



Azure Health Check - Cost Optimization Report

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**This sample report has been
abbreviated for concise review.**

Executive Summary

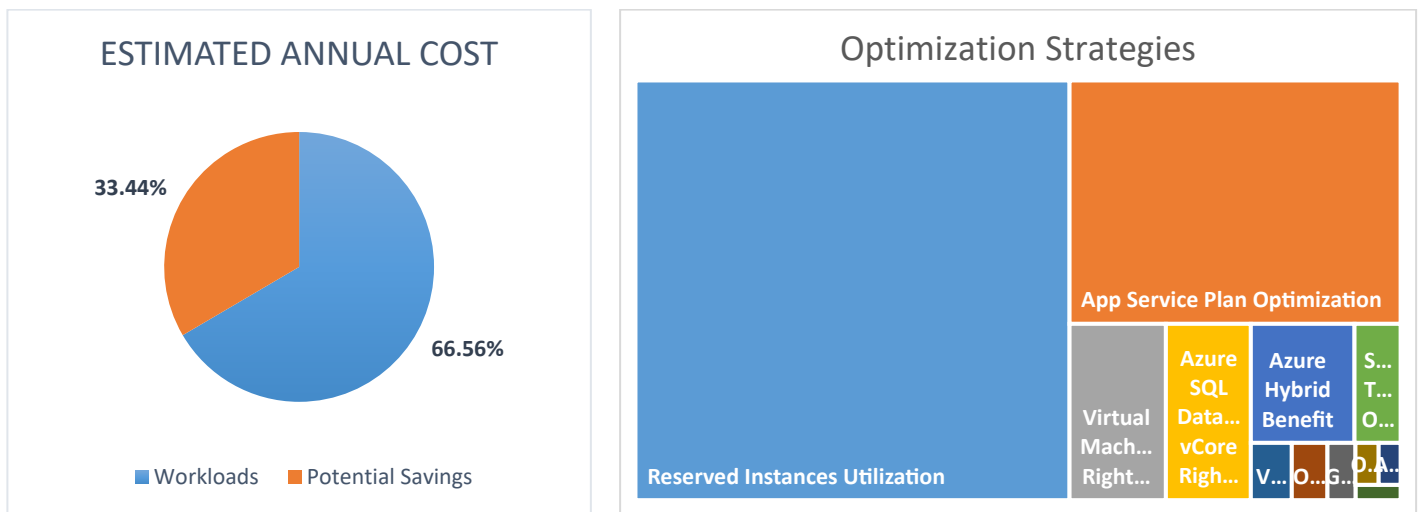
The VIAcode Azure Optimization Assessment (AOA) provides an in-depth analysis of the Azure infrastructure cost. Our analysis delivers actionable recommendations to dramatically improve efficiency and effectiveness of your Azure environment to drive cost savings, reducing risk and strategies to maintain an optimized Azure environment. The recommendations in this assessment can be used to plan necessary improvements and cost savings in your Azure environment. VIAcode can help you implement these cost savings and optimization improvements.

Using data collected from your Azure environment VIAcode experts analyzed 38 optimization strategies to deliver the following:

- Prioritized, actionable and specific recommendations for improving your Azure environment.
- Interactive analytical report to help identify infrastructure affected by recommended improvements.
- Estimated value for each proposed recommendation.

The VIAcode Azure Optimization Assessment provides thorough review of your Azure infrastructure to identify key improvement areas and understand the health of the environment. The recommendations in the Assessment can be used to drive cost savings and governance improvements.

The VIAcode Assessment found potential annual savings of **\$479,652.58** out of **\$1,434,318.33** predicted spend (**33.44%** cost reduction). These graphs represent the percentage of potential saving as well as the optimization strategies, if implemented, that will provide these savings.



Assessment Report Structure

This report includes a structured analysis of the customers Azure environment using the VIAcode proprietary software to cover the following areas of cloud infrastructure management:

- Cost optimization

- Governance and compliance

The infrastructure analysis and recommendations for the areas above are described in specific sections of the report.

