

Contoso E2E Case Study: Assessment to ACR in 10 Weeks

May 2020

UnifyCloud™

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

Contoso Customer Summary

1st E2E project:
10 weeks from
assessment to ACR

- 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 EOY 2020

- ✓ 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

Data Center Economic Assessment

HKDC Lift & Shift & RI Pricing

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

Lift & Shift Report
Lift & Shift report provides as it is infrastructure migration to azure.

Summary | Virtual Machine | Other Services | Backup and DR | All Machine Details | Assumptions

Production + Dev/Test | Production | Dev/Test

SLA 99.9 (Replication) | SLA 99.99 (Backup + Replication) | Sized on: 95 Percentile Utilization | As Is Configuration

Lift and Shift Azure Cost & Device Summary

Category	Production + Dev/Test Pay as you go (Monthly Price)	Production + Dev/Test 1 Year reserved (Monthly Price)	Production + Dev/Test 3 Year reserved (Monthly Price)
Windows VM Machines			
Compute Cost (Prod)	115271.38	86010.16	71762.40
Compute Cost (Dev/Test)	17091.03	9988.64	6432.18
Storage Cost	28450.24	28450.24	28450.24
LINUX VM Machines			
Compute Cost (Prod)	42343.65	26251.20	17214.34
Compute Cost (Dev/Test)	17390.80	10283.48	6687.08
Storage Cost	8912.26	8912.26	8912.26

Category	Windows VM	SQL VM	Linux VM	Biztalk VM
Total Machines Summary	560	0	318	0
Physical	0	0	0	0
Virtual	560	0	318	0
Unknown	0	0	0	0
Production	329	0	199	0
Dev/Test	231	0	119	0

Category	Windows VM	SQL VM	Linux VM	Biztalk VM
Total Sized VM Summary	560	0	318	0
Physical	0	0	0	0
Virtual	560	0	318	0
Unknown	0	0	0	0
Production	329	0	199	0
Dev/Test	231	0	119	0

VM Summary

- Window VM: 63.8%
- Linux VM: 36.2%

Azure Service Costing

Category	Production + Dev/Test Pay as you go	Production + Dev/Test 1 Year reserved	Production + Dev/Test 3 Year reserved
Total Compute	192096.86	132533.48	102096.00
Total Storage	37362.50	37362.50	37362.50
Bandwidth & Virtual Network	550.56	550.56	550.56
Total Cost	230009.92	170446.54	140009.06

Azure Service Costing (Optional)

Category	Production + Dev/Test Pay as you go	Production + Dev/Test 1 Year reserved	Production + Dev/Test 3 Year reserved
Network/Others	13870.23	13870.23	13870.23
Total Backup Cost	21198.54	21198.54	21198.54
Total DR Cost	21718.20	21718.20	21718.20
Total Cost	56786.97	56786.97	56786.97

Cost Summary Description

- Monthly Pricing.
- Costing available with different currencies
- Assessment available for all Azure geographies (Azure Region)
- All Servers are right sized based on
 - 95 Percentile Utilization
 - As Is Configuration
- Cost Summary for Virtual Machines in Lift & Shift showing
 - Pay as you Go
 - 1 Year Reserved Instance
 - 3 Year Reserved Instance
- Environment based filtering i.e. Production and Dev/Test
- Costing breakdown as mandatory or optional
- Costs categorized as Compute, Storage, Network, Number of VMs considered for Lift & Shift.
- Total Storage cost in Azure Services Costing is sum of all storage cost for VMs (Windows, Biztalk, SQL or Linux).

HKDC Dev/Test & Prod **2**

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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 Processed 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 minimum 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					

- Lift & Shift Report
- Lift & Shift with MLS
- Lift & Shift with RI
- LiftShift-SQL-PaaS
- Lift & Shift Grouping
- App Sizing
- Data Estate
- Onpremise Security
- TCO
- Others

Recommended vs Mandatory

2

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.

Oracle TCO for Azure PostgreSQL

1 Oracle DB Details

2 PostgreSQL in Azure

Oracle To Azure PostgreSQL

This report provides all the relevant information about Oracle DB.

Cost Summary PostgreSQL database right sizing details Oracle servers inventory details Remain same as Oracle VM Postgre Backup

Pay as you go 1 year reserved 3 year reserved

On-premises

Inventory details of Oracle Servers.

6 Oracle Servers Found	9 Oracle Instances	N/A Oracle Databases	5 Instances with End of support
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Azure Database for PostgreSQL Deployment Options Summary

4 Single Server	1 Hyperscale (Citus)	1 Oracle VMs (Not in Postgre)
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3 PostgreSQL Costs in Azure

