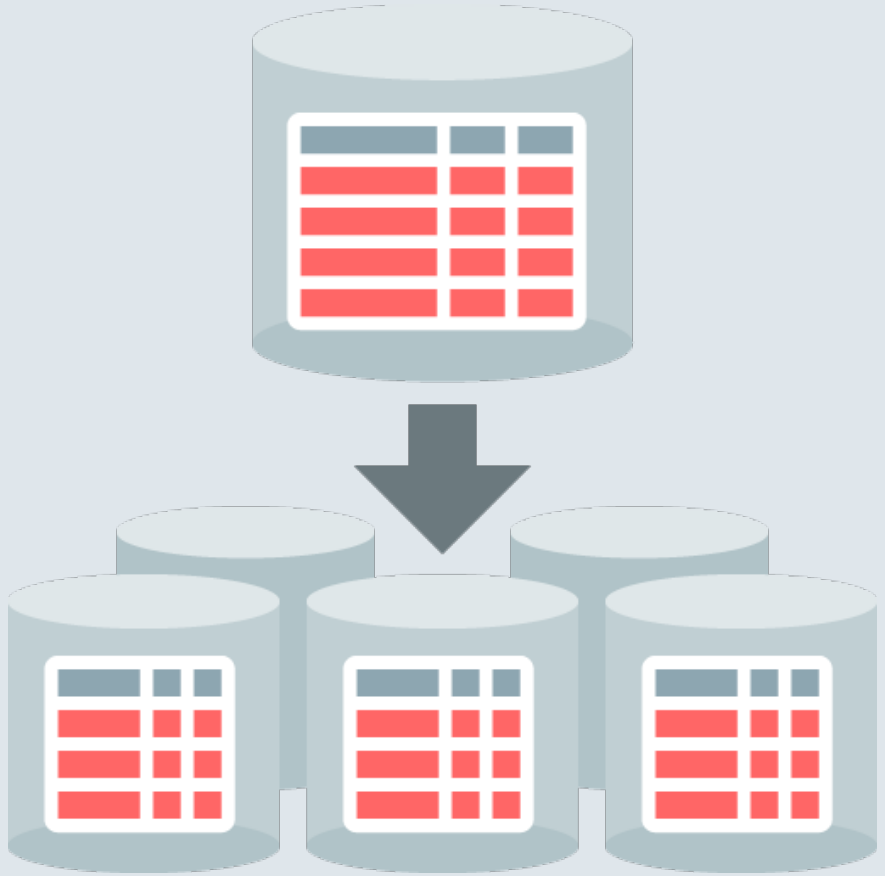
Oracle Sharding Demonstration

Linear Scalability and Extreme Data Availability



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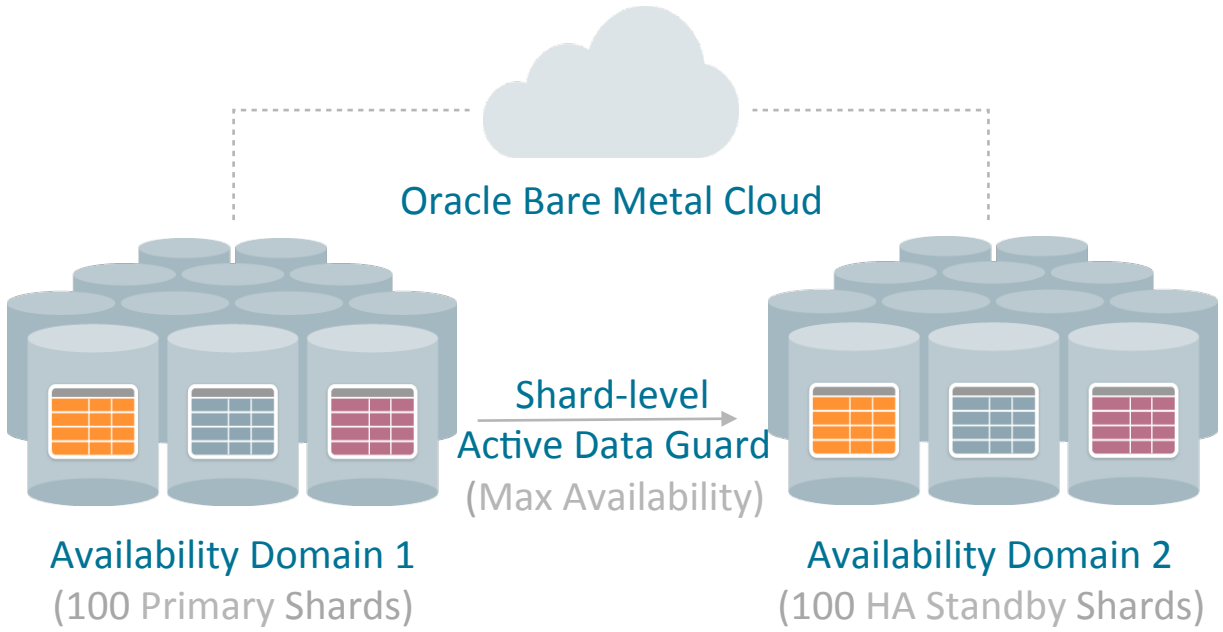
Oracle Sharding Demo on Oracle Bare Metal Cloud