Cost

Key strategies that contribute to these cost reductions are:

1. Purchase reservations (RIU) to save **\$272,123.00** (18.97% savings).
2. Change tier for your App Service Plans (ASP) to save **\$120,300.13** (8.39% savings).
3. Downgrade virtual machines with underload CPU while preserving memory capacity (VUT) to save **\$25,384.32** (1.77% savings).
4. Consider selecting correct SQL vCore database tier (SVC) to save **\$22,359.20** (1.56% savings).
5. Enable Azure Hybrid Benefits for Windows VMs (AHB) to save **\$18,461.31** (1.29% savings).
6. Change Storage Accounts tier (STO) to save **\$8,212.87** (0.57% savings).
7. Change VM disk types (DUT) to save **\$3,513.42** (0.24% savings).
8. Pay attention to probably orphaned resources (ORO) to save **\$3,041.28** (0.21% savings).
9. Use LRS Data Stored instead of ZRS Data Stored Recovery Vaults (GRO) to save **\$2,393.48** (0.17% savings).
10. Rebuild VMs to decrease OS disk sizes (ODO) to save **\$1,450.66** (0.10% savings).
11. Select the correct database service tier for Azure Database Flexible Servers (MDT) to save **\$1,373.33** (0.10% savings).
12. Configure pipeline to deploy deallocated disks from scratch (DDO) to save **\$447.72** (0.03% savings).
13. Delete orphaned managed disks (ODC) to save **\$234.00** (0.02% savings).
14. Consider selecting correct SQL database tier (SDT) to save **\$173.75** (0.01% savings).
15. Delete unused Public IP addresses (UIP) to save **\$129.60** (0.01% savings).
16. Change Container Instances tier (CIO) to save **\$36.06** (0.00% savings).
17. Delete orphaned snapshots (OSS) to save **\$18.20** (0.00% savings).
18. Take a look to Logic Apps usage (LAU) to save **\$0.25** (0.00% savings).

Note: estimation of annual spend and savings are based on 2024 November monthly spend X 12.

Governance

Cloud cost is an ongoing process. To significantly simplify the burden of controlling compliance and help optimize costs we recommend the implementation of Azure Policies, budgets, and monitoring. We recommend implementing list of policies and use tags for every resource.

Cost Optimizations

Table below provides a summary of applicable optimization strategies. Columns represent the following information:

- Resource count – number of analyzed resources
 - Current cost – Azure cost for resources where optimization is applicable.
 - Optimized cost – how much applicable resources would cost after optimization is applied
 - Savings – delta between current costs and optimized cost
 - Savings/Cost - % of savings within applicable resources. For example, as part of optimization we've analyzed 1000 resources, however, only 200 are not optimized and would be affected by such optimization strategy. Typically, this % shows effectiveness of such optimization strategy within a resource type.
- Savings/Total - % of optimization savings compared to the total spend

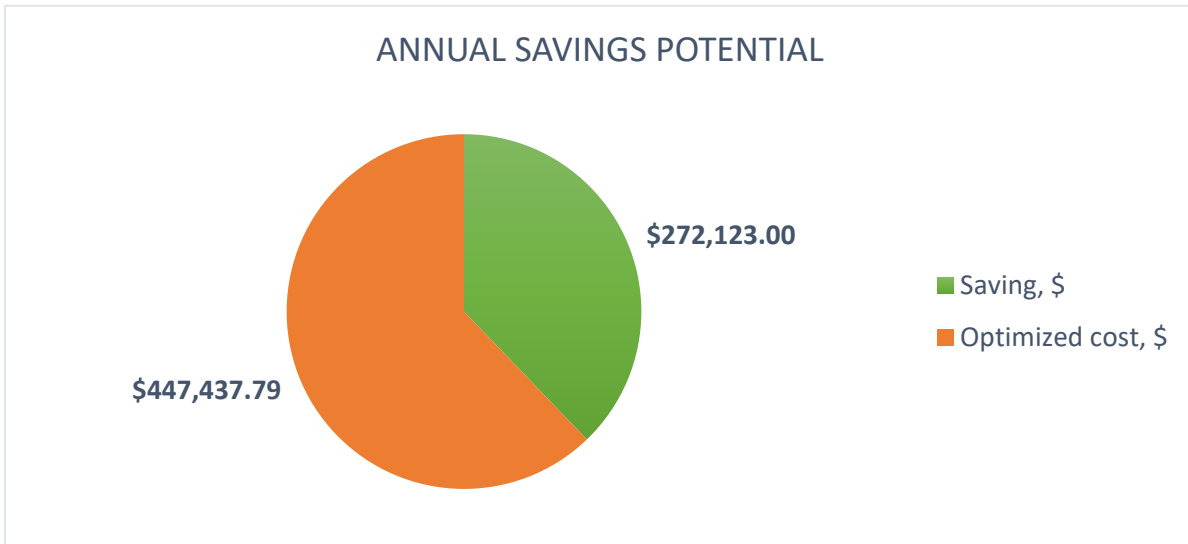
Name	Resource Count	Current cost, \$	Optimized cost, \$	Saving, \$	Savings/Cost, %	Savings/Total, %
Reserved Instances Utilization (RIU)	427	\$59,963.40	\$37,286.48	\$22,676.92	37.82%	18.97%
App Service Plan Optimization (ASP)	377	\$36,577.32	\$26,552.31	\$10,025.01	27.41%	8.39%
Virtual Machines Rightsizing (VUT)	1	\$3,052.80	\$937.44	\$2,115.36	69.29%	1.77%
Azure SQL Database vCore Rightsizing (SVC)	3	\$20,058.11	\$18,194.84	\$1,863.27	9.29%	1.56%
Azure Hybrid Benefit (AHB)	11	\$1,726.52	\$188.08	\$1,538.44	89.11%	1.29%
Storage Tier Optimization (STO)	278	\$6,356.83	\$5,672.43	\$684.41	10.77%	0.57%
VM Disk Type Optimization (DUT)	31	\$564.43	\$271.64	\$292.78	51.87%	0.24%
Orphaned Resources Optimization (ORO)	97	\$31,035.35	\$30,781.91	\$253.44	0.82%	0.21%
Geo Replication Optimization (GRO)	229	\$542.54	\$343.08	\$199.46	36.76%	0.17%
OS Disk Size Optimization (ODO)	16	\$345.75	\$224.86	\$120.89	34.96%	0.10%
Azure Database Flexible Servers Rightsizing (MDT)	30	\$11,315.98	\$11,201.54	\$114.44	1.01%	0.10%
Deallocated Disks Optimization (DDO)	20	\$484.13	\$446.82	\$37.31	7.71%	0.03%
Orphaned Disks Optimization (ODC)	31	\$564.43	\$544.93	\$19.50	3.45%	0.02%
Azure SQL Database Rightsizing (SDT)	41	\$24,505.30	\$24,490.82	\$14.48	0.06%	0.01%

