TECHNICAL ARCHITECTURE

IT: Real Estate

VERSION: 1.0 REVISION DATE:4/4/2020

Approval of the Technical Architecture indicates an understanding of the purpose and content described in this deliverable. By signing this deliverable, each individual agrees with the content contained in this deliverable.

Approver Name	Title	Signature	Date
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Contents

Section 1 DOCUMENT SCOPE

This document describes the Technical Architecture of the System that satisfies business requirements as documented in the Business Requirements Document, 2/28/20.

The goal of this Technical Architecture is to define the technologies, products, and techniques necessary to develop and support the system, and to ensure that the system components are compatible.

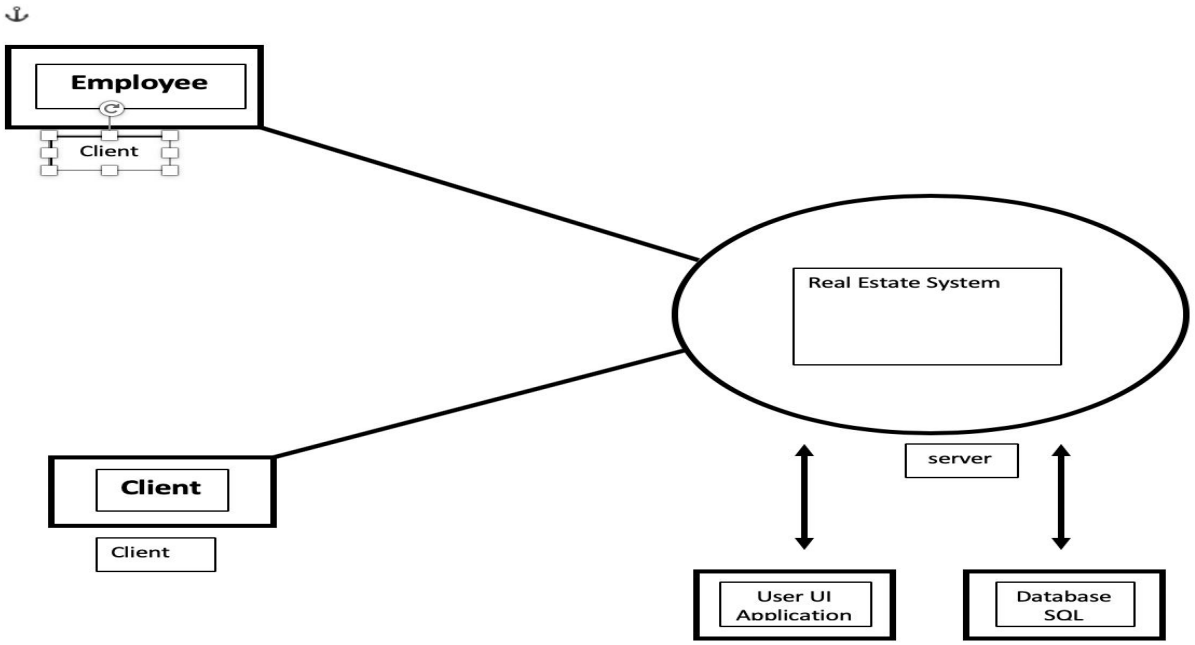
This document will also:
Identify the hardware and software specifications for the Development, Testing, QA and Production environments.
Define procedures for both data and code migration among the environments.

The Document Scope narrative also provides an overview of the efforts conducted to understand the existing technical environment and IT strategic direction and to determine how the system's proposed technical architecture fits into them.

