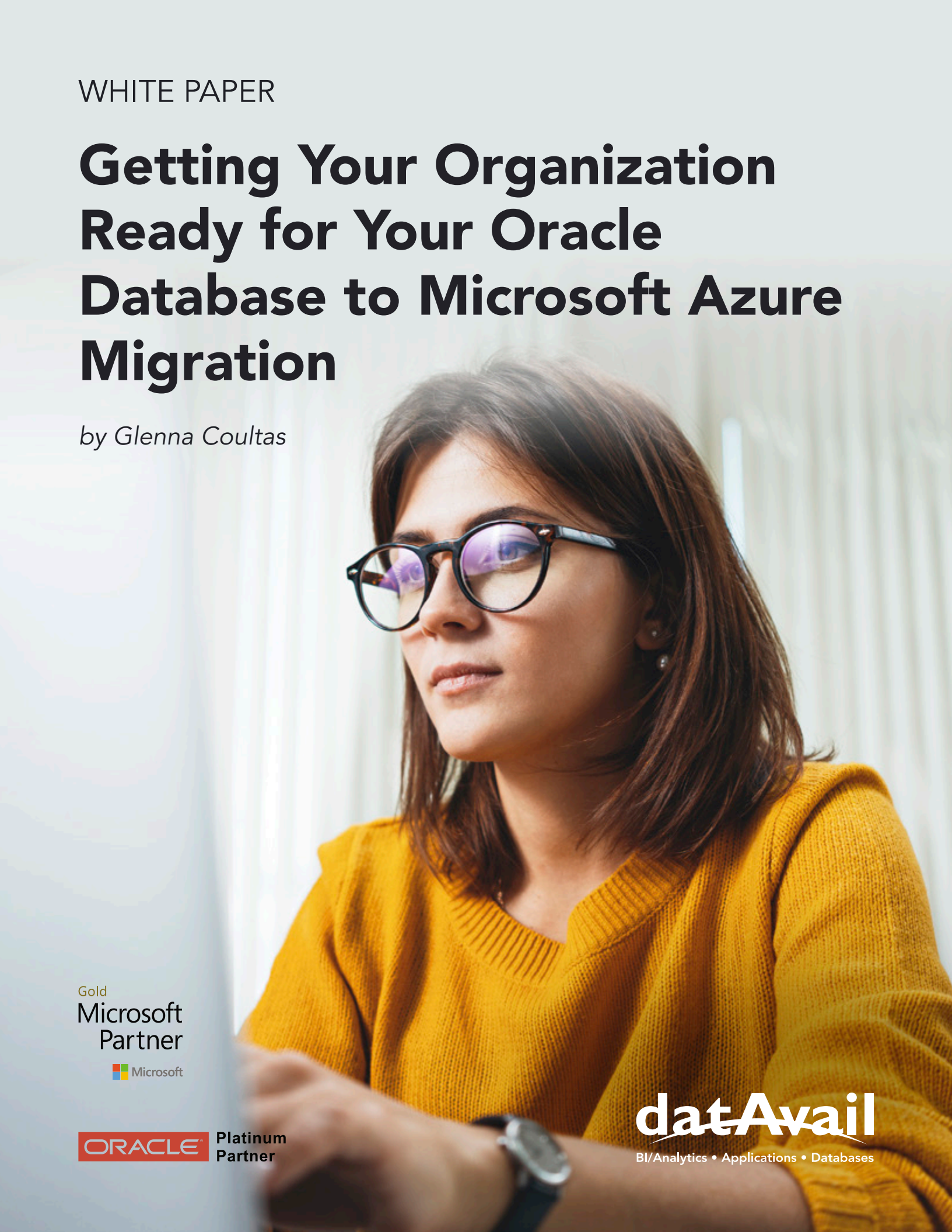
WHITE PAPER

Getting Your Organization Ready for Your Oracle Database to Microsoft Azure Migration

by Glenna Coultas



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Introduction

Do you wish your Oracle database could do more for your organization? A Microsoft Azure migration may be the solution you need. This move delivers many benefits, including lower total cost of ownership, flexible deployment options, excellent scalability, and a modernized database approach. In this white paper, we'll explore what the Oracle to Azure migration process looks like, the methods you can use, what you should consider during the planning process, and how to estimate your costs.

