Contoso E2E Case Study: Assessment to ACR in 10 Weeks

May 2020

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Agenda

- Customer Summary
- Data Center Economic Assessment
- Modernizing Apps to Azure PaaS
- Modernizing DBs to Azure SQL
- Smart Claim App Azure Architecture
- Oracle to Azure PostgreSQL

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Contoso Customer Summary

- APAC SA Team:
  - Proposed End-to-End (E2E) Program → Assessment to ACR
  - Includes modernize apps to PaaS, DBs to SQL Azure
  - Introduced UnifyCloud to field team & customer
- UC Assessment:
  - Azure TCO of $2.1M/year vs HKDC on-premise costs of $6.9M/year
  - Detailed recommendations on modernizing apps & DBs to Azure PaaS & SQL Azure
- Contoso's Hong Kong Data Center
  - CIO now planning to exit HKDC by EOY 2020
  - Modernize apps to PaaS, DBs to SQL Azure
- Contoso Thailand selected Smart Claim for E2E pilot
  - UC assessed 25 of ~80 total apps for modernization to Azure
  - Includes SQL, Oracle & Sybase: all moving to SQL Azure
  - E2E: From Assessment to ACR in 10 weeks
    - Modernized Smart Claim App to PaaS & Containers (AKS)
    - Modernized Smart Claim SQL to SQL Azure
    - Generating ACR by 3/25/20
  - 4 Additional Apps migrated to Azure PaaS by June 15th
  - Remaining apps migrated by EOCY 2020

1st E2E project: 10 weeks from assessment to ACR

- ✓ Start of Infra Assessment – 01/10/2020
- ✓ Complete Infra Assessment – 02/03/2020
- ✓ Start of App & DB Assessment – 02/14/2020
- ✓ Complete App & DB Assessment – 02/24/2020
- ✓ Presented to CIO & CTO – 02/27/20
- ✓ App & DB Migration Start Date – 03/03/2020
- ✓ App & DB Migration End Date – 03/25/2020

Application & Database	Date
Smart Claim, MS SQL DB	March 25
S&M, Sales and Marketing tool, MS SQL DB	June 15
CMAC, Common Major Claim system, Oracle DB	June 15
PRS, Premium collection system, Oracle DB	June 15
AMS, Sybase DB	June 15
Next 20 apps (Phase 2)	Sept 30
Final 60 apps (Phase 3)	Dec 31

Contoso Thailand Modernization to Azure timeline

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Data Center Economic Assessment

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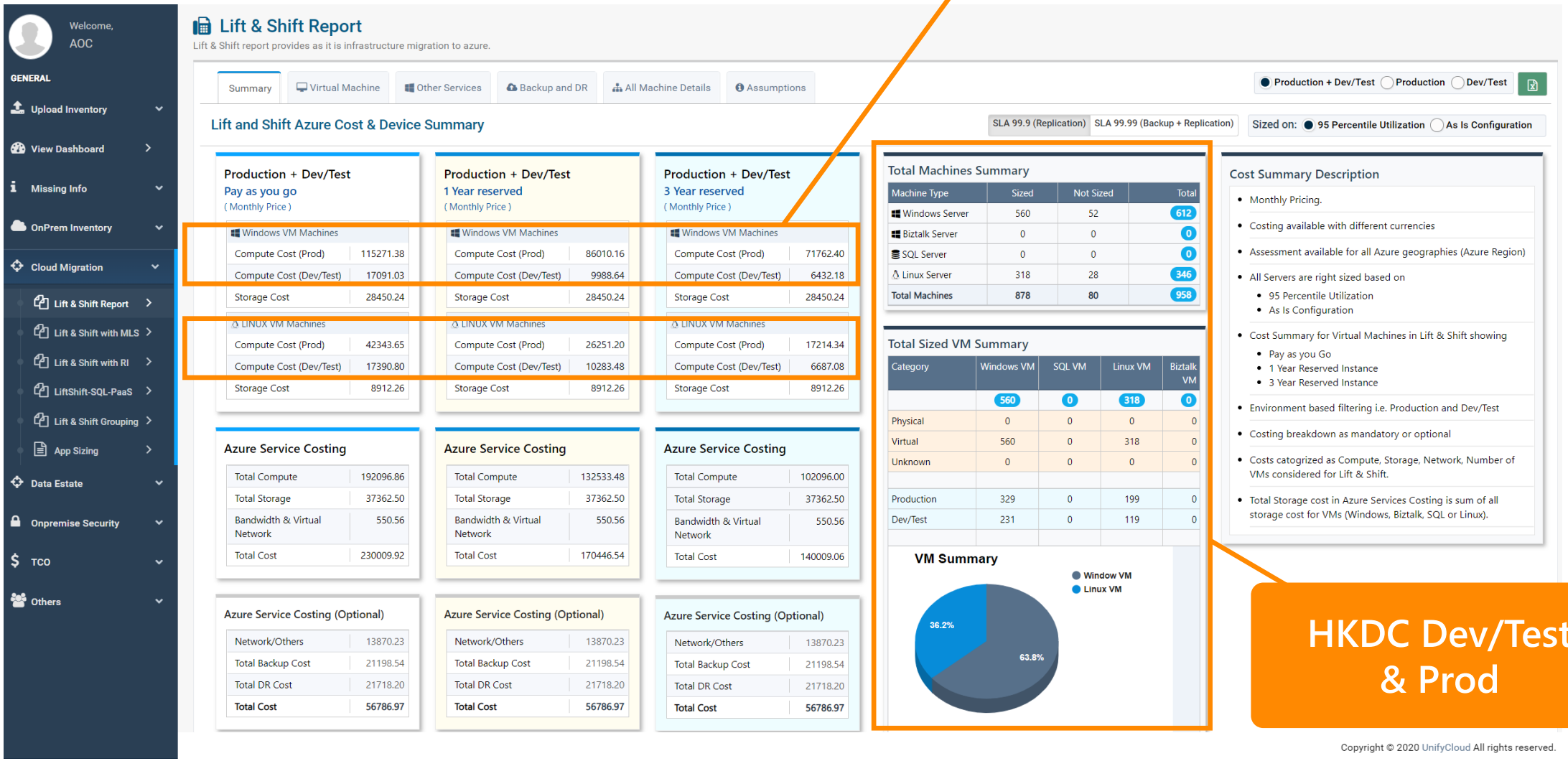
HKDC Lift & Shift & RI Pricing

Comparing PAYGO, 1 YR RI and 3 YR RI Pricing w/o AHUB (1)



(2) **HKDC Dev/Test & Prod**

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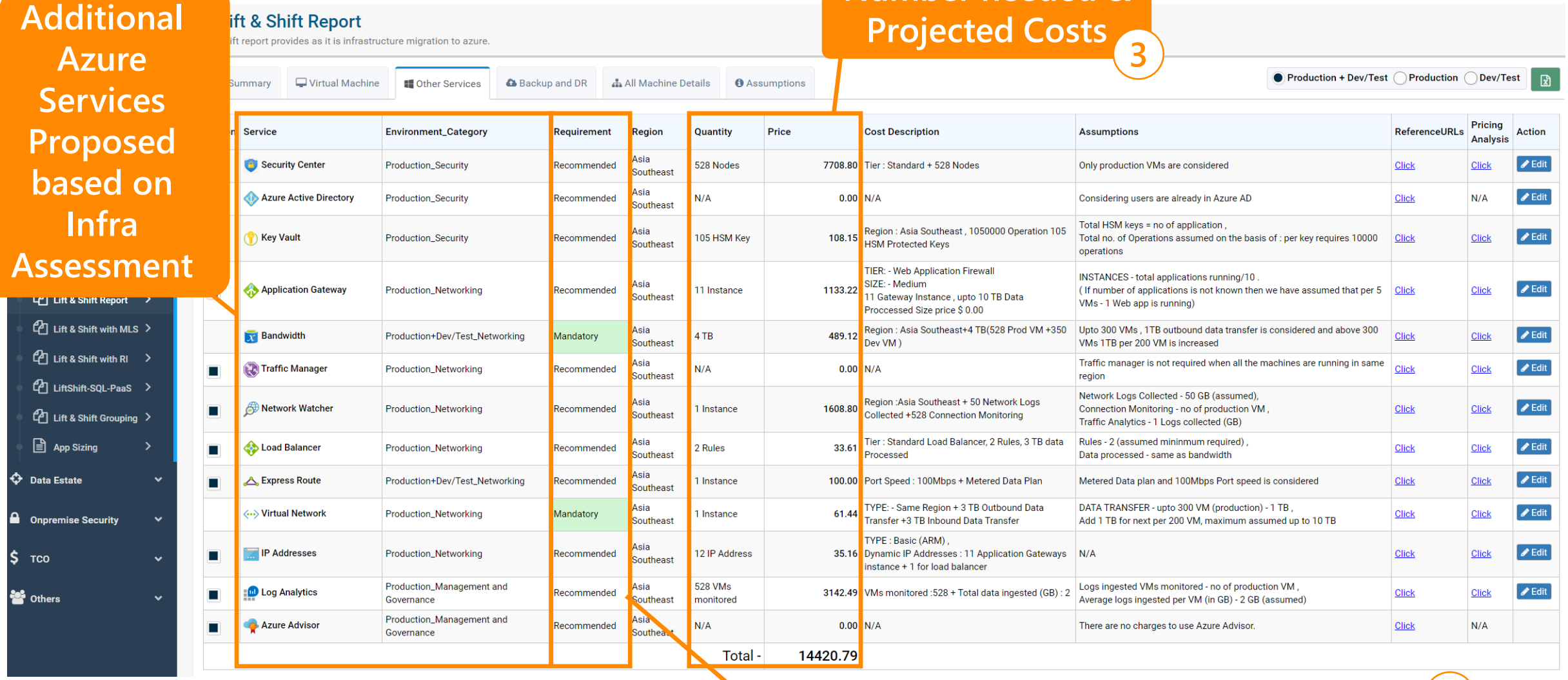
Other Azure Services in TCO: Mandatory & Recommended

