Jeys Consulting Group

Software Project

C188 Performance Assessment

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WESTERN GOVERNORS UNIVERSITY

CONTENTS

A. Introduction 3
A.1. Purpose Statement 3
A.2. Overview of the Problem 3
A.3. Goals and Objectives 3
A.4. Prerequisites 3
A.5. Scope 3
A.6. Environment 4
B. Requirements 4
B.1. Business Requirements 4
B.2. User Requirements 5
B.3. Functional Requirements 5
C. Software Development Methodology 5
C.1. Advantages of the Waterfall method 5
C.2. Disadvantages of the Waterfall method 6
C.3. Advantages of the Scrum Method 6
C.4. Disadvantages of the Scrum method 6
C.5. Best Suited 6
D. Design 7
D.1. Architecture Diagram 7
D.2. Database schema 8
E. Testing 9
E.1. AVGC CRM Cloud Solution tests 9
E.1.1. Compatibility Testing 9
E.1.2. Integration testing 10
E.1.3. Performance testing 10

A. INTRODUCTION

A customer relationship management (CRM) system is an integral part of all successful organizations in this digital society and Information Age. The CRM system is a tool that businesses use to gain value and insights from interactions with their customers. One such example is that the CRM system can be utilized by sales and marketing personnel to track notes from their customer interactions to help guide a customer's journey in a positive manner which will lead to increased business growth and profitability for AVGC and its stakeholders.

A.1. PURPOSE STATEMENT

The purpose of this document is to propose a new CRM solution for AVGC by migrating the current CRM system to the cloud with AWS.

A.2. OVERVIEW OF THE PROBLEM

The primary issue with the existing CRM system is that it is not future-proof and scalable to meet the growing business needs of AVGC. With the 42% increase in sales over the past two years, AVGC must act at this point to maximize the potential of the current business environment.

A.3. GOALS AND OBJECTIVES

The goal of the proposed solution, presented by Jeys Consulting Group, is to provide a modern and scalable CRM system that will adapt and grow to meet the demands of AVGC and its users. This solution takes advantage of numerous benefits by migrating to the Cloud. Due to the scalability of the proposed CRM system within AWS, the system will be reliable and efficient, leading to cost savings while also taking advantage of the enhanced security provided by the Cloud infrastructure.

A.4. PREREQUISITES

Prerequisites	Description	Due Date
Evaluation of current CRM system infrastructure	Jeys Consulting Group will need a thorough analysis and evaluation of the current CRM system and its supporting IT infrastructure.	6 months before the migration start date
CRM data collection and consolidation	AVGC will need to collect and consolidate all CRM data to create a 'Master' copy that will be migrated.	3 months before the migration start date
Creation of AWS Corporate account	AVGC will need to set up an AWS Corporate account to utilize their cloud services and to set up billing.	2 months before the migration start date
Installation of migration tools	AWS Migration tools will need to be installed in the on-premises environment to facilitate migration to AWS.	1 month before the migration start date

A.5. SCOPE

The following items will be covered by the scope of this project.

- Hosting recommendation to AVGC for a cloud and subscription-based model
- Utilize tools to provide user access to accurately control data access, workflow, and admin/editorial control
- System that is scalable and meets the performance standards of AVGC's 2,000 users and to support the growing user base
- Compatibility for multiple OS and browser support to support diverse user demand
- Provide dashboards and reports at the granular and high-level detail for different executive and managerial levels

The following item is NOT covered within the scope of this project.

- Quote generation and associated activities involved with quoting

A.6. ENVIRONMENT

The proposed CRM solution will be deployed within the AWS Cloud utilizing EC2 instances, DynamoDB, S3 Glacier, and the serverless-services DirectConnect, AWS Glue, & CloudWatch. On-premises workstations located at AVGC will be deployed with the minimal OS & browser versions listed below.

