
AWS
re:Invent

WIN303

Cost-optimize SQL Server on AWS

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“If you don’t understand the details of your business you are going to fail.”

Jeff Bezos

Founder and CEO of Amazon

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Agenda

Where can you run your SQL Server on AWS?

AWS Optimization and Licensing Assessment (AWS OLA)

Other cost-optimization options

Deltek case study



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Where can you run your SQL Server on AWS?



Amazon Relational Database Service (Amazon RDS)

Managed service with up to **128** vCPU, **4 TB** RAM, and **16 TB** storage
Available instance types depend upon the edition
Standard or Provisioned IO



Amazon Elastic Compute Cloud (Amazon EC2)

Self-managed SQL Server installation on virtual machine with up to **128** vCPU, **4 TB** RAM, and **400 TB** storage
Any available instance type
Multiple storage options

No. 1: Use AWS OLA



Collect

Determine prospective workloads to optimize, and collect utilization data for the underlying workloads



Analyze

Analyze the data to model cost- and licensing-optimization scenarios

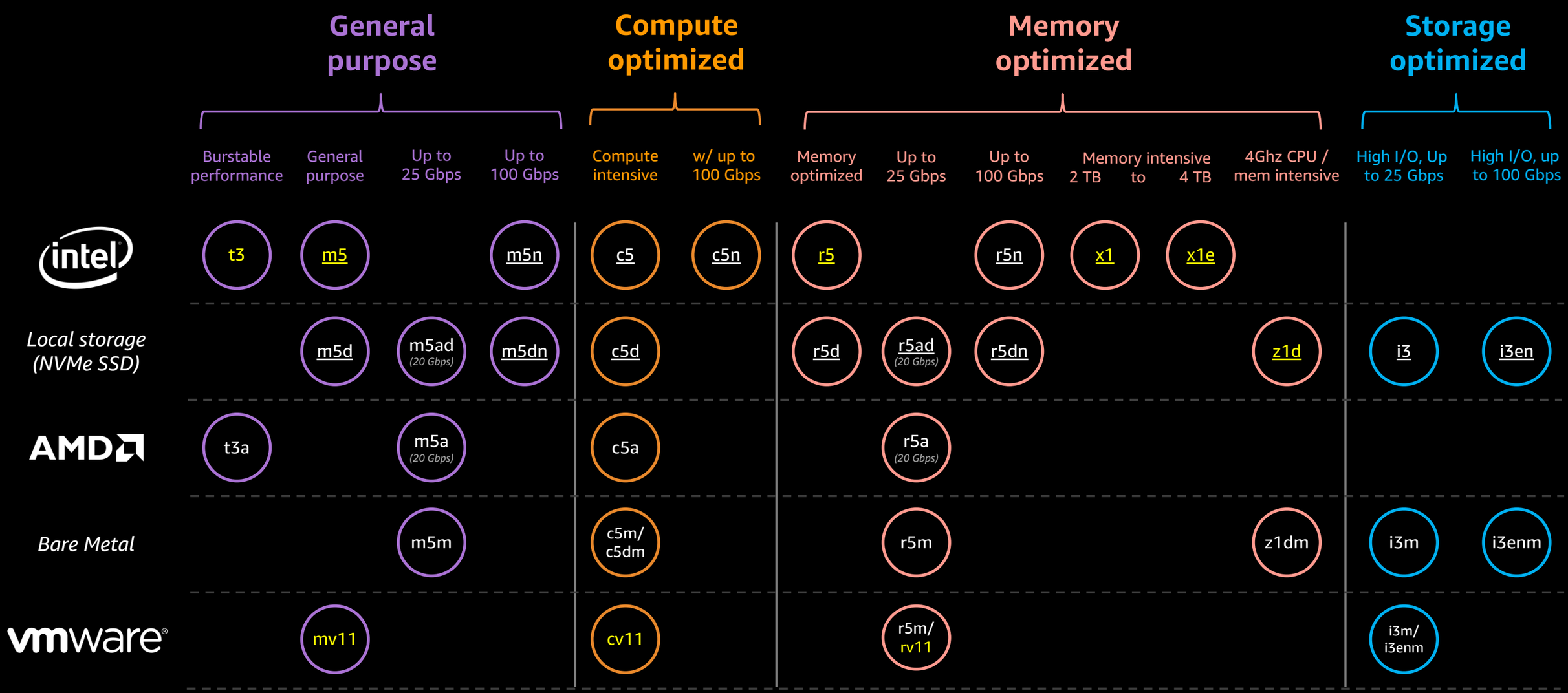


Plan

Review the results and build your business case or start a migration proof of concept

Sign up: http://tiny.cc/aws_ola

No. 2: Picking the right AWS instance type



No. 3: Optimize CPU for SQL Server BYOL workloads

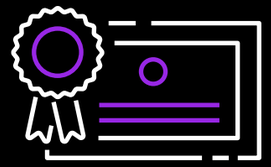


Control active vCPUs and Hyper-Threading status when launching new Amazon EC2 instances

Reduce the number of SQL Server licenses

Instance type	Total vCPUs	Active vCPUs with optimized CPUs	SQL Server license savings
r5.4xlarge	16	8	50%
r5.8xlarge	32	24	25%

No. 4: BYOL vs. License Included



Bring-your-own-license (BYOL) use cases

Already own the license

Unused licenses available for repurpose

Active Software Assurance includes a passive license for high availability (HA) / disaster recovery (DR)