Section 2 OVERALL TECHNICAL ARCHITECTURE

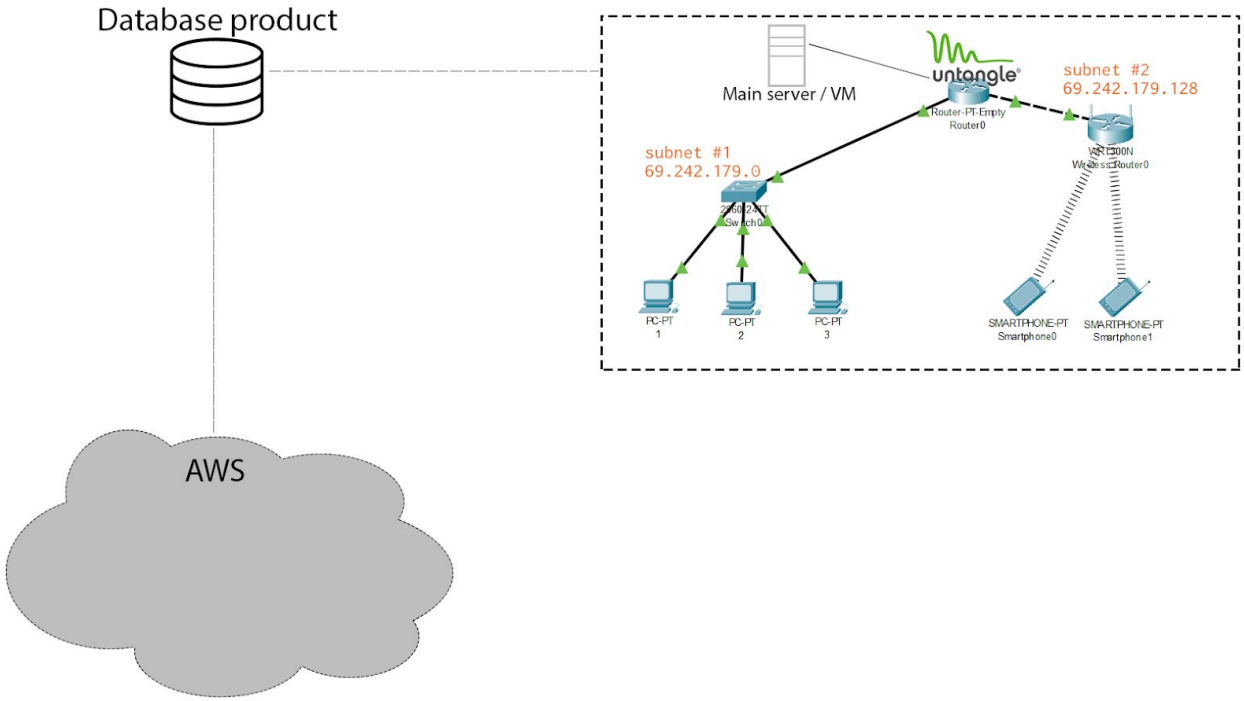
2.1 System Architecture Context Diagram

The **System Architecture Context Diagram** provides the "big picture" view of the system's architecture, and puts it in context with the rest of the Performing Organization's systems portfolio, illustrating how the system's hardware and software platforms fit into the existing environment.



2.2 System Architecture Model

The **System Architecture Model** represents the various architecture components that comprise the system, and shows their interrelationships.



2.2.1 Overall Architectural Considerations

*The **Overall Architectural Considerations** section defines how additional technical requirements have been addressed by the architecture. Representative items in this section may include:*

- *Security Strategy*
  - *Firewall protection*
  - *antivirus software*
  - *network interference*
  - *detection software*
- *Performance requirements*
  - *Network must be responsive*
  - *Must process request in timely manner*
  - *Use system resources efficiently*
  - *Connecting to network easily and quickly*
- *Database sizing*
  - *sizing based on 5 branches, must be expandable. Sizing options based on needs and overall capacity of data.*
- *Concurrent user*
  - *Allow Traffic within the network, requires employees and clients to access the entire network without latency.*
  - *Multiple Employees must be able to access the database and its assets at any given time.*
- *Data import and export*

    - *Employees must be able to import and export data easily within the network.*
    - *Data should be free from compromise among both methods of operation.*
- *Data encryption and decryption*
    - *AWS server/client side.*
    - *Saves systems on disks*
    - *Decryption occurs on downloads*
    - *Upload encryption occurs via encryption keys with Amazon Cloud S3 toolkit.*
- *Disaster recovery*
    - *Scheduled local backups*
    - *fault recovery*
    - *system rollbacks*
    - *cloud backups*

