# Azure Advisor - Process Workflow

Advisor is a personalized cloud consultant that helps analyzes your resource configuration and usage telemetry and then recommends solutions that can help you improve the cost effectiveness, performance, Reliability and security of your Azure Resources.

 With Azure Advisor we can identify unused VMs and receive recommendations about Azure reserved instance purchases.

## **VM Rightsizing and Shutdown**

**What is VM Rightsizing?**

Rightsizing VMs is a cost optimizing technique in which the underutilized VMS are picked from the Azure Advisor and are resized to lower SKU. VMs that are not used consistently are recommended to shut down. The VMs which are consuming less than 5% of CPU utilization in the past 7 days are classified as “Underutilized” by Advisor.

Based on the recommendations the necessary action is taken.

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| **Purpose** | **Document the process of Rightsizing or shutting down of VMs.** |
| **Summary** | Analyze and recommend underutilized VMs to the DevOps or cloud (or concerned) teams for rightsizing and shutting down |
| **Stakeholders** | FinOps, Cloud, DevOps and Application Teams. |

**Steps for Implementation**

1. Go to Azure Portal by logging into <https://portal.azure.com/#home>
2. Navigate to Azure Advisor and Click on “Cost” Blade

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3. The cost recommendations are shown below. Click on the Hyperlink “Right-size or shutdown underutilized virtual machines” to see the list of VM recommendations.

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4. Download all the recommendations by clicking on “Download as CSV”



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5. Calculate the total potential savings from the recommendation file, for a Month, Year, and 3-Years.

6. Share the recommendations file with the DevOps/Cloud/App Teams for them to review and right size accordingly.

7. Upon confirmation from DevOps/Cloud, verify the VM changes and track the reduction costs from Azure PBI report.

# Azure SLA Credits

View the recording of SLA Credit process here:

What is Azure SLA (Service Level Agreements) credit?

Azure Service-level agreements (SLAs) describe Microsoft’s commitments for uptime and connectivity for individual Azure Services. Each Azure service has its own SLA with associated terms, limitations and service credits.

SLA’s will offer a Service Credit from Microsoft based on which services were impacted. Services such as Virtual Machines will offer up to 100% service credits when the monthly uptime percentage falls below 95%, and 25% when uptime falls below 99.99%.

Credits are prorated based on the service affected and the duration of the outage.

Requesting Refund

Credit requests must be submitted by the end of calendar month.

Steps for raising refund requests

1. Login to Azure portal and go to "Health History."

<https://portal.azure.com/#blade/Microsoft_Azure_Health/AzureHealthBrowseBlade/healthHistory>

2. On the drop-down bar-

“Select all” for Subscriptions

“Service issue” under Health Event Type

“Last 3 months” for Time Range.

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3. Select the issue and download the issue PDF

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4. Review and make a note of Tracking ID, one of the subscriptions (e.g.: ASD) and the Summary for time period

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5. Create a “Support Ticket” for SLA Credit from Azure portal

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6. Click on the Create support request to get redirected to the support page.

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Fill in the mandatory fields (\*)

Issue Type: e.g. Billing

**Subscription**: select anyone subscription found from PDF (e.g. ASDBILLING)  
**Summary**: Small summary from PDF (that describes the outage problem)

**Problem type**: Refund request

7. Under Additional Details, Provide more information about the Issue.

Problem start date: from PDF doc.

Refund amount: Calculate from Azure formula (Mention as “Calculated”)

Reason for the refund/credit: SLA Credit

Provide the tracking ID of the outage: from PDF.

Addition details: Summary of the issue (Summary, root cause & the Impacted subscriptions from the PDF)

**File Upload**: Upload the PDF file of the Issue.

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8. Provide Contact details as shown below

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Additional email for notification: FinOpsMailbox@xx.com

9. Review and create the support ticket for SLA credit

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10. Request will be raised, and an email communication will be sent out from Microsoft Support with the “Tracking ID”.

11. Upon review MS Support team verify the impacted/ No Impact subscriptions and provide/share the refund calculations as applicable.