- Objectives
  - Demonstrate linear scalability of Relational transactions
  - Showcase highest availability with MAA on Oracle Bare Metal Cloud
- Infrastructure
  - Each shard hosted on dedicated server

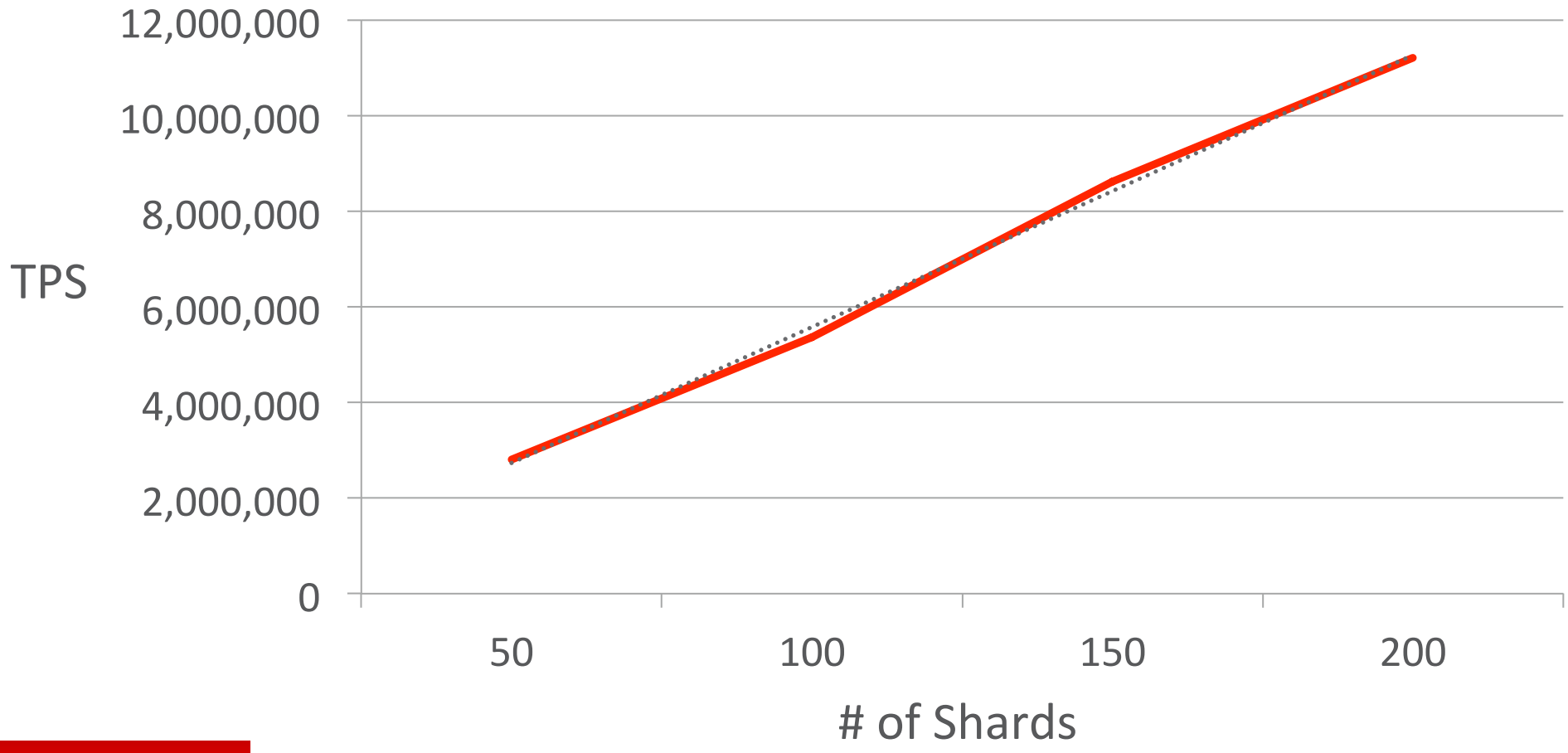
Component	Resources per shard
CPU	36 Cores
Memory	512 GB
Flash	12.8 TB NVMe
Network	10 GbE