- latest Chrome and Chromium
- latest Firefox
- Internet Explorer 9 and above
- Safari 6.0
- mobile & tablet
- iOS7 Safari
- iOS7 Third-Party Browsers (Chrome and Firefox)
- Android 4.0 Chrome
- Backend server with latest SUSE Linux Enterprise Server(SLES)

B. REQUIREMENTS

The 5 requirements that I will be addressing are as follows.

1. Hosting recommendation to AVGC for a cloud and subscription-based model
2. Utilize tools to provide user access to accurately control data access, workflow, and admin/editorial control
3. System that is scalable and meets the performance standards of AVGC's 2,000 users and to support the growing user base
4. Compatibility for multiple OS and browser support to support diverse user demand
5. Provide dashboards and reports at the granular and high-level detail for different executive and managerial levels

B.1. BUSINESS REQUIREMENTS

The first business requirement addressed is to provide a recommendation for a cloud and subscription-based model. The utilization of AWS has many subscription offerings that AVGC can take advantage of. Two subscription offerings are Reserved 1-year & 3-year. Reserving for these terms will reduce costs based on the dedicated partnership and subscription with AWS. In addition, both the 1-year & 3-year subscriptions allow AVGC to decide to pay entirely up front, a partial amount upfront, or with nothing upfront.

B.2. USER REQUIREMENTS

The first user requirement addressed is to provide AVGC the ability to control user access based on the 'least-privilege access' concept. The use of the AWS IAM (Identity and Access Management) service provides granular access and control for users and AWS services to resources within the company. IAM Users can be created to manage an individual's access directly and be added to IAM Groups to easily manage access for a larger subset of users. IAM Roles also control access for making API requests to other AWS services. With the use of IAM Users & Roles, access will be tightly controlled at all user levels.

The second user requirement is the ability to support AVGC's user base with a scalable solution that meets performance demands. AWS has an Auto-Scaling feature which provides the functionality to scale a system up or down based on user needs and demands dynamically on pre-defined metrics. A typical workload may require the use of 2 EC2 instances to support 500 users but when concurrency peaks, the Auto-Scaling Group (ASG) can scale out to 4 EC2 instances. When system utilization drops to normal levels, the ASG will scale back to an appropriate number of EC2 instances defined during the creation of the ASG.

B.3. FUNCTIONAL REQUIREMENTS

The first functional requirement is to support the multiple OS and browser versions. AWS relies heavily on various types of APIs to provide different software components to communicate with each other in a structured way to request and respond to each other. This will allow users to interact with new and pre-existing applications, prevent rewriting applications due to changes that can be made to APIs, and provide easy access for all users no matter the manner of access.

The second functional requirement is to provide summary reports and dashboards for various members of AVGC at both a detailed and high-level. AWS CloudWatch monitors AWS resources and applications to automatically log detailed and custom metrics. The metrics can track real-time and historical data to provide an operational view for gaining business insight and value while optimizing AWS resource utilization to save on costs.

C. SOFTWARE DEVELOPMENT METHODOLOGY

In the following section, I will be comparing the Waterfall and Scrum methods.

C.1. ADVANTAGES OF THE WATERFALL METHOD

Here are some advantages of the Waterfall method.

- The project scope and requirements are defined early and won't deviate much during development

- Prior experience with similar projects can be utilized for developers to emulate successful outcomes and avoid known pitfalls
- Stages of the waterfall method can have additional steps added or steps broken down into a more detailed level

C.2. DISADVANTAGES OF THE WATERFALL METHOD

Here are the disadvantages of the Waterfall method.

- The project needs plenty of time to allow for each step to complete as they do not overlap during development
- The project will be tougher to adapt to new requirements that may be discovered which were unforeseen early in the planning phase
- Project development is hard to get right as any mistake can cause later steps to be incorrect or wrong

C.3. ADVANTAGES OF THE SCRUM METHOD

Here are the advantages of the Scrum method.