Azure Database for PostgreSQL Cost Summary (Monthly) Pay As You Go

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

Total Compute Cost: 2336.21

+ Total Storage Cost: 185.16

+ Azure PostgreSQL Backup Cost: 0

5 Total PostgreSQL VMs

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

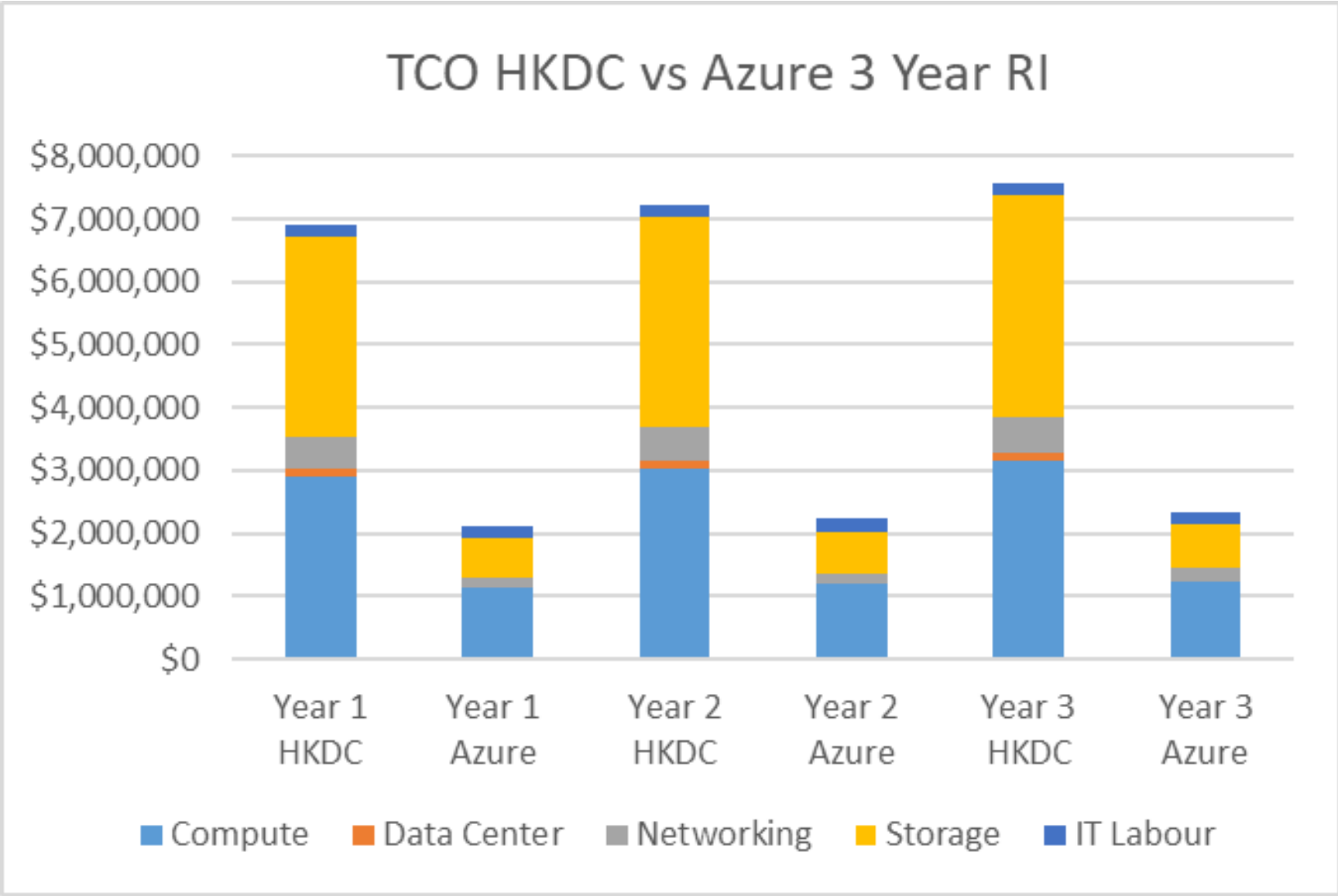
Detailed ACR for Contoso's 25 App & DB Portfolio

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

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

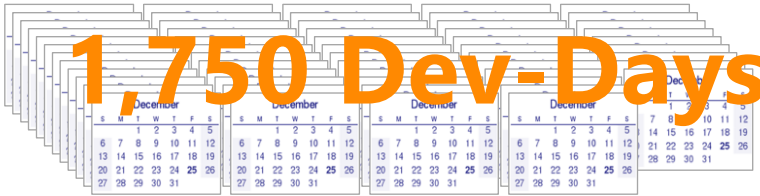
CloudPilot Saved Contoso 4+ Dev-Years of Assessment Work



5.8M lines of code assessed by CloudPilot:

 **117 Minutes** 

5.8M lines of code assessed manually:

 **1,750 Dev-Days**

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

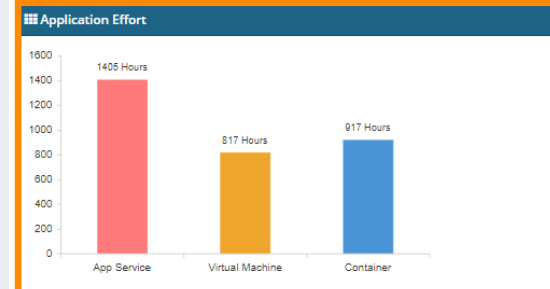
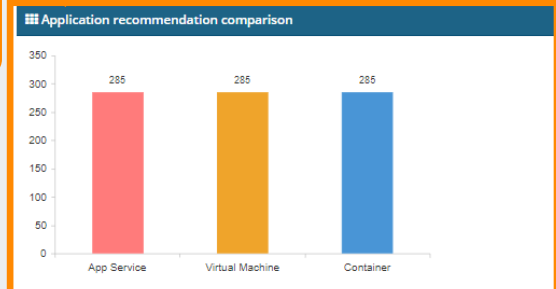
Contoso 25 App Portfolio View & Relative Readiness

3 Count of code changes required for this portfolio

Application 25

- 285 App Service
- 285 Virtual Machine
- 285 Container(AKS)

