Oracle Cloud Infrastructure

Technical Case Study

ORACLE

MESTEC has embarked on its multicloud journey with Oracle and Microsoft

MESTEC
MANUFACTURING PERFORMANCE. REDEFINED.

"Oracle ATP Database is the foundation of our solution. We now have reduced our risk with an always-on, always-patched system."

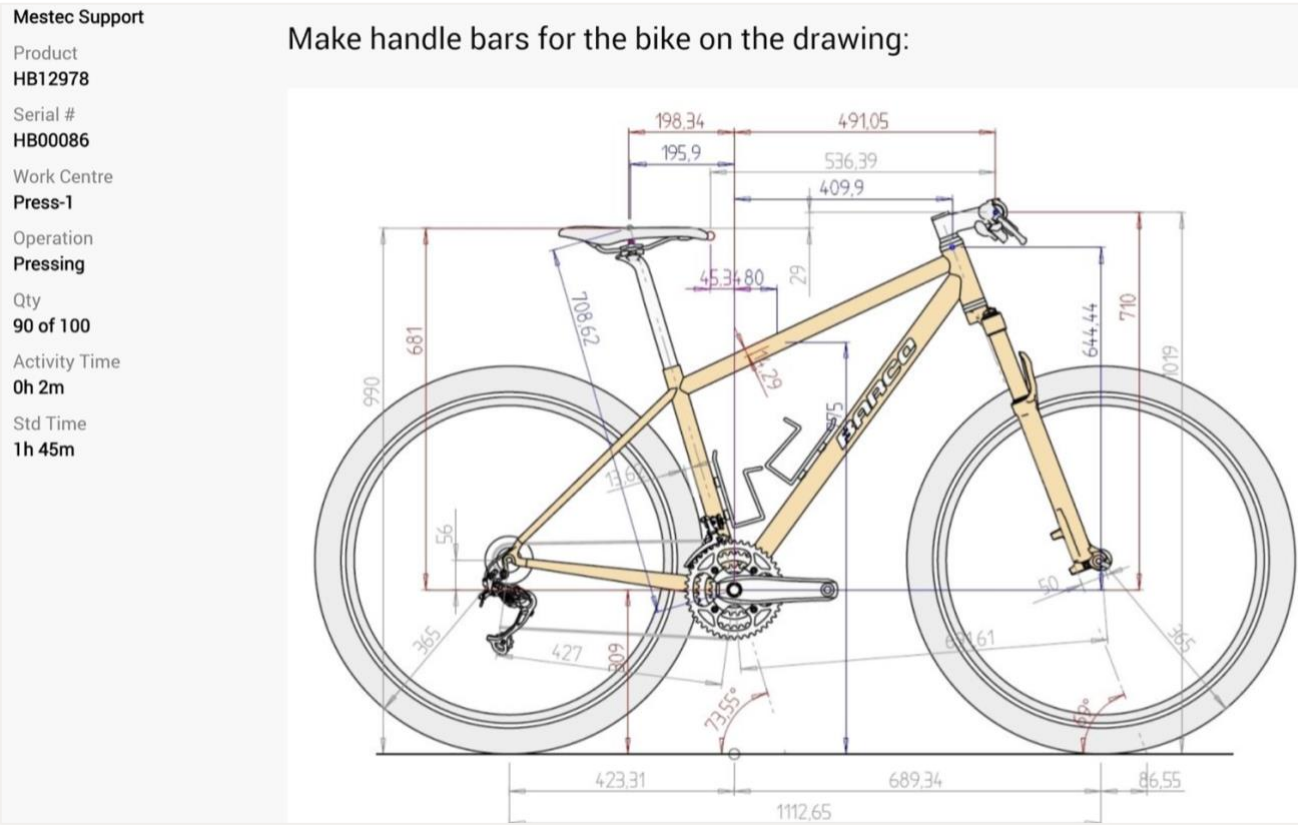
Mark Carleton, CEO MESTEC

Use Case: Oracle Multicloud Solution

Introduction: Summary and Context

MESTEC is the world's first cloud-based SaaS manufacturing solution provider. The company is based in Berkshire, UK. It delivers Manufacturing Execution System (MES) and Advanced Planning and Scheduling (APS) software to manufacturers looking to improve critical aspects of the manufacturing lifecycle from process definition to planning and execution to gathering real-time performance insight from the factory floor. The company's software connects customer's back-end ERP systems with the company's manufacturing and automation systems to monitor and optimize factory performance. The company focuses on bringing efficiencies to manufacturers by delivering solutions that focus on manufacturing processes by eliminating manual data collection and paper-based operations. Their customers can rapidly deploy a diverse set of manufacturing environments with no customization and typically no upfront costs.