Why You Should Consider Microsoft Azure for an Oracle Database Migration

If you currently have an on-premises Oracle database, you may be running into several issues with your organization's changing technology needs. You have to pay for and maintain all of the infrastructure for your databases, source the specialists to keep it up and running, and suffer from a lack of scalability. You also need to keep your Oracle databases secure from hackers, and cover all of your Oracle licensing fees.

If you move your Oracle databases from on-premise to Microsoft Azure in the cloud, you're able to solve many of these challenges. In addition to the Azure-specific benefits available, you also gain access to all the advantages that a cloud-based database environment offers. Azure's flexibility offers four main methods for making the move to the cloud.

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Oracle Migration Methods on Microsoft Azure

Microsoft Azure offers several migration options, which accommodate a wide range of infrastructures and use cases.

Cross-cloud connectivity

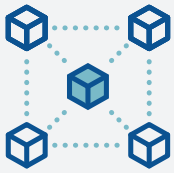
One of the easiest migration methods is available if you use Oracle Cloud Infrastructure (OCI). With this solution, you can directly connect your Oracle databases to Microsoft Azure. It's best suited for organizations already using both OCI and Azure.

Lift and shift

A lift and shift migration that minimizes disruptions to your business operations. You use Microsoft Azure Virtual Machines to set up your databases. For this approach, you use the Bring Your Own License deployment option. This method works best for organizations using Oracle on-premises that want to make a move to the cloud.

