

Zero data loss protection for **ORACLE ON AZURE**



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OVERVIEW

Azure Tessell for Oracle is an end-to-end Oracle PaaS available on Azure that encompasses all the critical lifecycle management functions of Oracle Database from a single offering that includes:

- Provisioning of Oracle database as per Azure and Oracle best practices
- Backup and Recovery of Oracle on Azure using multiple mechanisms
- Automated local-HA of Oracle Databases (inside a PPG within the same AZ or across AZ)
- Automated cross-region DR of Oracle Databases
- Automated Redaction and Cloning of Oracle Databases
- Automated Patching of Host OS, Oracle database, and minor DB version upgrades
- Automated downstream environment management
- Monitoring and Management of Oracle Databases on Azure (OEM Support)
- Billing and Chargeback insights
- Delivered @ Customer Terms with the ability to bring your own Keys, Network Policies, etc.

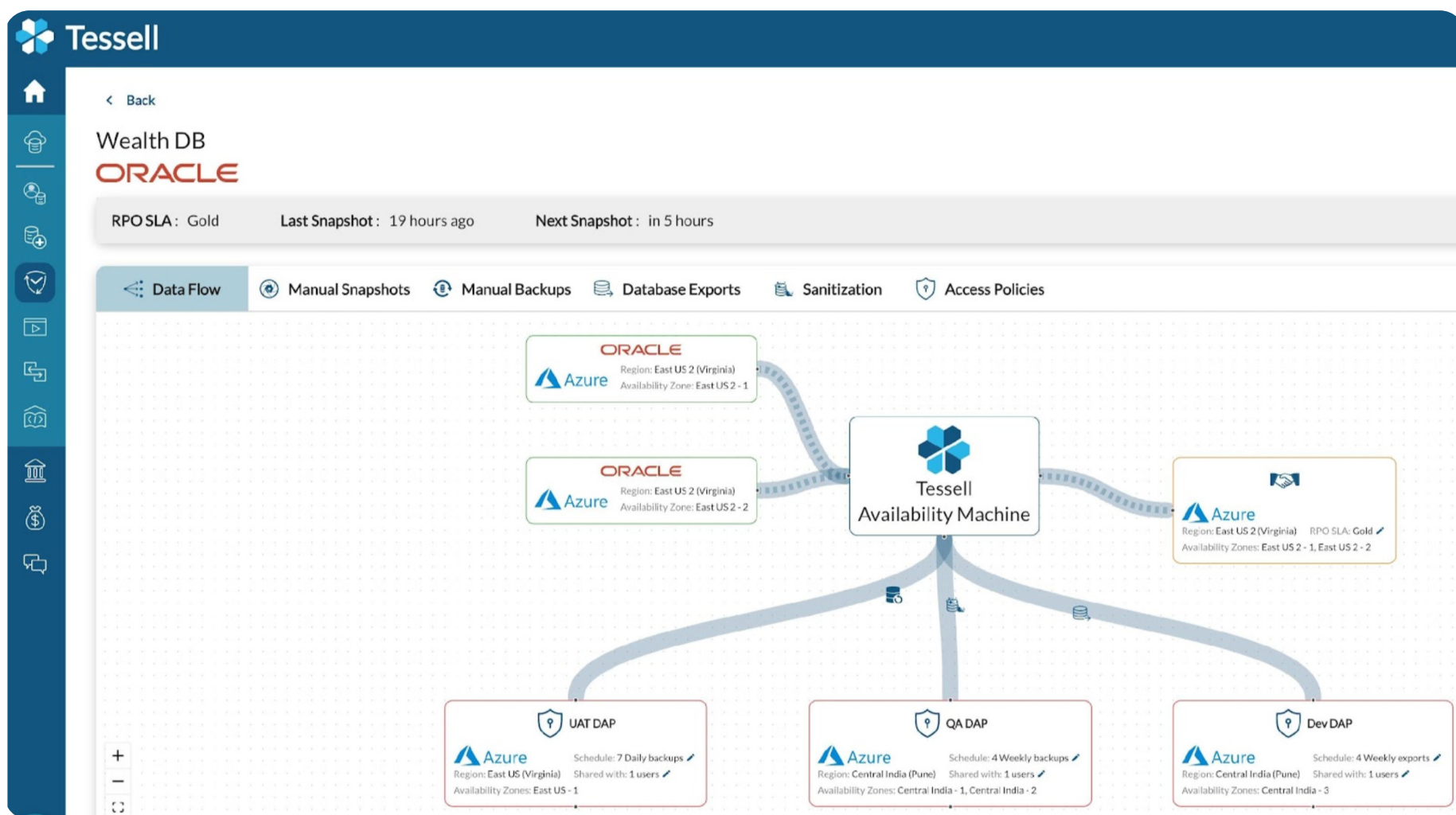
BACKUP & RECOVERY

In this article, we will delve deeper into the Oracle Backup and Recovery Options that are built into Azure Tessell for Oracle PaaS. Tessell supports 3 backup options for Oracle databases on Azure that fully leverage the potential of both Azure and Oracle as described below:

