Few Projects During My Time as Azure Engineer at Sony.

– **Norbert Obiekwe. - 04 September 2020**

Here are few sub projects I managed to put together.

In addition to these descriptions, I had attached corresponding attachments which gives more briefs about one or two projects. The contents were already written while on the job back in 2019. I am just sending them across for reference purposes and if they could be useful.

Projects:

1. Sony Azure Platform re-Organization Project;

The goal of this project is to implement proper Azure systems/resources interconnectivity for the Enterprise Azure platform. These include member's and device registration in Azure Active directory, Virtual machines registration to Azure active directory (and interconnections, for members to access assigned VM using their directory accounts), Applications registrations (the access and authentication control that governs the resources access are all tied to having best practice provisioned Azure Active directory implementation, commonly known as **Azure role base access control mechanism**).

Few scope of work I completed under the platform re-organization project includes:

- Lead the design, planning, and actual execution of the project.
- Member registrations to the enterprise domain (firstname.lastname@ad.sdpg.com)
- Implemented Azure Virtual machines join to Active directory- . This is very different to on premise active directory join).
- Provisioned the enterprise domain and the domain registration to Azure Active directory.
- Provisioned of member Groups for easy member's management and assignment of resources for easy of authorization. Talking about **Azure role based access control mechanism**
- I managed about 50 members on the Active directory. Member's registrations and management were implemented using PowerShell scripts and Azure portal.
- Implemented self-service password reset
- Implemented multifactor authentication
- Implemented Azure password policy which governs member's password selection

- Produced detailed documentation for password reset process, resource authorization and authentications processes using individual active directory accounts. Target audiences for the documentation are enterprise IS experts.
- Offered expert level feedback to Sony principal manager and Sony stakeholders about Azure active directory best practices. Such feedback includes factors to consider when shopping for suitable Azure Active directory tier and the benefits or otherwise of each tier.

Project 2.

2. Virtualization and Network System Project;

The virtualization project involves the design, planning, implementation and management of over 80 Virtual Machines (VMs) in different staging environment's which are used by Enterprise software developers/stakeholders, Application servers and Clusters.

The VMs are critical component of the enterprise platform that houses very critical development codes, Application hosting's, and act as clusters' for Docker images, and other server and client facing resources. Due to its critical nature, proper recovery and continuity steps were taken to ensure steady availability of resources in event of crash or unforeseen circumstances.

Few scopes of work I completed under the Virtualization project include:

- Planned, provisioned and managed Virtual machines using best practices and automation with ARMTemplates, PowerShell scripts and Azure CLI.
- Wrote PowerShell scripts to automatically monitor and clean Virtual machines hard drives when they are filled up with dangling Docker Images.
- To guard against unintended destruction of the data on the Virtual machines, I planned and Implemented **Azure Back Up** best practice for the VMs.
- Created a detailed documentation of back up steps and recovery process for the backed up systems. The documents are created using confluence and hosted in enterprise confluence page.
- Ensured redundancy of data on the VMs by choosing Azure replication zone-redundant storage (ZRS) during the VM provisioning. With ZRS copies of data are synchronously copied across Azure availability zone in the primary region. I choose ZRS because the Sony video application requires high availability. ZRS is the Microsoft recommended replication in the primary region and also replicating to a secondary region.

- Performed post deployment configurations, software installations and other management task on the deployed Virtual machine such as installing IIS, various host certificates installation's and management on the already provisioned VMs using the Custom script extension, Runbook and DSC in Azure.
- The VMs and most other deployed enterprise resources are hosted on **East US 2 Azure Data Centre**. I had in some cases, moved resources from one data Centre region to another. I had also on number of occasions replicated existing resources to more data Centre, giving room for robust redundancy.
- For all the embarked projects, there are many pieces that needed to come together, both from top (management decisions to actual project implementation). As such I constantly had to liaise with the principal manager and enterprise cloud team to understand the enterprise intent and current setup of the platform.
- I documented detailed system inter-dependencies such as Azure virtual machine accessibility which is dependent on Active directory accounts. Access, authentication and authorization to enterprise resources are tied to active directory implementation & Vis versa.

Deliverables;

I. Under this project other project, detailed and accurate documentations and how to guides were some of the deliverables for the projects. Such documents include a guide manual for the stakeholders to successfully RDP to the provisioned Azure joined Virtual machine.

