

**Architecting** *Reality*  
One **BIT** at a Time

## Cloud & Security Case Study

**NOVEMBER 2019**

## **Project Description: Azure Migration & Security Project for Ernst & Young**

Ernst & Young needed to catalog, get and transform Big Data and ultimately render in reports using PowerBI, Excel and SRSS. Additionally, they needed an adaptor between their On Premises and Cloud search and metadata services. Microsoft discontinued the Office 365 dedicated tenant offering. Due to data compliance and security concerns, the client had to architect an alternative content metadata and search service synchronization system. In addition, the client wanted to migrate SharePoint 2013 farms to SharePoint 2016, and host on Azure IaaS.

### **Solution: virtualdeveloper.com**

1. Architected, and implemented container security for Azure Kubernetes Services (AKS), and integrated with Azure Container Registry, and Azure virtual networks (CNI) plug-in,
2. Developed Azure Security Best Practices, and Patterns reference architecture.
3. Architected, and implemented Azure Security Center for vulnerability scanning, Qualys vulnerability assessments, and penetration testing.
4. Architected, and implemented advanced threat protection, and data security for SQL Server, and Azure Storage.
5. Architected, and secured PaaS deployments, and installed Azure Application Gateway (including web application firewall). Developed threat modeling as specified by Microsoft Security Development Life Cycle, and leveraged Microsoft Security Risk Detection to identify bugs in software.
6. Developed security guidelines based on Microsoft Cloud Unified Penetration Testing Rules of Engagement.
7. Developed configuration, and deployment management procedures using VSTS for Azure key management, and web application configuration artifacts.
8. Configured web application security recommendations from Azure Security Center, to include SSL/TLS certificates, session, and cache management, and https headers.
9. Created Docker images using GIT, Docker and alternatively visual studio. Published Docker images to Azure Container Registry. Stored container configuration files in VSTS.
10. Implemented Azure Kubernetes Services to simplify deployment, management and operations and provide complete container selection and orchestration.
11. Architected data transformations using Azure Data Catalog for data discovery, Data Factory to get data and Data Lakes to process and transform the data.
12. Created analytical reports from data using PowerBI, Excel and SSRS.
13. Configured data encryption using POSIX ACLs, network access security, TLS and CLE encryption and integrated keys and certificates with Azure Key Vault.

14. Configured Polybase to load data from Azure Blob storage to SQL data warehouse using T-SQL and SQLOOP.
15. Configured and developed Azure functions for event driven serverless computing and orchestration.
16. Designed and implemented Site to Site VPN connectivity via ExpressRoute
17. Architected Control-M servers for processing SharePoint 2016 search and metadata service farm updates. The SharePoint farms were provisioned on Azure virtual machines in an availability set.
18. Architected an Azure Service Bus to manage encrypted topic/subscription messaging. A shared access signature (SAS) is implemented as the primary security policy guarding access to the service bus based on authorization rules.
19. Implemented Azure Key Vault and Blob Storage accounts - whitelisted back ends to SQL storage for end to end SSL encryption after SSL termination at the Application Gateway. Always on Availability clusters. Load balancing was provisioned using an application gateway.