1 **Additional Azure Services Proposed based on Infra Assessment**

Number needed & Projected Costs 3



Service	Environment_Category	Requirement	Region	Quantity	Price	Cost Description	Assumptions	ReferenceURLs	Pricing Analysis	Action
Security Center	Production_Security	Recommended	Asia Southeast	528 Nodes	7708.80	Tier : Standard + 528 Nodes	Only production VMs are considered	Click	Click	Edit
Azure Active Directory	Production_Security	Recommended	Asia Southeast	N/A	0.00	N/A	Considering users are already in Azure AD	Click	N/A	Edit
Key Vault	Production_Security	Recommended	Asia Southeast	105 HSM Key	108.15	Region : Asia Southeast , 1050000 Operation 105 HSM Protected Keys	Total HSM keys = no of application , Total no. of Operations assumed on the basis of : per key requires 10000 operations	Click	Click	Edit
Application Gateway	Production_Networking	Recommended	Asia Southeast	11 Instance	1133.22	TIER: - Web Application Firewall SIZE: - Medium 11 Gateway Instance , upto 10 TB Data Proccessed Size price $ 0.00	INSTANCES - total applications running/10 . (If number of applications is not known then we have assumed that per 5 VMs - 1 Web app is running)	Click	Click	Edit
Bandwidth	Production+Dev/Test_Networking	Mandatory	Asia Southeast	4 TB	489.12	Region : Asia Southeast+4 TB(528 Prod VM +350 Dev VM)	Upto 300 VMs , 1TB outbound data transfer is considered and above 300 VMs 1TB per 200 VM is increased	Click	Click	Edit
Traffic Manager	Production_Networking	Recommended	Asia Southeast	N/A	0.00	N/A	Traffic manager is not required when all the machines are running in same region	Click	Click	Edit
Network Watcher	Production_Networking	Recommended	Asia Southeast	1 Instance	1608.80	Region :Asia Southeast + 50 Network Logs Collected +528 Connection Monitoring	Network Logs Collected - 50 GB (assumed), Connection Monitoring - no of production VM , Traffic Analytics - 1 Logs collected (GB)	Click	Click	Edit
Load Balancer	Production_Networking	Recommended	Asia Southeast	2 Rules	33.61	Tier : Standard Load Balancer, 2 Rules, 3 TB data Processed	Rules - 2 (assumed mininmum required) , Data processed - same as bandwidth	Click	Click	Edit
Express Route	Production+Dev/Test_Networking	Recommended	Asia Southeast	1 Instance	100.00	Port Speed : 100Mbps + Metered Data Plan	Metered Data plan and 100Mbps Port speed is considered	Click	Click	Edit
Virtual Network	Production_Networking	Mandatory	Asia Southeast	1 Instance	61.44	TYPE: - Same Region + 3 TB Outbound Data Transfer +3 TB Inbound Data Transfer	DATA TRANSFER - upto 300 VM (production) - 1 TB , Add 1 TB for next per 200 VM, maximum assumed up to 10 TB	Click	Click	Edit
IP Addresses	Production_Networking	Recommended	Asia Southeast	12 IP Address	35.16	TYPE : Basic (ARM) , Dynamic IP Addresses : 11 Application Gateways instance + 1 for load balancer	N/A	Click	Click	Edit
Log Analytics	Production_Management and Governance	Recommended	Asia Southeast	528 VMs monitored	3142.49	VMs monitored :528 + Total data ingested (GB) : 2	Logs ingested VMs monitored - no of production VM , Average logs ingested per VM (in GB) - 2 GB (assumed)	Click	Click	Edit
Azure Advisor	Production_Management and Governance	Recommended	Asia Southeast	N/A	0.00	N/A	There are no charges to use Azure Advisor.	Click	N/A	
				Total -	14420.79					

Recommended vs Mandatory 2

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Summary of Contoso Apps & DBs Assessed

Application	App Lines of Code	DBMS Model
AAAdmin	338,130	Sybase 15.7
Agent Portal	1,499,933	Sybase 15.7
		DB2/400 V7R1
		Oracle 11g R2
		SQL Server 2012
AMS	195,187	Sybase 15.7
BBL Portal	152,083	Oracle 12c
CMAC	390,430	Oracle 11g R2
CMiC	356,064	Oracle 12G
COAST	1,038,765	SQL Server 2012
		Oracle 11G SE
COASTSM	201,656	SQL Server 2008 R2
CommonLogon	18,502	N/A
CRS	27,709	Oracle 11g R2
CustomerView	173,702	N/A
FastCheque	55,033	Sybase 15.7
iCare	195,394	Oracle 11g R2 / SqlLite
iCollect	25,874	Oracle 11g R2
iMOiAcademy	138,254	Oracle 12c SE/
		SqlLite

Application	App Lines of Code	DBMS Model
iMORCON	61,805	Oracle 12c SE/
		SqlLite
iMOSmart	137,168	Oracle 12c SE/
		SqlLite
iMOwrapper	66,112	Oracle 12c SE/
		SqlLite
iPoSplus	152,629	Oracle 11g R2 / SqlLite
iPoSplusCS	137,127	Oracle 11g R2 / Sybase 15.7/
		SqlLite
iServiceWeb	152,744	Sybase 15.7
		DB2/400 V7R1
		Oracle 11g R2
PRS	171,349	Oracle 11g R2
SmartClaim	41,635	SQL Server 2012
SOA	16,037	Oracle 11g R2
VitalityVMMP	98,112	Oracle 12c
Total Lines of Code	**5,841,434**	

Contoso DBs	#
Sybase	6
Oracle	19
SQL Server	4
SQL Lite	7
DB2	2
Total	**38***

* All DBs except DB2 to be modernized and migrated to SQL Azure. DB2 will 'Lift & Shift' to IaaS as a VM.

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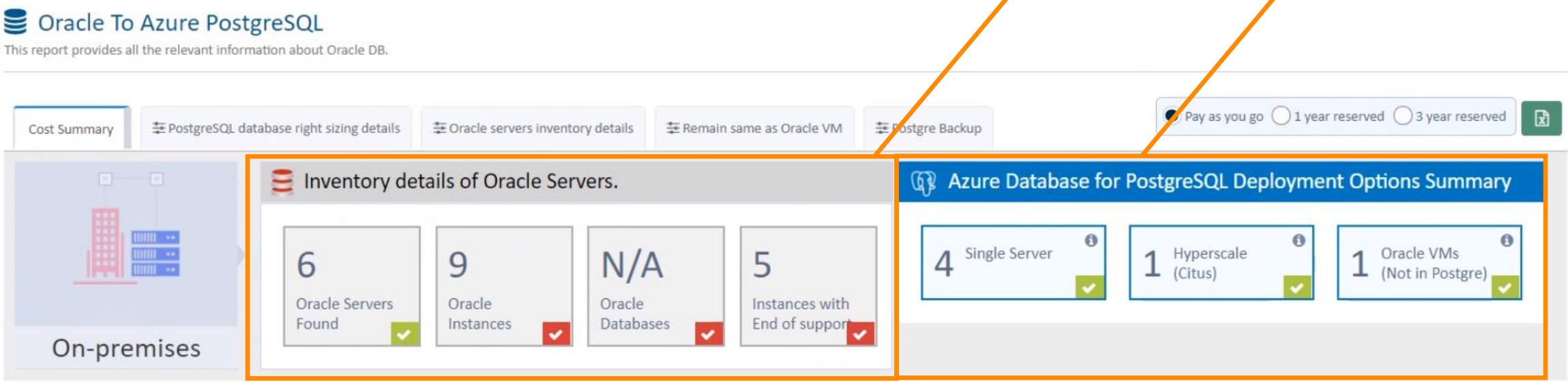
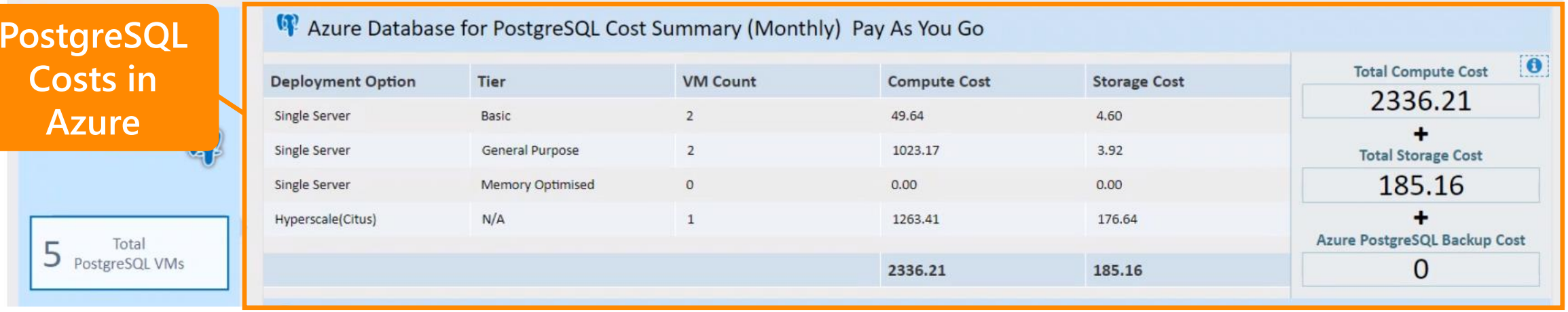
Oracle TCO for Azure PostgreSQL

1 Oracle DB Details

2 PostgreSQL in Azure



3 PostgreSQL Costs in Azure



Deployment Option	Tier	VM Count	Compute Cost	Storage Cost
Single Server	Basic	2	49.64	4.60
Single Server	General Purpose	2	1023.17	3.92
Single Server	Memory Optimised	0	0.00	0.00
Hyperscale(Citus)	N/A	1	1263.41	176.64
			2336.21	**185.16**