Demo Topology



Sharding – a Different Way to Scale

Frictionless linear scaling due to zero shared hardware or software



Oracle Sharding Demo on Oracle Bare Metal Cloud

Conclusions

- Elastically scaled-out to 200 shards on Oracle Bare Metal Cloud
  - Demonstrated linear scalability of Relational transactions
  - Demonstrated 11 Million transactions per sec that includes:
    - 4.5 Million Read-Write Transactions per sec across all 100 Primary shards
    - 6.5 Million Read-Only Transactions per sec across all 100 Active Standby shards
- MAA Sharding provides highest availability
  - Each shard is protected by Data Guard Fast-Start Failover across Availability Domains
  - Single Shard Failure resulted in 100% availability for 99% of the application
    - 1% of the application experienced only 15 seconds blackout

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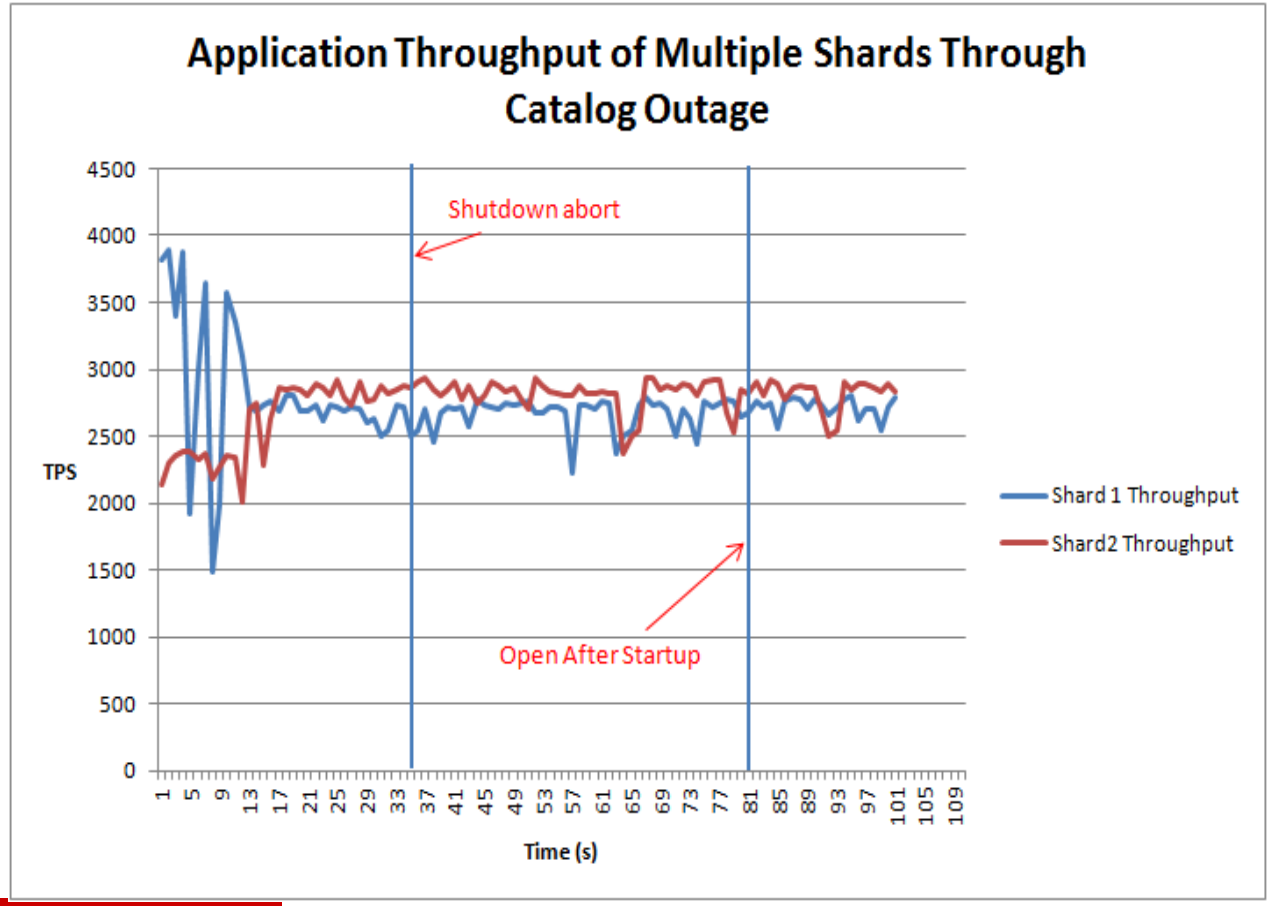
Shard Catalog Outage Testing