SQL running on default tenancy EC2 with Active Software Assurance

Need to run SQL on dedicated hosts



License-included use cases

RDS SQL as an option

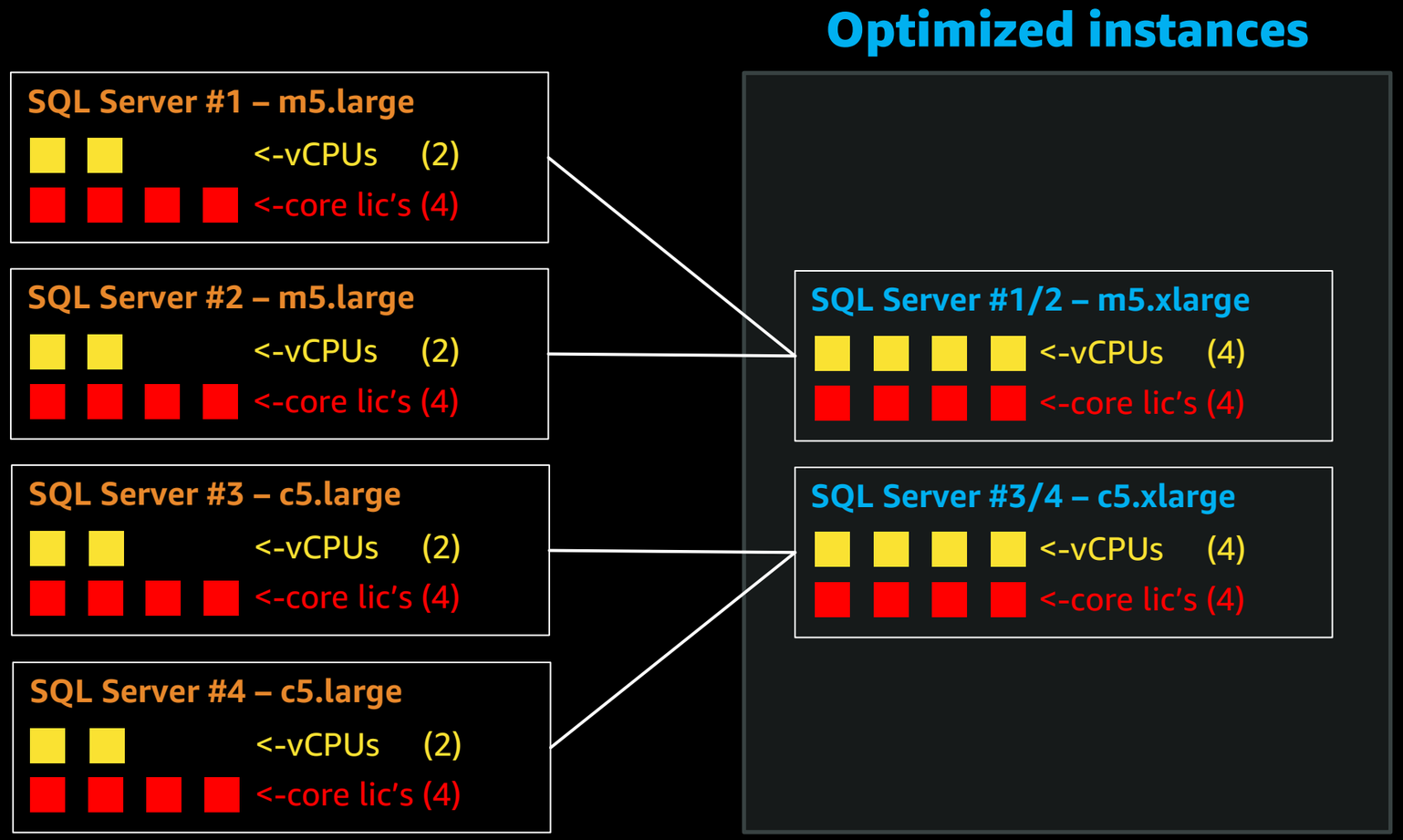
No extra license to repurpose

License on a pay-as-you-go model as projects needs dictate

Eliminate the need to have a Microsoft Enterprise Agreement (EA) or Server and Cloud Enrollment (SCE)

Prefer AWS to be responsible for license compliance

No. 5: SQL workload consolidation



= **50%** license reduction

Total vCPUs: 8
Total cores to license: 16

Total vCPUs: 8
Total cores to license: 8

No. 6: Consider SQL Enterprise to Standard Step-Down