- Snapshot-based Backups
- Archive Log Backups
- RMAN Backups

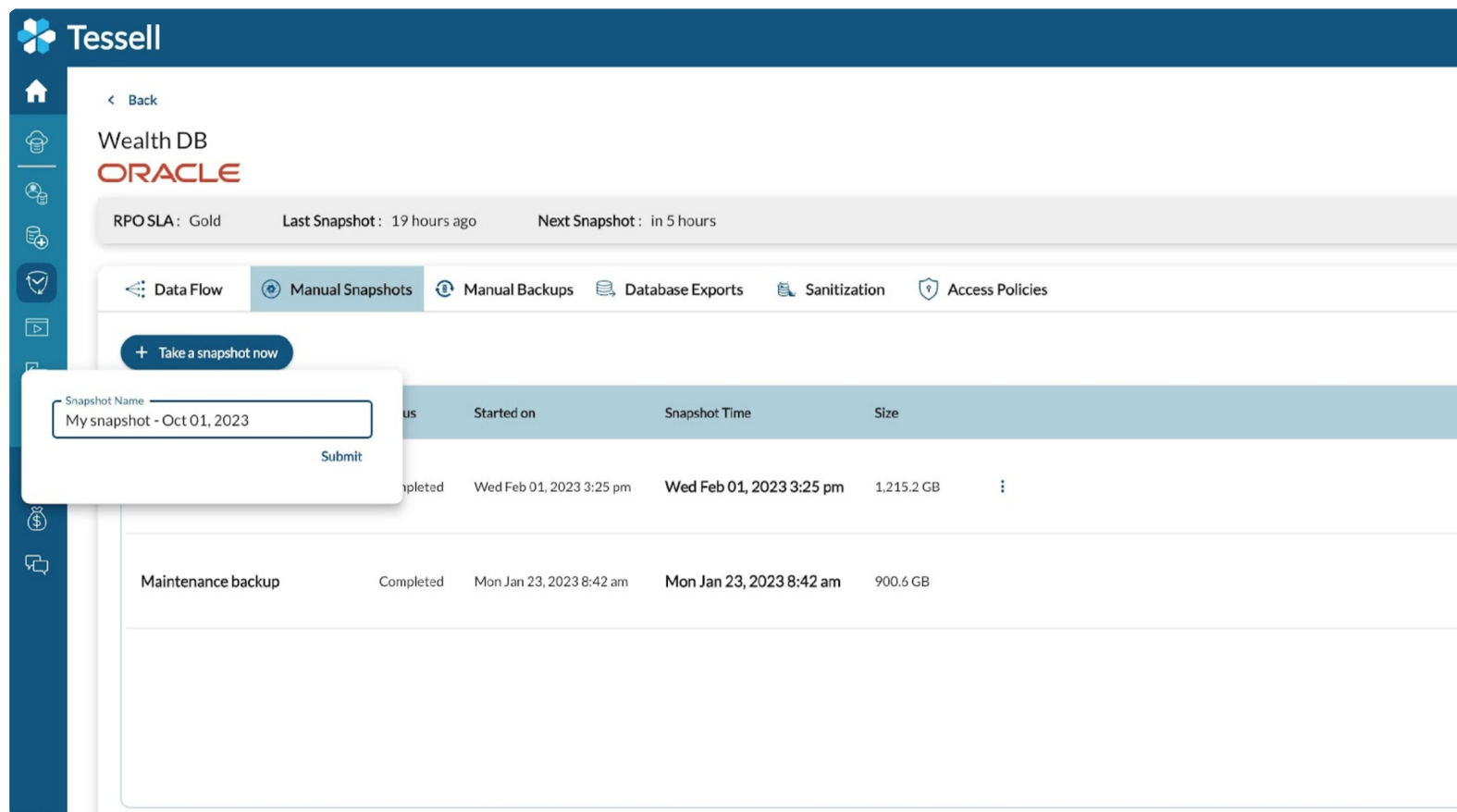
Snapshot-based Backups

Azure Tessell for Oracle leverages Azure Managed Disks as primary storage for standard compute shapes. The Azure Managed Disks offer instant Snapshot capability that takes a few seconds irrespective of the volume size. Tessell has integrated with Azure Managed Disk Snapshots to create an Oracle-aware snapshot that can be restored instantly for the lowest RTO. This Oracle-aware Azure snapshot backup is equivalent to the L0 RMAN backup of Oracle databases and can be restored instantly. The snippets from the Tessell portal that show the creation of Oracle Snapshot-based Backups is shown below.

