

VNA-SB-018 | OCI FinOps & 4-Cloud Cost Benchmarks | Low-Level Infrastructure, Spot/Preemptible VMs & Managed Platform Economics | Sierra Granite

OCI vs. AWS vs. Azure vs. GCP Cost Comparison: Compute, Spot VMs, Block IOPS & BYOL

Cloud bills on AWS, Azure, and Google Cloud spiral out of control not just from base compute rates, but from hidden IOPS provisioned-storage taxes, NAT gateway processing fees, Kubernetes control-plane charges, and punitive data egress rates. Explore our transparent, line-by-line engineering benchmarks across all 4 major clouds covering low-level compute, Spot/Preemptible VMs, block storage IOPS, and managed database platforms.

Search Queries & Scope Covered: OCI vs AWS vs Azure vs GCP cost comparison | OCI Preemptible instances vs AWS EC2 Spot pricing | OCI Block Volume IOPS pricing vs AWS EBS io2 gp3 | cloud data egress fees OCI 10TB free vs AWS | Oracle Support Rewards and BYOL licensing on OCI vs RDS

SOURCE LEGACY STACK (STACK X)		MODERNIZED TARGET ARCHITECTURE (STACK Y)	
AWS (EC2, EBS, RDS), Microsoft Azure (VMs, SQL), Google Cloud (GCE, Cloud SQL)		Oracle Cloud Infrastructure (OCI Flexible Compute, Preemptible/Spot VMs, NVMe Block, Autonomous DB)	
FLEXIBLE COMPUTE SAVINGS	BLOCK STORAGE AT HIGH IOPS	FREE OUTBOUND DATA EGRESS	SPOT / PREEMPTIBLE DISCOUNT
42-58% Lower \$/vCPU	Up to 80% Cheaper	First 10 TB/Month Free	50% Off Flat Rate

1. Problem Space & Architectural Bottlenecks

- AWS, Azure, and GCP lock customers into rigid t-shirt VM sizes (forcing you to double RAM just to add CPU cores or vice versa) and charge extra for regions outside US-East.
- Provisioning high-performance database storage (e.g., 30,000+ IOPS and 1,000 MB/s throughput) on AWS `io2`/`gp3` or Azure Ultra Disk often costs more per month than the compute instances themselves.
- Outbound internet data egress on AWS, Azure, and GCP starts at \$85 to \$120 per TB after just 100 GB, punishing data-intensive APIs, SaaS platforms, and multi-cloud architectures.

2. Technical Solution & Reference Architecture

- 2.1 Low-Level Infrastructure Benchmarks** (Compute, Spot/Preemptible VMs, Block IOPS, Egress): OCI flexible AMD EPYC (`E5.Flex`) and Ampere ARM (`A1.Flex`/`A2.Flex`) shapes allow independent 1-OCPU and 1-GB RAM scaling at uniform global pricing, with flat 50% discounts on Preemptible (Spot) capacity.
- 2.2 Storage & Network Economics:** Every OCI Block Volume includes high baseline IOPS and dynamically scales up to 300,000 IOPS per volume using Performance Units (`VPU`) at a fraction of AWS `io2` pricing, while the first 10 TB/month of outbound internet egress is \$0.00.
- 2.3 Managed Platform Layer** (Kubernetes, Exadata/Autonomous DB, Oracle BYOL Advantage): OCI Container Engine for Kubernetes (OKE) has a \$0 control plane fee. For Oracle Database workloads, OCI's 1 OCPU = 2 vCPUs architectural mapping combined with Bring Your Own License (BYOL) and Support Rewards (\$0.25-\$0.33 per \$1 spent) cuts net database run-rates by 50% to 70%.

2.4 Multi-Cloud Split-Stack Execution: Using the sub-2ms OCI-Azure Interconnect and OCI-Google Cloud Interconnect (with \$0 cross-cloud interconnect egress fees), you can keep front-end apps in Azure/GCP while running data-intensive compute and databases on OCI.