Enterprise

Dedicated virtualization clusters for SQL on premises

Always-on availability groups (AGs)

Transparent data encryption (TDE)

Read replica to offload read-only queries

Standard

Basic AGs

SQL 2019 TDE is a feature

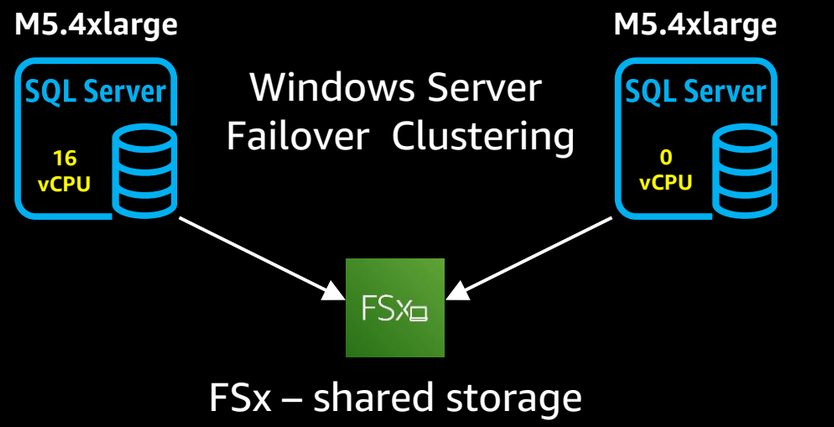
Always-on failover clustering instance (FCI)

DR can be done via block replication

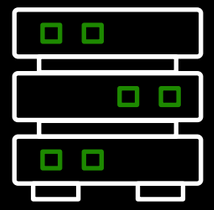
Always-on AGs
SQL enterprise licensing



Always-on FCI
SQL standard licensing



No. 7: Using dedicated hosts



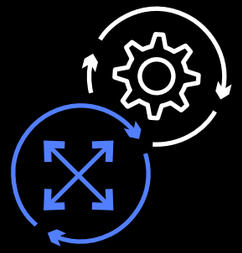
SQL Server benefits

License physical cores vs. vCPUs (eliminates 4 core min)