- Roles for project members are clearly defined, a standard set of documentation are used, along with regularly cadenced meetings are set up to help keep team members informed and to identify/resolve issues in a quick manner
- Fixing issues and adapting to changes is much easier due to the incremental nature of how this method carries out project implementations
- The ability to come to market with a finished product more quickly than the lengthy waterfall method

C.4. DISADVANTAGES OF THE SCRUM METHOD

Here are the disadvantages of the Scrum method.

- The ability to adapt and change can lead to new requests (scope creep) entering the project
- Team members must be well trained and skilled in the Scrum methodology
- Due to the use of multiple “Sprints”, there’s no clear-cut deadline or finished product for the project

C.5. BEST SUITED

For the building of AVGC’s CRM system, we recommend the use of the Scrum methodology. With this method, Jeys Consulting Group will be able to quickly create a finished product for AVGC users while additional features can be built and added to the new CRM system. To begin, the first Sprint would entail a successful ‘seed’ migration to the new CRM system. The next Sprint will allow for business and user testing on the new platform before going into production. Throughout this process, we will be able to use additional Sprints test out or add more functionality to the CRM system. Once AVGC is satisfied with the product, a final migration, and cutover to the new CRM system will occur.

After system stability is achieved post-cutover, more functionality and features can be added per AVGC's request once those needs are discovered during normal business use cases.

D. DESIGN

In this section, I will provide an AWS architecture and DBS schema.

D.1. ARCHITECTURE DIAGRAM

The following architecture diagram will satisfy many project requirements and provide a modernized solution for AVGC that is flexible enough to scale as the number of business users grows over time. One such example is the use of multiple Availability Zones which will help with system uptime in case of issues with a specific data center.