\$6,815 App Service Cost
\$7,047 Virtual Machine Cost
\$11,795 Container Cost



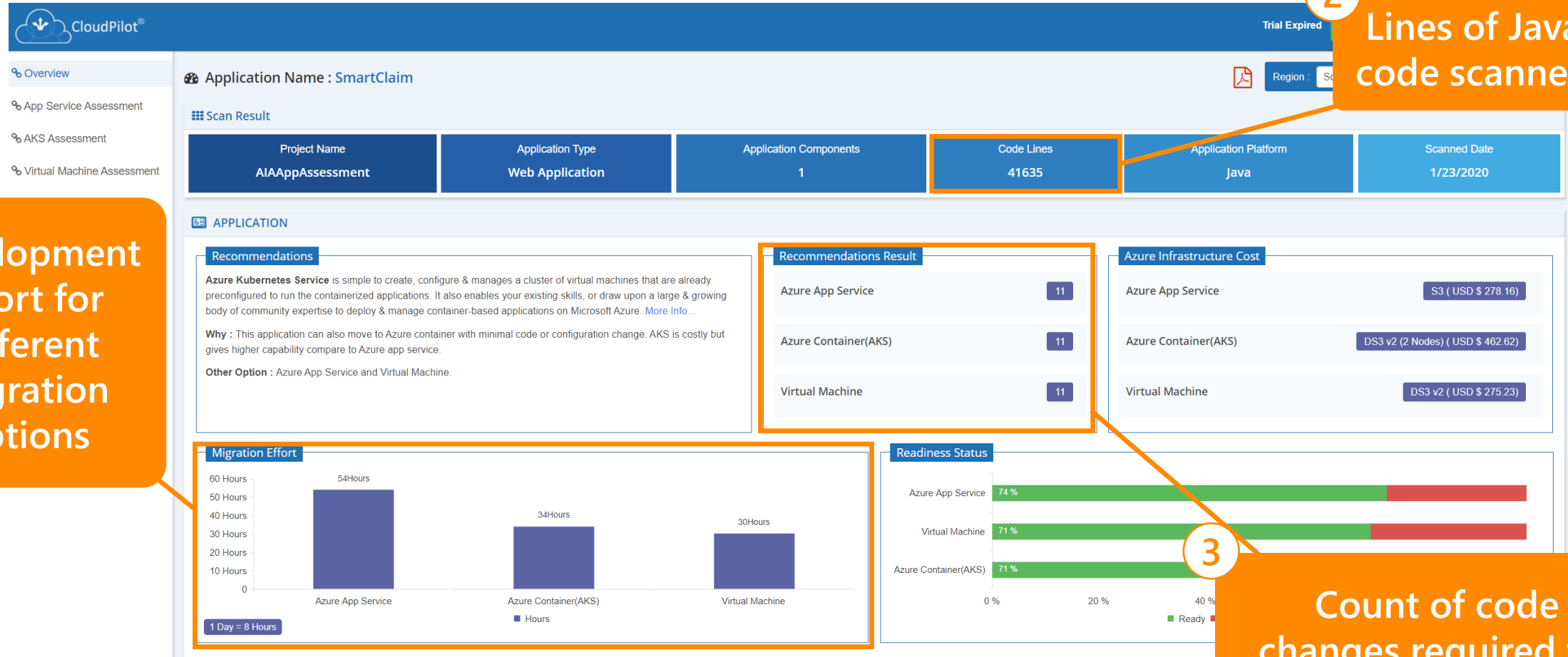
2 Development effort (hours) to make code changes; only ~70% more effort to go to PaaS

4 SmartClaim App

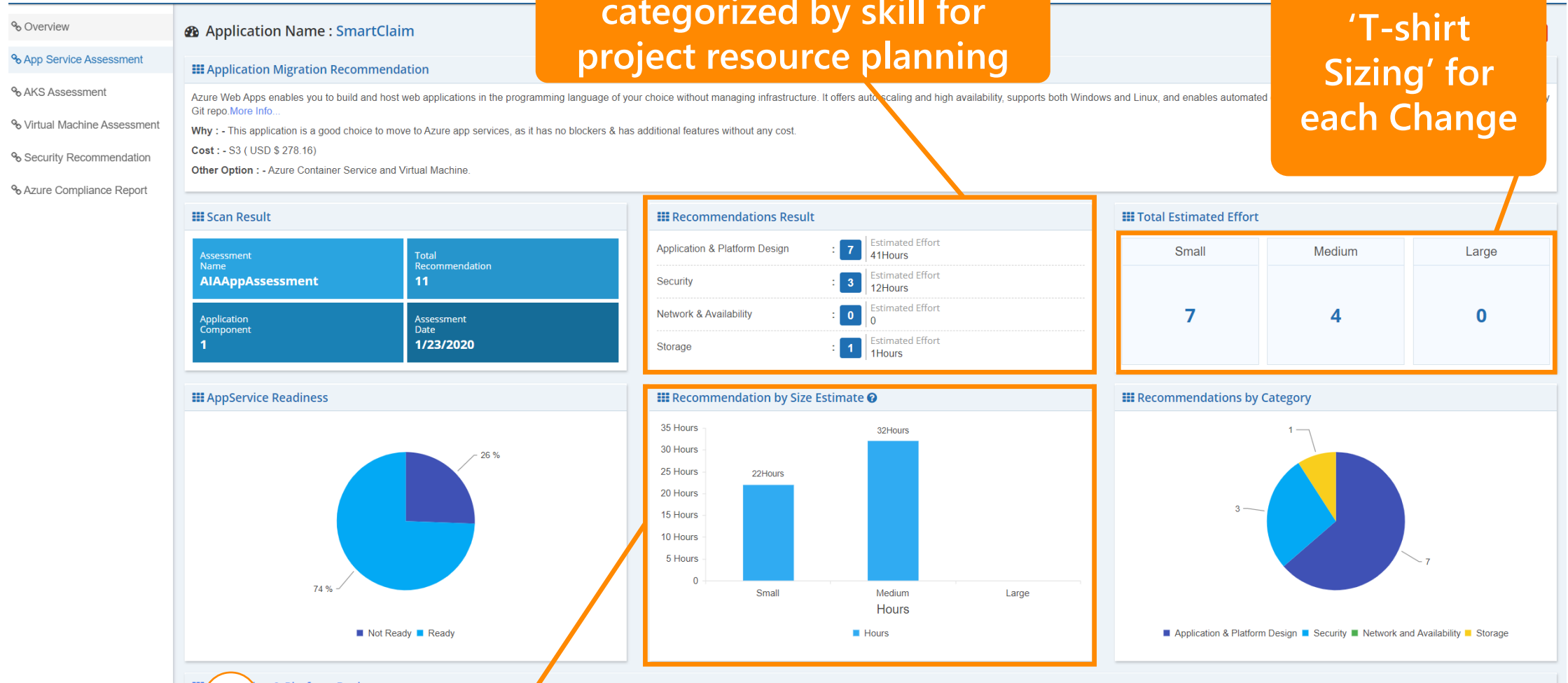
Application Name	Project Name	Platform	Scan Date	App Service Readiness	Container Readiness	Virtual Machine Readiness	Recommended Platform	Assessment Status	Migration Status	View
SmartClaim	AIAAppAssessment	Java	04-03-2020	74%	71%	71%	Container	Completed	Pending	View
AAAdmin	AIAAppAssessment	Java	04-03-2020	79%	75%	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%	75%	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

1 Quick visual indicator of readiness for app migration to VMs, Containers or PaaS

Assessment of Smart Claim App



Additional Details for Modernization & Planning



1 Development effort grouped by S/M/L sizing options

3 Required code changes categorized by skill for project resource planning

2 'T-shirt Sizing' for each Change

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

Reason for change

The Logging uses Hard Coded Drive path to store log file. These paths may not be accessible after deployment in Azure App Service.

