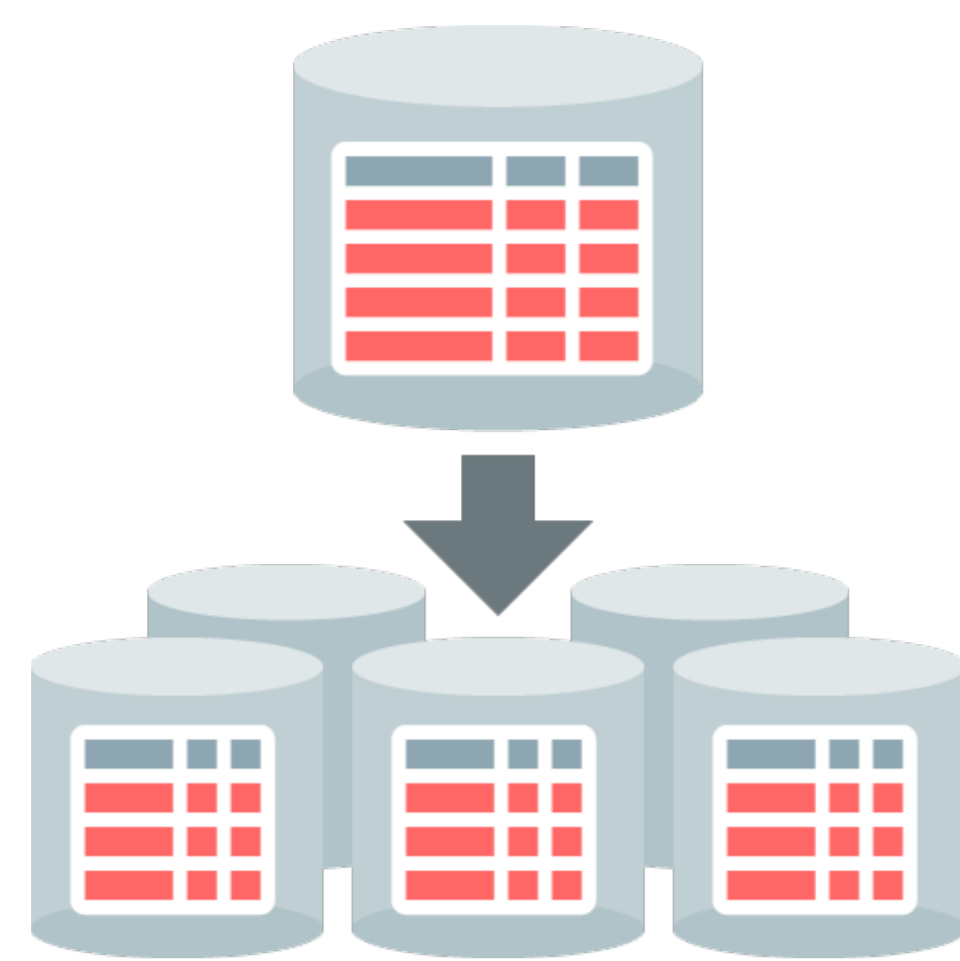


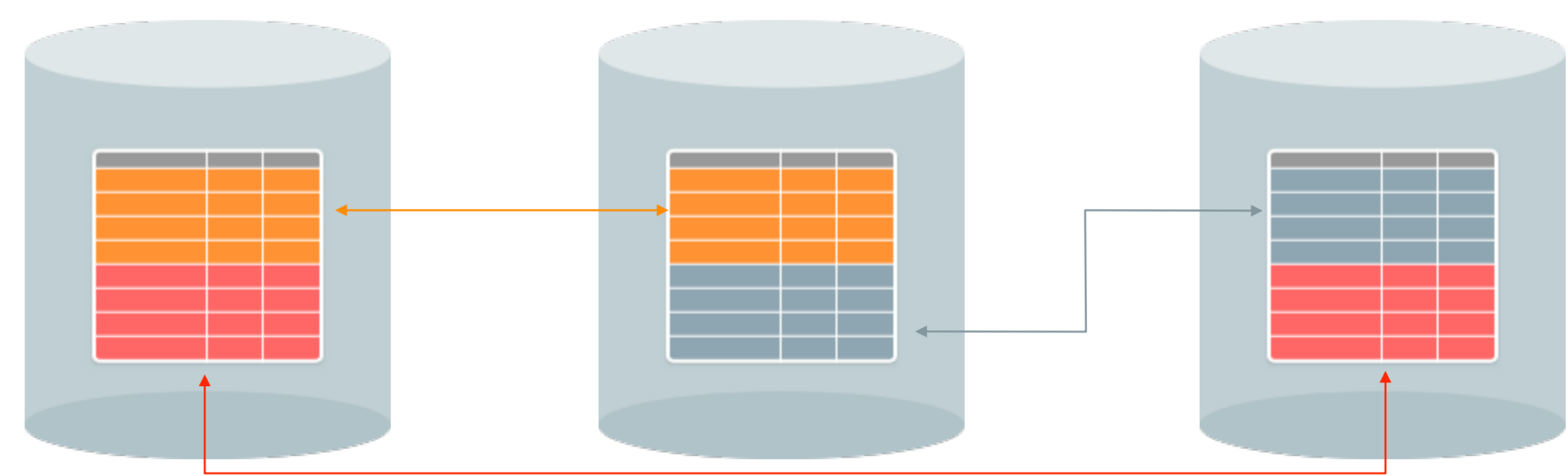
Oracle Sharding : Scale-out Relational Database

One giant database partitioned into many small databases (shards)



Built on **shared-nothing hardware** architecture

Sharding = Distributed Partitioning + Replication