Licenses that you can bring to dedicated hosts vs. licenses that you cannot bring to shared tenancy

Supports **both** Windows Server BYOL and license-included options

License Manager integration (facilitates self-auditing)

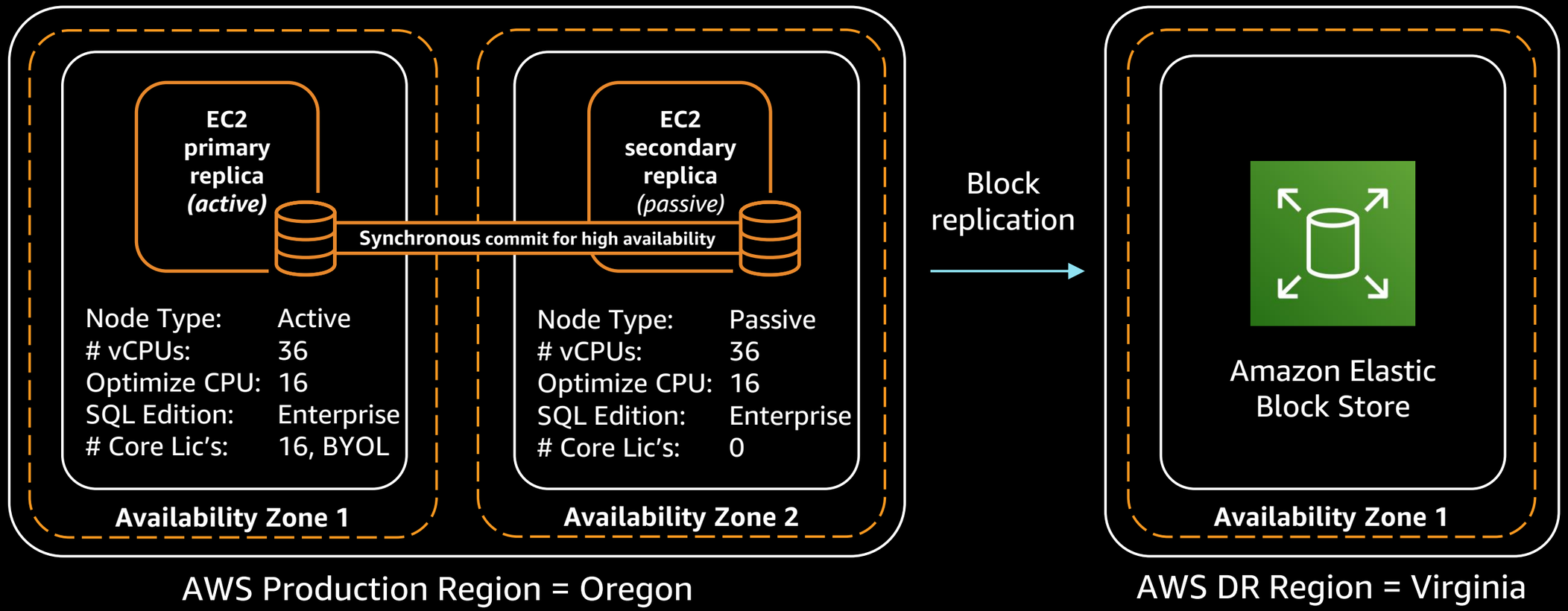


Dedicated host management features

Automatic allocation of new hosts, placement of instances on hosts, release of hosts with no active instances