Code block	Line no.	File path
private static final Logger log = LoggerFactory.getLogger(SmartclaimwsEligibleApplication.class);	13	D:\Source_Code\SmartClaim\scws-eligible\src\main\java\com\aiath\smartclaimws\eligible\SmartclaimwsEligibleApplication.java
private static final Logger log = LoggerFactory.getLogger(AiaServiceConnection.class);	11	D:\Source_Code\SmartClaim\scws-eligible\src\main\java\com\aiath\smartclaimws\eligible\connection\AiaServiceConnection.java

[Show All](#)

Recommendation

- Log files must be stored on Azure Blob storage or some other logical Application path.
- Log Analytics can also be used to store Logs of application on Azure.

Sample Code Copy Code

```
Sample code for creating blob-
storageAccount = CloudStorageAccount.parse(storageConnectionString);
blobClient = storageAccount.createCloudBlobClient();
container = blobClient.getContainerReference("quickstartcontainer");
container.createIfNotExists(BlobContainerPublicAccessType.CONTAINER, new BlobRequestOptions(), new OperationContext());
```

Estimated Efforts

8 Hrs Cost Hours Size : Medium

Impact

Optional

Help URL

<https://docs.microsoft.com/en-us/azure/storage/blobs/storage-quickstart-blobs-java>
<https://docs.microsoft.com/en-us/azure/azure-monitor/platform/data-sources-custom-logs>

Detailed Cost Dashboard: App Modernization

3

Visualization of the Compute cost of different scenarios



- Overview
- App Service Assessment
- AKS Assessment
- Virtual Machine Assessment
- Application Dependency Graph
- Security Recommendation
- Costing Recommendation
- Costing Dashboard**
- Compliance Details

Costing Dashboard

Summary Application		App Service Compute (East US)	
Application Name:		Tier: Standard	Instances: 1
No. of Application	1	OS Type: Windows	
No. of Database	0	Node Instances: S2: 2 Cores(s), 3.5 GB RAM, 50 GB Storage	
Size of Storage	5	Compute	USD 146.4
No. of Dependency	0	Network	USD 92.23
Platform	.Net	Storage	USD 101.52
Scan Date	8/8/2019	Security & Monitoring	USD 26.14
DR Cost Included	No	Database Cost	USD 0
		Total	USD 366.29



1 Container Cost Options

Container

Azure Service Fabric Compute (East US)	Azure Kubernetes Service (AKS) Compute (East US)	Azure Container Instances (ACI) Compute (East US)
OS Type: Windows Virtual Machine: 2 Node Instances: DS1 v2, 1 Cores(s), 3.5 GB RAM, 7 GB Temporary storage	Temporary Storage: 14 Virtual Machine: 2 Node Instances: DS2 v2, 2 vCPU(s), 7 GB RAM, 14 GB Temporary storage	OS Type: Windows Memory: 1 Container groups: 1 vCPU: 1
Compute: USD 236.26	Compute: USD 213.74	Compute: USD 64.56
Network: USD 92.23	Network: USD 92.23	Network: USD 92.23
Storage: USD 101.52	Storage: USD 101.52	Storage: USD 101.52
Security & Monitoring: USD 26.14	Security & Monitoring: USD 26.14	Security & Monitoring: USD 26.14
Database Cost: USD 0	Database Cost: USD 0	Database Cost: USD 0
Total: USD 456.15	Total: USD 433.63	Total: USD 284.45

2 VM & PaaS Cost Options

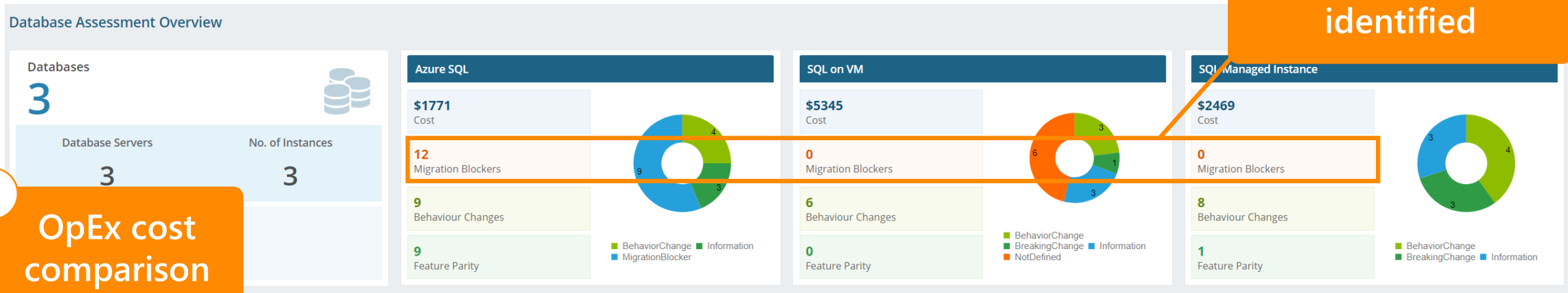
Virtual Machines

Virtual Machine (IIS) Compute (East US)	Virtual Machine (Lift & Shift) Compute (East US)	App Services Compute (East US)	App Service Environment Compute (East US)
Tier: Standard OS Type: Windows	Tier: Standard OS Type: Windows	Tier: Standard Instances: 1	Tier: Isolated OS Type: Windows