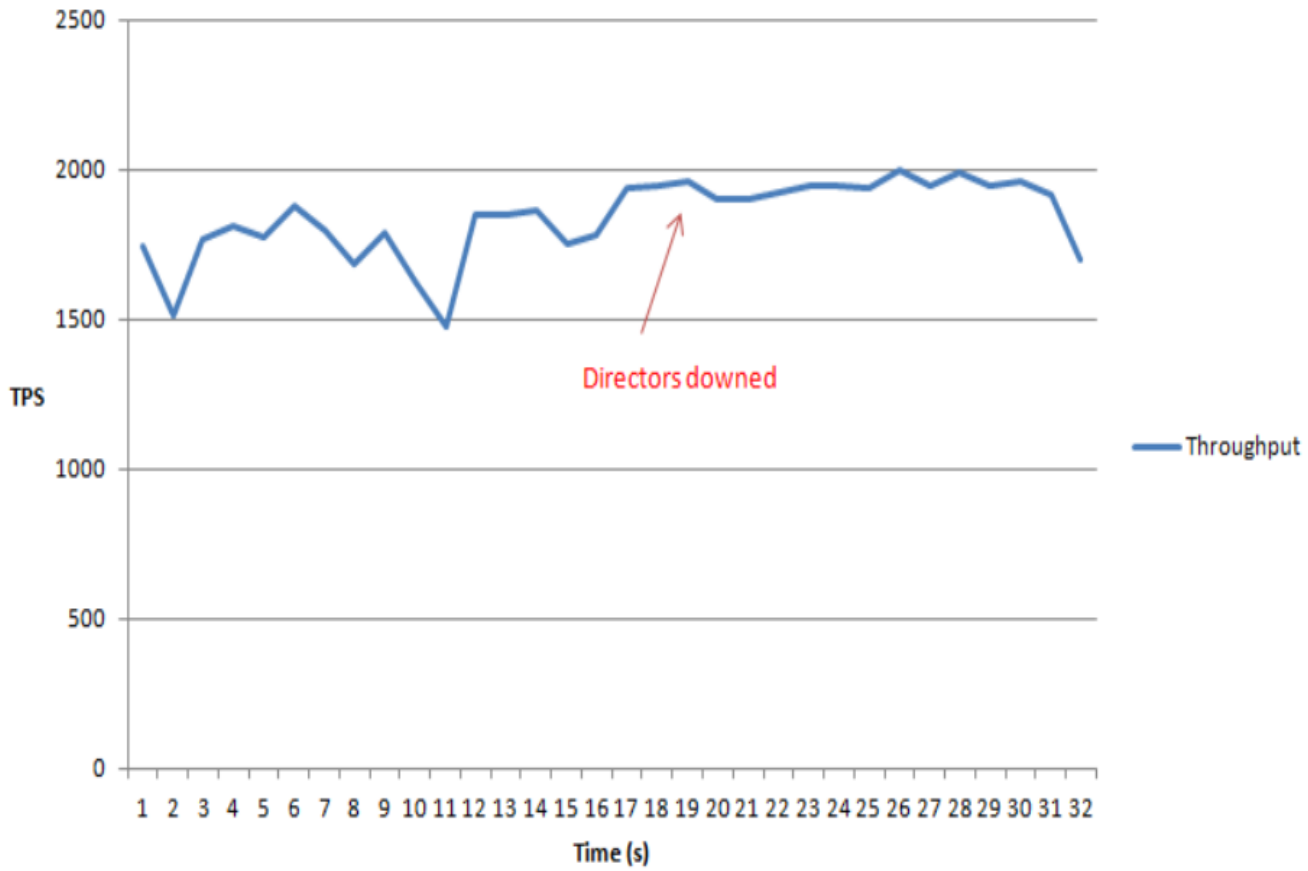
Shard Catalog Outage Has Zero Impact on Availability for OLTP



- Outage of shard catalog has no effect on application performance (Direct Routing)
- Ranges of sharding keys are cached within the connection pools
- OLTP Transactions use direct routing, completely bypassing the shard catalog
- MAA Best Practice is to protect catalog with Data Guard Maximum Availability

