

Extra-Large Oracle Databases on AWS

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100+ TB database on AWS – why not?

- ❖ Amazon RDS for Oracle
 - ❖ 64 TB max
 - ❖ 80K IOPS max
 - ❖ 1750 MB/s max (10+ hrs to scan 64 TB)

- ❖ Standalone database on EC2
 - ❖ No practical limit on EBS storage size
 - ❖ Same performance limits as RDS
 - ❖ Have to build your own HA

Meet EC2 *i3en.metal* instances

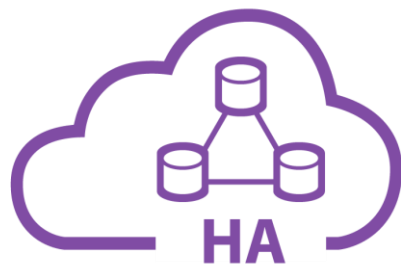
- ❖ 60 TB of local SSD storage
- ❖ 16 GB/s of storage throughput
- ❖ 2 million IOPS
- ❖ 100 Gb/s network

but

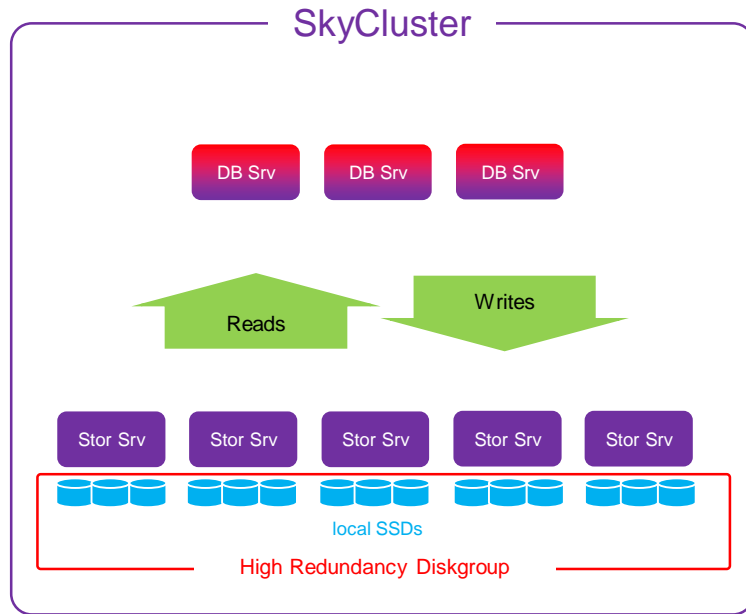
- ❖ 60 TB is still not enough in many cases
- ❖ the local SSDs are **NOT PERSISTENT**

How to make use of *i3en.metal* for 100+ TB databases?

- ❖ Add persistency (and high availability) for storage
- ❖ Pool multiple i3en.metal instances together for larger capacities
- ❖ ... and you probably need RAC for database HA

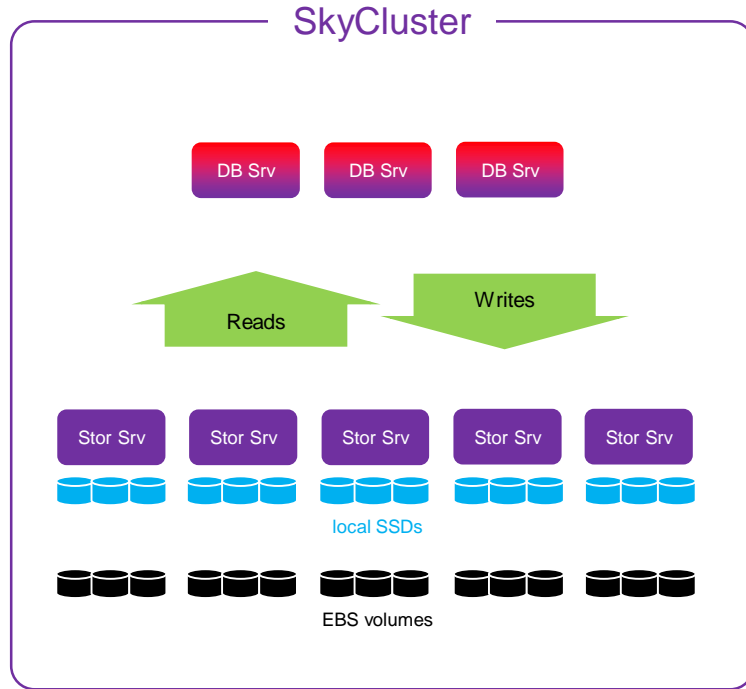


- ❖ HA database system based on EC2
- ❖ Proven Oracle RAC database engine
- ❖ Flexible storage options: EBS, local SSD, or both
- ❖ Infrastructure-as-Code deployment with a few mouse clicks