Orphaned IP Addresses						
Optimization (UIP)	26	\$90.00	\$79.20	\$10.80	12.00%	0.01%
Container Instance Optimization (CIO)	1	\$33.97	\$30.96	\$3.01	8.85%	0.00%
Orphaned Snapshots						
Optimization (OSS)	1	\$1.52	\$0.00	\$1.52	100.00%	0.00%
Logic App Utilization (LAU)	5	\$0.54	\$0.52	\$0.02	3.88%	0.00%
TOTAL:	Monthly	\$119,526.53	\$79,555.48	\$39,971.05		33.44%
	Annually	\$1,434,318.33	\$954,665.75	\$479,652.58		

Recommendations Summary

1. Purchase 329 reservations.
2. Change tier for your 46 App Service Plans.
3. Downgrade 1 virtual machines with underload CPU while preserving memory capacity.
4. Rightsize vCores for 1 SQL DB's.
5. Enable Azure Hybrid Benefits for 3 resources.
6. Change 71 Storage Accounts tier.
7. Consider replacement of 20 premium SSD with standard SSD.
8. Pay attention to 26 probably orphaned resources.
9. Use LRS Data Stored instead of ZRS Data Stored backup for 6 recovery vaults.
10. Decrease OS disk size to 64 GB on 11 virtual serves.
11. Select the correct database service tier for 3 Azure Database Flexible Servers.
12. Configure pipeline to deploy 2 deallocated disks from scratch.
13. Delete 1 VM disks/ASR replicas.
14. Select right size for 1 SQL Databases.
15. Delete 3 Public IP Address.
16. Migrate 1 Container Instances to VM-hosted.
17. Remove 1 orphaned snapshots.
18. Review 1 logic apps to identify what logic app runs without result of with failed status.

Reserved Instances Utilization (RIU)



Description

Azure Reservations are pre-purchase commitments that reduce cloud consumption costs by reserving resources in advance.

Azure Reservations help you to save money by committing you to one-year or three-year plans for multiple products. Committing allows you to get a discount on the resources you use.

Reservations provide a billing discount and don't affect the runtime state of your resources. After you purchase a reservation, the discount automatically applies to the appropriate resources. You can pay for a reservation up front or monthly. The total cost of up-front and monthly reservations is the same—you don't pay any extra fees when you choose to pay monthly. Monthly payment is available for Azure reservations, but not third-party products.