Shard Directors Outage Testing

Shard Director Outage Has Zero Impact on Availability

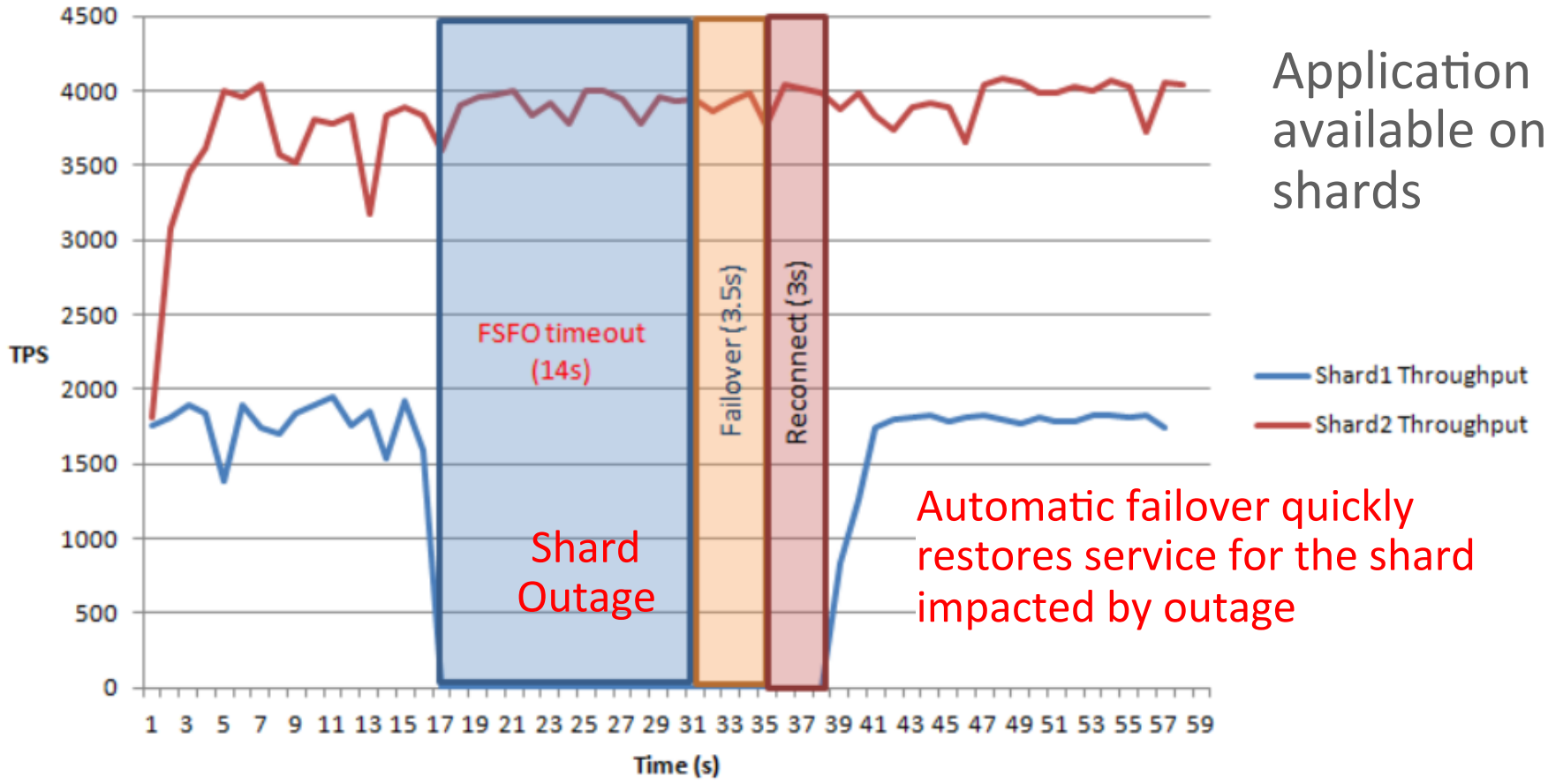


- Outage of shard directors does not affect a running connection pool
- Connection pool caches ranges of sharding keys / shards
- MAA best practice to have 3 shard directors per region

Shard Outage has Zero Impact on Surviving Shards

Each Shard is a Physically Separate Oracle Database

Application Throughput



Application remains available on other shards

Automatic failover quickly restores service for the shard impacted by outage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