Automatic host recovery upon host failure

No. 8: Using block replication



50% license reduction + 30% compute cost reduction

No. 9: Using GP2 striping vs. Provisioned IOPS

Scenario

- 2 TB data volume
- 6,000 IOPs
- 1,000 MiB/s / throughput

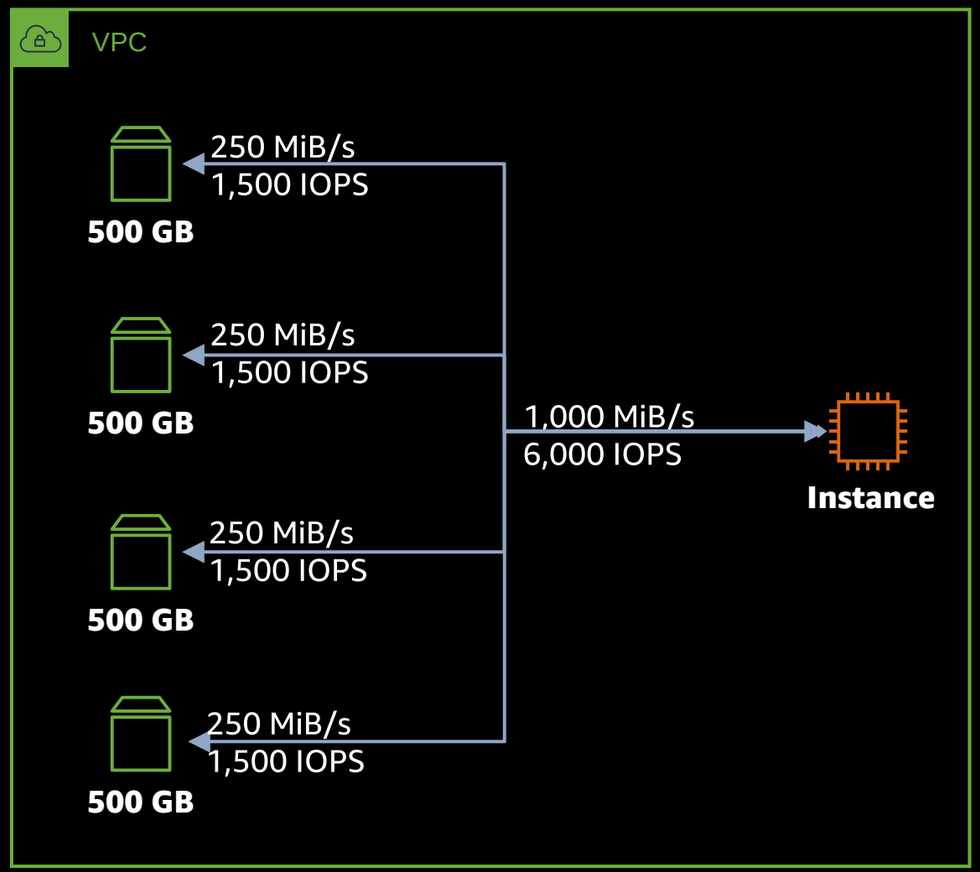
Option 1: IO1 *(99.9% SLA)* or IO2 *(99.999% SLA)*



EBS cost for IO1 : $646 (N. Virginia)

EBS cost for IO2 : $286 (N. Virginia)

Option 2: GP2 *(99% SLA)*



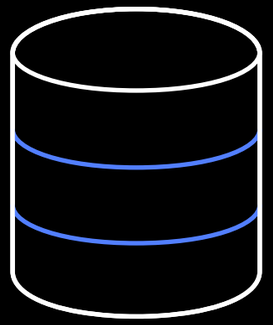
GP2 cost: $205 (N. Virginia)

GP3 cost: $163 + $15 (N. Virginia)

