

# Complex Migration at Scale based on **Cloud Adoption Framework** for Critical IT Landscape of Major Government Entity

## A benchmark success story in Azure Migration.

The Government of Qatar had chosen MS Azure to move all its entities on cloud. The client, a nodal government entity was the first to move to Azure. Microsoft wanted a highly reliable implementation partner, with proven expertise and experience in migrating critical landscapes at scale. Cloud4C, known in the region as the most trusted Azure Expert MSP, emerged as the chosen partner to execute the complex migration, aligned to government requirements. A benchmark solution leveraging our proprietary CAF was designed, combining 'lift and shift', re-architecture and rebuilding approach to deliver a completely secure, safe and resilient IT landscape.

### About the Client

**300 +**  
Servers

**1000+**  
Employees

Taking forward Qatar National Vision 2030, the client acts as the key nodal entity to develop the communications and information technology sector, through implementing and overseeing e-government programs; with the objective of building an active, dynamic and secure sector.

### The Challenge

#### Migrating Heterogeneous IT Landscape on Azure

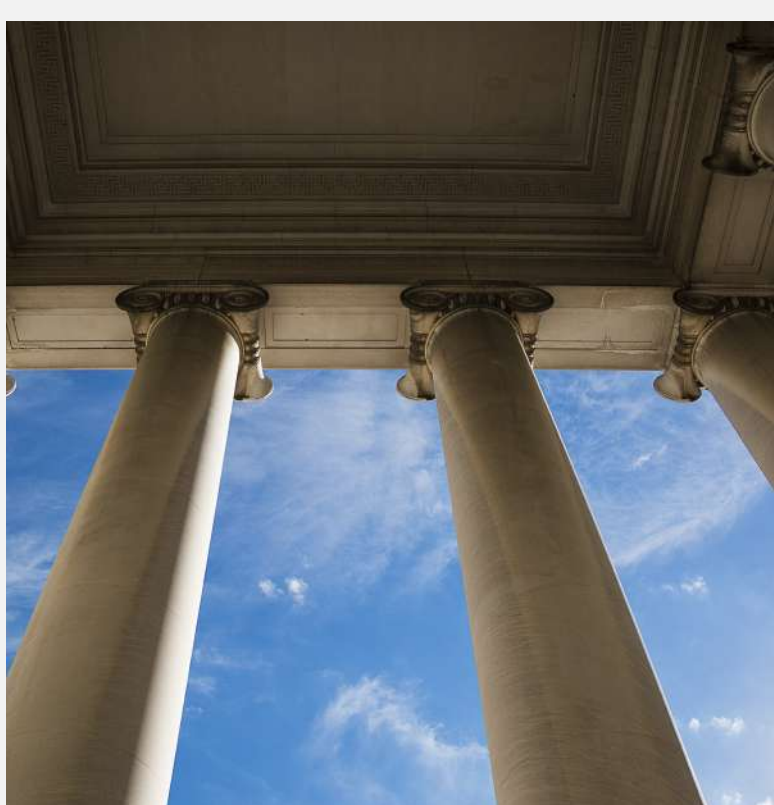
There were over 300 VMs, multiple server platforms, diverse databases and complex networks, to be migrated on Azure. Massive customization was required to replicate the existing landscape functionalities on cloud. The third-party systems and applications needed seamless integration, calling for nuanced expertise.

#### Move to Azure Security Architecture

End to end security was of paramount importance for this project. The client had specific requirements for both infrastructure and network security. This mandated specifically designed security architecture leveraging Azure security tools and applications.

#### Simultaneous Modernization of Legacy Infrastructure

The legacy infrastructure in client environment, including 20+ websites running on legacy servers, required modernization. This had to be done in parallel while migrating to cloud, to ensure access to most advanced features and updates.



#### DR for Business Continuity

The client being a government entity supporting mission-critical functions, their IT landscape had to be adequately backed up with a strong service and data resilience architecture. A robust DR solution with geo-redundancy and stringent RTO/RPO was necessary to ensure failsafe business continuity.

### The Solution

Cloud4C migrated the complex IT landscape, hosting both production and DR sites on Azure. We adopted a mixed approach, combining both native and Azure technologies. A thorough feasibility assessment was performed by our experts to understand the requirements and align the solution architecture to stringent government norms. The successful Azure Migration set a new standard by delivering a highly optimized landscape.

#### Modernizing Complex On-Premise Architecture on Azure

**CAF Based Assessment** – The client had very specific requirements to comply with stringent government regulations. Our team performed a detailed analysis of the client's IT landscape with CAF (Cloud Adoption Framework) based assessment to map dependencies and build a migration blueprint, so as to define the migration strategy, methodology and major milestones.

**Customization at Scale** – The client had over 20 databases, 20 websites, multiple native and third-party applications, running on MS SQL, My SQL and Oracle EBS. In addition, almost 300 VMs were to be migrated. We customized the required components to replicate the on-premise architecture on Azure.