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Detailed ACR Estimate for SmartClaim App & DB

SmartClaim Monthly ACR Forecast			
Azure Services	**SKU**	**Monthly ACR**	**Description**
Azure App Service	Standard S3 (4 Core , 7 GB RAM)	$554.80	Support Upto 10 instance
Azure Kubernetes Service	2 Node , D4s V3 , 4 Core , 16 GB	$441.02	For Backend API
SQL Azure Database	ServerLess vCore 2vCore , Including Backup and storage <1 GB	$88.55	Daily Backup incremental: 31 Days,Weekly: 14 Weeks Monthly : 13 Month , Yearly : 11 Year First Backup will be full.
Azure Virtual Machine (Jump Box)	D2 V3	$158.46	Used for JumpBox Access
Application Gateway	WAF	$103.02	
Azure Firewall	1 Logical Unit	$912.52	
Virual Network	100 GB	$2.00	
Azure Monitor	2GB Per VM	$0.00	
Security Center	Free	$0.00	
Container Registry	100 Minutes	$5.00	
Backup	Azure Backup Vault	$103.83	
Storage Account	GRS, Block Blob 10 GB Hot	$4.94	For Log Files Only
	Total	**$2,374.14**	

1 CloudPilot provides detailed ACR estimates per App

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Detailed ACR for Contoso's 25 App & DB Portfolio

ACR for 25 Applications and Databases			
Azure Services	**SKU**	**Monthly ACR**	**Description**
Azure App Service	20 Instance Standard and Premium	$11,972.00	Support Upto 10 instance
Azure Virtual Machine	39 VM (E2SV3,D2SV3,E4-2SV3,D8SV3,E32-8SV3	$15,224.01	For Backend API
SQL Azure Database	22 SQL Azure Database Instance	$8,970.83	Daily Backup incremental: 31 Days,Weekly: 14 Weeks Monthly : 13 Month , Yearly : 11 Year First Backup will be full.
Key Vault	15 HMS Key	$15.45	
Bandwidth	5 TB	$613.80	
Application Gateway	2 Instance WAF 2	$5,076.78	1000 MB/s
Azure Firewall	2 Unit with 4 TB Data Transfer	$1,890.54	
Virual Network	4 TB	$81.92	With in Region
Azure Monitor	3GB Per VM	$334.88	
Security Center	Standard	$1,191.40	
Container Registry	Standard 1 CPU	$20.00	
Backup	Azure Backup Vault	$5,989.50	
DR Cost	ASR + Storage Cost	$2,873.60	
Redis Cache	C4: 13312 MB Cache Data	$382.52	
Express Route	1 Instance, 1 GBPS	$487.00	
Storage Account	GRS, Block Blob 1 TB Hot	$132.04	For Log Files Only
	Total	**$55,256.27**	

1 CloudPilot provides detailed ACR estimates for Contoso Thailand's portfolio of 25 Apps & DBs

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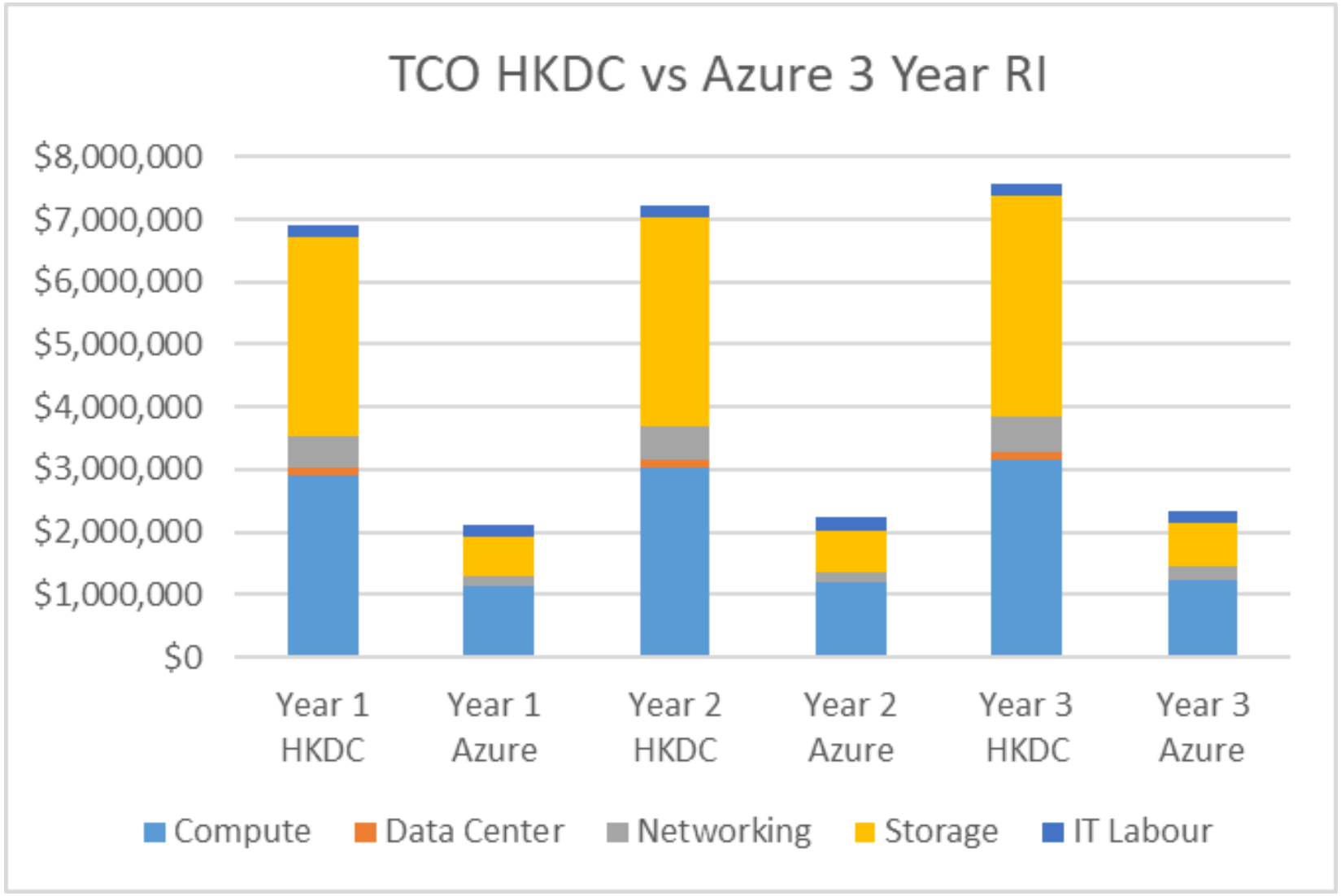
Azure offers Contoso a compelling TCO & business case

TCO compares HKDC on-premises costs to Azure costs, including 3YRI.



Assessing Apps for Modernization to Azure

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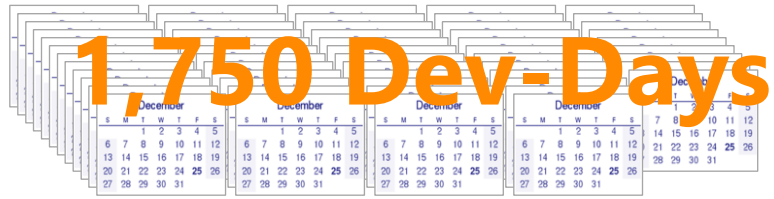
CloudPilot Saved Contoso 4+ Dev-Years of Assessment Work

25 Applications + **38** Databases = **5,841,434** Lines of Code

5.8M lines of code assessed by CloudPilot:

117 Minutes

5.8M lines of code assessed manually:



1,750 Dev-Days

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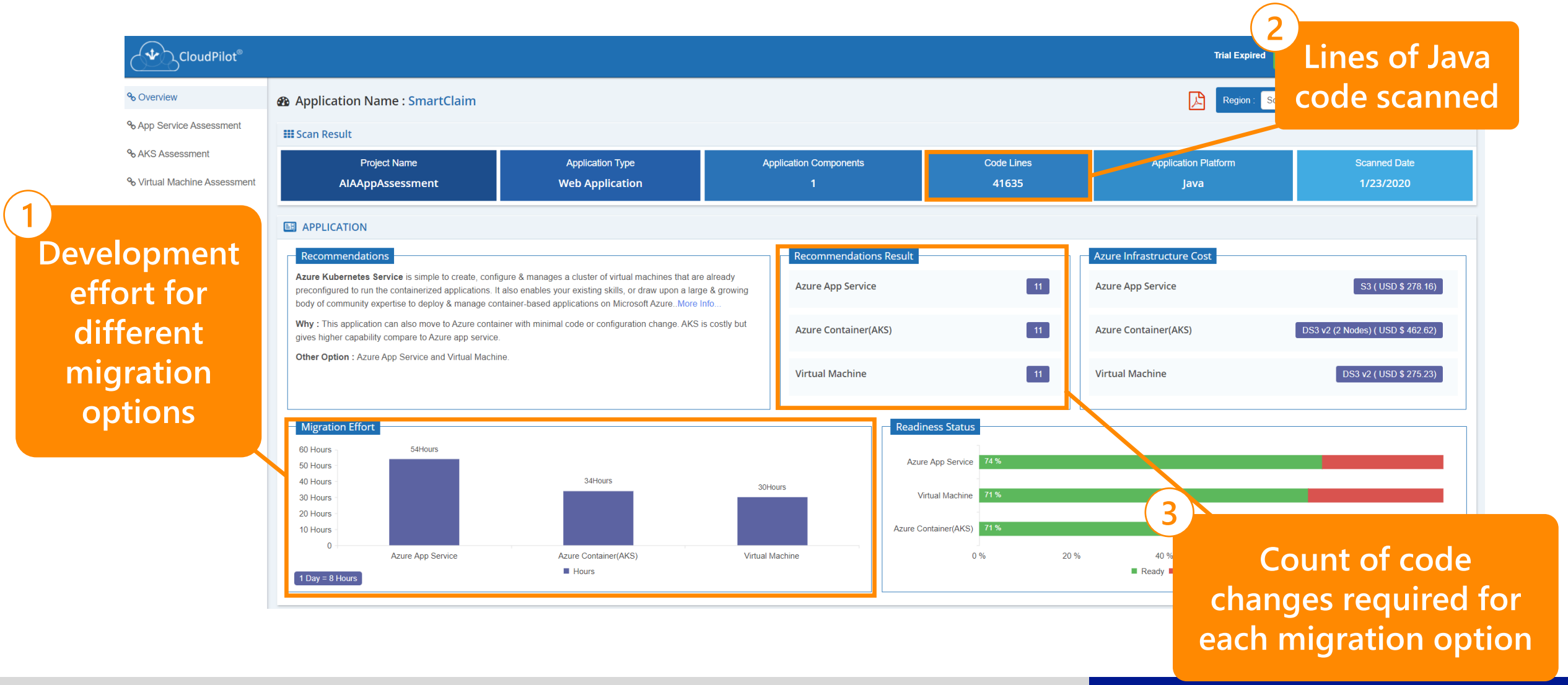
* Microsoft IT estimates it takes three days to manually scan 10,000 lines of code for migration to Azure. DBs assessed for VM Migration