To deliver the specialized cloud software solutions to its manufacturers, MESTEC relies on Oracle Autonomous Transaction Processing (ATP) database connected to an Azure front-end through the Oracle Cloud and Azure Interconnect. MESTEC also leveraged other interconnectivity methods that Oracle had to offer. These included direct connectivity via FastConnect, IPSec and VPN to encrypt data packets to and from Oracle Cloud Infrastructure (OCI), instead of relying on the public internet for connectivity.



MESTEC Software's Simple User Interface.

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Goals of Cloud Migration

As a SaaS-based cloud solution for manufacturing companies, MESTEC needed underlying cloud infrastructure and database resources that could scale instantly to address the manufacturing environment's 24/7, 365 days a week needs. The company felt challenged by the limiting capability and the high cost of implementing a high availability environment on legacy systems. MESTEC wanted to automate many of the database operations like patching, infrastructure configuration, and maintenance. The goal was to bring intelligence to database operations while minimizing manual effort and human error.

MESTEC also wanted to implement a multicloud strategy without compromising on performance. The real objective for MESTEC to go with a multicloud strategy was to optimize the overall IT expenditure and distribute applications between two cloud service providers (CSPs) to offer higher availability and resiliency to their manufacturing customers.

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Suite of Oracle Products Used

MESTEC attained its vision of a multicloud strategy by utilizing an array of OCI services. Many of which are listed below

Oracle Autonomous Transaction Processing (ATP)	A cloud database service that eliminates the complexity of operating and securing high-performance databases. The service automates provisioning, configuring, tuning, scaling, patching, encrypting, and repairing databases. Additionally, the service includes Oracle's advanced database options, such as real application clusters (RAC), multitenant, partitioning, in-memory, advanced security, and advanced compression.
Oracle Cloud Azure Interconnect	Oracle partnered with Microsoft to provide its customer the option to build their multicloud strategy by offering low latency, private connectivity between Oracle Cloud Infrastructure and Microsoft Azure. This partnership provides a highly optimized, secure, and unified cross-cloud experience to help customers achieve interoperability between two clouds seamlessly.
Oracle Data Guard	A comprehensive set of services that create, maintain, manage, and monitor one or more standby databases to enable production Oracle databases to survive disasters and data corruptions.
OCI Fastconnect	Network connectivity allows customers to connect directly to their Oracle Cloud Infrastructure virtual cloud network via dedicated, private, high-bandwidth connections.
OCI VPN Connect	A simple and secure way to connect corporate networks to OCI over your existing internet connection.
OCI Dynamic Routing Gateway (DRG)	A gateway that provides a path for traffic between your on-premises networks and VCNs and can also be used to route traffic between VCNs.
Oracle Object Storage	Enables customers to securely store both structured and unstructured data in its native format. With built-in redundancy, OCI Object Storage is ideal for building modern applications that require scale and flexibility. This service lets MESTEC store exports and moves data from one region to ensure resiliency and built-in contingency.

The OCI-Azure Multicloud Solution

MESTEC wanted to deploy a multicloud strategy, and it chose OCI and Azure Interconnect. Its deployment strategy comprised of the following steps:

- Port web applications to Web Apps Services from Microsoft
- Port on-premises database to Oracle Autonomous Transaction Processing (ATP)
- Leverage the interconnect based on Oracle and Microsoft's respective FastConnect and ExpressRoute services to create private connections between locations to offer speed and secure connection
- Implement Oracle Data Guard

Using Oracle Cloud and Azure Interconnect, MESTEC achieved interoperability to run critical applications across cloud environments. With Oracle ATP, MESTEC could auto-scale its database workloads without having to worry about the limitations that an on-premises environment offers. Oracle's highly performant, available, secure transaction processing database also ensured that systems were compliant because of the auto-patching capability of Oracle ATP. Migrating their on-premises database operations to ATP also helped MESTEC address the planned maintenance headache to patch their windows environment regularly. This manual activity otherwise meant maintenance for the staff at unsocial hours, the constant worry that the environment is less up to date than what the company expected, and most importantly, unhappy customers when systems were down.