Assessing Databases for Modernization to Azure

Analysis of 3 SQL Server DBs for Migration Options

1 Migration blockers identified



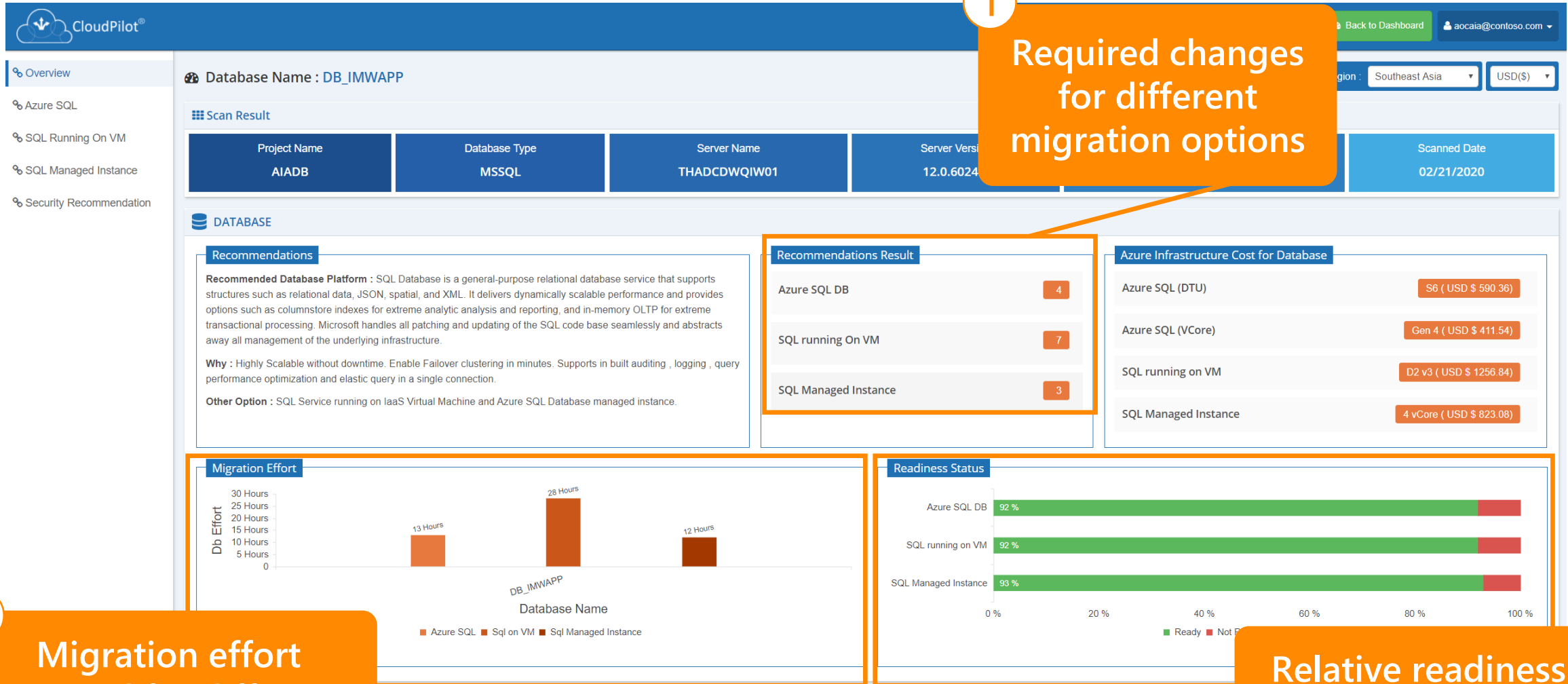
2 OpEx cost comparison

Migration Option	Cost
Azure SQL DTU Cost	\$1771
Azure SQL vCore Cost	\$1235
Lift & Shift Cost	\$5345
Managed Instance Cost	\$2469

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

Database Name	Database Size (MB)	Azure SQL Readiness	SQL VM Readiness	SQL MI Readiness	Action
COMPBK	720.88	67%	67%	76%	View
COASTB	446,591.94	79%	83%	88%	View
DB_IMW	4,036.31	91%	92%	92%	View

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



3 Migration effort required for different migration scenarios

1 Required changes for different migration options

2 Relative readiness by database for different migration options

CloudPilot provides detailed recommendations for database migration

CloudPilot®
Trial Expired [Back to Dashboard](#)
aoacia@contoso.com

- Overview
- Azure SQL
- SQL Running On VM
- SQL Managed Instance
- Security Recommendation

Name of Database DB_IMWAPP	Instance Name THADCDWQIW01	Server Version/Edition 12.0.6024.0 / Standard Edition (64-bit)
Size 3.94 GB	Assessment Name DB_IMWAPP dbassessment	Source Platform On-Premise

Total Recommendations 4	Impacted Objects 19
Total Efforts 13 Hours	

Small	Medium	Large
1	3	0

Azure SQL DB Readiness

92% Ready, 8% Not Ready

Recommendation by Size Estimate

Small: 1 Hour, Medium: 12 Hours, Large: 0 Hours

Recommendation by Category

3 Small, 1 Medium, 0 Large

BehaviorChange	BehaviorChange - Unqualified Join(s) detected
<p>Unqualified Join(s) detected</p> <p>[71627] Windows users can be converted to external users in Azure SQL Database</p>	<p>Issue details</p> <p>Impact</p> <p>Starting with database compatibility level 90 and higher, in rare occasions, the 'unqualified join' syntax can cause 'missing join predicate' warnings, leading to long running queries.</p> <p>Recommendation</p> <p>An example of "Unqualified join" is select * from table1, table2 where table1.col1 = table2.col1 Use explicit JOIN syntax in all cases. SQL Server supports the below explicit joins: - LEFT OUTER JOIN or LEFT JOIN - RIGHT OUTER JOIN or RIGHT JOIN - FULL OUTER JOIN or FULL JOIN - INNER JOIN</p> <p>- Missing join Predicate Event Class (https://go.microsoft.com/fwlink/?LinkId=798567) - Deprecation of "Old Style" JOIN Syntax: Only A Partial Thing (https://go.microsoft.com/fwlink/?LinkId=798568) - DOC : Please strive to use ANSI-style joins instead of deprecated syntax (https://go.microsoft.com/fwlink/?LinkId=798569) - Missing join predicate icon should be red (https://go.microsoft.com/fwlink/?LinkId=798570)</p> <p>Action</p> <p>Warning</p>
<p>Information</p> <p>Deprecated data types TEXT, IMAGE or NTEXT</p>	
<p>MigrationBlocker</p> <p>[71627] Database users mapped with Windows authentication (integrated security) not supported in Azure SQL Database</p>	

Impacted Objects (1)			
Impacted Objects	Impacted Type	Estimated Efforts	Estimated Size
dbo.po_clmimg_direct	Procedure	2 Hour	Medium

Object Details

Name: dbo.po_clmimg_direct

Type: Procedure

Object: Object [dbo].[po_clmimg_direct] uses the old style join syntax which can have poor performance at database compatibility level 90 and higher. For more details, please see: Line 9, Column 68.