If you have consistent resource usage that supports reservations, buying a reservation gives you the option to reduce your costs. For example, when you continuously run instances of a service without a reservation, you're charged at pay-as-you-go rates. When you buy a reservation, you immediately get a reservation discount. The resources are no longer charged at the pay-as-you-go rates.

Reservations can significantly reduce your resource costs by up to 72% from pay-as-you-go prices, but only if your VMs are working more than 64% of time. If a VM is running, for example, eight hours a day, it is cost effective to use a pay-as-you-go subscription.

If you have a lot of VMs working 24/7, it is cost effective to purchase a reservation.

Strategy

Buy additional reservations for resources that are not covered by reserved instances and are running more than 64% of time.

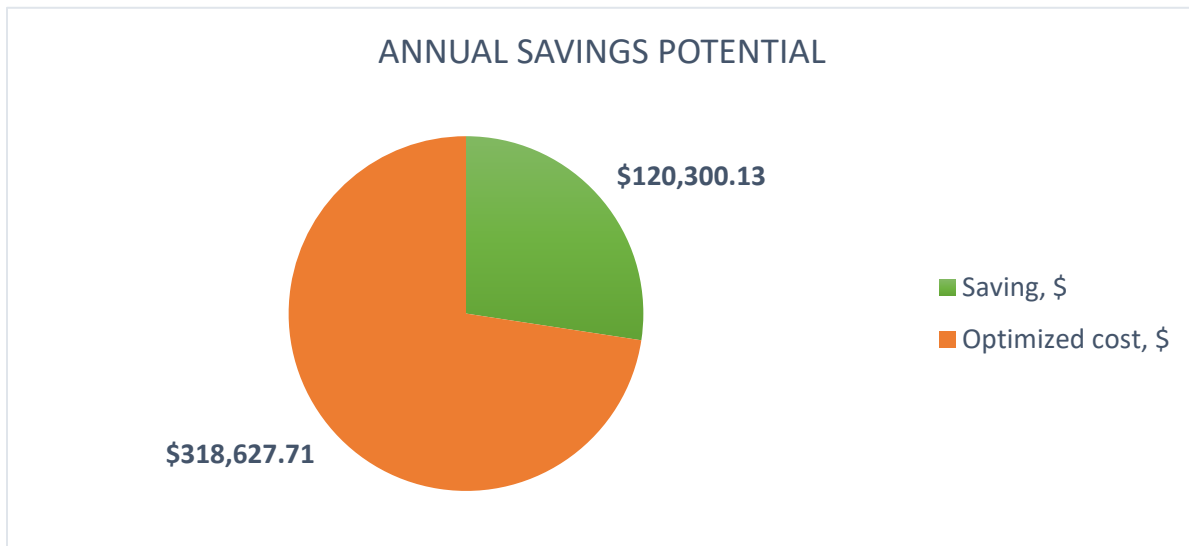
Estimated Cost Reduction

Name	Resource Count	Affected Resources	Current cost, \$	Optimized cost, \$	Saving, \$	Savings/Cost, %	Savings/Total, %
Subscription 2	251	215	\$47,844.28	\$29,051.86	\$18,792.42	39.28%	15.72%
Subscription 1	93	64	\$6,868.43	\$4,594.10	\$2,274.33	33.11%	1.90%
Subscription 3	83	50	\$5,250.69	\$3,640.52	\$1,610.17	30.67%	1.35%
TOTAL:		Monthly	\$59,963.40	\$37,286.48	\$22,676.92	37.82%	18.97%
		Annually	\$719,560.79	\$447,437.79	\$272,123.00		

Recommendations

- Buy reserved instances.

App Service Plan Optimization (ASP)



Description

In App Services (Web Apps, API Apps, or Mobile Apps), an App is always running in an App Service plan. In addition, Azure Functions also has the option of running in an App Service plan. An App Service plan defines a set of compute resources for a Web App to run on. One or more apps can be configured to run on the same computing resources (or in the same App Service plan).

When you create an App Service plan in a certain region (for example, West Europe), a set of compute resources is created for that plan in that region. Whatever apps you put into this App Service plan run on these compute resources as defined by your App Service plan. Each App Service plan defines the following:

- Operating system (Windows, Linux).
- Region (West US, East US, etc.).
- Number of VM instances.
- Size of VM instances (small, medium, or large).

Pricing tier (Free, Shared, Basic, Standard, Premium, PremiumV2, PremiumV3, Isolated, or IsolatedV2).

The pricing tier of an App Service plan determines what App Service features you get and how much you pay for the plan. The pricing tiers available with your App Service plan depend on the initial operating system selection.