**Unique Solution Architecture** – Cloud4C delivered a unique hub and spoke architecture, leveraging our proprietary Migration Factory framework. We followed a combination strategy to create the new landing zone that included a 'lift and shift' approach for existing systems, re-architecture for modernizing infrastructure and, rebuilding of the legacy systems on cloud.

**Multi-skill, Multi-technologies Expertise** – We created a specialized team of certified experts, including a focal point lead from different CoEs. The team had seasoned Azure architects and engineers along with experts in Security, Backup, Networks, MS SQL, MySQL, Windows, Linux, DevOps and Oracle.

#### Delivering Custom Made Security Architecture

**Seamless Integration** – The client insisted on using, multiple third-party network devices and virtual appliances from existing OEMs. Our team delivered custom design, blending native and Azure technologies to integrate multi-party applications and third-party virtual appliances on cloud for optimal security.

**Balancing cost and Security** – We deployed multiple firewalls and MS native security tools to filter and monitor all the traffic with end to end encryption, while ensuring optimized cost.

**SIEM Integration** – We integrated the security information management and security event correlation from multiple devices on one seamless SIEM platform. The aggregated logs from users, machines, and servers provided real-time event monitoring to detect security threats and mitigate risks in real-time. Sentinel was deployed on a centralized workspace and integrated with all Azure VMs, NVA and other virtual appliances. A centralized console monitored all alerts and events for proactive issue tracking and resolution.

**Multiple Access Point Management** – We delivered a very evolved and dynamic Role Based Access Control (RBAC) framework, balancing security concerns and ease of access for various entities, at multiple nodal points.

**Network and Infrastructure Monitoring** – Our solution covered both network and infrastructure security requirements for a fully secure landscape. We set up Azure monitor, along with native monitoring tools to analyze logs and spot abnormal behavior. Any unusual activity was identified, tracked and reported through rule-based alerts.

**Compliance with stringent security requirements** – The security architecture on cloud was designed with adherence to Azure Security Center (ASC) policies and guidelines. The client ran a closed environment and our team worked on-site, under strict security guidelines, adhering to compliances and government regulations.

#### Automation and Modernization for Optimal Productivity

**Modernization of systems** – The on-premise MS SQL databases were re-architected as PaaS on MS Azure. Azure Netapp Files, Azure File Sync, and Azure Storage were configured for hundreds of terabytes of data archives, to ease maintenance and searchability.

**Reduction of repetitive man-hours with automation** – Our team delivered automation with significant customization on Azure technologies. For instance, patching functionality on Azure was customized with update management to push OS level patches automatically. Further, switching on/off of test machines was automated for cost-effectiveness.

**Serverless Computing and Continuous Integration Continuous Deployment (CICD)** – Our team brought down the cycle time for various processes by enabling the client to go live with applications with serverless computing and CICD.

#### Geo-redundant DR Solution

The DR site was hosted on a different Azure region to ensure geo-redundancy. Data resilience was assured with stringent RPO/RTD and best in class replication methodologies, including ASR (Azure Site Recovery), Oracle Active Data Guard, MS SQL mirror and log shipping along with several native replication methods.


#### Reliable Backup Solution

We delivered enterprise-grade backup with data encryption, for foolproof security. Azure backup service was deployed for all production workloads, to prevent data loss in case of an outage. Our team did not create a backup in the staging environment to optimize costs and reduced redundancy.

#### VDI Implementation

The COVID 19 pandemic mandated large remote working operations. The client reached out to our team for a quick turnaround on Virtual Desktop Implementation. We enabled over 100 users to access various applications through a virtual desktop, in just 2-3 days to ensure uninterrupted business operation, even during the pandemic.

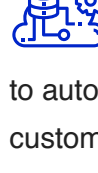
#### Key Accelerators

 **Azure Expert MSP**

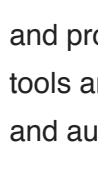
Equipped with 600+ Azure certified resources, Cloud4C is an Azure Expert MSP offering enterprise grade Managed Services to augment complex technology environments. Cloud4C's optimized delivery model, supported by robust processes such as ITIL, ITSM, CoBIT and proprietary service delivery processes provide a single SLA up to database layer.

 **Multi-Skill Multi-Technology Expertise**

spanning 23 CoEs across Cybersecurity, SAP, Azure, DR and Backup and next gen tech experience of 2000+ professionals support heterogeneous IT environments with 24X7 monitoring.

 **Combination of Azure and Native Technologies**


to automate key processes and deliver customized solutions for specific security requirements.

 **CICD and Serverless Computing**


to accelerate the pace of application deployment and product release, leveraging native cloud tools and DevOps services creating a cohesive and automated solution for faster GTM.

### Results


#### Compliance

 A benchmark migration with highly customized IT landscape on Azure, compliant to government norms


#### Security

 Unmatched security with geo-redundancy for business continuity


#### 40%

 Move to opex model with no capital investments brought down TCO by 40%

#### GTM

 Automation delivered faster GTM for end user applications

#### Better Ops

 Reduced dependency on internal IT team and streamlined operations

#### Forecast

 Better forecast on spending for informed forward planning

#### Constant Ops

 Uninterrupted business as usual during pandemic with swift VDI deployment for 100+ users