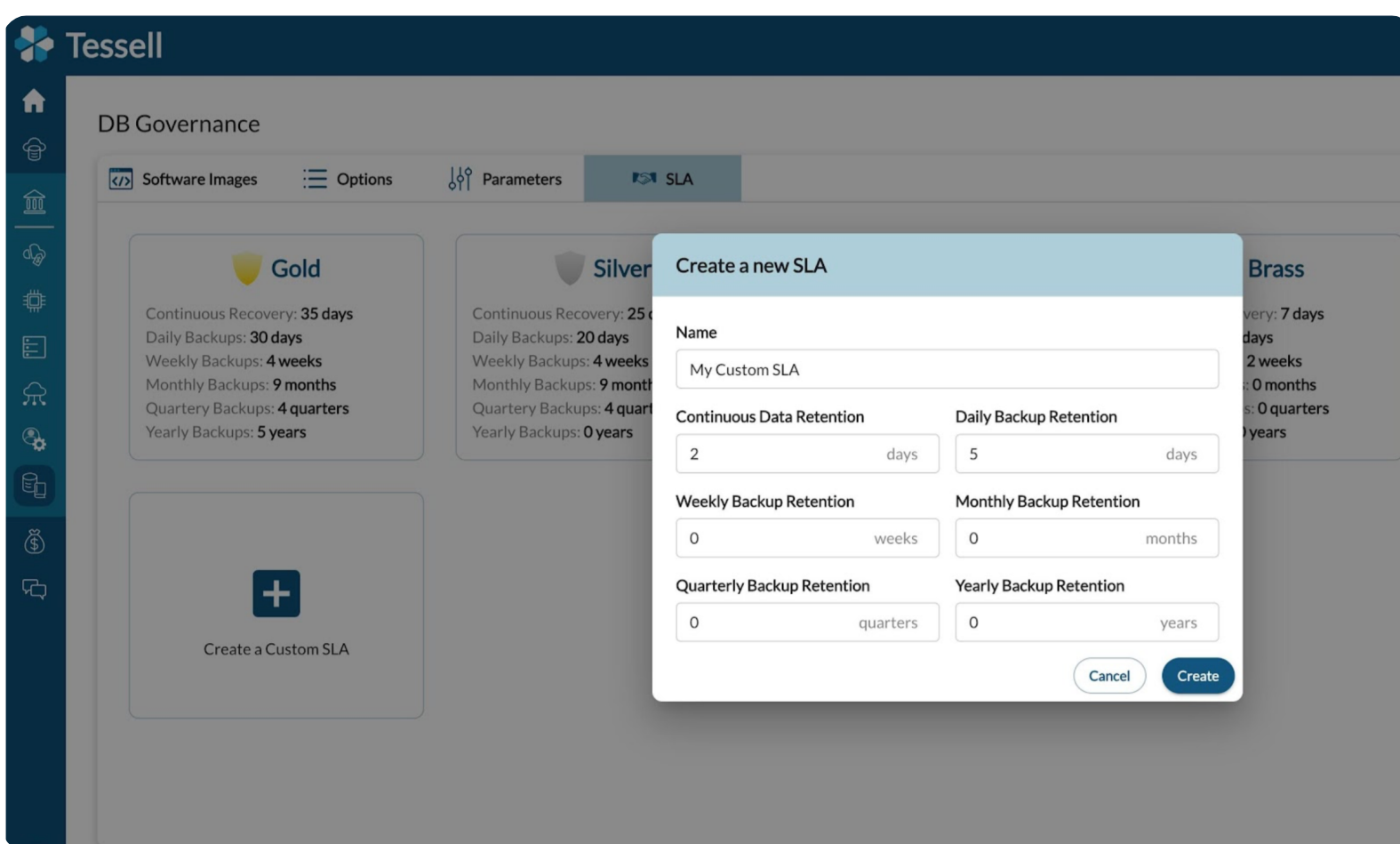


Tessell Availability Machine is responsible for the creation of Oracle data that can be consumed for multiple use cases including Backups. As seen from the above screenshot, the Data Flow diagram shows the relationships that are available for any Oracle Database deployed on Azure including the primary instance, its replicas, and any other downstream environments that are created using the primary as the source.

If you click on the tab called “Manual Snapshots”, it shows the interface to create Oracle-aware snapshots of the database as shown in the screenshot captured below:



The Snapshot-based backup creation can be scheduled using the Tessell Portal or the CLI. The screenshot from the Tessell portal is shown below:



Snapshot-based Backups:

Azure snapshots are designed to be “WRITE ONCE and READ MANY” hence they are READ ONLY (immutable) post creation. Please check the below link for reference.

<https://learn.microsoft.com/en-us/azure/virtual-machines/snapshot-copy-managed-disk?tabs=portal>

Ransomware Protection for Snapshots:

Tessell provides the capability to replicate the snapshots to other Azure regions. This can be done as an ad-hoc or in a policy-based manner using the Data Access Policy feature of the Availability Machine in Tessell.

Create new access policy for Sales DB

☐ UAT
 ☐ QA
 ☐ Dev
 ☒ Custom

Policy Name

Data Access Policy for Sales DB

Destination

Azure

Select Region

West US (California)