3
Objects to be changed

1
Database changes

2
Detailed Recommendations

Detailed Database Cost Comparison

2

Visualization of the cost of different scenarios

1 Database Cost Options

CloudPilot®

- Overview
- Azure SQL
- SQL Running on VM
- SQL Managed Instance
- Security Recommendation
- Costing Dashboard**

Costing Dashboard

Database Summary

Database Name:	[Redacted]
Project Name	APAC_REC'D_DB
No. of Database	1
Database Type	MSSQL
Assessment Date	08/02/2019
Assessment Status	Completed
Migration Status	Pending
Source Platform	On-Premise

Database Comparison Cost

Cost Comparison Chart

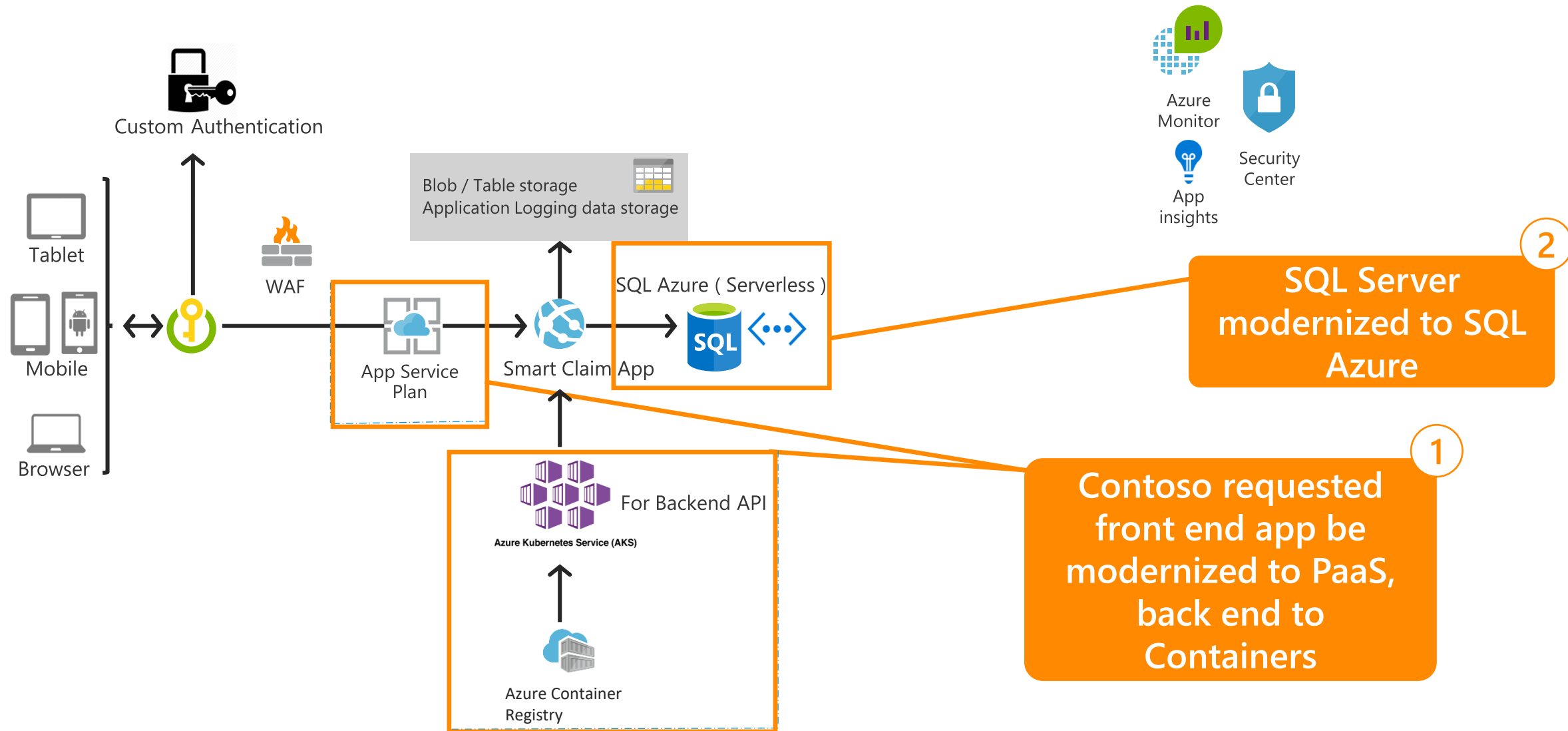
Scenario	Cost (USD)
Azure SQL (DTU)	590.36
Azure SQL (vCore)	738.39
Azure SQL ON VM	1373.23
SQL Managed Instance	738.39

MS SQL Database

Scenario	Tier	Performance Level	Purchase Model	Type	No. of Database	Compute	Network	Storage	Security & Monitoring	Total
Azure SQL (DTU)	Standard	S6: 400 DTUs- 250 GB included storage per DB- \$0.8065/hour	DTU	Single Database	1	USD 590.36	USD 0	USD 0	USD 26.14	USD 616.5
Azure SQL (vCore)	General Purpose		4 vCore	Single Database	1	USD 738.39	USD 0	USD 3.68	USD 26.14	USD 768.21
Azure SQL On VM	Standard	Node Instances: D4 v3: 4 vCPU(s) 16 GB RAM 100 GB Temporary storage \$1.876/hour		SQL Server	1	USD 1373.23	USD 203.38	USD 0	USD 26.14	USD 1602.75
SQL Managed Instance	General Purpose		4 vCore	Single Database	1	USD 738.39	USD 0	USD 0	USD 26.14	USD 764.53

Smart Claim App: Azure Architecture

Contoso Thailand: Azure Architecture for Smart Claim Application



Oracle to Azure PostgreSQL

Oracle Assessment for Azure PostgreSQL

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Overview PostgreSQL Best Practices

Database Name : AUDSYS

Scan Result

Project Name	Server Name	Server Version and Edition	
testoralc		Oracle Database 12c Standard Edition Release 12.1.0.2.0	4/21/2020

Recommendations

Recommended Database Platform : PostgreSQL is a general purpose database system designed to run on UNIX-like platforms. PostgreSQL was designed to run on UNIX-like platforms. It is free and open source software. PostgreSQL is free and open source software. PostgreSQL requires very little of ownership is low in comparison with other database management systems. functional languages, etc. If you don't like any part of the system, you can define your own data types, index types, requirements e.g., adding a new optimizer.