12. MS support team needs the EA Admin’s approval to share/credit the SLA refund.

13. Once the Finops EA Admin approves the request the SLA credit will then reflect in the portal in 2-3 business days.

14. Add the PDF copy downloaded in step 3 to our SharePoint.

# FinOps Savings Calculation

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| **Sl. No** | **Savings Category** | **Description** | **Method of Calculation** | **Amortized Monthly (Yes/No)** | **Example** |
| 1 | Azure Reservations | Purchase of virtual machine/Cosmos DB/Redis Cache, etc. at a discounted price of 32% to 70%. FinOps drives the swap from pay-as-you-go to a committed 1–3-year plan | **Savings** = (PAYG cost of a SKU per month – RI cost of a SKU per month) \* Quantity | Yes | Purchase of Virtual Machine “Standard\_F16s\_v2” of quantity of 4 in East US region  On demand cost of standard\_F16s\_v2 = $1343.20 per month/resource  RI Cost of standard\_F16s\_v2 = $724.20 per month/resource  Total savings per month for quantities purchased = On-demand cost - RI cost x quantities purchased  **Total monthly savings: ($1,343.20 - $724.20) \* 4 = $2,476/month** |
| 2 | Rightsizing (SKU upgrade, AHB, ASB Optimization, etc.) | This includes VM SKU upgrade/downgrade, AHB, ASB Optimization, etc. | **Savings** = (Daily cost of current VM (RI & On demand) – Daily cost of newly upgraded VM) \* # of days in a month effective implementation date | Yes | If a SKU standard\_DS3\_v2 is upgraded to standard\_DS4\_v2,  Daily cost of current VM = $ 100  Daily cost of newly upgraded VM = $80  **Total monthly savings = ($100-$80) \* 30 days (Avg days per Month) = $600 monthly** |
| 3 | Decommissioning | Deletion of unused resources/environment/Application in cloud | **Savings =** Daily Resource Cost \* # of days in a month effective decommission date | Yes starting 2023  2022: (Realized as one-time annual savings) | If the environment LT8 costs $4K daily, and our company decides to decommission all the resources in LT8, the savings are calculated as shown below:  **Total monthly savings = $4,000 \* 30 days = $120K monthly** |
| 4 | Log-Analytics Dedicated Cluster Migration | * Dedicated Azure managed cluster implemented * Linked workspaces allow newly ingested data to be stored * Benefits include improved costs, rate limit, and performance and latency consistency | **Savings =** (Price per 1 GB of data ingested without Dedicated Cluster – Price per 1 GB of data ingested with Dedicated Cluster) \* Total GB Ingested. | Yes starting 2023  2022: NA | If 100 GB of data is ingested per day in log-analytics workspace:  **Savings** = ($1.56 – $1.09) \*100 GB                 = $0.47 \* 100 GB                 = $47 per day of savings for 100 GB of data ingested  **Total monthly savings = sum of ingested data savings per day in the log-analytics workspace \* 30 days (Avg days per Month)** |
| 5 | **Azure SLA Credits** | This involves a two-part process i.e.   * Validation of our company’s outage reports against Azure outage reports * Proactive monitoring to ensure we are credited for loss of service | **Monthly Uptime %** = (Minutes in the Month – Downtime mins) / Minutes in the Month \* 100 | NA | Month of April had an outage of 39 Minutes in Express Route.  •No. of Days in April = 30  •Minutes = Days \* 24 Hours \* 60 Minutes = 43200 Minutes  •Monthly Uptime % = (Minutes in the Month – Downtime) / Minutes in the Month \* 100  •Monthly Uptime % = ([43200-39) / 43200] \* 100 = 99.90%  •SLA Credit Percentage = 10%  •**Credit Amount Issued** = 10% \* Monthly Usage Cost of Resources Impacted |
| 6 | REST (Rent-an-environment-solution) | REST application enables application teams to schedule resources to be shut down/started on a schedule so that we incur savings on certain consumed services while they are down during off hours.  REST savings are calculated based upon the duration of each schedule, the resources within that schedule, and the current cost of the resource consumed service using the daily Microsoft cost files. | Calculated at resource level  **Savings** = (24-hrs rental group was up or “downtime”) \* cost per active hour | Yes | Rental group starts at 9 am and ends at 5 pm - 8 active hours  24 - 8 = 16 down hours  Resource A daily cost was $24. 24/8 = $3 per hour  $3 \* 16 = $48 savings for the day  Savings are calculated at a weekly level (168 hours) to allow for resources that are down the entire weekend and do not produce a record in the Microsoft cost file.  **Total monthly savings = Resource daily savings \* 30 days (Avg days per Month)** |

# Azure Reservation (RI) and Savings Plan (SP)

## **Reserved Instances**

Azure Reservations\Savings Plan help our company save money by committing to one-year or three-year plans for multiple products. Committing to Azure allows us to get a discount on the resource purchases upfront. Reservations can significantly reduce our purchase costs by minimum of about 32% from pay-as-you-go prices.