Content Type

☒ As-is Data
 ☐ Sanitized Data
 ☐ Database Exports

Content

☒ Automatic
 ☐ Manual

Frequency

☐ Continuous
 ☒ Daily Backups
 ☐ Weekly Backups

☐ Monthly Backups

Number of last available backups

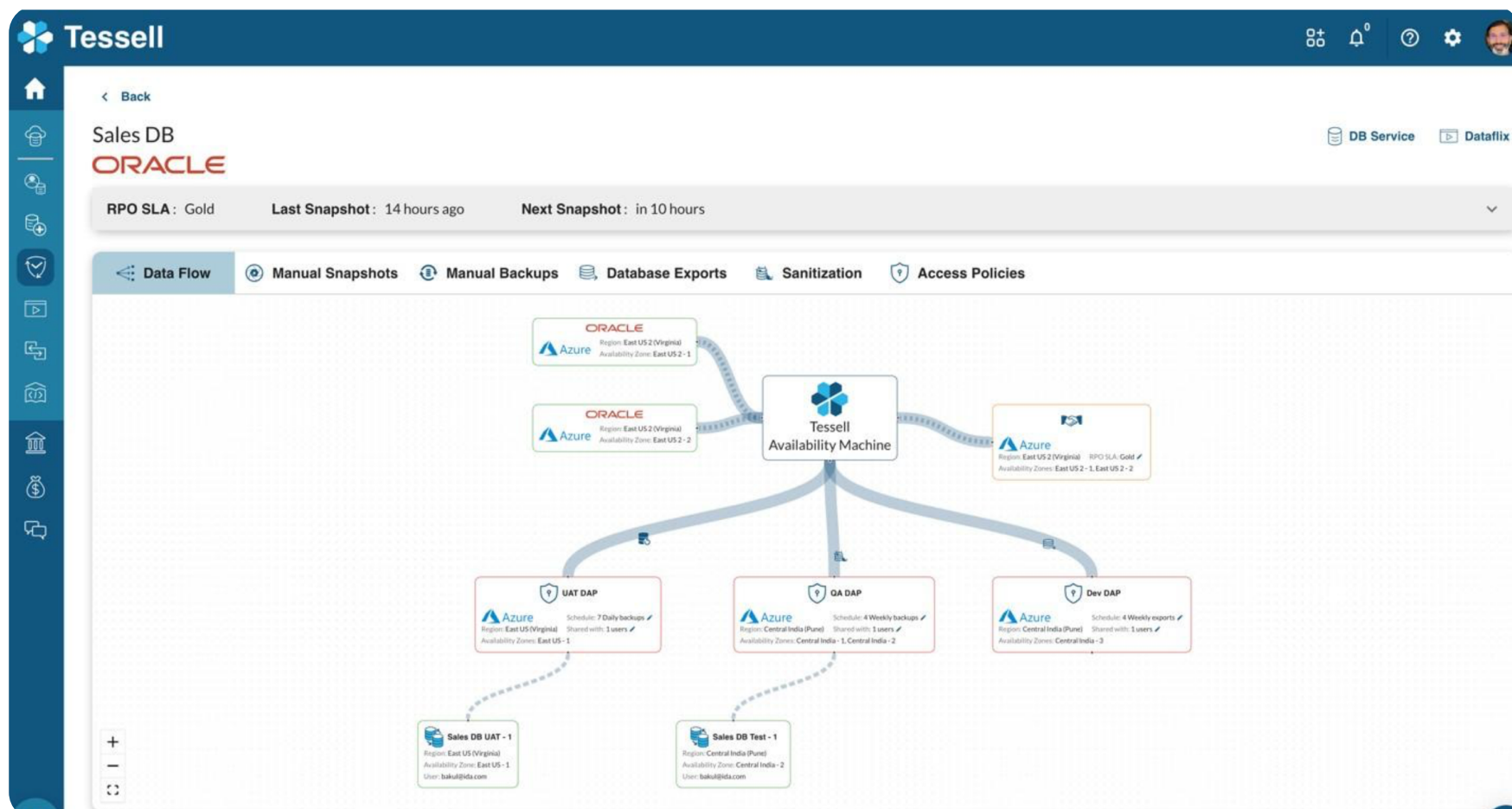
7

Grant Access

☒ Share the data with other users

Cancel Save

You can create multiple Data access policies to replicate the snapshots to multiple regions. Also, these can be then shared with users for restores. The replicated snapshots can then be used to perform restoration using Tessell Dataflux.



You can also replicate the snapshots to a different Azure tenant/subscription. This will make the ransomware protection more tolerant and flexible.