*Note that the process of joining Azure virtual machines to an Azure active directory and then RDP (remote login) to the Azure joined VMs are whole lot different, more challenging than the normal on premise RDP process. As such my detailed, accurate documented guidelines tremendously helped the stakeholders to easily remote login to provisioned virtual machine. I attached the RDP how to guide which is originally documented on Enterprise confluence page

II. Another deliverable is detailed documentation for the backup and restoration processes of the enterprise Virtual machines and Network systems. Some content of this document include;

- Back up schedule times.
- The recovery services vault, where the Backups are stored.
- The backup policy – retention range, policy name, instant restores, retention back up points

- The storage replication in use for the backup.
- Backups and restore considerations such as disk, backup's preparations, and data transfer, etc.
- Storage account for restoration processes- the account location, storage type, storage redundancy
- The data center region for the data on the Virtual machines. As best practice, the VMs and the vault have to be in same data center region.
- The VMs restoration options – such as create a new VM, restore disk, and replace existing, cross region.
- Other backup and restoration options such as the On premise Virtual machine back up to Azure using the MARS agent

The virtual machines and enterprise resources are placed in different **virtual Network systems**. Part of this project and mostly all the other project involves managing the Network systems aspect such as,

- Provisioning and management of Azure Virtual Networks systems.
- Provisioning and management of Sub nets.
- Provisioning and management of Network security groups.
- Provisioning, Management and documentations of the interconnectivity between various deployed resources in different Virtual Networks. Implemented Site to Site and VPN peering mechanisms.
- Proper documentation's of enterprise Network systems for quality and enterprise training purposes.
- Performed troubleshooting of various Network systems connectivity.

There are other Application integrations and build out that took place. Such as new Crackle App integrations to load balancing, both back end and frond end Load balancing. Integration with ARM template and PowerShell script, Jenkins to Azure DevOps, etc.

Project 3:

Azure Security Analytics' and Cloud Compliance Adherence Project - RedLock System Integration to Azure platform.

Security is paramount to everything we do at Sony. To ensure proper compliance and modern native cloud security measures are maintained, Sony employed the services of RedLock, a cloud threat defense company whose technology add comprehensive asset discovery and automated threat detection and remediation to cloud vendors.

For proper analytics, detection and remediation, RedLock system would need to integrate into an Azure platform for proper injection of data on both ends. As such RedLock system has to be integrated into Sony's Azure platform in other to inject data and other metrics for security and compliance analysis, detection and remediation from Sony's platform to RedLock's platform.

Few RedLock features include capturing of detailed events from multiple public cloud platforms to identify and remediate threats. This enables RedLock to gather resource configurations, network traffic, and third party feeds to identify threats and vulnerabilities as well as identify compromised accounts and insider threats by analyzing user behavior. Remediation is then automated by integrating with existing incident response workflows.

My main efforts for this project were to analyze the given systems and actual system integration. As such, I had multiple meeting sessions with the Sony Principal Manager's, and RedLock stakeholders, to understand the infrastructure architectures. I lead the actual execution of the project.

This Project deliverables includes proper integration of RedLock systems to Sony's Azure Enterprise Cloud platform and producing detail documentation of integration steps and interconnecting systems in use.

Integrating the RedLock system to Sony's Azure platform is a very involved process. It's a detailed meticulous process that involves detailed step by steps directives. This project alone covers a lot of steps covered under the current Sow

Some implementation I completed for this project includes:

- Provisioned Network systems and management of same for a secure RedLock system sync with Sony Azure platform; this Involved deep understanding of the RedLock software platform, infrastructure architectures' and how it works within Azure architecture.
- Implemented RedLock system registration in Sony's Azure active directory.
- Facilitated various high ends meeting with RedLock stakeholders, Azure agents and Sony stakeholders.

- Provisioned other resources like storage account, Network security flow. Troubleshoot and resolved integration issues as they arise.
- Produced and maintained a point by point detailed documentation of the software integration steps, the interconnected resources such as storage account names in use, network security flows, etc.

I had attached copy of the RedLock project documentation as written during project implementation time in 2019

Project 4:

DevOps project – Continuous Integration and Deployment

DevOps is the heart of my responsibility at Sony.

Few main efforts under this project include:

- Built out end to end CICD pipelines in different stages to Azure endpoints such as service fabric, App service and to Azure resource group.
- Implemented branch creation and management.
- Built out Azure Infrastructure and resources such as service bus, virtual networks, virtual machines, event grids, Azure SQL data ware house, storage accounts, service fabrics, etc.
- Use of Automations such as ARMTemplate, PowerShell script, Runbook, Azure cli to build out and automate Azure resources; Managed daily DevOps operations and scheduling triggers using automations.
- Built out systems to Azure data centers and enterprise level management of our data center regions.
- Facilitated lots of meetings with Sony and Microsoft stakeholders to get through various projects that required their inputs.
- Produced detailed, accurate documentations which contain system logs, deployment steps and troubleshooting steps, daily-monthly infrastructure maintenance routine steps.