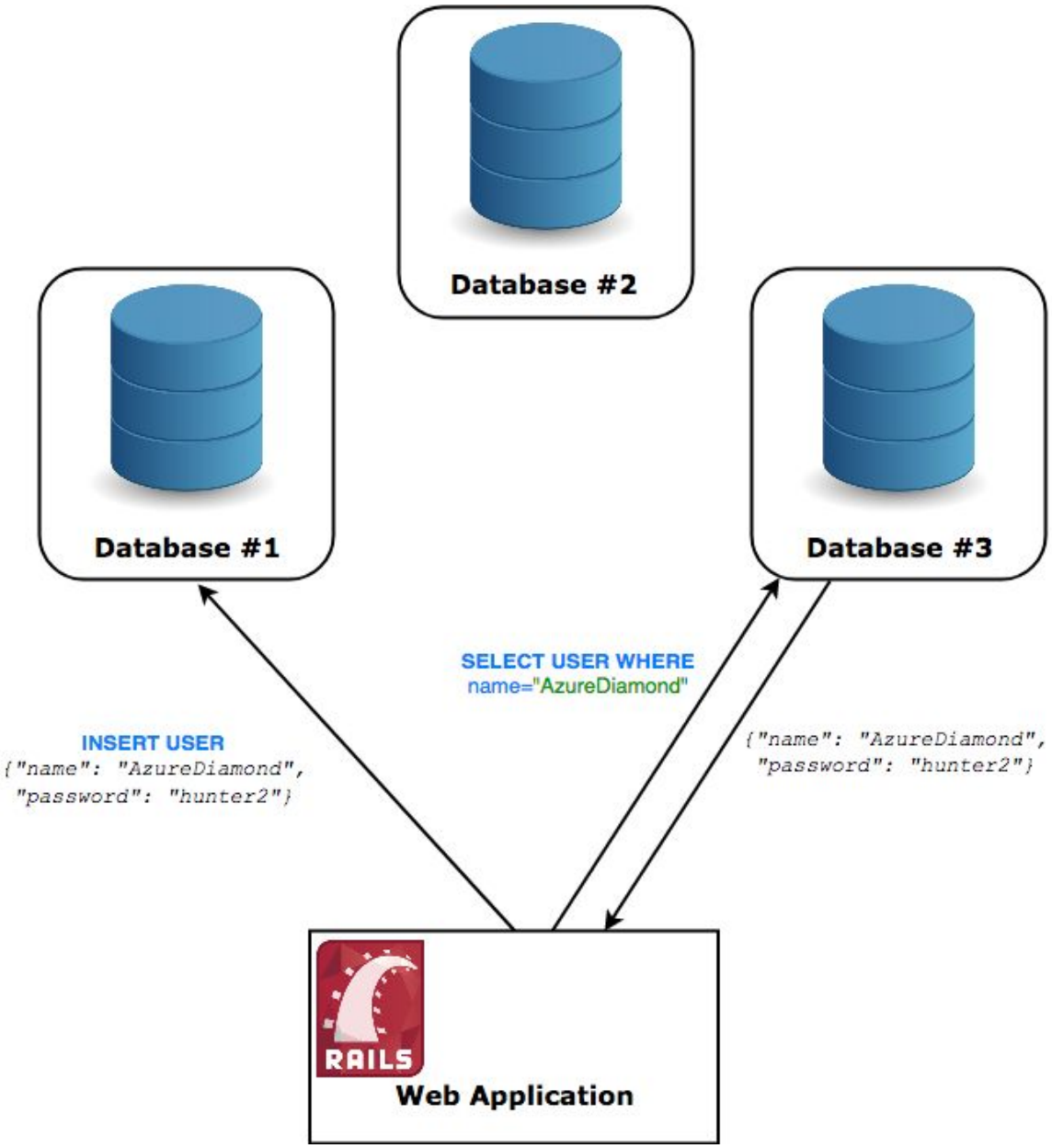
Distributed System

- Distributed system applications are made up of
  - multiple different applications running on different machines, or
  - many replicas running across different machines, all communicating together to implement a system