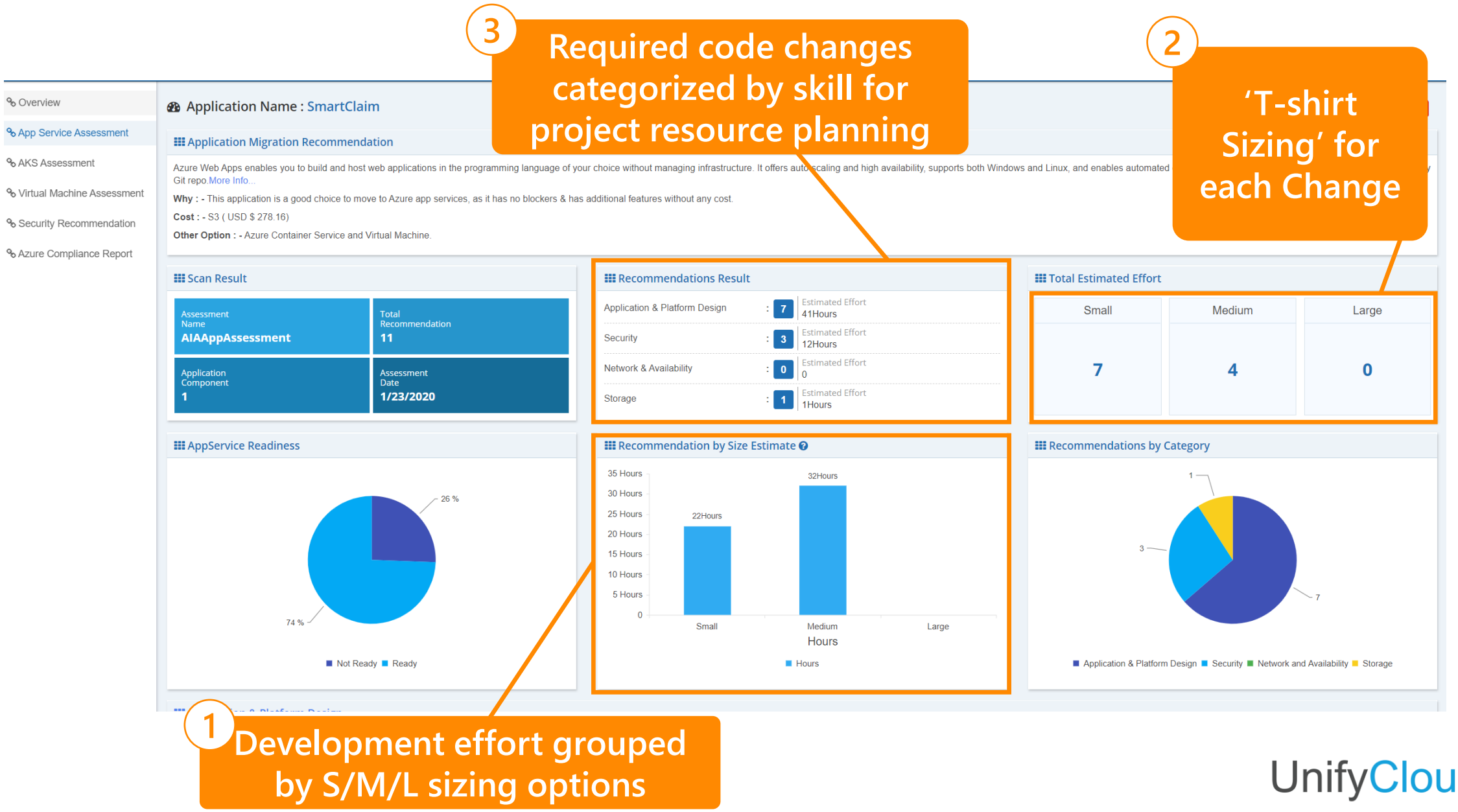
Contoso 25 App Portfolio View & Relative Readiness

Application Name	Project Name	Platform	Scan Date	App Service Readiness	Container Readiness	Virtual Machine Readiness	Recommended Platform	Assessment Status	Migration Status	View
SmartClaim	AIAAppAssessment	Java	04-03-2020	74%	71%	71%	Container	Completed	Pending	View
AAAdmin	AIAAppAssessment	Java	04-03-2020	79%	76%	76%	VM	Completed	Pending	View
AMS	AIAAppAssessment	Java	04-03-2020	74%	71%	71%	VM	Completed	Pending	View
BBL Portal	AIAAppAssessment	Java	04-03-2020	81%	79%	79%	AppService	Completed	Pending	View
CMAC	AIAAppAssessment	Java	04-03-2020	67%	63%	63%	VM	Completed	Pending	View
SOA	AIAAppAssessment	Java	04-03-2020	84%	82%	82%	AppService	Completed	Pending	View
iMOwrapper	AIAAppAssessment	Java	04-03-2020	77%	74%	74%	AppService	Completed	Pending	View
iMORCON	AIAAppAssessment	Java	04-03-2020	70%	66%	66%	AppService	Completed	Pending	View
iPoSplus	AIAAppAssessment	Java	04-03-2020	70%	66%	66%	VM	Completed	Pending	View
iCare	AIAAppAssessment	Java	04-03-2020	77%	74%	74%	Container	Completed	Pending	View
Agent Portal	AIAAppAssessment	Java	04-03-2020	63%	58%	58%	AppService	Completed	Pending	View
iPoSplusCS	AIAAppAssessment	Java	04-03-2020	70%	66%	66%	AppService	Completed	Pending	View
iServiceWeb	AIAAppAssessment	Java	04-03-2020	77%	74%	74%	AppService	Completed	Pending	View
CommonLogon	AIAAppAssessment	Java	04-03-2020	74%	71%	71%	VM	Completed	Pending	View
			04-03-2020	65%	61%	61%	VM	Completed	Pending	View
			04-03-2020	72%	68%	68%	VM	Completed	Pending	View
			04-03-2020	79%	76%	76%	Container	Completed	Pending	View
			04-03-2020	72%	68%	68%	AppService	Completed	Pending	View
			04-03-2020	79%	76%	76%	VM	Completed	Pending	View
			04-03-2020	72%	68%	68%	AppService	Completed	Pending	View
			04-03-2020	86%	84%	84%	AppService	Completed	Pending	View
			04-03-2020	72%	68%	68%	AppService	Completed	Pending	View
			04-03-2020	70%	66%	66%	VM	Completed	Pending	View
			04-03-2020	67%	63%	63%	AppService	Completed	Pending	View
CMIC	AIAAppAssessment	Java	04-03-2020	65%	61%	61%	AppService	Completed	Pending	View

Assessment of Smart Claim App



Additional Details for Modernization & Planning



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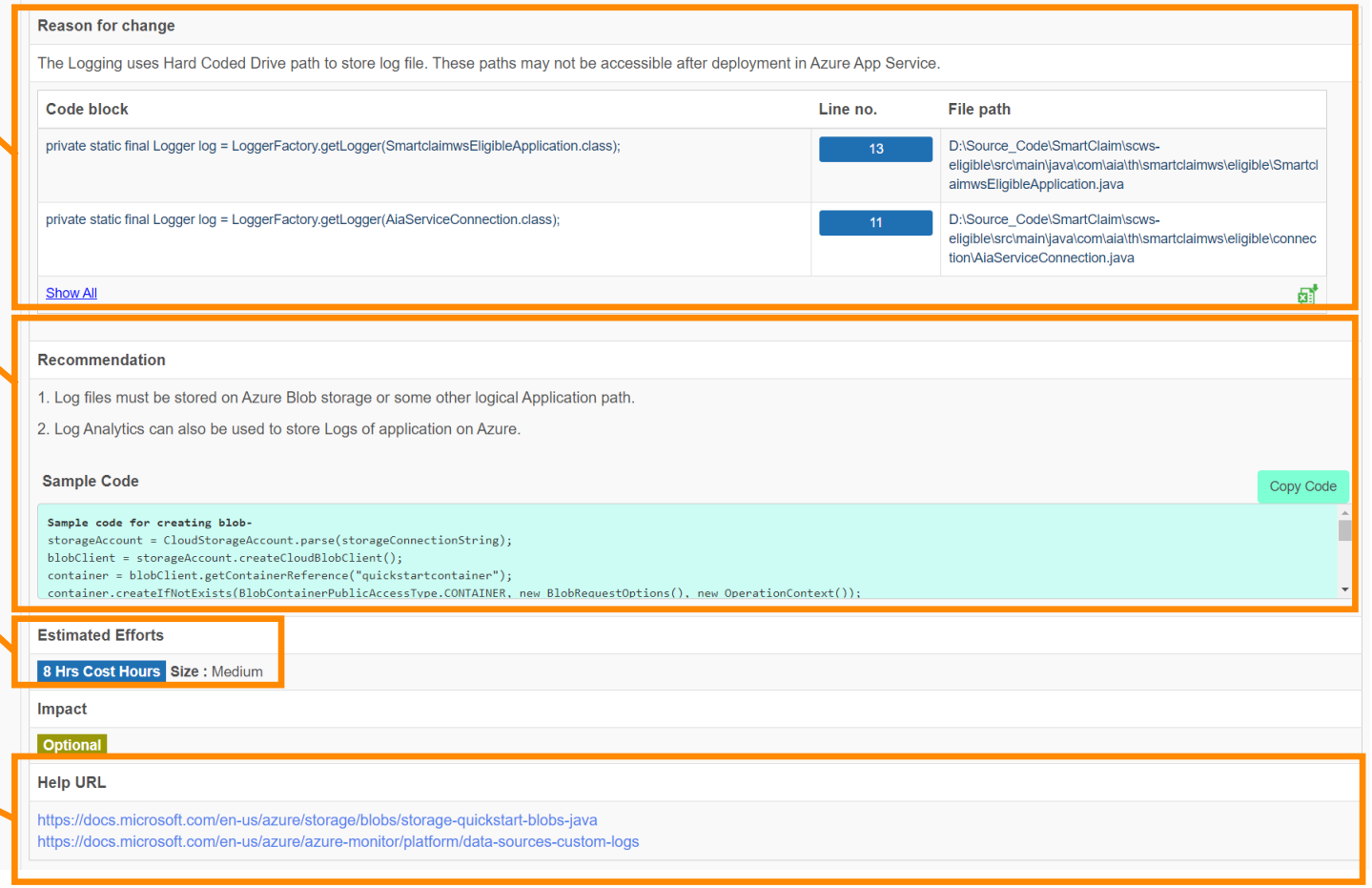
Contoso Sample Code Change Recommendation