3. 4-Cloud Infrastructure & Platform Benchmark Matrix

Legacy Artifact / Baseline Workload	Modernized Oracle / Cloud Target	Engineering Method & Outcome
8 vCPU / 32 GB RAM Linux On-Demand VM (730 hrs/mo)	OCI E5.Flex (~\$128/mo) vs AWS m7a.2xlarge (~\$338/mo) vs Azure D8as_v5 (~\$280/mo) vs GCP n2d-standard-8 (~\$252/mo)	54-62% Compute Savings + Exact Core/RAM Sizing
8 vCPU / 32 GB RAM Spot / Preemptible Batch Worker	OCI Preemptible (~\$64/mo Fixed) vs AWS Spot (~\$105-\$140/mo Variable) vs Azure Spot (~\$85/mo) vs GCP Spot (~\$76/mo)	Predictable 50% Flat Preemptible Rate (Zero Price Spikes)
1 TB Block Storage @ 32,000 IOPS & 480 MB/s	OCI Balanced/Higher Perf (~\$59/mo) vs AWS gp3/io2 (~\$265-\$1,600/mo) vs Azure Premium SSD v2 (~\$230/mo) vs GCP Extreme PD (~\$325/mo)	75-95% Lower High-IOPS Storage Cost
10 TB / Month Outbound Internet Data Egress	OCI (\$0.00 Free Tier) vs AWS (~\$900/mo) vs Azure (~\$870/mo) vs GCP (~\$850/mo)	10 TB/mo Included Free + \$0.0085/GB Thereafter
16 vCPU Enterprise Database (HA Multi-AZ)	OCI Base DB / Autonomous BYOL vs AWS RDS Oracle/Postgres vs Azure SQL Business Critical vs GCP AlloyDB	2x Core Licensing Efficiency + OCI Support Rewards

4. Oracle APEX & Ancillary Engineering Toolchain

- OCI Flexible Compute (`VM.Standard.E5.Flex`, `BM.DenseIO.E5.128`, `VM.Standard.A1.Flex` Ampere ARM)
- OCI Preemptible Instances (Spot VMs) & OCI Container Engine for Kubernetes (OKE)
- OCI Block Volume Dynamic Performance Scaling (VPUs) & OCI Lustre / File Storage
- Oracle Support Rewards (reduces on-premises Oracle tech license support bills by \$0.25-\$0.33 per \$1 of OCI universal credits)
- OCI-Azure Interconnect & Oracle Database@Azure / Oracle Database@Google Cloud

Anonymized Production Proof: By auditing compute shapes, storage IOPS allocations, egress paths, and database licensing across AWS, Azure, GCP, and OCI, our FinOps architects routinely cut annual enterprise cloud spend by 42% to 68% within 90 days.

5. Deep-Dive FinOps Research Notes

Spot & Preemptible VM Benchmarks Across AWS, Azure, GCP, and OCI: Why OCI's flat 50% Preemptible discount on E5.Flex and Ampere ARM shapes beats volatile Spot market pricing on AWS, Azure, and GCP for Kubernetes worker pools and batch data processing.

1. *The Hidden Volatility of Hyperscaler Spot Pricing* - Engineering teams adopt Spot VMs (AWS EC2 Spot, Azure Spot VMs, Google Cloud Spot VMs) to reduce compute costs for stateless microservices, CI/CD runners, and data processing

pipelines. However, on AWS and Azure, Spot pricing fluctuates dynamically based on regional supply and demand, and base On-Demand list prices start 2x higher than Oracle Cloud Infrastructure (OCI). Even more problematic is rigid instance sizing: if your batch container needs 6 vCPUs and 16 GB of RAM, AWS and Azure force you into an 8-vCPU / 32-GB instance family (`m7i.2xlarge` or `D8s\_v5`), wasting 25% to 50% of the memory you pay for.

2. OCI Preemptible Instances: Flat 50% Discount + Custom Core/RAM - On Oracle Cloud Infrastructure, Preemptible Instances apply a fixed 50% discount directly to `VM.Standard.E5.Flex` (AMD EPYC Genoa), `VM.Standard3.Flex` (Intel Xeon), and `VM.Standard.A1.Flex` (Ampere Altra ARM) shapes. Because 1 OCI OCPU equals 2 hardware execution threads (2 vCPUs on x86) and memory is billed independently at \$0.0015/GB-hour (\$0.00075/GB-hour preemptible), an 8-vCPU (4 OCPU) / 32-GB RAM Linux Preemptible VM on OCI costs roughly \$64/month, compared to \$85-\$140/month on AWS/Azure Spot and over \$280-\$338/month On-Demand.

3. Combining OKE Node Pools with Mixed On-Demand & Preemptible Shapes - In OCI Container Engine for Kubernetes (OKE), we architect dual node pools: a baseline On-Demand `E5.Flex` pool for stateful ingress and core APIs, paired with an auto-scaling Preemptible `E5.Flex` or `A1.Flex` pool that handles burst traffic, document OCR, and ETL workers with graceful 2-minute `SIGTERM` pod draining.

Eliminating the Cloud IOPS & Data Egress Tax: OCI vs. AWS gp3/io2 & Azure Ultra: How provisioned IOPS charges and \$0.09/GB outbound bandwidth fees inflate database and SaaS cloud bills by 300%, and how OCI Volume Performance Units (VPUs) and 10 TB/month free egress change the math.