Archive Log Backups

Azure Tessell for Oracle is configured by default to backup Archive Logs of Oracle Databases under management every 5 minutes and stored on Azure Blob Storage. Depending upon the customer's appetite for redundancy requirements, Tessell supports these Blobs to be configured as:

- Locally Redundant Storage (LRS - 3 replicas in 1 AZ within a region),
- Zone-Redundant Storage (ZRS - 3 Replicas in 3 AZ within a region),
- Geo-Redundant Storage (GRS - 6 Replicas, 2 AZ, 2 Regions),
- Geo Zone-Redundant Storage (GZRS – 6 Replicas, 4 AZ, 2 Regions)

Tessell Dataflux Application is used for recovery, and it automatically accesses these archive log backups as well as the online redo logs available on persistent storage to recover the Oracle Database to the most optimal Point-in-time (PIT)

Immutability for Azure blob Storage:

Azure provides support for immutable storage in Azure blob using version and retention policy concepts. Tessell leverages the same for providing immutability to archive log files.

Please refer to the below articles

<https://learn.microsoft.com/en-us/azure/storage/blobs/immutable-policy-configure-version-scope?tabs=azure-portal>

<https://learn.microsoft.com/en-gb/azure/storage/blobs/versioning-overview>

Ransomware Protection for Archive logs:

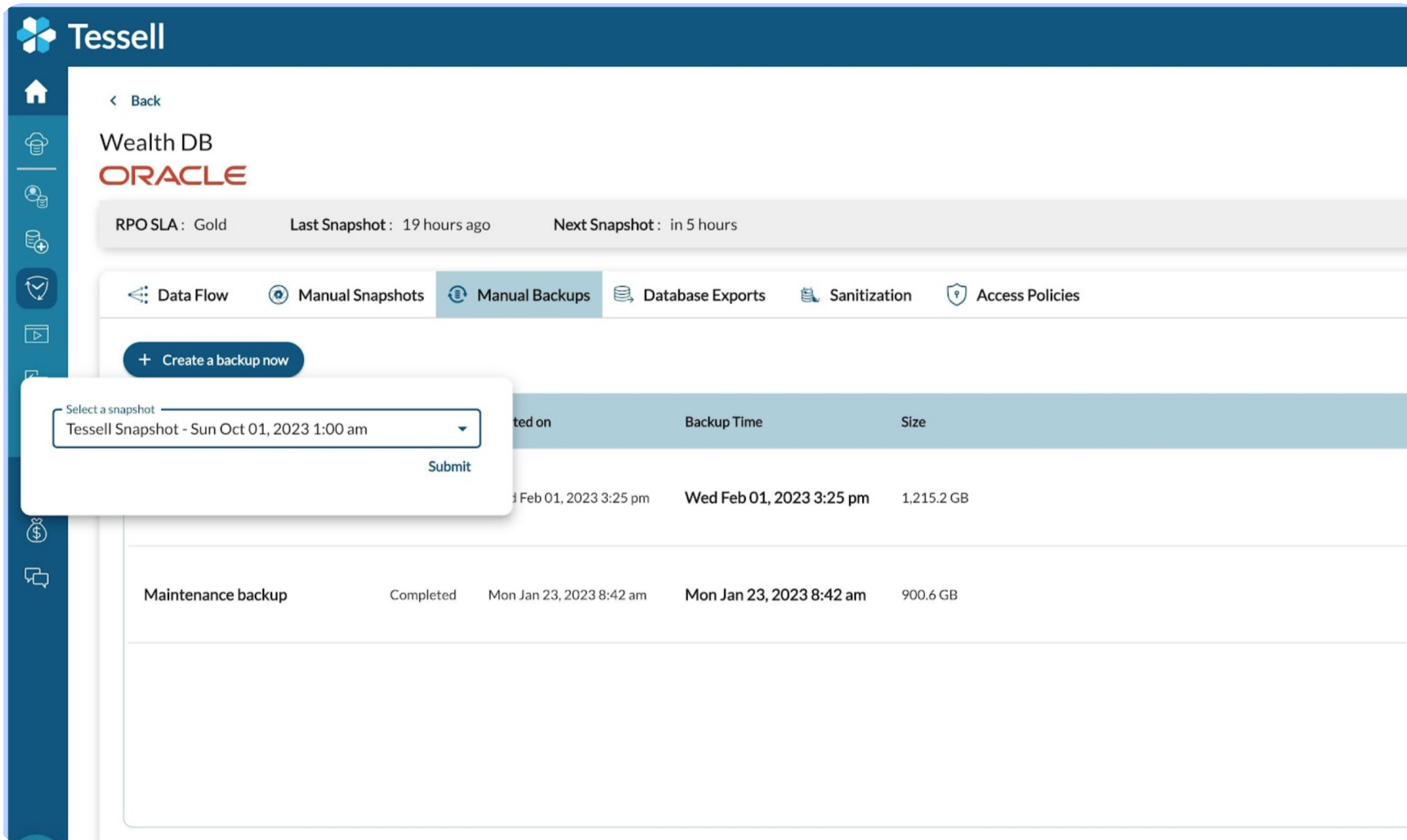
You can also replicate the archive logs to a different Azure tenant/subscription. This will make the ransomware protection more tolerant and flexible.