Traditional System



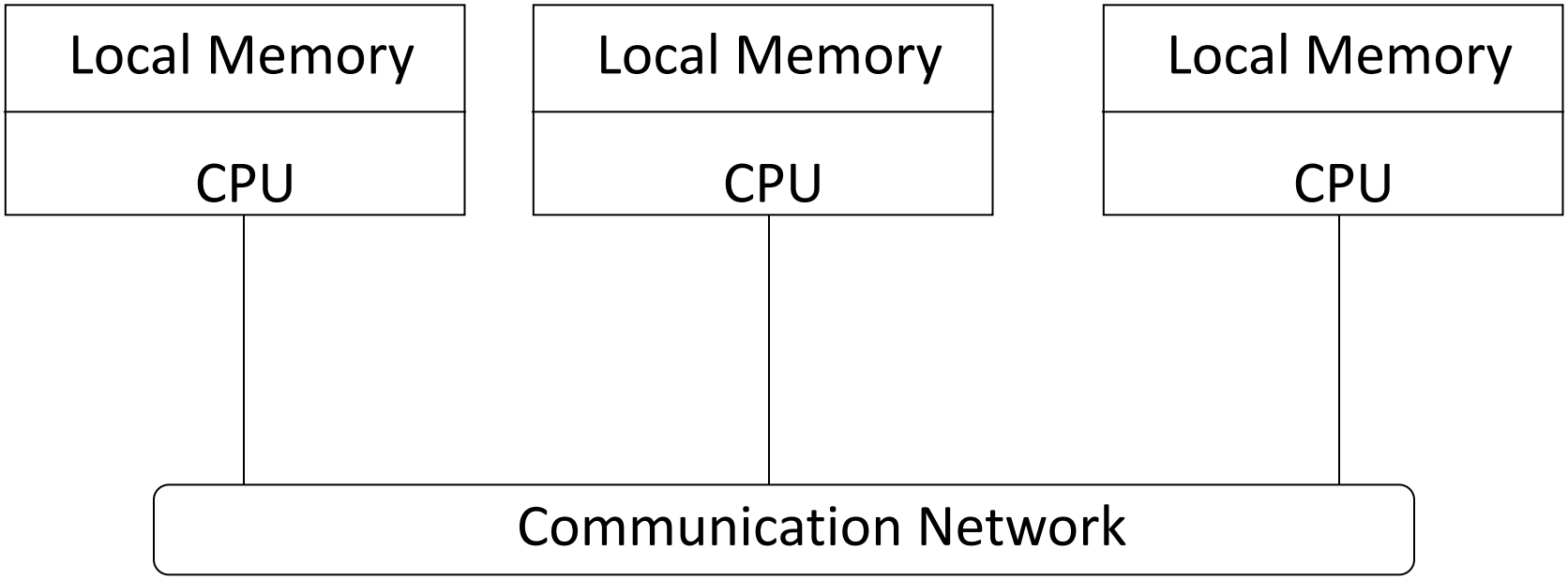
Distributed System



Advantages of Distributed System

- **Scalability:** Distributed systems are made on default to be scalable. Whenever there is an increase in workload, users can add more workstations. There is no need to upgrade a single system. Moreover, no any restrictions are placed on the number of machines.
- **Reliability:** Distributed systems are far more reliable than single systems in terms of failures. Even in the case of a single node malfunctioning, it does not pose problems to the remaining servers. Other nodes can continue to function fine.
- **Low Latency:** Since users can have a node in multiple geographical locations, distributed systems allow the traffic to hit a node that's closest, resulting in low latency and better performance.
- **Efficiency:** Distributed systems allow breaking complex problems/data into smaller pieces and have multiple computers work on them in parallel, which can help cut down on the time needed to solve/compute those problems.

Distributed System



- Collection of processors
- Non-shared memory
- Message exchange over a network