1. Exact code block, line of code and file path of code that need to be changed
2. Recommendations and sample replacement code
3. Estimated remediation effort & testing (hours)
4. Links to Authoritative Guidance



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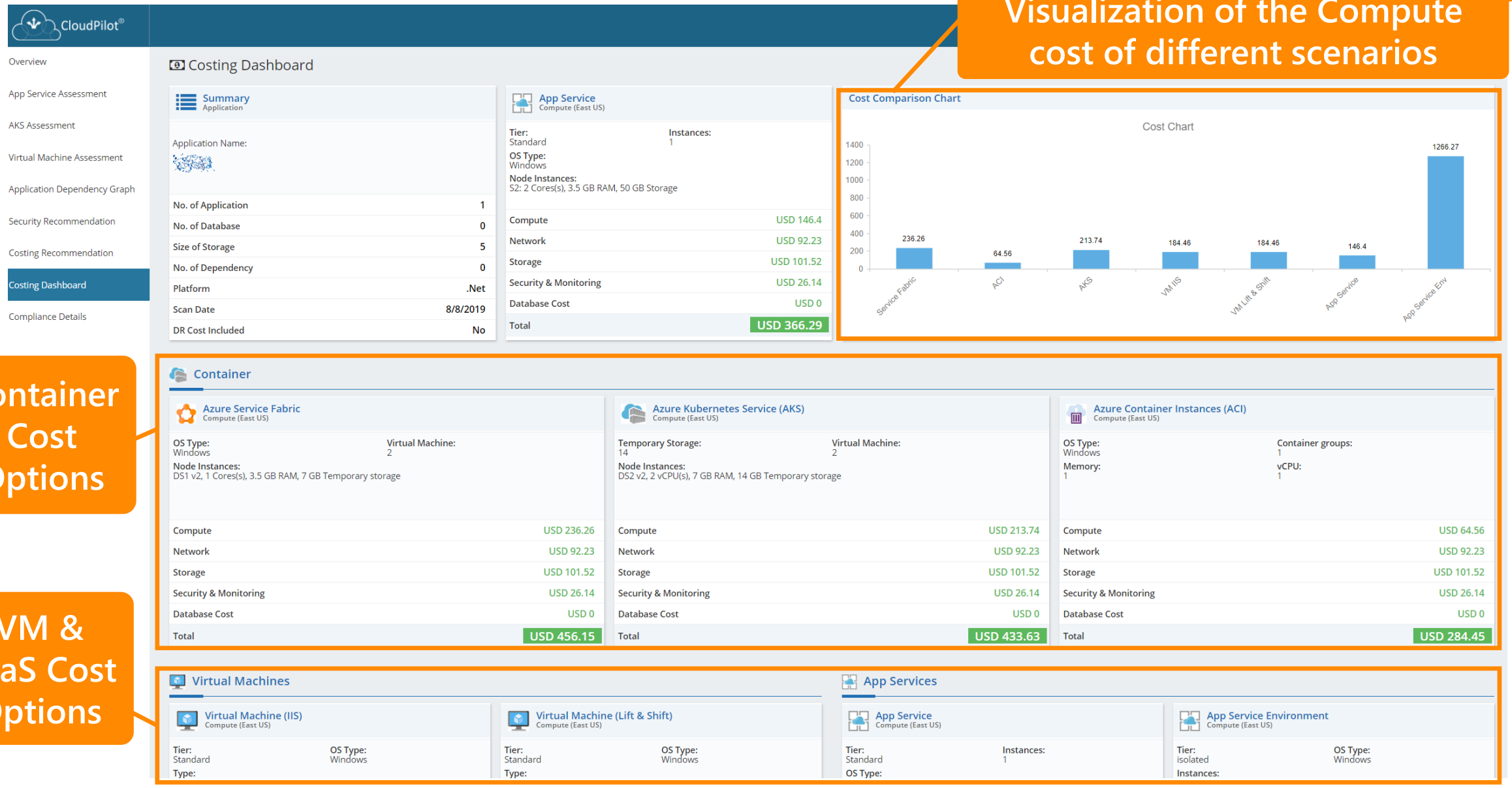
Detailed Cost Dashboard: App Modernization



Assessing Databases for Modernization to Azure

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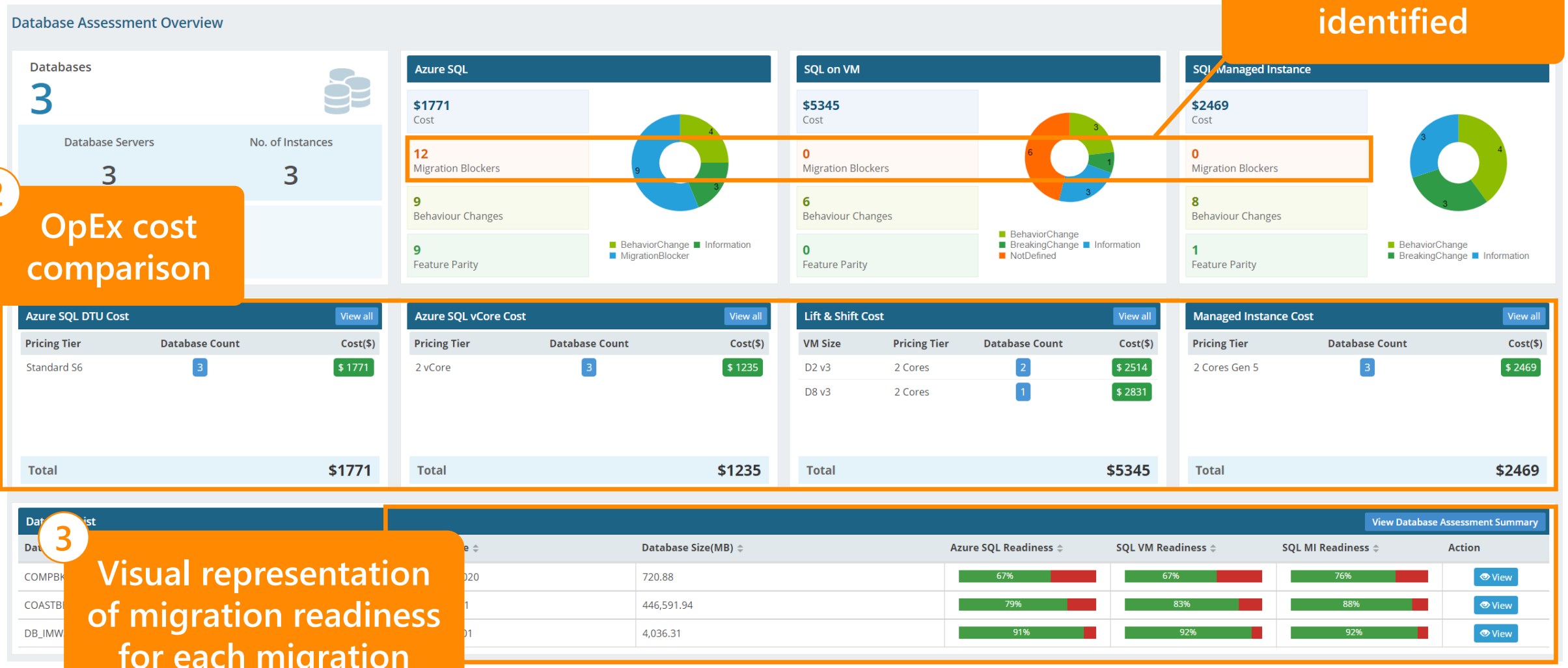
Analysis of 3 SQL Server DBs for Migration Options

1 **Migration blockers identified**

2 **OpEx cost comparison**

3 **Visual representation of migration readiness for each migration option by database**