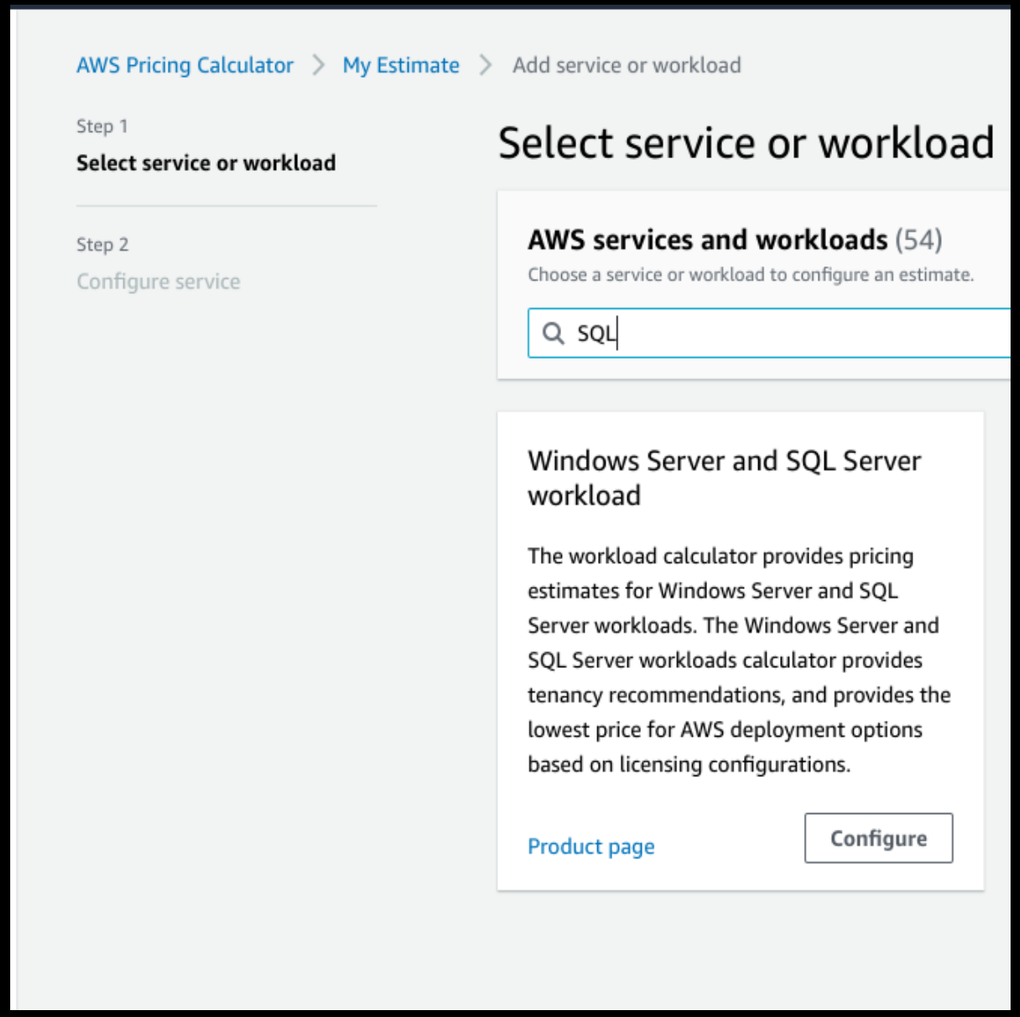
IO2 vs GP2 = –28% / IO2 vs. GP3 = –37%

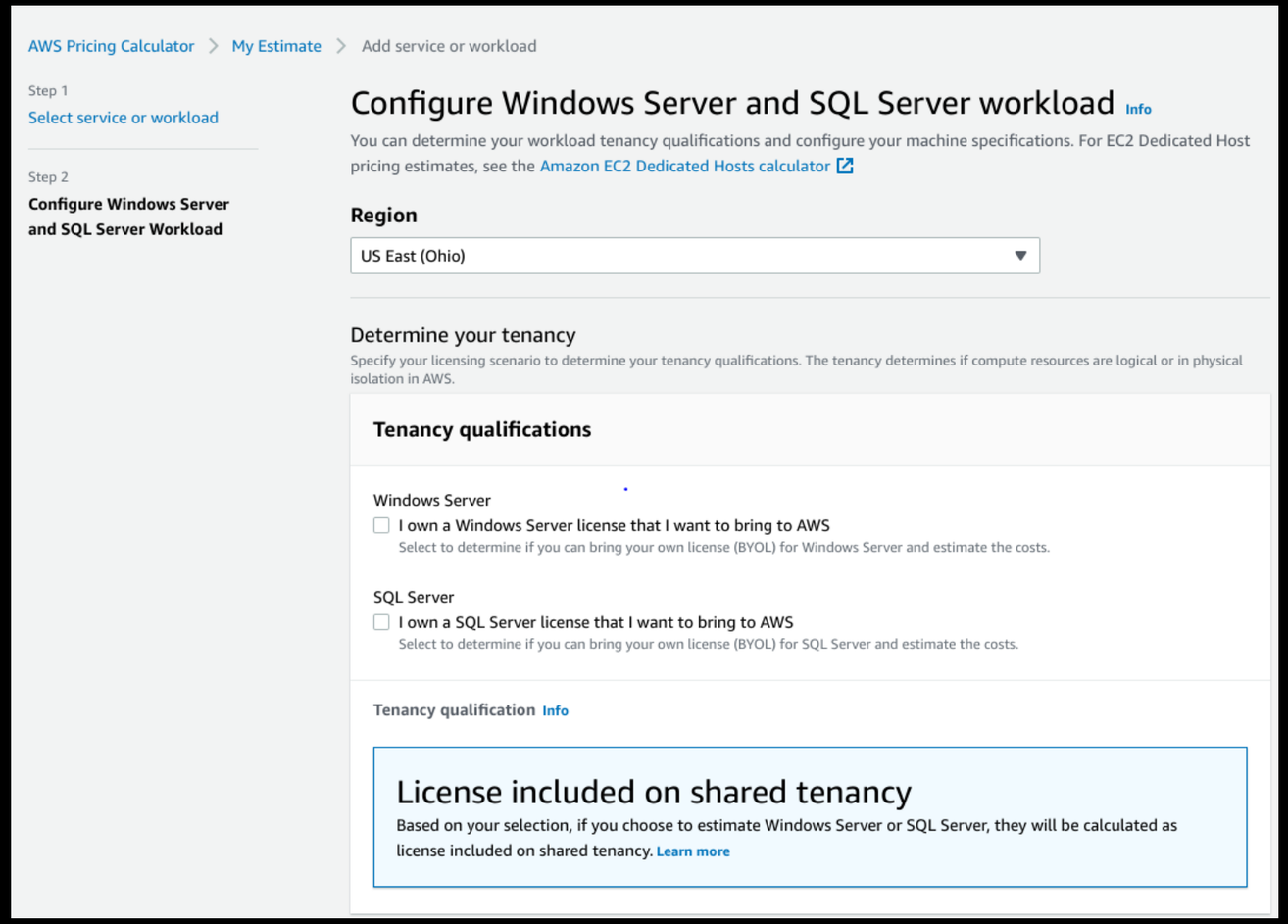
No. 10: Running non-production workloads on Developer Edition






No. 11: Windows and SQL Server workload calculator





Deltek case study

“When we moved our SQL Server licenses to Amazon EC2 Dedicated Instances and Dedicated Hosts, we saved 15% on SQL licensing costs. Additionally, when we move our Windows licenses to Amazon EC2 Dedicated Hosts, we will save 10% on Windows licensing. Altogether, we will save hundreds of thousands per year on Microsoft software licensing costs, and we can put those savings back into our products to add even more world-class capabilities for our customers."



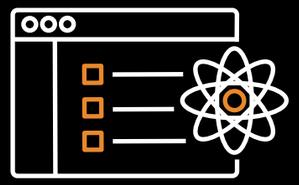
Cris Carlin
Vice President Global Cloud Operations, Deltek

Call to action



5 key takeaways from this session

Assessment
Consolidate
Architect
Licensing
AWS tools



Other re:Invent sessions

Win201 – Migrating Microsoft workloads to AWS
Win301 – Best practices for running Microsoft Active Directory on AWS
Win302 – Managing and governing Microsoft workloads on AWS
Win304 – Migrate SQL Server to AWS

Thank you!



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