## RI Purchase - Current Process

Reserved Instance purchase process information.

**Stakeholders and Technology Involved**

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**FinOps Analysis:**

1. FinOps Analyst to obtain RI Recommendations (either through API or csv from Microsoft) for initial analysis.
2. FinOps Analyst to perform basic verification of RI recommendations by analyzing trends, Resource count and Usage coverage by leveraging **FinOps Customer Succes Portal** **Power BI report.**
3. FinOps team to meet with DevOps to understand upcoming initiatives (if any) and that it has minimal to no impact on the RI usage.
4. FinOps team prepares a Cost-Benefit Analysis, demonstrating a break-even point for proposed RI purchases in comparison with the On-Demand spend for an equivalent quantity of SKU's
5. FinOps team to meet with Internal Management - Supervisor, Manager, Director to request review and obtain approval via email. Also, review with application director areas that will be covering proposed RI purchase.
6. FinOps team to meet with IT Planning and Budgeting to obtain Account ID, Project ID and other relevant details needed.
7. FinOps Analyst/Business teams (if any) to submit a *formal request* to FinOps with all approved contract artifacts.

**Intent of Purchase:**

FinOps Analyst to notify FinOps Management and IT Planning & Budgeting team about the intent to purchase RI.  Analyst to provide details of purchase reservation records that include RI Cost, On-Demand Cost, 3-year Savings, Annual savings, SKU information, meter categories, sub meter categories, quantity purchased, regions impacted, Cost-Benefit analysis etc.

**Contracts:**

1. FinOps Analyst to create Memo to obtain available funds from the portal. Memo to specify **Total 3 Year Purchase Amount**, **Current year RI Cost Impact, etc.**
2. FinOps Analyst to submit Contract Request (e.g. via remedy)
3. Director approval (this will send notification to IT Contracts to start the review process)
4. IT Contracts team reviews the request and approves it.
5. IT Contracts team creates DocuSign forms.
6. All the approvers sign (depending on amount can go up to a concerned person).
7. Monitor signing by following the link in the email. Then in browser, click View History to see who has signed.
8. IT Contracts creates and shares Executive approved Info.
9. Upon receipt of confirmation of Info, begin RI purchase commencement within the time period allotted to purchase.

**Steps to complete RI purchase:**

1. FinOps Analyst to sign into **Azure Portal | Reservations.**
   1. + Add
   2. Filter service to reserve (example: Virtual machine)
   3. Scope = Shared, Billing subscription= (e.g. nonprod subscription)
   4. Filter for SKU, region, Term, Billing Frequency
   5. Select correct SKU
   6. Enter Reservation name (format: VM\_RI\_<normalized SKU name>\_<region>\_<date>, example:VM\_RI\_F2s\_v2\_East\_03-04-2020)
   7. Enter Quantity (verify total cost)
   8. Next Review + buy
   9. Buy Now (the purchase will take several minutes)
   10. Check purchase confirmation to ensure the purchase went through. (Sample confirmation below).

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**After purchase procedures:**

* FinOps Analyst to notify IT Planning and Budgeting team, FinOps Management and other relevant stakeholders upon completion of RI purchase.
* ​​​​​​​FinOps Analyst to store all relevant artifacts in FinOps SharePoint site for auditing purposes. See example below.

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## RI Exchange - Current Process

Reserved Instance **cancels and Exchange** Process detailed below.

**FinOps Analysis:**

1. FinOps Analyst to identify low RI utilization by analyzing trends using **FinOps -** Power BI report and **Azure Cost Management Blade** (**ACM)**.
   1. Unused reservation cost is not very significant and unused charges last no more than a week before exchange is initiated.
   2. However, if we notice a large spike with multiple products/region that persists for more than 72 hours, FinOps Analyst to reach out to Microsoft to confirm no billing outages had occurred.
   3. Appropriate support tickets to be opened in Microsoft Azure portal if RI is in a pending state and Azure Portal does not confirm Exchanges.
2. ​​​​​​​Review usage to identify underlying SKU’s that are no longer used. FinOps Analyst to reach out to concerned areas with usage charges. Identify replacement SKUs for exchange. Reservation recommendation with 7-day look up should be used. **(ACM)**