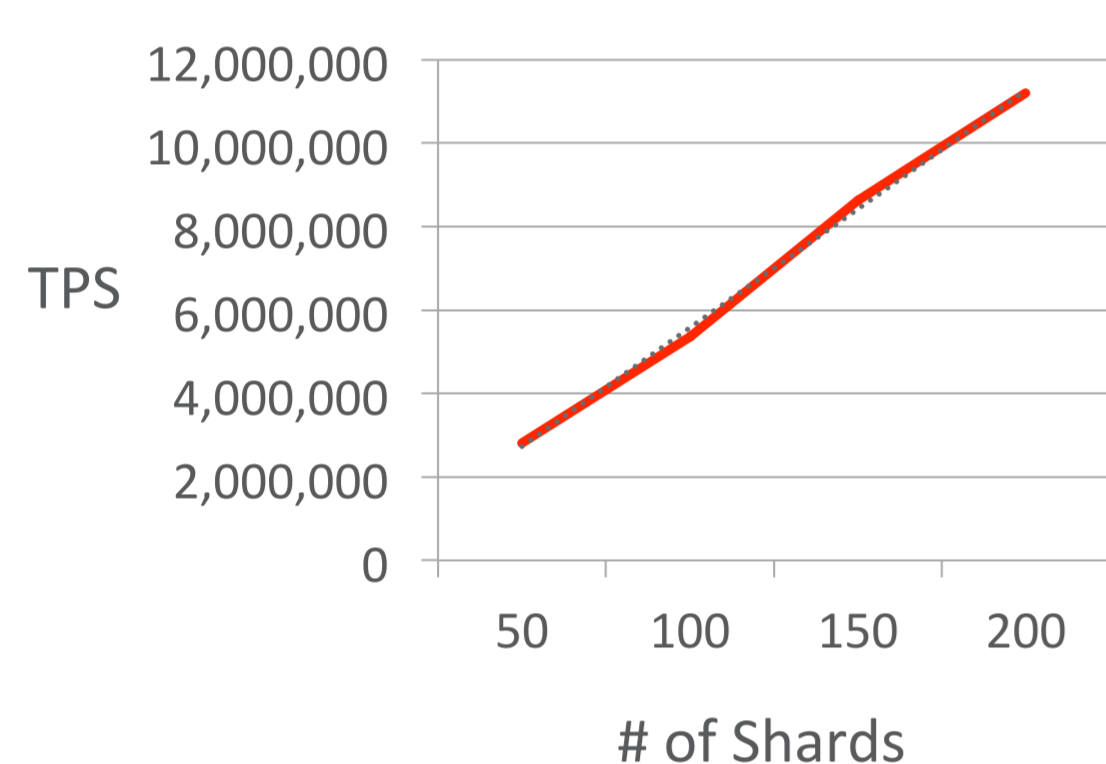


- Some web-scale OLTP applications use **database sharding** to avoid scalability or availability edge cases of a single large database
- Oracle 12cR2 is the first full-featured RDBMS that provides native database sharding while supporting enterprise capabilities

