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### ****Cloud Adoption Proposal for DYCI Manufacturing Ltd.****

**Overview:** DYCI Manufacturing Ltd. is seeking to modernize its on-premises infrastructure and migrate to a cloud-based system to overcome scalability issues, reduce costs, enhance disaster recovery, and improve collaboration. This proposal will evaluate three major cloud service providers—Azure, AWS, and DigitalOcean—to determine the most suitable choice for their specific needs and objectives.

### ****Cloud Service Canvass:****

**Vendor Chosen:** **Microsoft Azure**  
Given the size and nature of DYCI Manufacturing Ltd.’s business, Microsoft Azure was selected for its comprehensive infrastructure, strong security features, enterprise-level scalability, and integration with other Microsoft tools that are often common in manufacturing environments.

#### ****Type of Service Model:****

**Infrastructure as a Service (IaaS)**  
IaaS will allow DYCI Manufacturing to migrate its entire on-premises infrastructure to the cloud without the need to refactor applications. This ensures flexibility and ease of scaling, making it suitable for their manufacturing processes.

#### ****Virtual Machine Details:****

**VM Type:**

**Azure Standard D2 v4**  
This VM type offers balanced CPU, memory, and temporary storage, making it suitable for general applications, including ERP and database systems.

**Number and Type of VMs:**

10 General Purpose VMs (Standard D2 v4)  
These VMs will handle the company's critical workloads such as ERP systems, collaboration tools, and databases, ensuring high performance for day-to-day operations.

**CPU Specifications:**

**vCPUs:** 2 per VM  
Each VM will have 2 vCPUs to balance cost and performance for day-to-day use without over-provisioning.

#### ****Disk Configuration:****

**OS Disk:**

**Type:** SSD

**Size:** 100GB per VM  
Fast SSD storage will be used for the OS disk to improve the speed and responsiveness of business applications.

**Data Disk:**

**Type:** SSD

**Size:** 500GB per VM  
SSDs are chosen to speed up data processing for the company's ERP systems, production data, and internal applications.

#### ****Transfer Capacity:****

**Bandwidth:**

**1Gbps per VM**  
This is suitable for moderate workloads while ensuring smooth and efficient data transfer, essential for collaboration and file sharing between different departments.

#### ****Add-Ons:****

* **Azure Backup:**

Azure Backup will be implemented to ensure the company’s data is regularly backed up, helping reduce downtime in case of disasters.

* **Azure Site Recovery:**

Site Recovery will provide real-time replication and failover for critical applications and systems, ensuring minimal downtime and business continuity.

#### ****VM Location:****

* **Location:** **East US**  
  The East US data center was selected as it provides good connectivity, redundancy, and compliance with industry standards while ensuring a lower latency for the company’s primary operations.

#### ****VM Operating System:****

* **Operating System:** **Windows Server 2022 (for legacy ERP systems)** and **Ubuntu (for development/analytics)**

Windows Server 2022 will be used for ERP and email systems, which are typically Windows-based in manufacturing companies.

Ubuntu will be used for application development, cloud analytics, and big data workloads.

#### ****Monthly Cost Estimate:****

Using the **Azure Pricing Calculator**, the estimated monthly cost for this infrastructure is **$6,000**. This includes:

* VM costs for 10 VMs of the Standard D2 v4 type
* Backup and replication services
* Storage costs for SSD disks
* Bandwidth costs for 1Gbps transfer rate per VM

(Please note: This is an estimated cost and may vary based on actual usage and scaling over time.)

### ****Justification and Benefits of Cloud Migration:****

**Scalability:**  
With Azure’s flexible cloud infrastructure, DYCI Manufacturing will be able to scale its resources (e.g., VMs, storage) based on demand. For instance, during product launches or peak manufacturing seasons, additional resources can be provisioned instantly.

**Cost Optimization:**  
By moving to Azure, DYCI Manufacturing will switch from high capital expenses (e.g., purchasing hardware) to a pay-as-you-go model. This will eliminate the need for maintaining outdated on-premises hardware, reducing both capital and operational expenses.

**Disaster Recovery & Business Continuity:**  
Azure’s Site Recovery and Backup services provide real-time data replication and disaster recovery capabilities, ensuring minimal downtime and data loss. The company can quickly failover to another region if there is an issue with one data center.

**Improved Collaboration:**  
Migrating to the cloud will integrate departmental systems, improving collaboration across the organization. Tools like Microsoft 365, SharePoint, and Teams will work seamlessly with the underlying infrastructure.

**Enhanced Security & Compliance:**  
Azure’s built-in security features such as identity and access management, encryption, and automated security patching will ensure compliance with industry regulations such as GDPR and ISO standards. Azure also has robust disaster recovery capabilities to ensure high availability and prevent downtime.

### ****Modernization Components Suggested:****

**Big Data Analytics:**

**Why:** As DYCI Manufacturing deals with large amounts of production and customer data, adopting big data analytics will allow them to gain actionable insights, optimize production processes, and predict demand more accurately.

**Integration:** Azure provides services like Azure Synapse Analytics, which will allow DYCI Manufacturing to store and analyze large datasets efficiently.

**Manufacturing Impact:** Big data analytics can be used to optimize production schedules, forecast demand, and improve supply chain management.

**IoT (Internet of Things):**

**Why:** IoT is crucial in modern manufacturing for monitoring machinery and production lines in real-time. This technology can provide insights into machine performance, predictive maintenance, and process optimization.

**Integration:** Azure IoT Hub allows integration of IoT devices into the cloud environment. It can collect and process data from connected devices on the production floor, providing real-time monitoring and decision-making.

**Manufacturing Impact:** IoT can help DYCI Manufacturing monitor equipment status, detect issues early, reduce downtime, and increase overall efficiency on the production floor.

### ****Cloud Provider Components for Modernizations:****

**Big Data Analytics (Azure Synapse Analytics, Azure Data Lake):**  
Azure provides integrated big data services like **Azure Synapse Analytics** and **Azure Data Lake** for storing and analyzing massive datasets. These tools will allow DYCI Manufacturing to process data from their operations and gain real-time insights.

**IoT Integration (Azure IoT Hub):**  
**Azure IoT Hub** provides the platform to connect, monitor, and manage IoT devices. This can be used to connect sensors and devices on the production floor to the cloud, providing insights into machinery performance, product quality, and predictive maintenance.

### ****Conclusion:****

By migrating to Microsoft Azure, DYCI Manufacturing Ltd. will not only address their current challenges related to scalability, cost, and disaster recovery but will also enable them to innovate through big data analytics and IoT, bringing operational efficiencies and a competitive edge in the manufacturing industry.