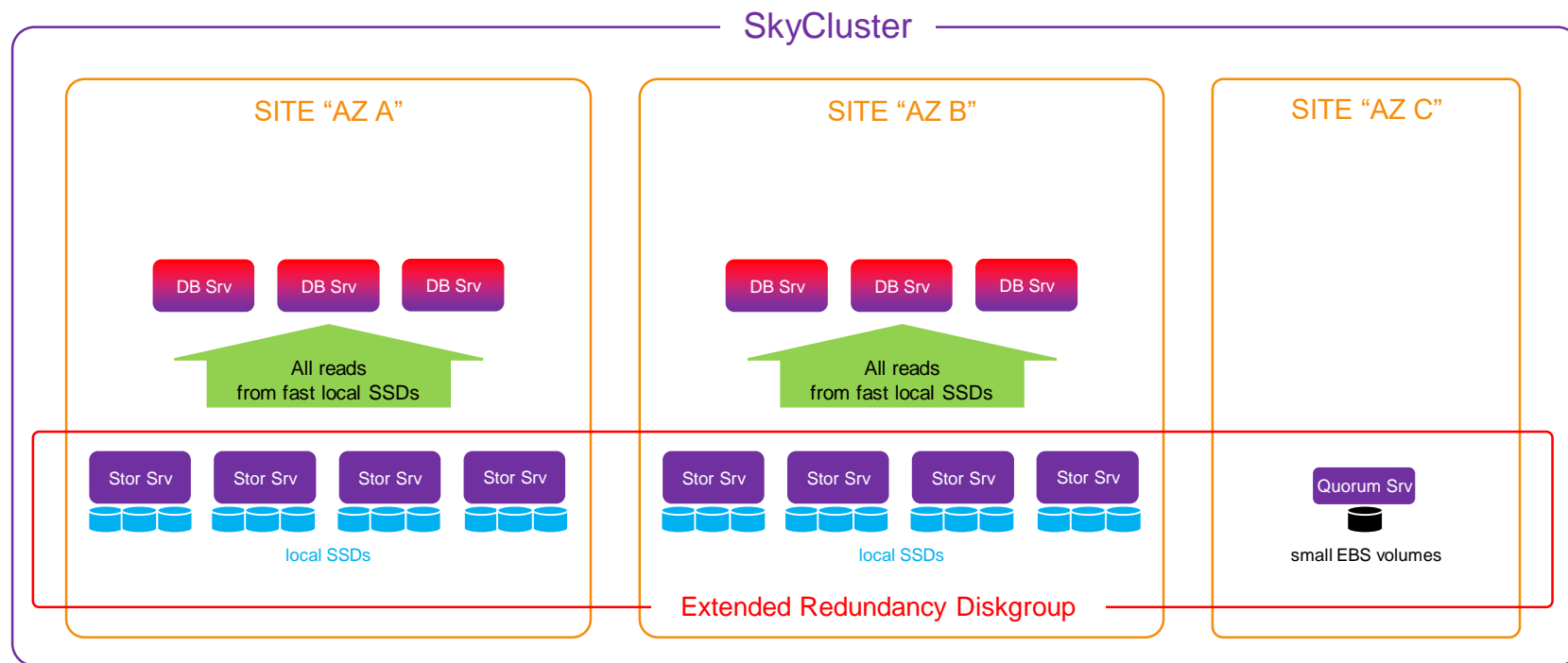


- ❖ Up to 7,000 MB/s per DB node
- ❖ Up to 10,000 MB/s per storage node
- ❖ 100 TB usable with 5 storage nodes
- ❖ 300 TB usable with 15 storage nodes

