The Strategic Optimization Checklist

✅ 1. Compute & Instance Right-Sizing

The goal is "Goldilocks" provisioning: not too much, not too little.

- **Identify "Idle" Instances:** List instances with <5% average CPU utilization over the last 30 days. Can they be consolidated or downgraded?
- **Burst-Capable Assessment:** For non-production workloads, are you using burstable instances (e.g., AWS T-series or Azure B-series) to save costs during quiet periods?
- **Memory vs. CPU Balance:** Are you paying for high-compute instances when your bottleneck is RAM? Adjust instance classes to match your engine's specific needs.

✅ 2. Storage & Throughput Efficiency

Storage is often the "silent killer" of cloud budgets.

- **IOPS Over-Provisioning:** Review your peak vs. average IOPS. If you aren't hitting your "Provisioned IOPS" ceiling, switching to General Purpose storage can save thousands.
- **Abandoned Volume Cleanup:** Identify and delete "Orphaned Snapshots" and unattached storage volumes left over from decommissioned test environments.
- **Storage Tiering:** Move historical logs, old backups, and "cold" data from premium SSDs to low-cost S3 or Blob storage tiers.

✅ 3. Network & Connectivity Costs

Data movement is the most overlooked expense.

- **Data Egress Audit:** Are you moving large datasets across regions? Use Private Links or keep resources within the same Availability Zone (AZ) to eliminate "egress" fees.
- **Cross-AZ Traffic:** Ensure your application and database are in the same AZ. Reducing cross-AZ chatter can cut networking costs by up to 20%.

✅ 4. Licensing & Commitment Strategies

Stop paying the "on-demand" premium for 24/7 workloads.

- **Bring Your Own License (BYOL):** Check if your existing on-premises SQL Server or Oracle licenses can be applied to the cloud to avoid "License-included" markups.
- **Reserved Instances (RIs):** For stable production workloads, have you committed to 1-year or 3-year reservations? Savings typically range from 40% to 60%.

✅ 5. AI & Performance Tuning

Tuning is about supervising the machines.

- **Index Hygiene:** Use automated tools to find redundant or unused indexes that slow down writes and inflate storage costs.
- **Query Plan Stability:** Ensure AI "Auto-tuning" features are in **Observe Mode** first to prevent automated changes from causing performance regressions.