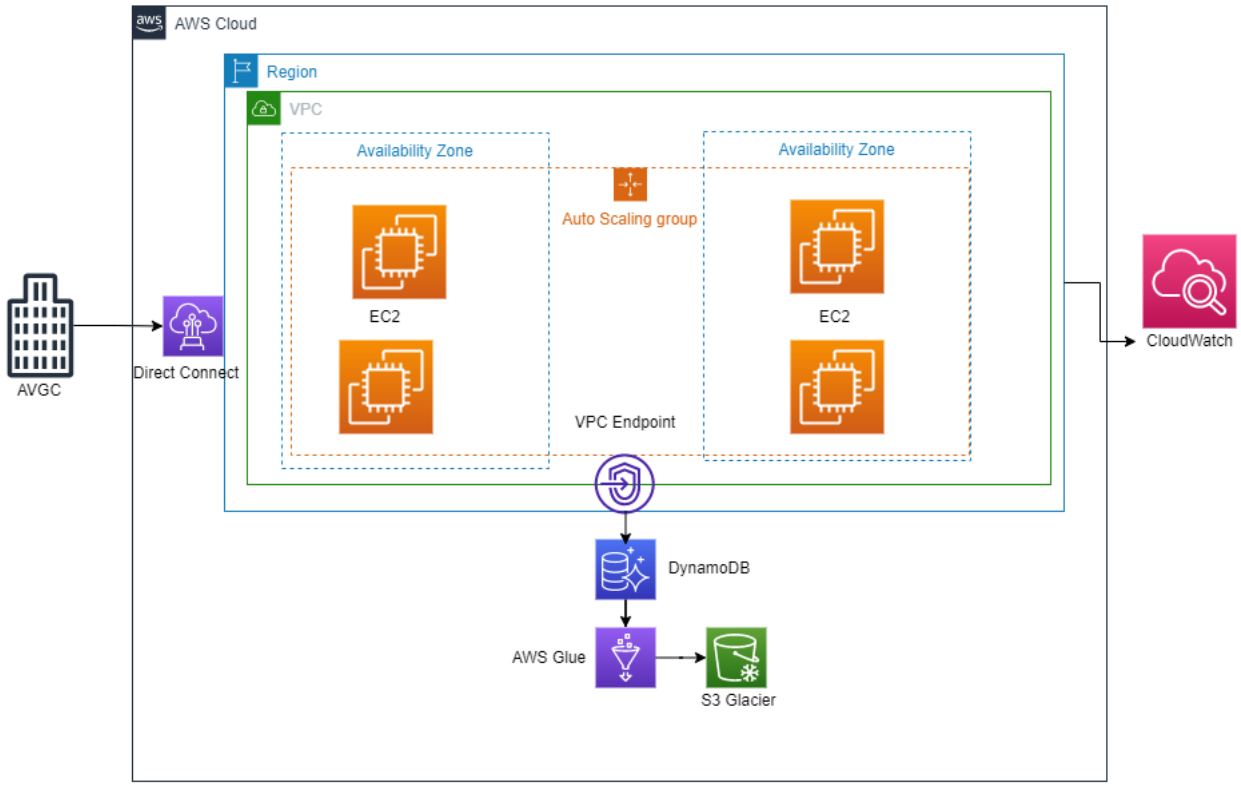

Figure 1: Proposed AWS Architecture for AVGC

D.2. DATABASE SCHEMA

The following database schema is being proposed to maintain contact information for non-gamer customers (parents, grandparents, etc.), standard gamers, and organizations or corporations. In addition to this, the database schema will track online orders, products available to be sold, and the distributors AVGC works with to ensure proper inventory levels are maintained.