Strategy

Analyze the performance metrics of the App Service plan and consider changing tiers.

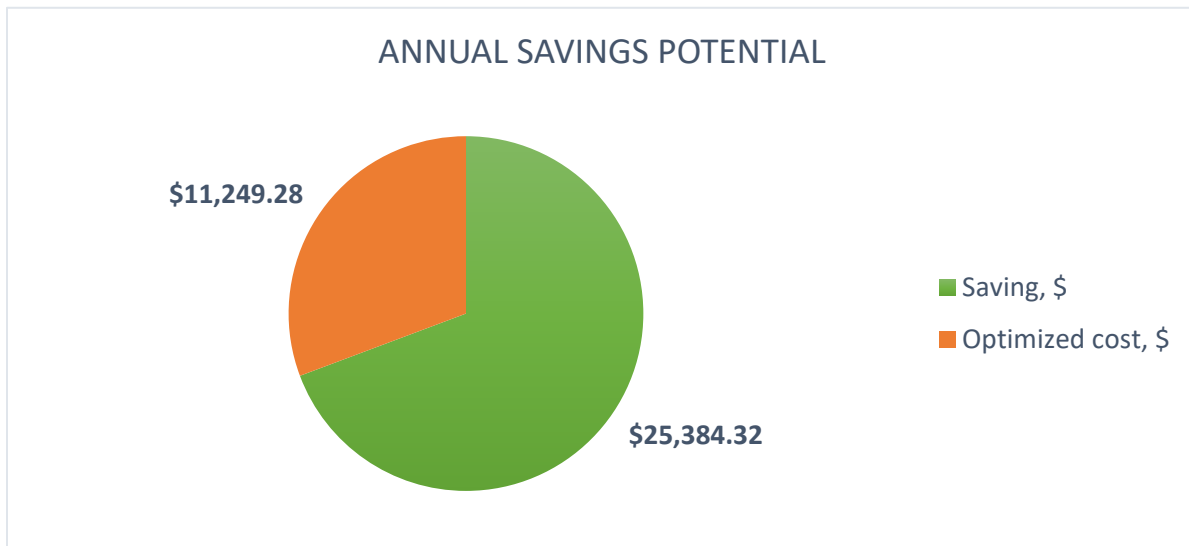
Estimated Cost Reduction

Name	Resource Count	Affected Resources	Current cost, \$	Optimized cost, \$	Saving, \$	Savings/Cost, %	Savings/Total, %
Subscription 2	166	46	\$28,794.12	\$18,769.11	\$10,025.01	34.82%	8.39%
Subscription 3	22	0	\$2,562.66	\$2,562.66	\$0.00	0.00%	0.00%
Subscription 1	189	0	\$5,220.54	\$5,220.54	\$0.00	0.00%	0.00%
TOTAL:		Monthly	\$36,577.32	\$26,552.31	\$10,025.01	27.41%	8.39%
		Annually	\$438,927.84	\$318,627.71	\$120,300.13		

Recommendations

- Change tier of your App Service Plans.

Virtual Machines Rightsizing (VUT)



Description

Rightsizing is the process of analyzing the utilization and performance metrics of your infrastructure, determining whether it is running efficiently, and then modifying the infrastructure as needed.

In the scope of this optimization, we are rightsizing only VM compute.

Resizing your VMs and selecting the correct type can have a dramatic impact on your Azure costs. For example, even by going down one size within the same VM family, you can reduce costs by 50%. By making changes between families and/or other Azure VM sizes according to your region, you have the potential for even greater savings.

Strategy

Shutdown recommendations

Advisor identifies resources that weren't used at all over the last seven days and makes a recommendation to shut them down.

- Recommendation criteria include **CPU** and **Outbound Network utilization metrics**.
- The last seven days of utilization data are analyzed.
- Metrics are sampled every 30 seconds, aggregated to 1 min and then further aggregated to 30 mins (we take the max of average values while aggregating to 30 mins).
- A shutdown recommendation is created if:
 - P95 of the maximum value of CPU utilization summed across all cores is less than 3%
 - P100 of average CPU in last 3 days (sum over all cores) is less than or equal 2%
 - Outbound Network utilization is less than 2% over a seven-day period

Resize SKU recommendations

We recommends resizing virtual machines when it's possible to fit the current load on a more appropriate SKU, which is less expensive (based on retail rates)