RMAN Backups

In addition to Snapshot-based Backups and Archive log Backups of Oracle Databases, Tessell also supports RMAN backups of Oracle databases on Azure. These RMAN backups are portable and can be recovered anywhere to get a fully functional database. The restore destination could be a different region with the same cloud provider, a different cloud provider like (AWS or GCP) or it could even be any on-premises data center or VMWare environment.

Within Azure, Tessell recommends that these backups are stored just like Archive logs on Azure Blob Storage. However, unlike Archive Logs, Tessell recommends that these RMAN Backups be stored on immutable containers within the Blog Storage to ensure compliance with regulatory and compliance requirements.

The creation of RMAN backups from the Tessell Portal is shown in the screenshot below:



For compliance purposes, these RMAN backups can be transported to a different Azure Account and stored as immutable blob storage. Tessell supports the time-based retention policies of immutability offered by Azure Blob Storage:

Time-based retention policies for RMAN Backups – With this policy once the retention period is set, the data becomes immutable for the retention period and can only be deleted after the expiry of the retention period. Tessell locks the retention policy within 24 hours of creation to ensure that the retention time is not tampered with. Before the locking, Azure ensures data is not deleted or overwritten but allows for the retention period to be updated until it is locked.

PS: This is currently supported within the same account and will be supported in a different Azure Account in the next release of Tessell slated to be GA in Feb 2024.

Immutability:

Azure provides support for immutable storage in Azure blob using version and retention policy concepts. Tessell leverages the same for providing immutability to archive log files.

Please refer to the below articles

<https://learn.microsoft.com/en-us/azure/storage/blobs/immutable-policy-configure-version-scope?tabs=azure-portal>

<https://learn.microsoft.com/en-gb/azure/storage/blobs/versioning-overview>

Ransomware Protection for Archive logs:

You can also replicate the RMAN backups to a different Azure tenant/subscription. This will make the ransomware protection more tolerant and flexible.

Tessell can also integrate with any existing storage solutions for moving the backups to more durable vault storage.

DATAFLIX

The Snapshot-based backups and the RMAN Backups are shown in the Tessell Dataflix application and can be used to restore the primary database or create redacted downstream environments.