1. Why Database Storage Costs More Than Compute on AWS and Azure - When migrating high-throughput Oracle, SQL Server, or PostgreSQL databases to AWS or Azure, architects quickly discover that baseline disks (`gp3` 3,000 IOPS or Azure Standard SSD) choke under production OLTP checkpoint and redo-log bursts. Upgrading a 2 TB volume to 64,000 IOPS and 1,000 MB/s on AWS `io2` or Azure Ultra Disk adds \$1,500 to \$3,800 per month per volume in provisioned IOPS fees alone, even during off-peak hours when the database is idle.

2. Dynamic Volume Performance Units (VPUs) on OCI - OCI Block Volumes use a single unified NVMe storage fabric across the entire region. At the default Balanced tier (10 VPUs), a 1 TB volume delivers 25,000 IOPS and 480 MB/s for just ~\$42.50/month total (\$0.0255/GB + \$0.017/VPU-GB). Better still, OCI allows online dynamic VPU auto-tuning via API or schedule: you can run at Lower Cost (0 VPUs, \$0.0255/GB) overnight, scale to Higher Performance (20 VPUs, 50,000 IOPS) during business hours, and burst to Ultra High Performance (up to 300,000 IOPS) during month-end batch closes with zero downtime.

3. The 10 TB/Month Free Outbound Egress Advantage - AWS, Azure, and GCP charge \$0.085 to \$0.12 per GB after the first 100 GB of outbound internet traffic. Moving 10 TB/month of API responses, PDF reports, or media payloads out of AWS costs ~\$900/month (\$10,800/year). On OCI, the first 10 TB every month is \$0.00, and traffic above 10 TB is billed at \$0.0085/GB (10x cheaper than AWS).

Platform Tier Economics: Managed Databases, BYOL Core Math & Oracle Support Rewards: Comparing AWS RDS, Azure SQL, GCP AlloyDB, and OCI Autonomous/Exadata Database services: how vCPU-to-OCPU core math and Support Rewards reduce net database TCO by up to 70%.

1. The 2-for-1 Core Counting Penalty on AWS RDS and EC2 - Under Oracle's Cloud Licensing Policy for Authorized Cloud Environments (AWS EC2/RDS and Azure VMs), 2 vCPUs equal 1 Oracle Processor license only when hyperthreading is enabled, and Standard Edition 2 is strictly capped. Furthermore, AWS RDS for Oracle cannot run Real Application Clusters (RAC), forcing customers to license full passive Multi-AZ standby instances without active read/write scalability. On OCI, 1 OCPU (2 vCPUs) maps with 2x efficiency under Bring Your Own License (BYOL), and Autonomous Database Serverless scales in granular ECPU increments automatically matching actual SQL load.

2. How Oracle Support Rewards Turn Cloud Spend into License Credits - Most enterprises already pay an annual 22% technical support renewal bill on their existing on-premises Oracle Database, Middleware, or Engineered Systems licenses. When those workloads (or even non-Oracle Linux, Kubernetes, VMware, or AI workloads) run on OCI, every

\$1.00 of OCI Universal Credits generates \$0.25 to \$0.33 in Oracle Support Rewards. A company spending \$300,000/year on OCI infrastructure receives \$75,000 to \$100,000 off its existing Oracle support invoice, effectively reducing net OCI infrastructure cost by another 25% to 33%.

6. Principal Architect Q&A

Q: How do OCI Preemptible Instances compare to AWS EC2 Spot Instances and GCP Spot VMs?

A: Unlike AWS Spot where market bidding prices can spike unexpectedly toward On-Demand rates during capacity crunches, OCI Preemptible Instances always bill at a flat, predictable 50% discount off the already-low OCI On-Demand rate, making them ideal for CI/CD, Kubernetes batch pools, and data pipelines.

Q: How do Oracle Support Rewards work when we move workloads to OCI?

A: For every \$1 of OCI Universal Credits consumed, customers with on-premises Oracle technology licenses earn \$0.25 (or \$0.33 for ULA customers) in rewards that directly pay down their annual Oracle technical support renewal invoice.

Q: What is included in the downloadable PDF Solution Brief?

A: The 6-page PDF Solution Brief contains the complete 2026 4-Cloud Price Benchmark Tables (Compute, Spot/Preemptible, GPU, Block Storage IOPS, Object Storage, Egress, Kubernetes, and Managed DBs), plus our 10-step OCI FinOps Right-Sizing Playbook.