Technical Implementation on OCI

In terms of cloud deployment, MESTEC took a very structured approach to their multicloud journey with a combination of Microsoft Azure and OCI. MESTEC's front-end web applications are delivered through Azure WebApps and hosted in two Azure regions. Both regions connect to OCI through the Azure Interconnect. MESTEC leveraged the Interconnect based on Oracle and Microsoft's respective FastConnect and ExpressRoute services to create private connections between the workloads distributed across the two clouds to offer speed and a secure connection. With this solution, MESTEC was able to achieve high availability and reliability through redundant 10-Gbps physical connections.

The implementation with OCI was radically different from MESTEC's legacy environment. MESTEC had multi-region deployment in Azure and achieved HA capability through Data Guard on Oracle ATP. For administrative access to the database in Oracle Cloud, MESTEC used Oracle Cloud Infrastructure FastConnect and VPN Connect. For private access to the workload in Microsoft Azure, they utilized ExpressRouter or Virtual Network gateway (VNG). For Oracle Cloud Infrastructure, the FastConnect virtual circuit terminates at a dynamic routing gateway (DRG) attached to a virtual cloud network (VCN). For Microsoft Azure, the ExpressRoute connection ends at a virtual network gateway (VNG) connected to a virtual network (VNet).

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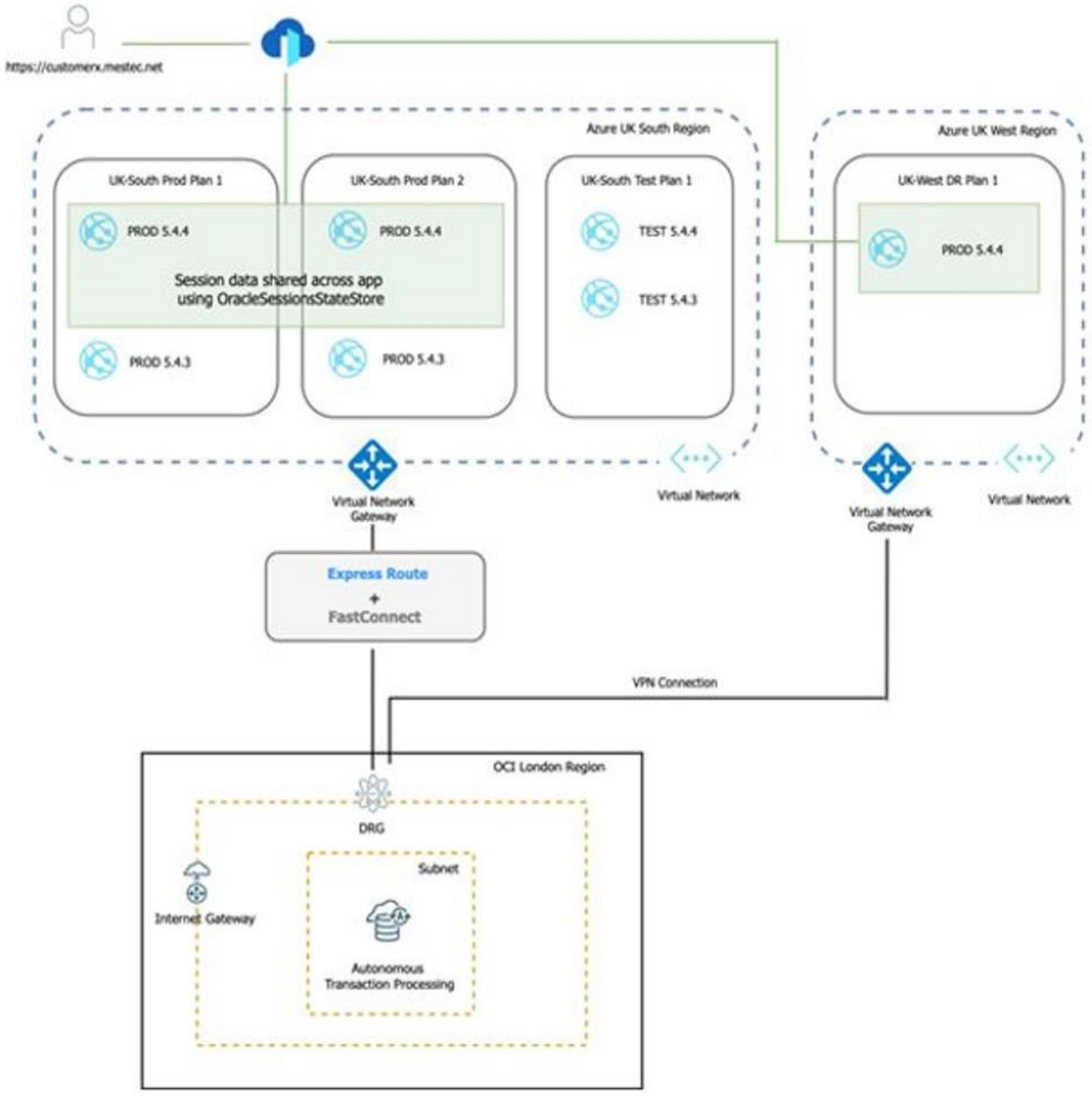

