Moving Legacy Mainframe Operations to Azure

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Introduction

Legacy Mainframe Operations is an orchestrated function that has been the core of most business operations going back almost 50 years. Mainframe Operations is at the center of the most complex computer processing efforts that operate under tight service levels which are critical to vital information systems production. Mainframe Operations function as the nerve center of the communication and coordination of operational status, output production, and critical issues as declared.

The developed businesses knowledge and complex integration of those efforts are housed in what may be known as the Technical Operations Center (TOC), Command Center, and Operations in some circles. By any name, Mainframe Operations serves as the heartbeat in command and control of the organization's computing power.

This discussion is not intended to be all-encompassing as much as it is intended to help foster the thought process around the immense opportunities that await in Azure Cloud for your organization. The pattern in which you choose to move workloads to Azure Cloud (rehost, refactor, re-write etc.) influences the applicable tool provided by ISV's or System Integrator. The document is written from an Azure native perspective on how to accomplish respective functionality.

Planning

Moving Mainframe Operations to Azure is a highly visible task and can have wide ranging impacts on business capabilities if not executed with sufficient contingencies accounted. Just as the move is complex, the decision tree on what path to follow in the transition can be wide ranging as well. A review of details around application migration strategies may be good for context. The movement of Mainframe Operations to Azure, whether in whole or in part may follow any one of the Project Planning Methodologies that have been adopted within an organization. We will focus on some key components within the wide-ranging Microsoft Azure Cloud that can be enabled to build a world class Cloud Enterprise Operations.

This discussion will be focused on the stakeholders within Mainframe Operations for reference.

Monitoring

In the introduction, we mentioned that Mainframe Operations has been an ongoing evolution for a number of decades. Moving Mainframe Operations to Azure has monitoring as one of the central pillars that form the foundation. Azure has developed a full suite of tools that have an impressive history that has grown with the desire to provide real time data and performance points.

Azure Monitor is a holistic portal for change analysis, metrics, application insights, VM insights, network, and many other functions that are available.

Azure Monitor provides insights into many aspects of performance, security, and health.

There is a very informative whitepaper that details the pathway to moving your Mainframe transaction processing (CICS & IMS) monitors to Azure.

Key aspects of Azure Monitor:

- Azure Monitor can collect performance and availability telemetry for all the layers in your stack from applications, infrastructure, the Azure platform, and any custom sources you integrate.

- Storage of the collected data in one of two data stores, Azure Monitor Metrics for numerical time-series values and Azure Monitor Logs for storing log data.

- Azure Monitor metrics are automatically collected and stored for Azure resources, but user configuration is required to send and store resource logs in Azure Monitor Logs.

- Azure Monitor includes Insights, which are out-of-the box monitoring and troubleshooting experiences for Azure resources. Available Insights include Azure Monitor VM insights, Azure Monitor application insights, and Azure Monitor container insights.

- You can use Azure Monitor to visualize data with workbooks and dashboards, as well as analyze data with custom charts and analytics. Azure Monitor lets you receive notification and take automated action based on performance and availability criteria.

Batch Jobs and Scheduling

The Azure Cloud provides several tools that map directly to the processes you create in the cloud to meet your business goals. Scheduling batch, events, and automated business-critical workflows are part of the integrated Azure platform. Whether you are moving your lights-out Mainframe Operations to Azure or you highly integrated Operations, there are multiple solutions available. Azure Cloud provides integrated solutions to build key scheduling solutions.

The desire to re-use and build upon your existing business operations is not uncommon and there is no need to recreate your wheel. Another whitepaper of note in support of that goal, is the Mainframe JCL to Scripting paper.

Azure Batch is used to run large-scale parallel and high-performance computing (HPC) batch jobs efficiently in Azure. Azure Batch creates and manages a pool of compute nodes (virtual machines), installs the applications you want to run, and schedules jobs to run on the nodes. There's no cluster or job scheduler software to install, manage, or scale. Instead, you use Batch APIs and tools, command-line scripts, or the Azure portal to configure, manage, and monitor your jobs. Azure Computer scheduling can be found here.

Azure Logic Apps is a cloud platform where you can create and run automated workflows with little to no code. By using the visual designer and selecting from prebuilt operations, you can quickly build a workflow that integrates and manages your apps, data, services, and systems. An informative demo of Logic Apps in motion.

Key aspects of Logic Apps:

- Visually create and edit workflows with easy-to-use tools
    - Alerts for late running jobs or processes
    - Perform actions based upon identified conditions
- Connect different systems across various environments
- Create and deploy to different environments

Azure Event Grid is a highly scalable, serverless event broker that you can use to integrate applications using events. Events are delivered by Event Grid to subscriber destinations such as applications, Azure services, or any endpoint to which Event Grid has network access. The source of those events can be other applications, SaaS services and Azure services. Integrating Logic Apps with Event Grid across Azure and on Kubernetes enables the processing of data anywhere, without writing code.

Key aspects of Event Grid:

- Dynamically scalable
- Uses push mechanism
- Messaging features
- Advanced messaging routing and filtering capabilities

The use cases of Event Grid are rich and varied.

Printing

The output created from massive compute power in Mainframe Operations is consumed online and in many cases hardcopy print. Printing requirements might be thousands of invoices monthly, millions of checks, files sent to plotters, or hundreds of test prints of new forms in development across the enterprise. Universal Print is an Azure service that manages the enterprise print infrastructure. Universal Print detailed information available reference.
The Azure Marketplace contains a Partner Ecosystem that contains supported needs for 3D printers, fingerprint readers, exam scanning etc. where you can download the software / drivers needed for Azure. Microsoft has a long history with printing functionality and enablement. Printing in Azure remains on the forefront of providing the resources to enable all printing needs globally.

Security

The foundation of Azure Cloud is security. There are a number of tools in use within Mainframe Operations that can be migrated to Active Directory which is the backbone of the security platform. Details on Active Directory can be found here. The powerful and compelling aspect of moving Mainframe Operations to Azure is that security is present at every layer. When you examine the desktop, the network, the application, and the infrastructure, Microsoft has a tool that provides health, status, and performance in action.

The movement of Mainframe Operations to Azure has security guidance which can be applied to each phase of your cloud migration journey.

The Azure Cloud is a global resource and whether your organization needs to comply with legal or regulatory standards, start here to learn about compliance in Azure.

Summary

The Azure Cloud is a proven landing place for your modernized workload. Your organization can then begin to take advantage of the massive scale and global reach of the cloud and adopt modern DevOps practices.

Moving Mainframe Operations to Azure is an essential task in your planning process. There are a number of organizational specific areas where you might focus, but commons areas of scheduling, printing, monitoring and security are highlighted here to aid in your planning.