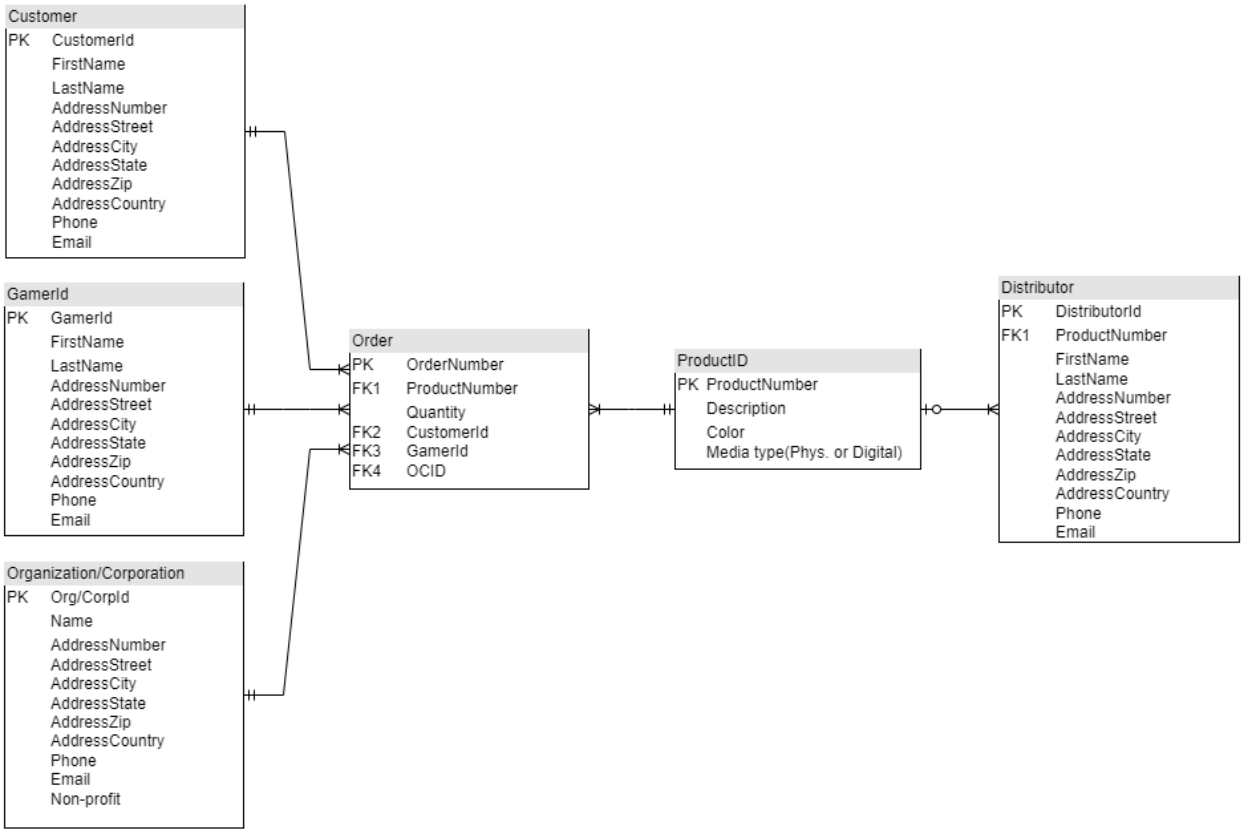

Figure 2: Proposed Database Schema

E. TESTING

This section will provide the testing results conducted by Jeys Consulting Group.

E.1. AVGC CRM CLOUD SOLUTION TESTS

To prove the capability of the proposed CRM solution, we will be conducting compatibility, integration, and performance tests. The compatibility test will demonstrate that AVGC users will be able to use the proposed CRM solution with a wide variety of OS versions and browsers. The integration test will confirm that the individual components of the CRM solution are compatible and configured properly. Finally, the performance test will ensure that the system can handle the requests from the growing user base while maintaining or exceeding that of the previous CRM solution.

E.1.1. COMPATIBILITY TESTING

For this test, we will ensure that the following OS & browser versions are supported in the new AWS Cloud architecture. • latest Chrome and Chromium • latest Firefox • Internet Explorer 9 and above • Safari 6.0 • mobile & tablet • iOS7 Safari • iOS7 Third-Party Browsers (Chrome and Firefox) • Android 4.0 Chrome
Preconditions: 1) Several ‘test’ VMs will be set up with various workstations with the required OS & browser versions. 2) The new AWS Cloud architecture will need to be stood up with network access to the test VMs.
Steps: 1) Logon to the new CRM system with the ‘test’ VMs with appropriate OS & browser versions installed 2) Verify connectivity and functionality of the new AWS Cloud infrastructure with ‘test’ VMs OS & browser version 3) Attempt to add a new contact utilizing each ‘test’ VM environment 4) Document and present results from compatibility tests
Expected results: Each OS & browser version tested will be able to connect to the new AWS Cloud environment and create a bogus contact for testing purposes.
Pass

E.1.2. INTEGRATION TESTING -

We will be testing that each part of the new CRM system can communicate and function to produce the desired results.
Preconditions: 1) The new CRM system will need to be stood up in the AWS Cloud environment 2) User with login credentials and data for testing as the data is passed from one AWS service to another
Steps: The steps tester must execute to test the feature. 1) Verify connectivity and data transfer from AVGC headquarters to the CRM system residing on the EC2 instances 2) Check that the CRM system can connect outside of the VPC to the DynamoDB database 3) Run test backups to ensure the DynamoDB is backed up to S3 Glacier 4) Perform various tasks and ensure that the activity is tracked via CloudWatch
Expected results: End-to-end testing of every component starting with connectivity between AVGC & CRM system to monitoring/auditing of the entire solution.
Pass

E.1.3. PERFORMANCE TESTING

For this test, we will conduct performance testing on the existing CRM system for a benchmark to begin testing the new CRM system within AWS. Then additional performance testing will be conducted on the new CRM system and compared with that of the existing CRM system.
Preconditions: Conditions that must be present before the test case can successfully run 1) Data collection tool for stats collection and reporting of system performance 2) Documented set of benchmark tests to be conducted
Steps: The steps tester must execute to test the feature. 1) Conduct performance tests on existing CRM system 2) Generate charts and reports to document the performance of the existing CRM system 3) Conduct performance tests on new CRM system 4) Generate charts and reports to document the performance of the new CRM system

5) Compare results from both tests and generate a final report documenting those findings.
Expected results: The new CRM system deployed within AWS will perform better than the existing CRM system deployed on-prem.
Pass