- Recommendation criteria include **CPU, Memory and Outbound Network utilization**.
- The last seven days of utilization data are analyzed.
- Metrics are sampled every 30 seconds, aggregated to 1 min and then further aggregated to 30 mins (we take the max of average values while aggregating to 30 mins).
- An appropriate SKU for virtual machines is determined based on the following criteria:
 - Target for user-facing workloads:
 - P95 of CPU and Outbound Network utilization at 40% or lower on the recommended SKU
 - P100 of Memory utilization at 60% or lower on the recommended SKU
 - Target for non user-facing workloads:
 - P95 of the CPU and Outbound Network utilization at 80% or lower on the new SKU
 - P100 of Memory utilization at 80% or lower on the new SKU

Burstable recommendations

A burstable SKU recommendation is made if:

- The average **CPU utilization** is less than a burstable SKUs' baseline performance
 - If the P95 of CPU is less than two times the burstable SKUs' baseline performance
 - If the current SKU doesn't have accelerated networking enabled, since burstable SKUs don't support accelerated networking yet
 - If we determine that the Burstable SKU credits are sufficient to support the average CPU utilization over 7 days.

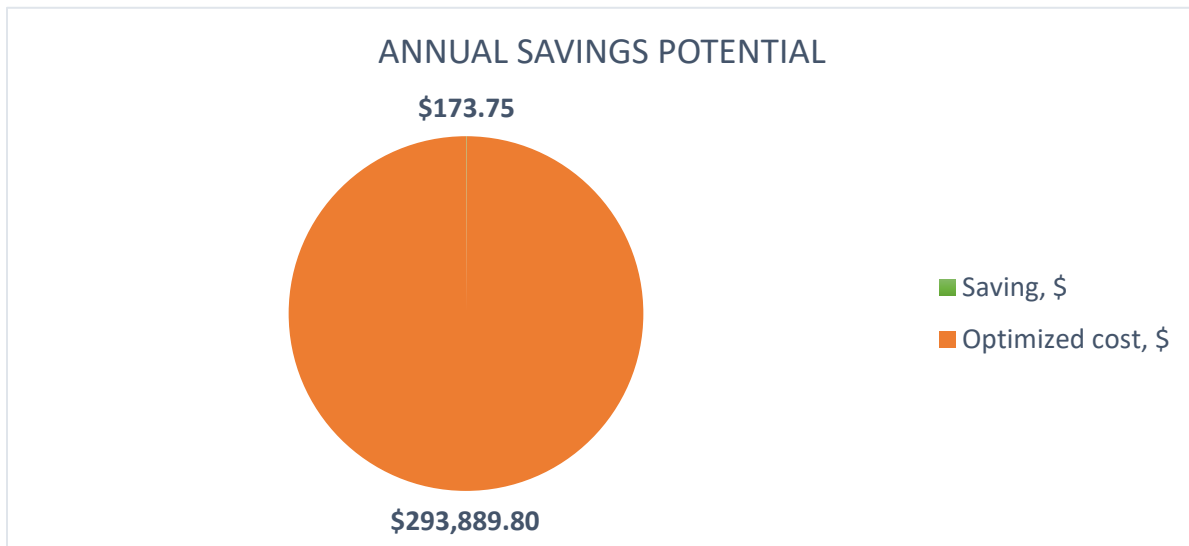
Estimated Cost Reduction

Name	Resource Count	Affected Resources	Current cost, \$	Optimized cost, \$	Saving, \$	Savings/ Cost, %	Savings/ Total, %
Subscription 1	1	1	\$3,052.80	\$937.44	\$2,115.36	69.29%	1.77%
TOTAL:		Monthly	\$3,052.80	\$937.44	\$2,115.36	69.29%	1.77%
		Annually	\$36,633.60	\$11,249.28	\$25,384.32		

Recommendations

- Consider changing VMs tier.

Azure SQL Database Rightsizing (SDT)



Description

Azure SQL Database is a managed cloud database provided as part of Microsoft Azure. A cloud database is a database that runs on a cloud computing platform, and access to it is provided as a service.

A managed database service takes care of scalability and backups, and it automatically scales to meet your apps' requirements and keeps them running with up to 99.995% availability.

One of the most effective ways to reduce your cloud costs is by rightsizing your infrastructure. Rightsizing is the process of analyzing the utilization and performance metrics of your infrastructure, determining whether it is running efficiently, and then modifying the infrastructure as needed.

Strategy

If the following parameters are as described below, consider changing your Azure SQL database tier to a lower one:

- CPU load < 10 %.
- DTU consumption < 40 %.
- Average count of sessions < 20.

Estimated Cost Reduction