MESTEC Azure-OCI architecture

Results

MESTEC's close partnership with Oracle and Microsoft helped them achieve their bigger business goal of delivering their customer's innovative cloud manufacturing solutions that would reduce costs and increase overall manufacturing efficiency. Transitioning to the cloud meant that they could implement their solutions for a diverse set of manufacturing environments quickly and reliably with little or no customizations and no up-front costs.

MESTEC was able to migrate 100% of its infrastructure from its legacy provider to a combination of OCI and Azure. Its application needed minor changes to be fully compatible with ATP. Utilizing Oracle's high performant, scalable, and secure multicloud solution, MESTEC could commit to higher SLAs (in terms of availability and RPO/RTO) for its customers. They could also onboard more customers without thinking about resources.

Initially, MESTEC connected to OCI using the public internet. However, it was subsequently rearchitected to use OCI FastConnect and Azure Interconnect primarily. Using OCI FastConnect, MESTEC connected directly to OCI virtual cloud network via a dedicated, private, high-bandwidth connection. The Azure Interconnect allowed MESTEC to pool multiple sessions on Azure to optimize the number of app services they could deploy.

Additionally, with Oracle ATP, MESTEC also got access to an intelligent, highly available, and performant backend database system for its applications. Leveraging Oracle ATP specifically, there was no need to patch the database environment as ATP is always patched, practically requiring zero maintenance. Additionally, all data is encrypted at rest, which was not the case with their legacy environment. ATP also provided them a more secure and 100% compliant environment, reducing overall business risk while meeting regulatory compliance. The company is now able to run customer workloads much faster, reliably, and with zero downtime.

Combining the power of the Oracle Autonomous Transaction Processing (ATP) Database and the OCI FastConnect and Azure Interconnect, MESTEC cut its labor and infrastructure costs in half compared to its on-premises environment, and workloads run up to 600% faster with half as many CPUs.

With the cloud solutions in place, MESTEC could easily spin and scale new resources fast. Most importantly, with Oracle’s global support and data center presence, MESTEC also felt assured that it could deploy its solutions anytime, anywhere, offering its customers global coverage, and not limit its business to Europe alone.

Next Steps

MESTEC has embarked on its multicloud journey with Oracle and Microsoft. They are also considering several other OCI services to deliver solutions to their customers faster, easier, and more cost-effectively. MESTEC is considering many other Oracle Cloud Infrastructure services like Oracle Analytics Cloud (OAC) and Oracle Integration Cloud (OIC). The company is also investigating cross-region Oracle Data Guard, including the rollout in other regions. Their primary focus is to make their customers successful by offering them innovative cloud-based manufacturing solutions with no up-front costs.

Resources

Learn more about MESTEC and relevant Oracle solutions through these resources:

- MESTEC Customer spotlight video
- Learn about Interconnect Partnership Between Oracle Cloud Infrastructure and Microsoft Azure
- Read the blog: Living with multi-cloud: a foundation architecture framework
- Learn why ISVs run on Oracle Cloud
- Getting Started: GTM Oracle Cloud Resources & Programs for ISVs
- Learn more about the cloud deployment options from Oracle
- Oracle Cloud Lift Services and Oracle Consulting

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