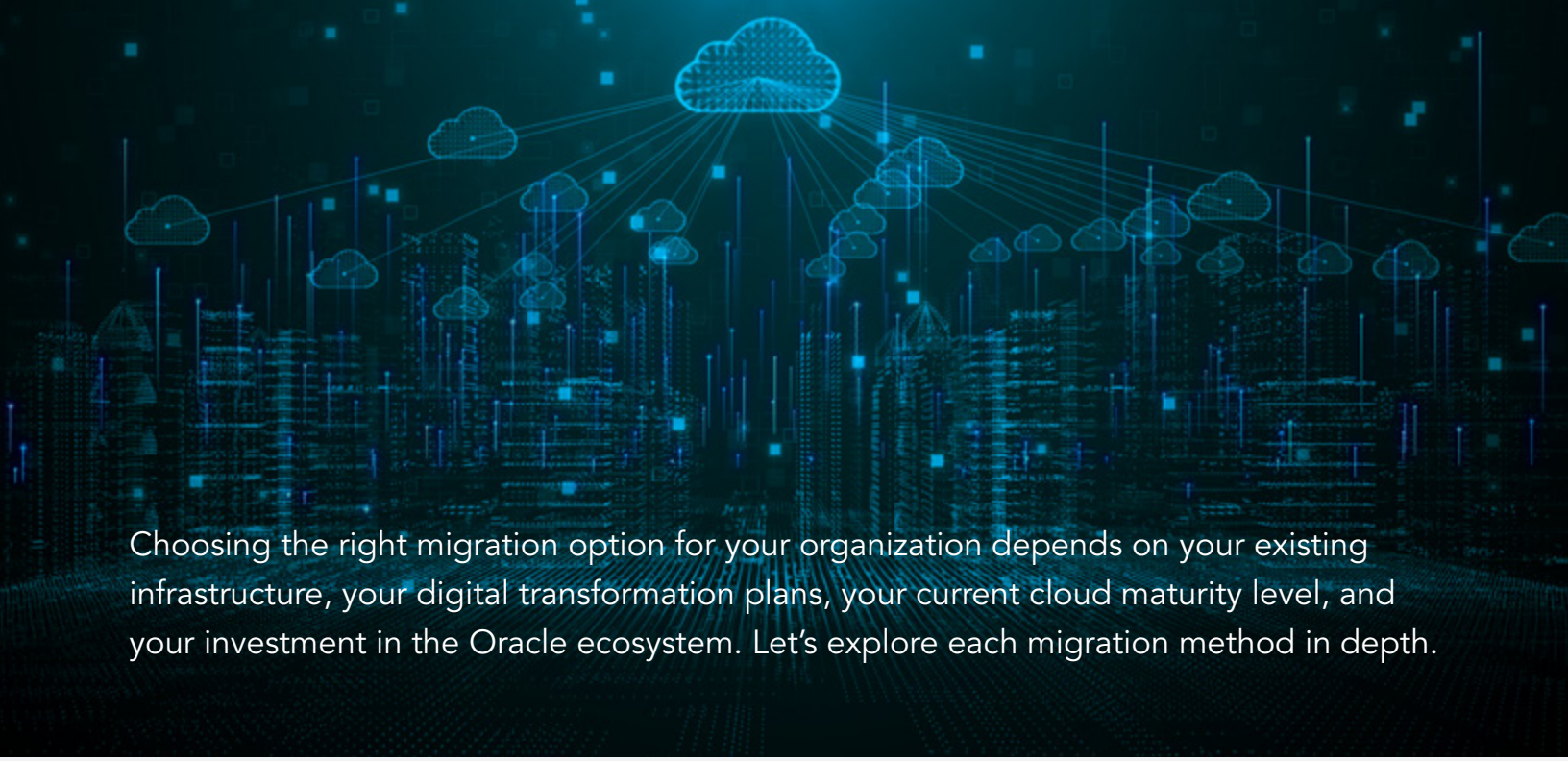
Database refactoring

Older Oracle code may not take advantage of a cloud-based environment. Refactoring your applications allows you to modernize these solutions, and you can set them up on Microsoft Azure Managed Service.



Rearchitect your Oracle database environment

Depending on the state of your code, you may want to use this migration as an opportunity to completely redesign your environment. In this scenario, Microsoft Azure SQL Database Managed Instance works best.



Choosing the right migration option for your organization depends on your existing infrastructure, your digital transformation plans, your current cloud maturity level, and your investment in the Oracle ecosystem. Let's explore each migration method in depth.

Cross Cloud Connectivity

This Oracle to Azure migration option is a multi-cloud deployment. You need to use Azure ExpressRoute and OCI FastConnect to establish a connection between both cloud services. With this method, you're not moving the data from your Oracle databases to Azure. Instead, the applications you host on the Azure cloud environment can connect with the databases available on OCI. This connection has high throughput and generally low latency for most use cases.

Lift and Shift

Unlike Oracle on Amazon RDS, Microsoft Azure does not have a managed Oracle environment. However, you're able to deploy Oracle through an Azure VM. Azure has lift and shift migration tools available that streamline this process. You don't need to transform your data during the move, and you can set up a VM environment that matches what you're currently using on-premises.

Oracle's partnership with Microsoft offers the following benefits:

- Customers can run supported Oracle software on Windows Server Hyper-V and Microsoft Azure.
- Developers can build on licensed and fully supported Java and Oracle Linux.
- You have Oracle software certification documents for Hyper-V and Azure.

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The tools available for the lift and shift migration process include:

- **RMAN:** You create Oracle database backups and transfer them to bare metal servers. From there, you restore the database to get it up and running. This method has limited downtime, as you can restore the database in advance before the cutover time.
- **Data Pump:** This tool allows you to export and import your data from Oracle databases.
- **Transportable tablespaces:** Oracle has a transportable tablespace tool that's capable of copying full tablespaces, as long as they're self-contained.
- **Oracle GoldenGate:** This data mesh solution allows you to transform and transfer data as needed. However, it does require additional licensing, which can drive your migration costs up.

Azure VMs have a subscription pricing model, and you're able to choose a customized hardware configuration that best supports your business goals. The available options range from 16 to 112 cores, with up to three terabytes of DRAM. If you need greater capacity in the future, Azure makes it simple to scale your VMs up and down.

Refactor

Do you have legacy Oracle code and want to move to Azure's managed database service? The Azure Database Migration Service assists you with refactoring your Oracle environment so that you can migrate to Azure Database for PostgreSQL.

The benefits of this Oracle to Azure migration approach include:

- Improving your business continuity.
- Boosting your disaster recovery strategies.
- Replicating data from an Azure Database for PostgreSQL server to a read-only server.
- Easily migrate data to PostgreSQL online.

Rearchitect

Are you comfortable working with Microsoft SQL Server? You can rearchitect your Oracle databases to use Azure SQL Managed Instance. Much like refactoring, this approach helps your business continuity and disaster recovery. It also provides strong database security and stability.

You use the SQL Server Migration Assistant for Oracle (SSMA) to convert Oracle objects and migrate data to your Azure instance.