PostgreSQL

Total Cost
Gen 5, 2 vCore
USD \$ 153.45

Total Efforts
154 hrs

Amount of Dev DB effort in hours to make required changes

Count of changes for Oracle to PostgreSQL

Migration Effort

Objects	Effort (Hours)
INDEX	3
PACKAGE BODY	133
SEQUENCE	1
TABLE	5
VIEW	12

Summary

Object Type	Count	Progress
INDEX	54	88%
PACKAGE BODY	10	91%
SEQUENCE	19	83%
TABLE	170	100%
VIEW	44	80%

Additional Detail on Oracle to Postgres Recommendations

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Overview PostgreSQL Best Practices

Azure PostgreSQL DB Recommendations

Scan Result

Name of Database testoralc	Size (mb) 1740.8	Server Version/Edition Oracle Database 12c Standard Edition Release 12.1.0.2.0
Assessment Name testoralc dbassessment	Source Platform On-Premise	

Recommendation Result

Migration level
Migration with code rewrite and a human-days cost up to 5 days

Technical level
difficult: stored functions and/or triggers with code rewriting

154 hrs
TOTAL EFFORT

Recommendations

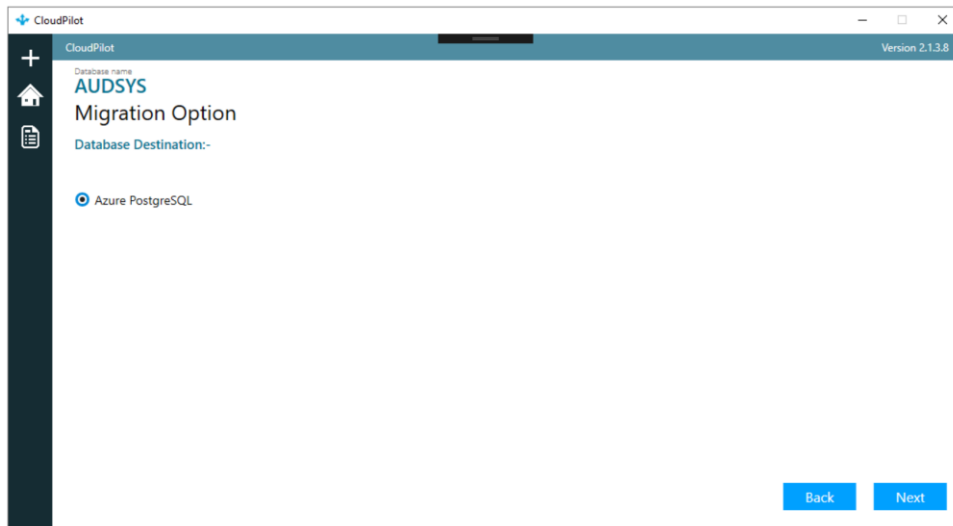
LDSSPROD Recommendations

Category	Recommendations				
INDEX	<p>Issue Detail</p> <p>44 index(es) are concerned by the export, others are automatically generated and will do so on PostgreSQL. Bitmap will be exported as btree_gin index(es) and hash index(es) will be exported as b-tree index(es) if any. Domain index are exported as b-tree but commented to be edited to mainly use FTS. Cluster, bitmap join and IOT indexes will not be exported at all. Reverse indexes are not exported too, you may use a trigram-based index (see pg_trgm) or a reverse() function based index and search. Use 'varchar_pattern_ops', 'text_pattern_ops' or 'bpchar_pattern_ops' operators in your indexes to improve search with the LIKE operator respectively into varchar, text or char columns.</p> <p>Recommendation</p> <p>Bitmap will be exported as btree_gin index(es) and hash index(es) will be exported as b-tree index(es) if any. Domain index are exported as b-tree but commented to be edited to mainly use FTS. Cluster, bitmap join and IOT indexes will not be exported at all. Reverse indexes are not exported too, you may use a trigram-based index (see pg_trgm) or a reverse() function based index and search. Use 'varchar_pattern_ops', 'text_pattern_ops' or 'bpchar_pattern_ops' operators in your indexes to improve search with the LIKE operator respectively into varchar, text or char columns.</p> <table border="1"><thead><tr><th>Actual Object Count</th><th>Estimated Effort</th></tr></thead><tbody><tr><td>54</td><td>147 minutes</td></tr></tbody></table> <p>Help Url</p> <p>No Record Found</p>	Actual Object Count	Estimated Effort	54	147 minutes
Actual Object Count	Estimated Effort				
54	147 minutes				
PACKAGE BODY	<p>Issue Detail</p>				