- Horizontal partitioning of data using a sharding key (e.g. customer_id) across a farm of independent Oracle Databases
- Shards can be hosted on commodity servers or engineered systems
- Data automatically replicated with Data Guard or Oracle GoldenGate for high availability and disaster recovery

Benefits

Linear Scalability



Add shards online to **linearly scale** - transactions, users and database capacity

Fault Isolation



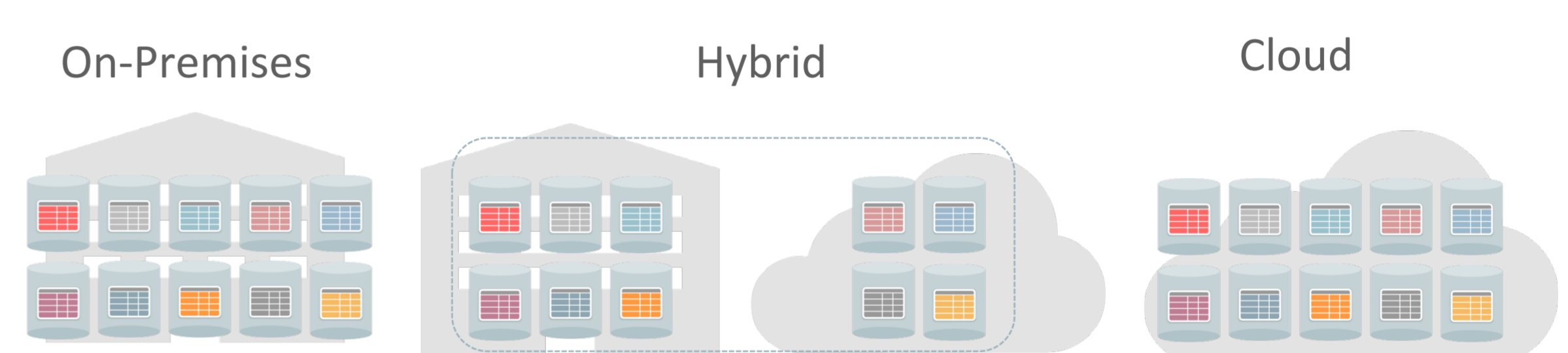
Shared-nothing architecture. Fault of one shard has no impact on other shards

Geographic Distribution



Data Sovereignty - for data privacy regulations.
Data Proximity - to bring data closer to the users

Flexible Deployment



Flexible On-Premises, Cloud or Hybrid Deployments. Supports **Cloud bursting**

Salient Features

- **Auto deployment** of up to 1000 shards
 - Supports Data Guard and Oracle GoldenGate
- Multiple sharding methods
 - **System Managed (Consistent Hash)**
 - Uniform data distribution across shards → linear scalability
 - **Composite (Range/List-Consistent Hash)**
 - Geo-distribution plus linear scalability
- Centralized schema maintenance
 - **Native SQL** for sharded and duplicated tables
 - Shard catalog/Coordinator manages all the shards as a **single logical database**
- **Direct Routing**
 - Direct fast path SQL access via sharding key from smart topology-aware connection pools
 - Application and data tiers can be scaled independently
- Proxy Routing for **multi-shard queries**
 - Powerful SQL processing that can operate across multiple shards
 - Supports multiple consistency levels
- Complete **Lifecycle Management**
 - Online scale-out w/auto resharding or scale-back
 - Chunk split and move
 - Automated Patching w/ Opatchauto
 - Command Line and Oracle Enterprise Manager

Additional Information

Oracle Sharding is available both in the Oracle Cloud and On-premises.

- Sharding on Oracle Technology Network
www.oracle.com/goto/oraclesharding



- @OracleSharding