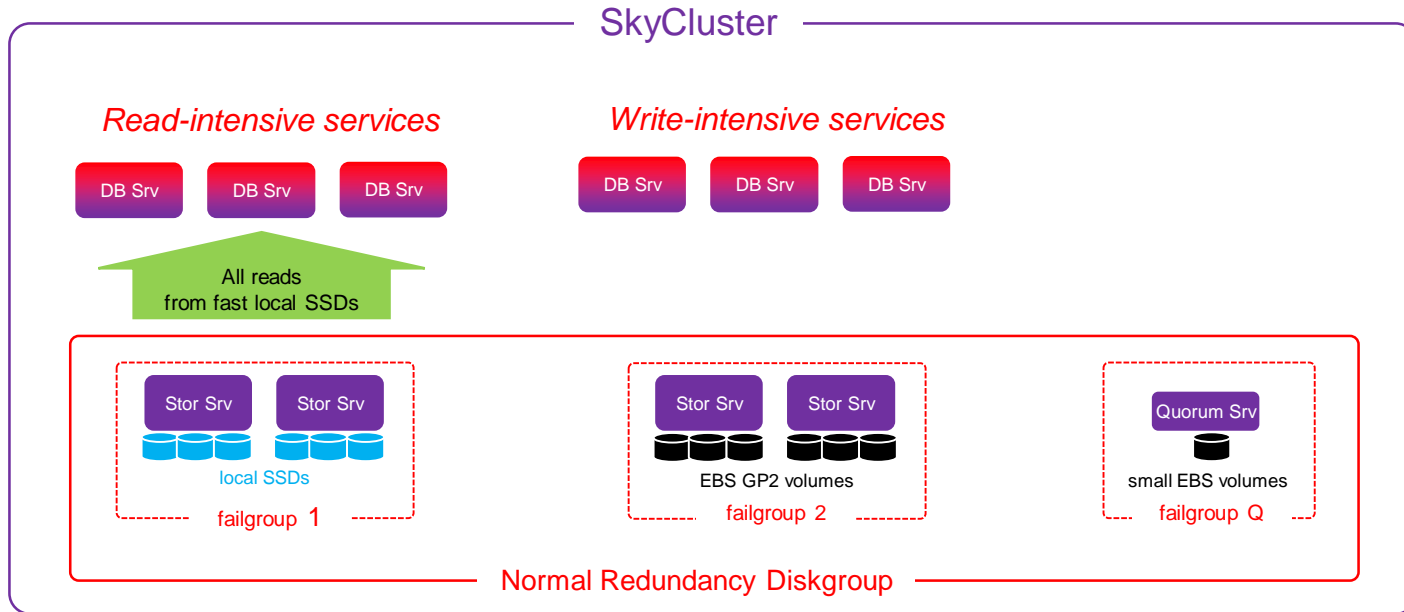
- ❖ High Redundancy Diskgroup
- ❖ Each storage nodes is in a separate failgroup
- ❖ Can tolerate loss of any two storage nodes



- ❖ Virtually unlimited extra capacity with EBS GP2 volumes
- ❖ For large and slower data