Tessell

Home

Database

Backup

Monitor

Alerts

Settings

Help

Continuous Region

Snapshots/Backups

Database Exports

Sanitized Snapshots

ORACLE

Azure

Critical data backup

Wednesday Feb 1st, 2023 15:25:47

Size: 1215.2 GB

Number of regions: 1

Region: East US 2 (Virginia)

Shared with no. of users: 0

East US 2 - 1

No. of clones: 0

East US 2 - 2

No. of schema: 27

No. of tables: 179

Download

Clone

Filter by region

All

Manual Snapshots/Backups

Critical data backup

Wed Feb 1st, 2023 15:25:47

No. of regions: 1

No. of availability zones: 2

Size: 1215.2 GB

Maintenance backup

Mon Jan 23rd, 2023 08:42:58

No. of regions: 1

No. of availability zones: 2

Size: 900.6 GB

Daily Snapshots/Backups

Tessell Snapshot

Sun Oct 1st, 2023 01:00:54

No. of regions: 2

No. of availability zones: 3

Size: 4166 GB

Tessell Snapshot

Sat Sep 30th, 2023 01:14:43

No. of regions: 2

No. of availability zones: 3

Size: 4143.4 GB

Tessell Snapshot

Fri Sep 29th, 2023 01:08:27

No. of regions: 2

No. of availability zones: 3

Size: 4130.6 GB

Tessell Snapshot

Thu Sep 28th, 2023 01:11:18

No. of regions: 2

No. of availability zones: 3

Size: 4117.5 GB

Tessell Snapshot

Wed Sep 27th, 2023 01:01:34

No. of regions: 2

No. of availability zones: 3

Size: 4104.6 GB

Weekly Snapshots/Backups

Tessell Snapshot

Sun Jul 23rd, 2023 01:13:10

No. of regions: 1

No. of availability zones: 2

Size: 3249.1 GB

Tessell Snapshot

Sun Jul 16th, 2023 01:08:26

No. of regions: 1

No. of availability zones: 2

Size: 3158.3 GB

Tessell Snapshot

Sun Jul 9th, 2023 01:03:43

No. of regions: 1

No. of availability zones: 2

Size: 3067.5 GB

Tessell Snapshot

Sun Jul 2nd, 2023 01:06:47

No. of regions: 1

No. of availability zones: 2

Size: 2976.7 GB

Monthly Snapshots/Backups

NEXT STEPS

Request a Demo

Tessell provides an elegant user interface for end-user self-service, complemented by Terraform APIs for automated provisioning across the DevSecOps pipeline. Tessell's story and benefits are best told through the product. We can visually demonstrate how Tessell seamlessly incorporates best practices in three areas database lifecycle management, and delightful data management, while bringing your existing people, process, and technology all '@ your terms.' Please reach out to request a demo.

No Cost POC

Real-world numbers bring a confidence that is difficult to replicate. Request a no-cost POC and run performance benchmarks for workloads running on Azure. Oracle Automatic Workload Repository (AWR) reports can be compared to assess performance improvements across environments. Please reach out to [request a no-cost POC \(click here\)](#).

Workload Analysis & Licensing Sizing

Understanding your current workloads and their resource utilization is key for future planning. The Automatic Workload Repository provides a non-invasive way to consolidate and store detailed performance data from the Oracle database. This data can then be analyzed and compared for insights into utilization, performance optimization, and cost savings. Please reach out to [request a workload analysis \(click here\)](#).



Request a TCO Analysis

From infrastructure refresh to CPU license consolidation, TCO is a key element of any business decision. Tessell has a great deal of experience in moving the full spectrum of Oracle workloads, both packaged (e.g. EBS) and custom applications, to the cloud. Consequently, Tessell can provide insight into estimated cost savings that combine Oracle Automatic Workload Repository (AWR) data and provide examples of real-world customer results. Please reach out to [request a TCO analysis \(click here\)](#).

About Tessell

Tessell is a cloud-native Database-as-a-Service (DBaaS) that functions seamlessly on both AWS and Azure. Tessell offers policy-driven self-service access, DevOps integration, production monitoring, and lifecycle management for Oracle, PostgreSQL, MySQL, and Microsoft SQL Server database engines. Additionally, Tessell leverages the high-performance NVMe storage capabilities of the cloud to handle demanding production workloads effectively and maximize the economic advantages of database consolidation.