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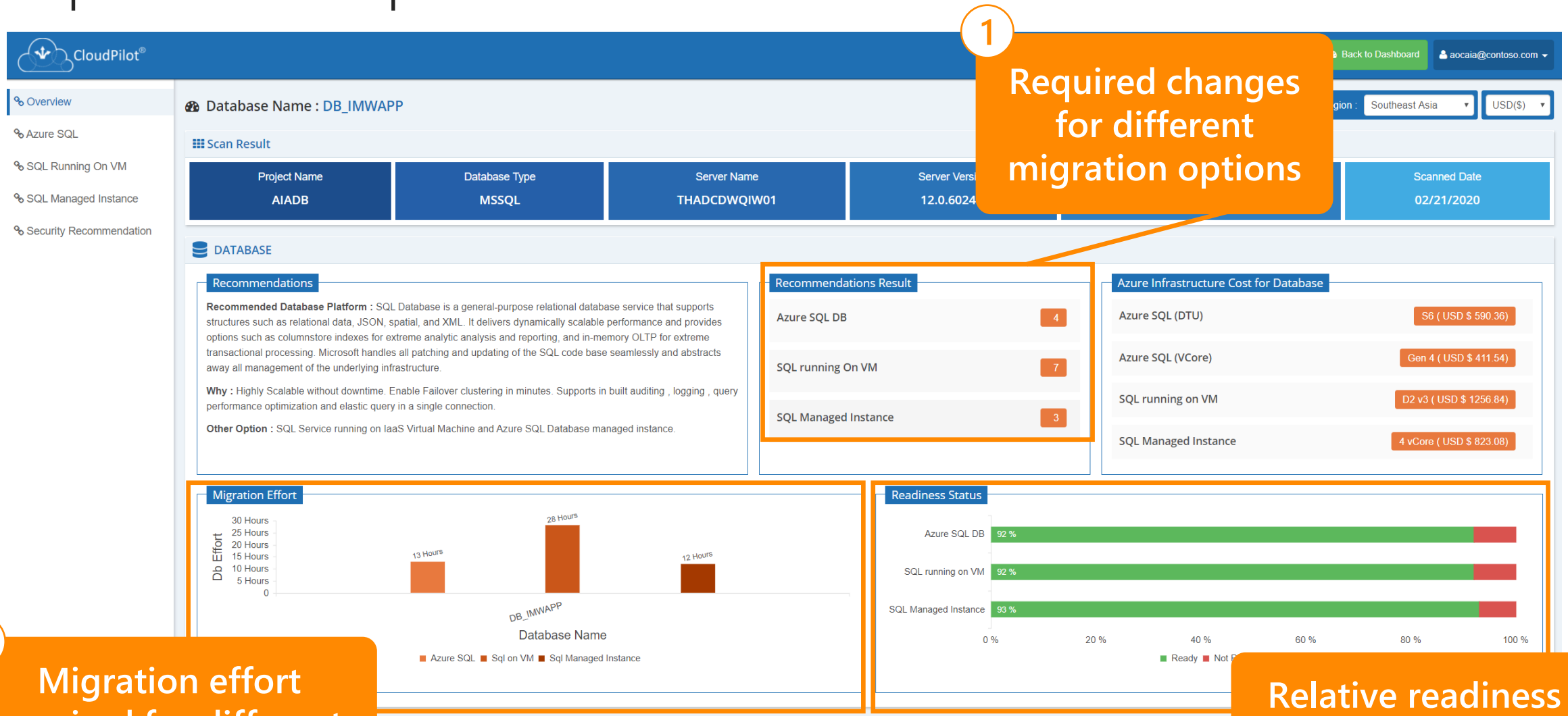
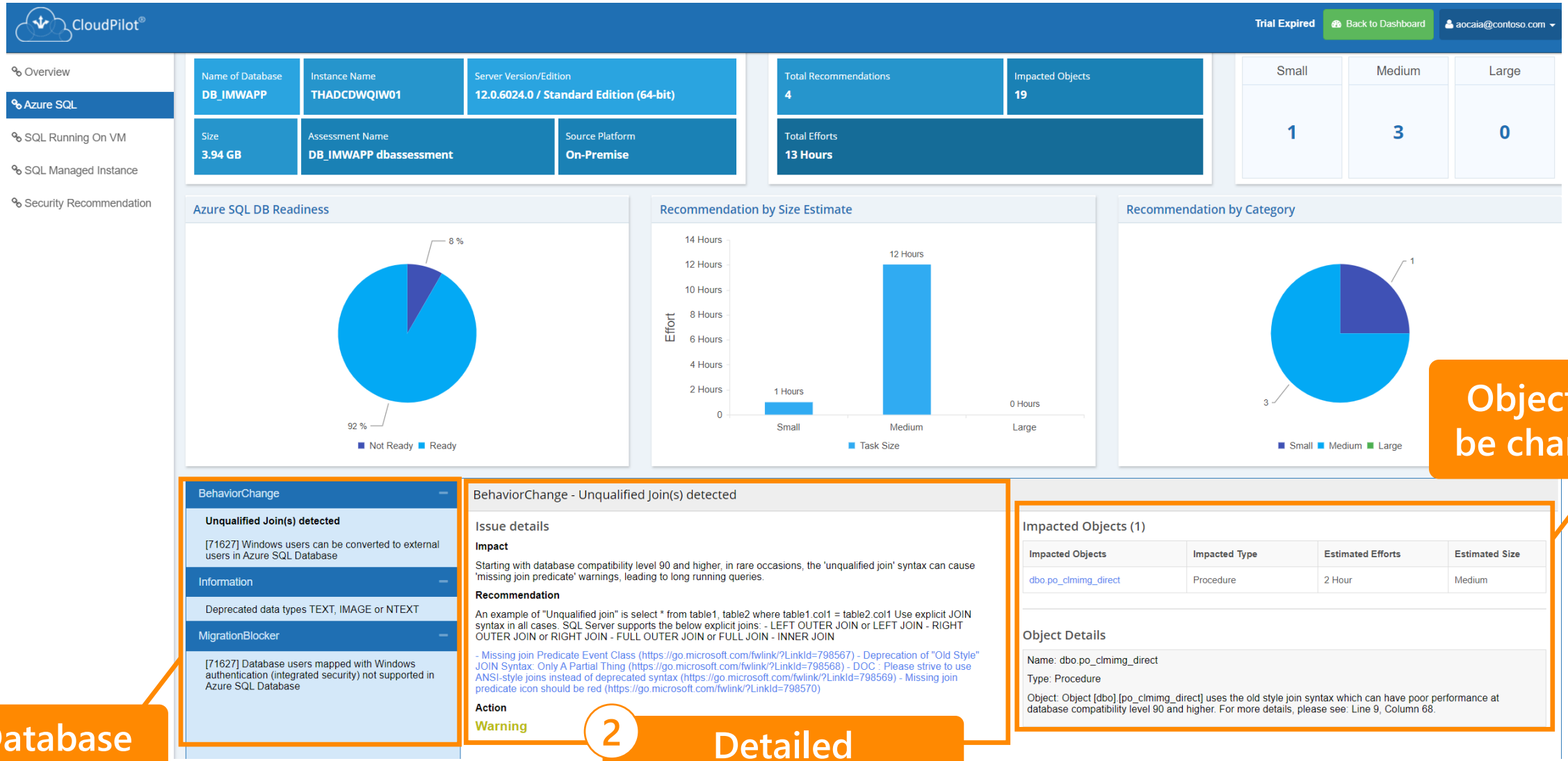
Like apps, the database assessment summary shows options and required development effort



CloudPilot provides detailed recommendations for database migration



1 Database changes

2 Detailed Recommendations

3 Objects to be changed

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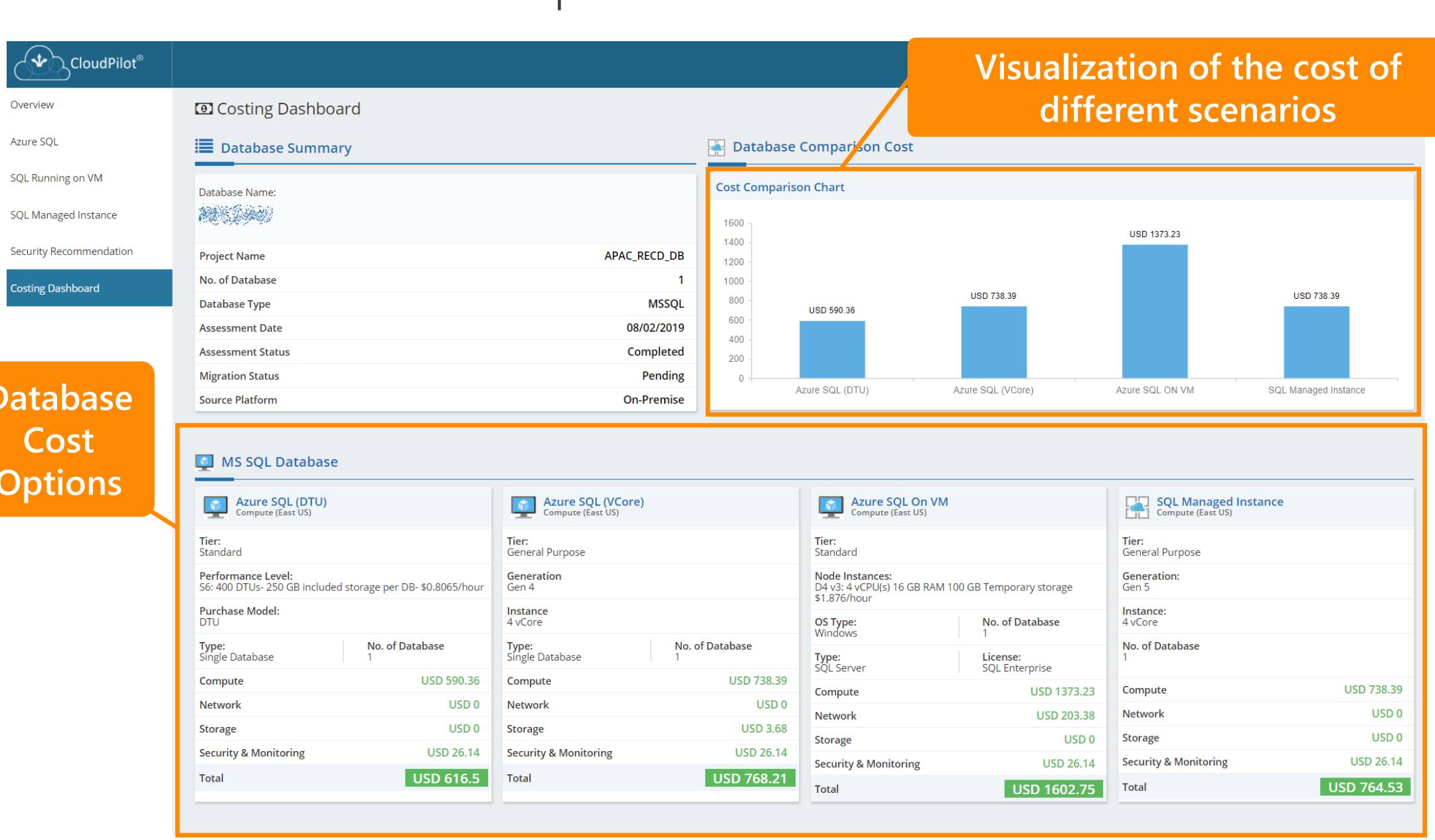
Detailed Database Cost Comparison