Planning Your Cloud Migration from Oracle On-Premises to Microsoft Azure VM

Before you begin your Oracle migration, you need to have a complete plan. The high-level steps for an on-premises to Azure migration include:

- Provisioning a Resource Group
- Creating a Virtual Network
- Choosing the right VM environment for your needs, such as your CPU, RAM, instance storage, and operating system

Types of Database Instance Classes

What compute requirements do your Oracle databases have? You'll need this information to choose the proper database instance class type for your migration. The available options include Burstable B1, Compute optimized F, General purpose D, and Memory optimized E. The names of each class are self-explanatory, which makes this decision easier. If all else fails, you can start with General purpose D and move into a different class later on.

Options for Instance Storage

You have three choices for storage with Azure VM: magnetic, general-purpose SSD, and provisioned IOPS. We recommend provisioned IOPS for your cloud-based production database workflows.

Azure Virtual Network

The Azure Virtual Network is logically isolated from other virtual networks.

Resource Group

Your Azure Resource Group is a logical container where you deploy and manage your Azure resources.

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How Much Does an Oracle On-Premises to Microsoft Azure VM Migration Cost?

Pricing out your Oracle database migrations can be difficult, as many factors impact your bottom line costs. You'll want to look at the expenses associated with each of the following components to get a relatively accurate estimate:

- Instance types and size
- Storage
- Data transfer

If you want access to bursting, which allows you to boost your disk storage and IOPS as needed, you also need to account for Microsoft's burst enablement fee of $24.576 and transaction fees of $0.005 per 10,000 transaction units if you have P30 disks or greater.

If you're migrating Oracle databases with highly predictable workloads, you can save some money by moving from pay-as-you-go subscriptions to a one-year reserved price.

You'll want to pay particularly close attention to your data transfer and networking costs, as these expenses can quickly creep up on you. Before you start the migration process, analyze your current data transfer operations to better gauge these requirements.

Virtual network peering allows you to connect two of these networks together. You can send network traffic between the two of them through a private IP address. You incur a fee for both ingress and egress for both ends.
Your pricing also varies based on the location of these virtual networks. If both are in the same region, it costs less than those across different zones.

Virtual Network TAP is a tool that mirrors your VM traffic to a packet collector. You pay for this feature with an hourly rate for each IP endpoint you're using.

NAT Gateway helps you streamline your virtual network's outbound connectivity. You set this up by choosing frontend IP addresses, and then you select the subnet for the virtual network. After you configure NAT Gateway, the virtual network's routing table has a new Internet destination on the selected subnets. The tool manages your outbound SNAT flows.
The pricing for this solution is on a per-hour basis.

Final Thoughts

Migrating your Oracle database to Microsoft Azure delivers many benefits to your organization, so all the planning is well worth it. You'll enjoy excellent scalability and flexible deployment options, lower total cost of ownership, powerful security, and a range of modernized cloud capabilities. Depending on the migration options you chose, you may be able to reuse your existing Oracle licenses or eliminate the need to buy separate licenses altogether.

Get ready for the next step of your Oracle to Microsoft Azure migration. As an Oracle Platinum Partner and Microsoft Gold Partner, Datavail has more than 16 years of experience in database support and offers the talented experts you need to plan and execute your Oracle migration. Contact us today to learn more about how we can help.

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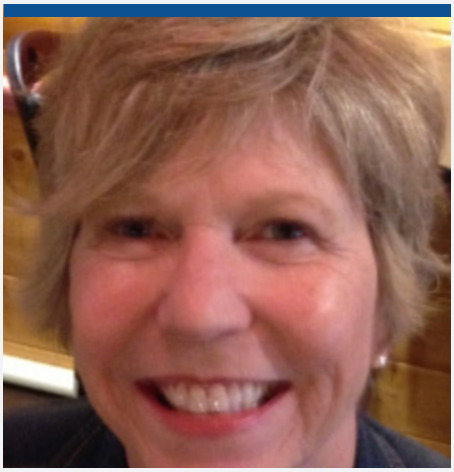
Biography



Glenna Coultas

Oracle DBA

Glenna is an Oracle DBA at Datavail with 20+ years of experience in the industry. Glenna has a depth of knowledge and skills in Oracle, OAC, GoldenGate, Exadata, MySQL, MySQL replication, shell scripting and data analysis. She is also an Oracle Certified Professional, bringing value to Datavail's customers with Oracle solutions that fits their business needs.

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