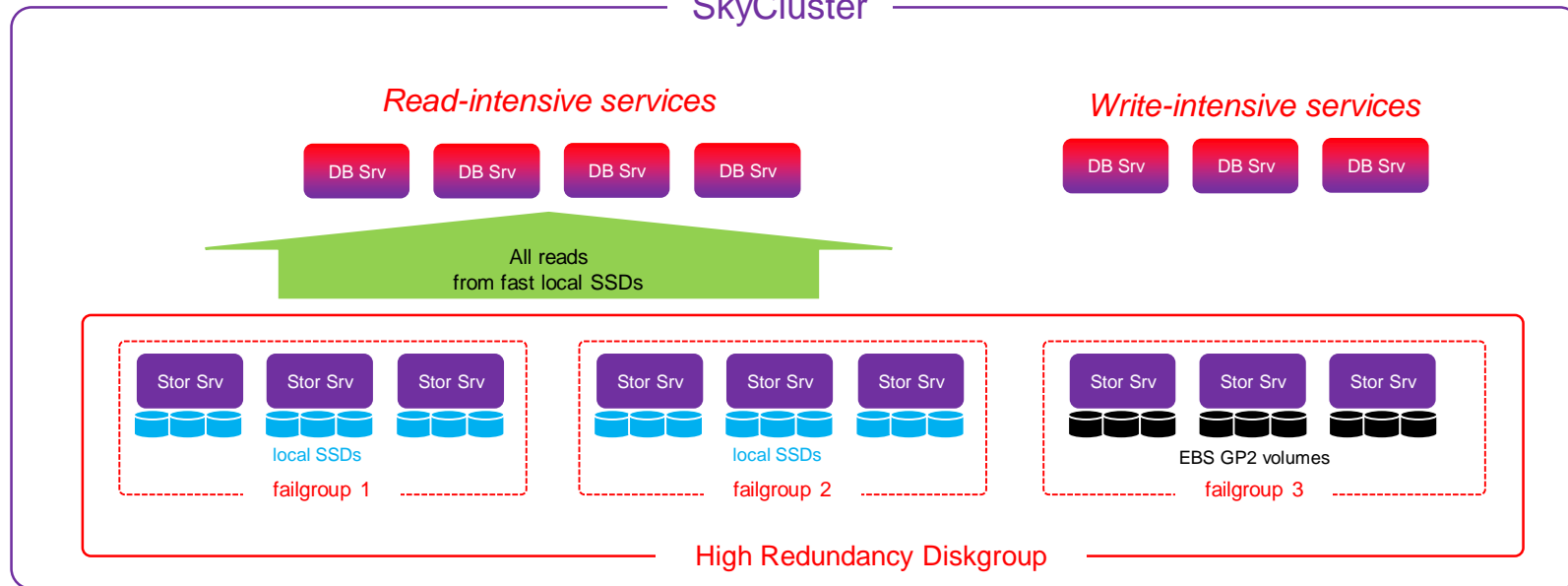


- ❖ "Extended" cluster configuration
- ❖ Extended Redundancy diskgroup for data
- ❖ Can tolerate loss an entire site plus loss of one storage server on the other site

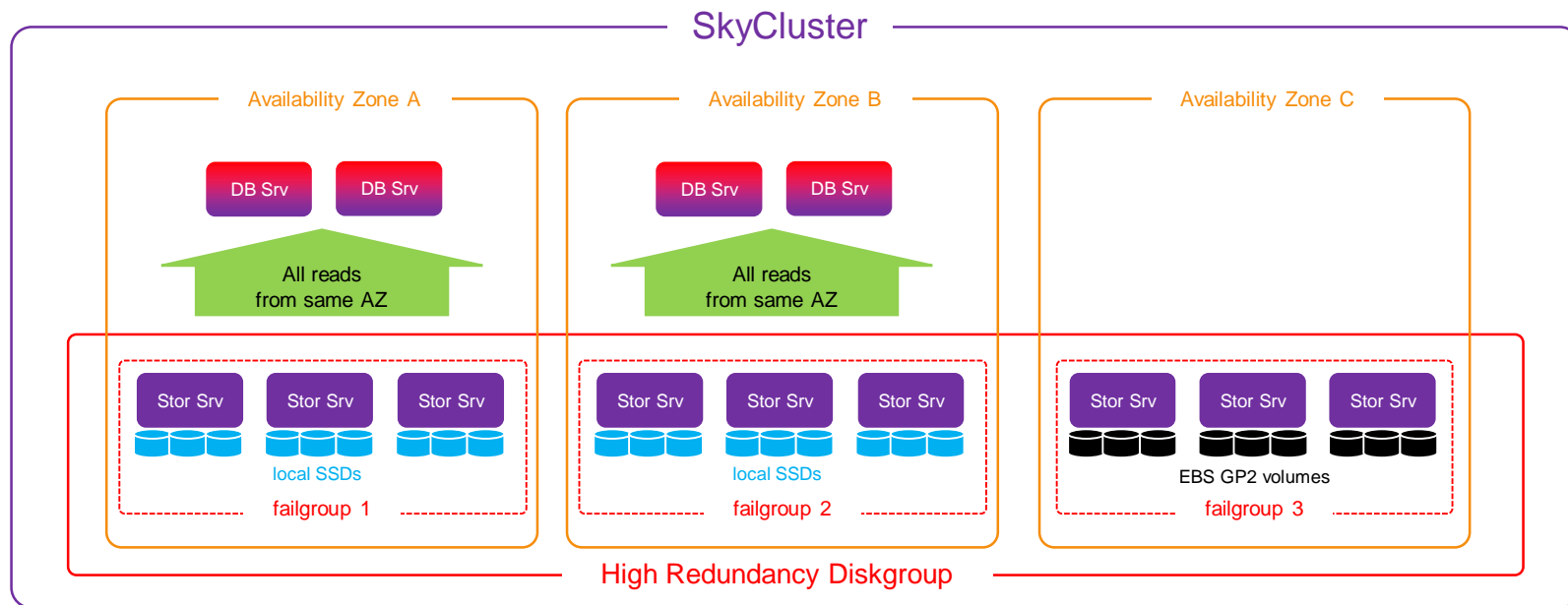


- ❖ Normal Redundancy diskgroup for data
- ❖ Separate failgroups for local SSDs and for EBS
- ❖ Can tolerate loss of any one storage node
- ❖ Good for small number of storage servers, e.g. up to 120 TB of fast storage