Smart Claim App: Azure Architecture

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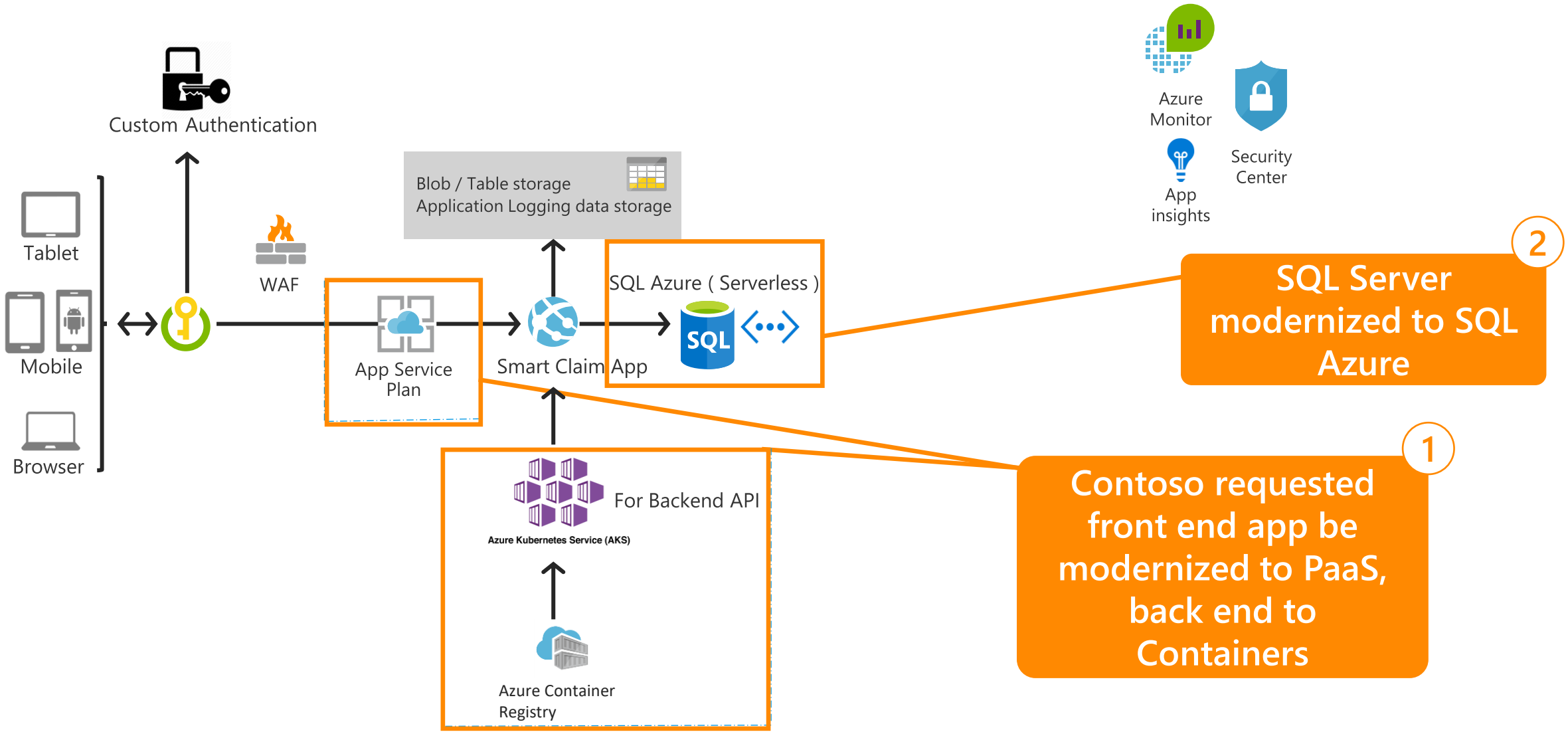
Contoso Thailand: Azure Architecture for Smart Claim Application



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Oracle to Azure PostgreSQL

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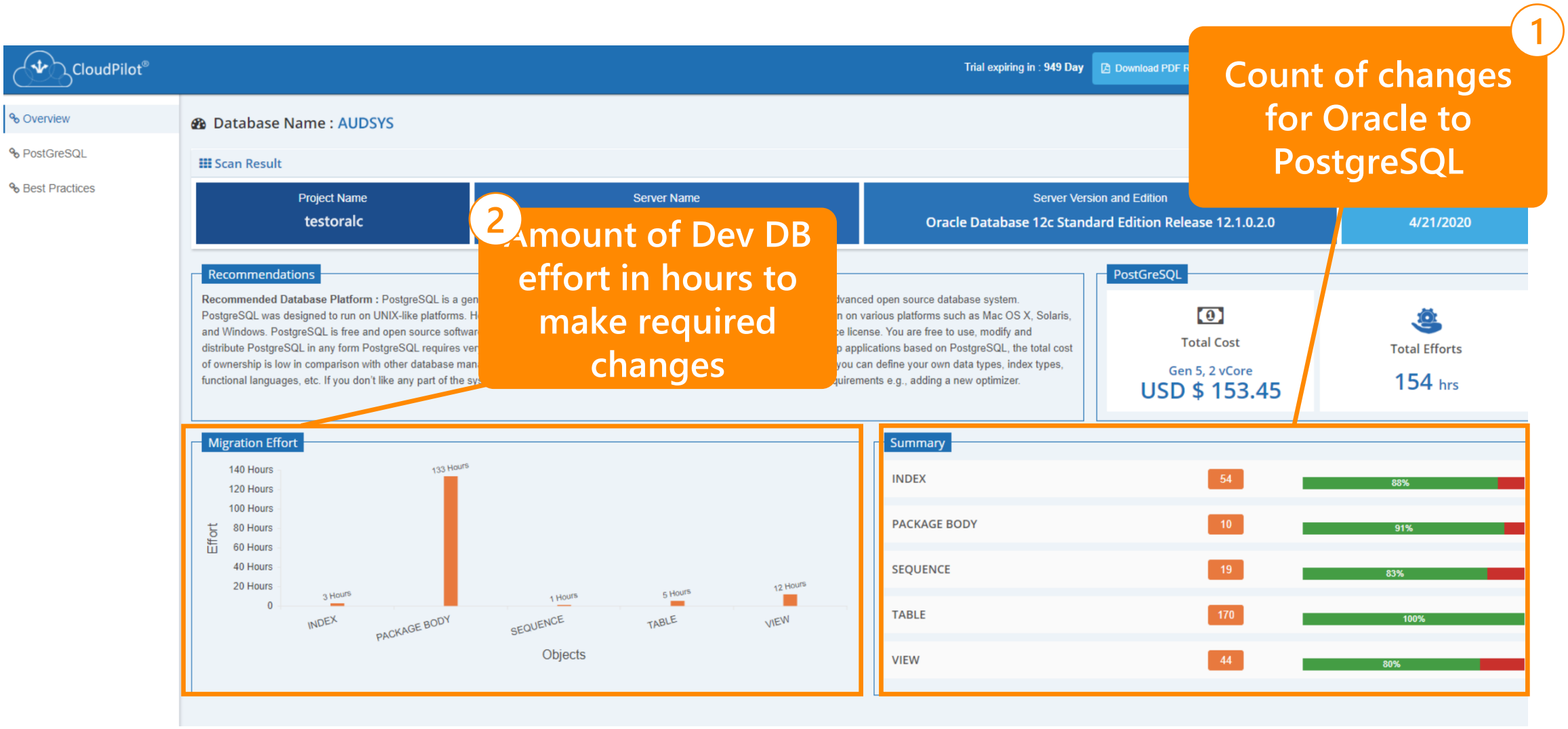
Oracle Assessment for Azure PostgreSQL