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**Steps to complete RI Exchange:**

   FinOps Analyst to sign into **Azure Portal | Reservations**​​​​​​​

* +Click on Reservations, Exchange Reservations after selecting the specific reservation.
* Exchange Reservations Screen.
* Filter service to reserve for the exchange (example: Virtual machine)
* Scope = Shared, Billing subscription= (e.g. escreen-nonprod)
* Filter for SKU, region, Term, Billing Frequency
* Select correct SKU (up to now we have only used Upfront billing frequency, we have approval to go monthly)
* Enter Reservation name (format: VM\_RI\_<normalized SKU name>\_<region>\_<date>, example:VM\_RI\_F2s\_v2\_East\_03-04-2020)
* Enter Quantity (verify total cost)
* Next Review + Buy
* Buy Now (the purchase will take several minutes)
* Check purchase confirmation to ensure the purchase went through. (Sample confirmation below).

**After purchase procedures:**

* FinOps Analyst to notify IT Planning and Budgeting team, FinOps Management and other relevant stakeholders upon completion of RI Exchange + Purchase.
* ​​​​​​​FinOps Analyst to store all relevant artifacts in FinOps SharePoint site for auditing purposes.

# Changing the SKU for Azure VDI

**Log in to** the [Azure portal](https://portal.azure.com/#home) and enter the VM name in the search bar at the top, and click on it.

To change from DS1\_V2 to D2as\_V4

1. Click on “Size” on the left hand column:

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1. If you want to pick a particular VM seiers e.g. DS1\_V2- in the search box type DS1\_v2 and then click on this SKU in the results, and click “Resize”. **Please note that resizing the VM will cause it to restart.**

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Ds1\_v2

7. Once you have resized the virtual machine, it will restart automatically, and the user can log back in.

**Identify Azure SQL Database Managed Instance SKU**

Identifying the correct Azure SQL Database SKU for our IaaS SQL Server instances using Microsoft Data Migration Assistant. This recommendation is an application to the following offering: Single database, Elastic pools, and Managed Instance. Here are the steps:

**Collect performance counters**

Run SkuRecommendationDataCollectionScript.ps1 to collect the performance counters. Collecting these metrics does not have any impact on the SQL Server instance. Sample run:

* **ComputerName**: The name of the computer that hosts your databases.
* **OutputFilePath**: The output file path to save the collected counters.
* **CollectionTimeInSeconds**: The amount of time during which you wish to collect performance counter data. Capture performance ***counters for at least 40 minutes*** to get a meaningful recommendation. The **longer the duration** of the capture, the more accurate the recommendation will be. Also ensure the workloads are running for the desired databases to enable more accurate recommendations.
* **DbConnectionString**: The Connection string pointing to the master database hosted on the computer from which you're collecting performance counter data.

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| **Set-Location** 'C:\Program Files\Microsoft Data Migration Assistant'    .\SkuRecommendationDataCollectionScript.ps1  **-ComputerName** GPL81441  **-OutputFilePath** 'C:\Users\Pumacounters.csv'  **-CollectionTimeInSeconds** 2700  **-DbConnectionString** 'Server=FRWS5249N1.abc.CORP.NET\SQL1;Initial Catalog=master;Integrated Security=SSPI;' |

**Get SKU recommendations**

Run DmaCmd.exe to get the recommendation and run it with the following parameters

* **/Action=SkuRecommendation**: Enter this argument to execute SKU assessments.
* **/SkuRecommendationInputDataFilePath**: The path to the counter file collected in the previous section.
* **/SkuRecommendationTsvOutputResultsFilePath**: The path to write the output results in TSV format.
* **/SkuRecommendationJsonOutputResultsFilePath**: The path to write the output results in JSON format.
* **/SkuRecommendationHtmlResultsFilePath**: Path to write the output results in HTML format.

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| **Set-Location** 'C:\Program Files\Microsoft Data Migration Assistant'   .\DmaCmd.exe /Action=SkuRecommendation  /SkuRecommendationInputDataFilePath="C:\Users\Pumacounters.csv"  /SkuRecommendationOutputResultsFilePath="C:\Users\Pumaprices.html"   /SkuRecommendationTsvOutputResultsFilePath="C:\Users\Pumanprices.tsv"  /SkuRecommendationPreventPriceRefresh=true |

Run DmaCmd.exe to get the recommendation:

Here is the final report with the SKU recommendation

Open the HTML file in Chrome for better visibility

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