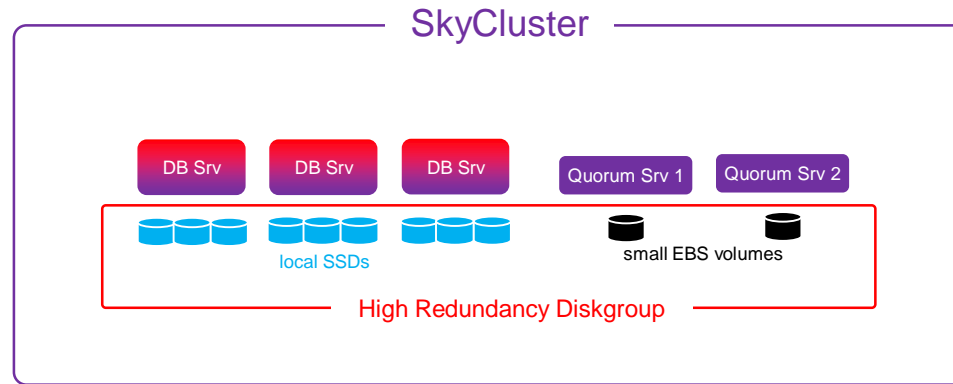
SkyCluster



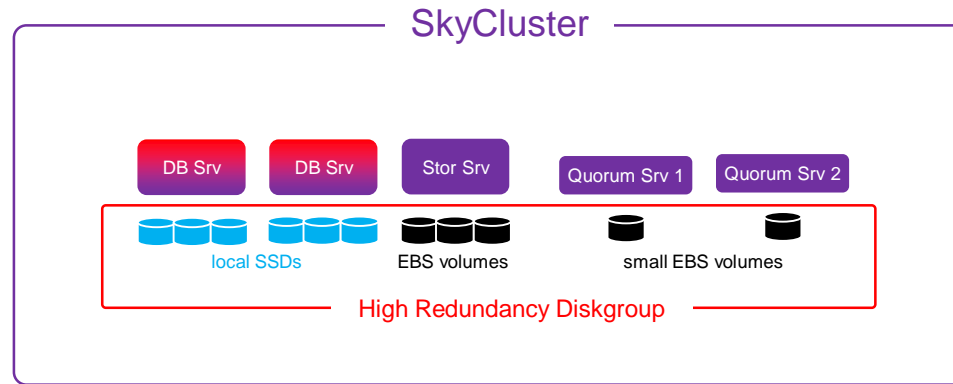
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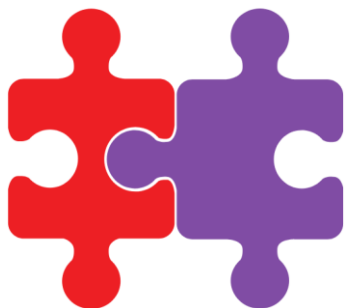
Some more background info about SkyCluster for AWS

- ❖ Familiar environment: RAC, ASM, Clusterware
- ❖ Familiar tools: RMAN, DataGuard, GoldenGate, OEM
- ❖ Full control of database features and patching
- ❖ Standard database patching process
- ❖ Quick and easy storage expansion
- ❖ FlashGrid support with deep Oracle expertise





- ❖ Keep full control of the database software and the OS
- ❖ Cluster VMs deployed in your cloud account
- ❖ FlashGrid has no access to the VMs or data
- ❖ Data at rest encrypted by EBS with AWS or customer managed key (optional)
- ❖ Oracle Transparent Data Encryption (TDE) option available



- ❖ Oracle Database: 11.2, 12.1, 12.2, 18c, 19c
- ❖ OS: Oracle Linux 7, RHEL 7
- ❖ Oracle tools: OEM, RMAN, DataGuard, GoldenGate
- ❖ EC2 VM instances: multiple types and sizes
- ❖ AWS Clouds: Commercial, US Govt



24x7 support covers all cluster infrastructure

- FlashGrid software
- Oracle ASM and Clusterware
- AWS EC2 instances, VPC networking, EBS or local SSD storage
- Linux kernel/networking/storage components
- Performance

- ❖ Fully functional cluster in 1 hour
- ❖ Infrastructure-as-Code deployment
- ❖ Configure once, deploy multiple clusters
- ❖ Eliminate human errors in HA configuration



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Questions?

Email me at: *artem at flashgrid dot io*

Additional information

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