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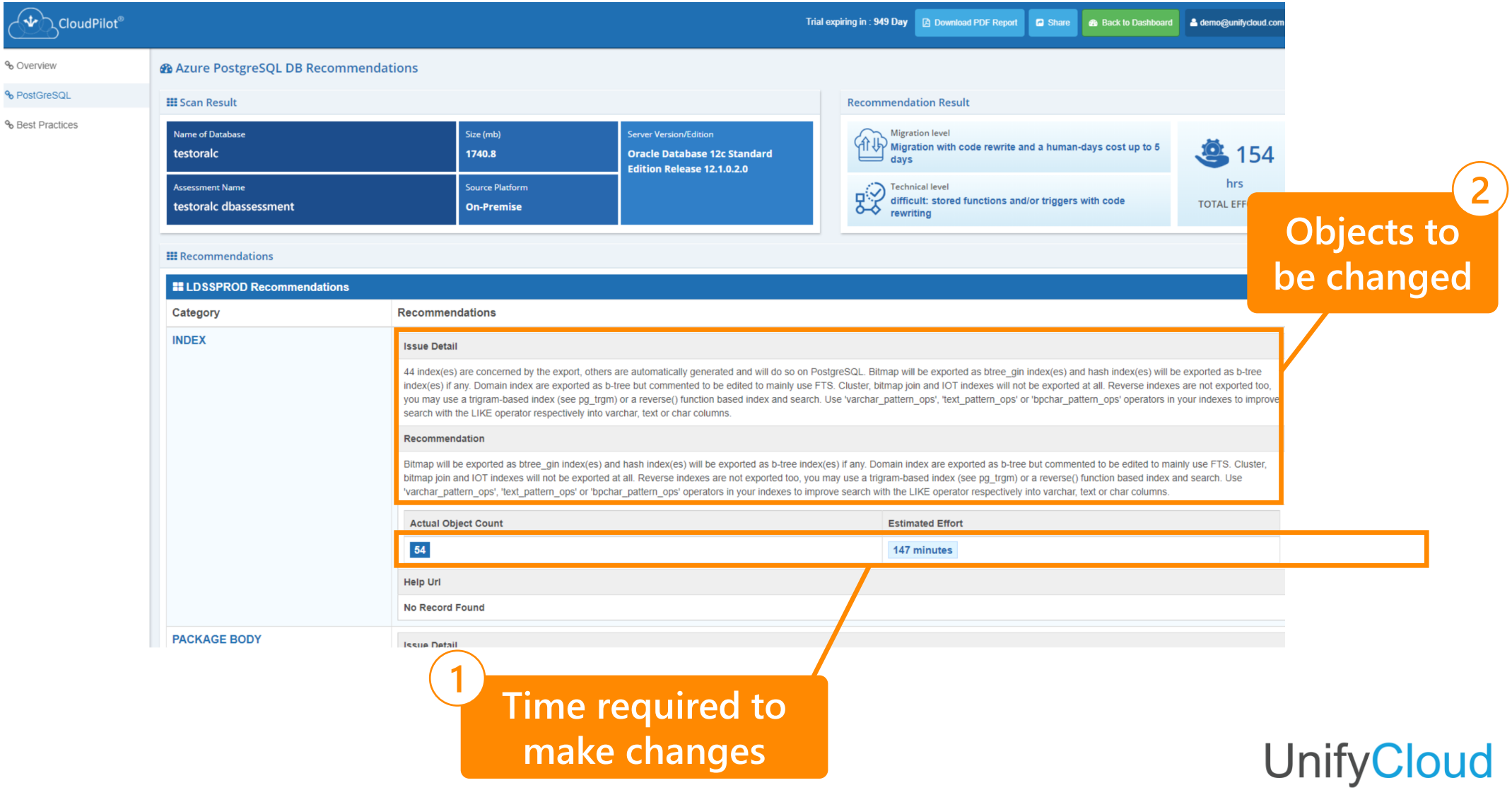
Additional Detail on Oracle to Postgres Recommendations



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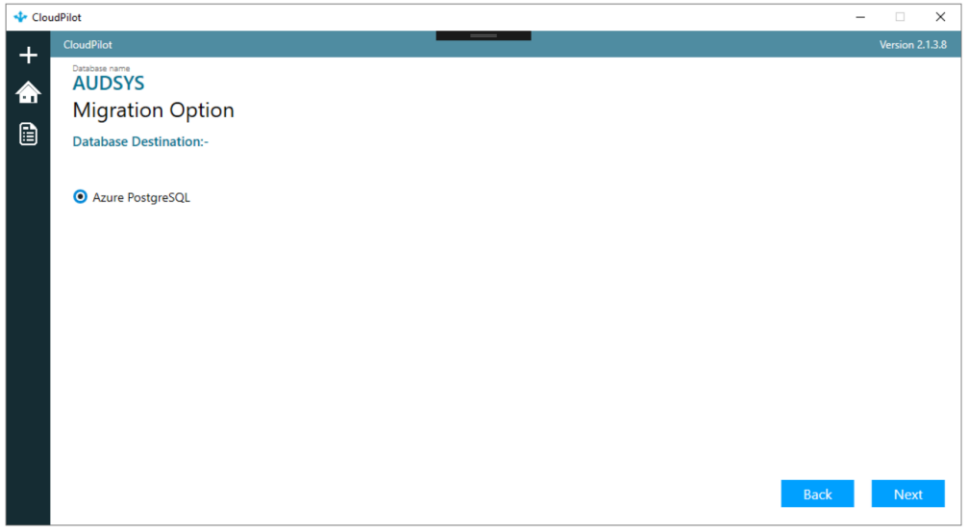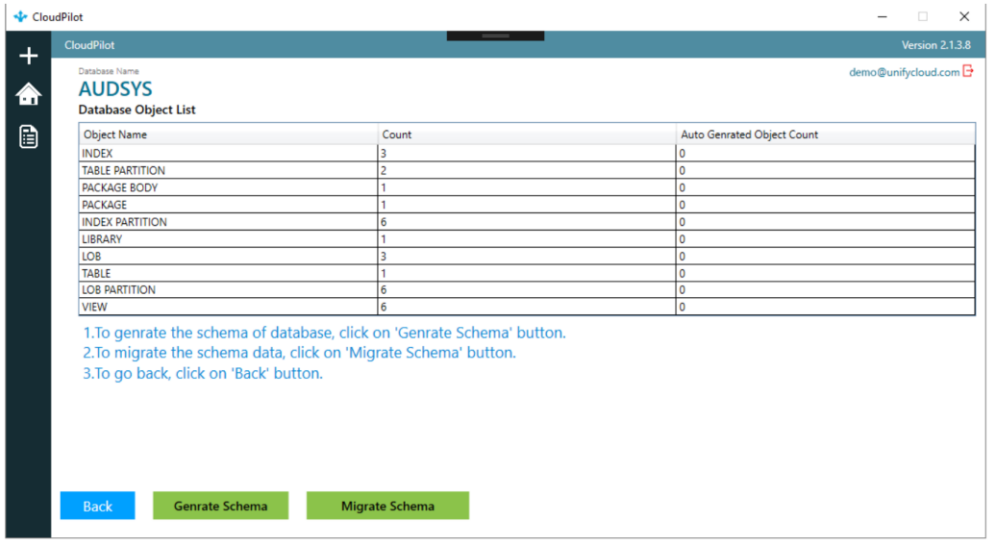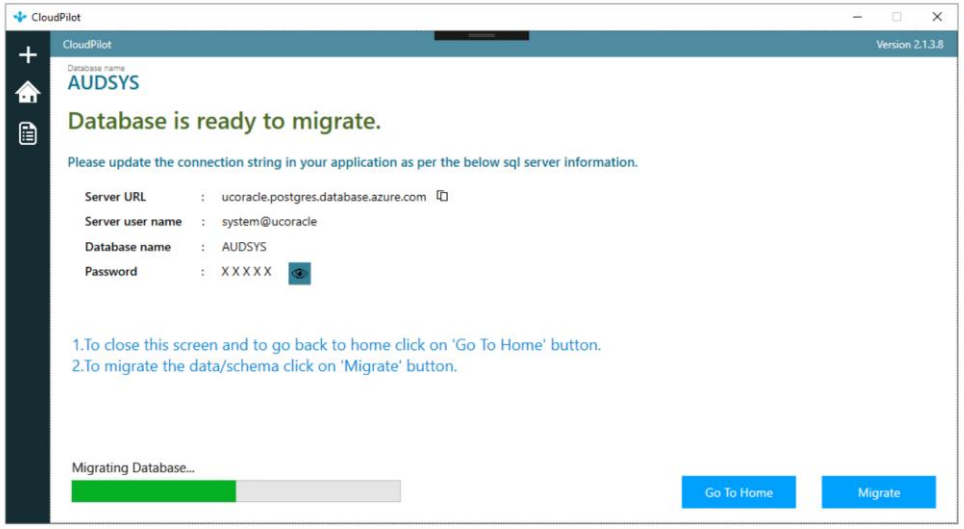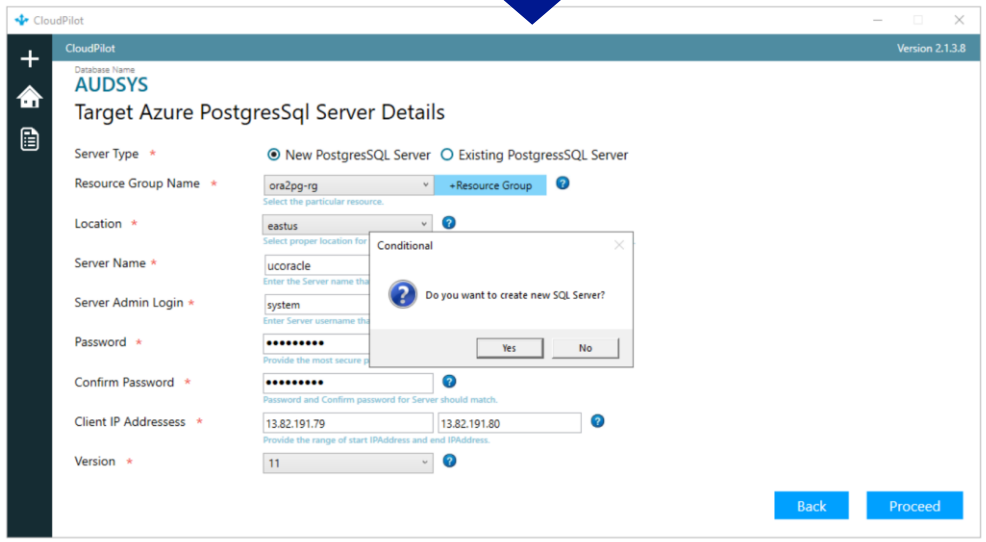
Migration Steps: Oracle to Azure PostgreSQL