2
Objects to be changed

1
Time required to make changes

Migration Steps: Oracle to Azure PostgreSQL



CloudPilot Version 2.1.3.8

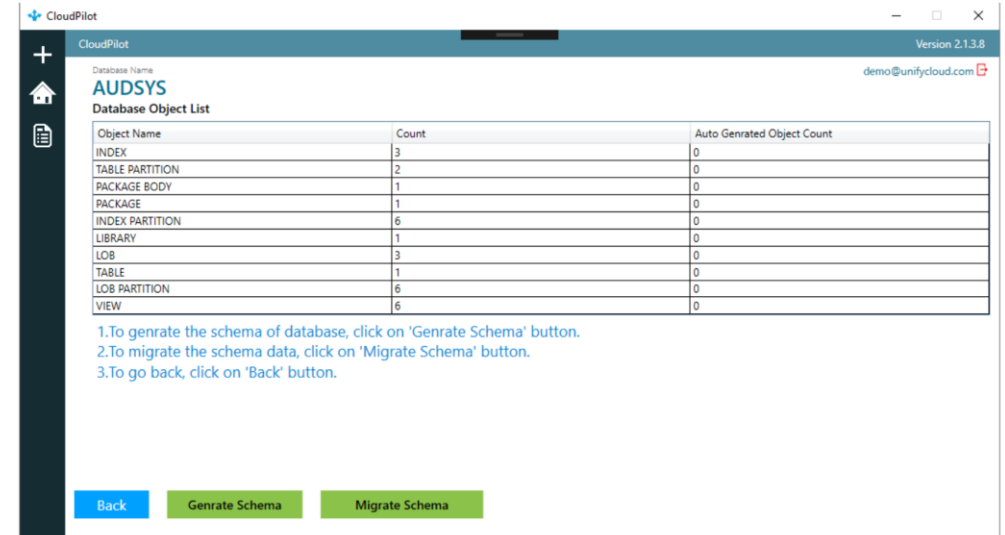
Database name: **AUDSYS**

Migration Option

Database Destination:-

Azure PostgreSQL

Back Next



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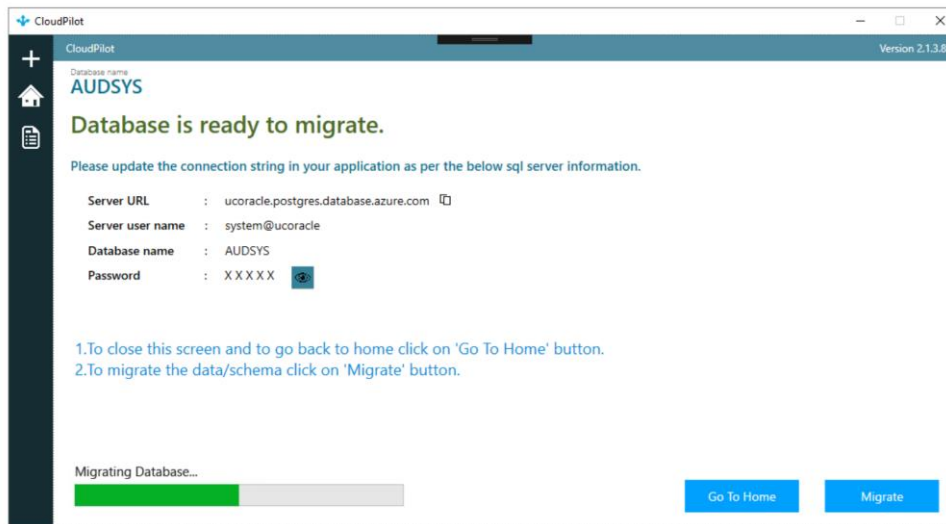
Database Name: **AUDSYS**

Database Object List

Object Name	Count	Auto Generated Object Count
INDEX	3	0
TABLE PARTITION	2	0
PACKAGE BODY	1	0
PACKAGE	1	0
INDEX PARTITION	6	0
LIBRARY	1	0
LOB	3	0
TABLE	1	0
LOB PARTITION	6	0
VIEW	6	0

1.To generate the schema of database, click on 'Generate Schema' button.
2.To migrate the schema data, click on 'Migrate Schema' button.
3.To go back, click on 'Back' button.

Back Generate Schema Migrate Schema



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Database name: **AUDSYS**

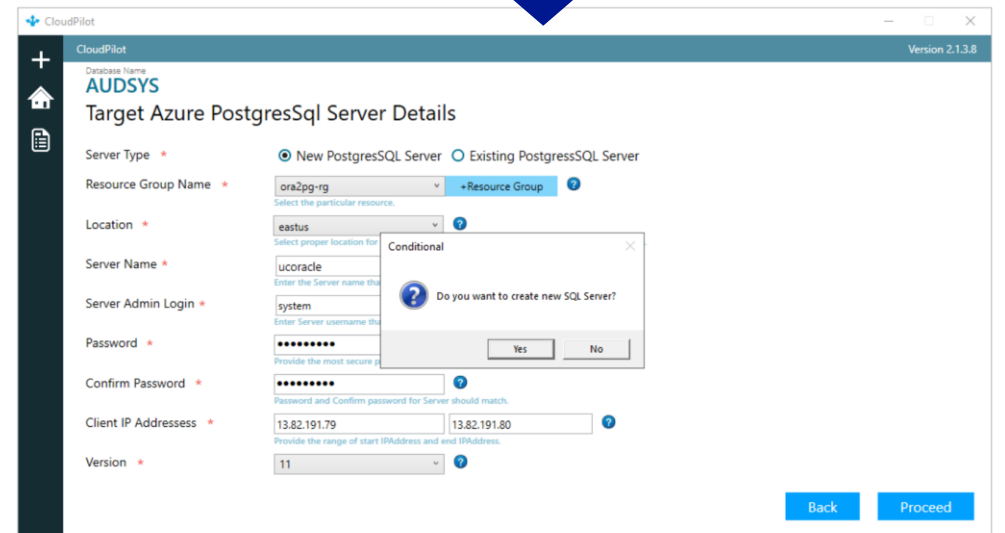
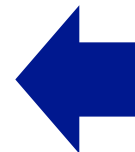
Database is ready to migrate.

Please update the connection string in your application as per the below sql server information.

Server URL : ucoracle.postgres.database.azure.com
Server user name : system@ucoracle
Database name : AUDSYS
Password : XXXXX

1.To close this screen and to go back to home click on 'Go To Home' button.
2.To migrate the data/schema click on 'Migrate' button.

Migrating Database...
Go To Home Migrate



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Database Name: **AUDSYS**

Target Azure PostgreSQL Server Details

Server Type * New PostgreSQL Server Existing PostgreSQL Server

Resource Group Name * ora2pg-rg +Resource Group

Location * eastus

Server Name * ucoracle

Server Admin Login * system

Password *

Confirm Password *

Client IP Addressess * 13.82.191.79 13.82.191.80

Version * 11

Back Proceed

Conditional

Do you want to create new SQL Server?

Yes No