2.3 System Architecture Component Definitions

2.3.1 System Architecture Component A

The **Architecture Component Definitions** section provides narrative describing and explaining each architecture component in the System Architecture Model, and identifies specific elements that comprise that component in this system. The following are our architecture components and elements:

Architecture Component	**Component Elements**
Database Server	API services Server Hardware Configuration Operating System DBMS
Network Servers	Untangle Service Software Firewall Routers/Switches Subnets
Email Servers	Outlook Service Virus/Spam Filters Custom Domain Dedicated Servers
Backup Servers	AWS service Cloud based Automatic scheduling

Section 3 SYSTEM ARCHITECTURE DESIGN

*The **System Architecture Design** section provides detailed descriptions of each product implementing architecture components, and explains the rationale for product selection.*

3.1 System Architecture Component A

*For each **System Architecture Component** (identified in Section 2.3 above), the narrative describes specific **Component Functions**, requirements and other **Technical Considerations** that were used in the decision-making process, as well as any specific **Products** selected to implement this component. The **Selection Rationale** identifies any other products that may have been considered, and provides rationale for the decision. **Architecture Risks** identifies any potential risks associated with the architecture element.*

3.1.1 Component Functions

- Database
    - API services
    - Hardware configuration
    - Windows 10 Operating System
    - MYSQL (DBMS)
- Network
    - Software Firewall
    - Routers and Switches for each locations
    - Different subnets for Wired and Wireless connection
- Email
    - Outlook service
    - Filtering Spam and Viruses
    - Setup custom business domain
    - Dedicated servers emails
    - Accessible from any devices
- Backups
    - Frequent backups of the database
    - Use of AWS service for backing up
    - backups are automated, following an assigned schedule

- Access Ports
    - Cisco Systems WAP371 AP for business commerce
    - Wireless types: 802.11a/b/c/d/g/ac

3.1.2 Technical Considerations

- Microsoft Azure
- Fortigate Firewall protection
- Blue Bird
- Gmail
- Nord VPN
- FireEye
- SolarWinds

3.1.3 Selected Product(s)

- Amazon AWS
- Untangle
- MYSQL

- Microsoft Outlook
- Google Fiber

3.1.4 Selection Rationale

- Amazon AWS offers reliable, scalable, and inexpensive cloud computing services.
- Untangle provides the most complete multi-function firewall and Internet management application suite available
- MYSQL The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications. Most importantly, web databases.
- Microsoft Outlook organizes email, calendar, and contacts all in one place for home or business.

3.1.5 Architecture Risks

Some Architecture risks might include failure to import, store and backup data for future retrieval. Another Architectural risk might be failure to implement correct network traffic filtering, disabling certain sites employees should be able to access otherwise. The architecture of the VPN system could fail as well, allowing unwanted data or paper trails to leave the network and create a wormhole that might lead to compromise of the network. Issues and risks could also be faced if the antivirus and intrusion countermeasure were to fail, this would inherently leave the system in a compromisable and vulnerable state.

Section 4 System Construction Environment

*The **System Construction Environment** section details the various environments necessary to enable system construction and testing.*

4.1 Development Environment

4.1.1 Developer Workstation Configuration

Developer workstation environment should resemble the employee workstation, but include many more capabilities and functionality. More specifically, the developer should have higher access rights to all systems and specialized tool kits for developer purposes. Higher level access, equipment, software, and tools will be essential within the developers workstation configuration within the network.

4.1.2 Supporting Development Infrastructure Configuration

Supporting Development Infrastructure List of Hardware:

- Lenovo ThinkPad P51 Laptop
- Acer V246HL Monitors
- ThinkPad Ultra Docking Station
- Windows 10

- VPN
- Firewall support
- Antivirus software
- Network toolkits
- Hardware access rights
- System Admin rights
- VLAN access
- Smart Phone

4.2 QA Environment

The Quality Assurance environment should allow our developers to complete and run full QA testing including performance network tests, tests of integration, and metrics. This environment shall be fully supportive of the functional and performance testing scenarios, the environment for testing purposes, shall only be sized at a portion of the size of the actual environment capacity.

4.2.1 QA Workstation Configuration

The instance should be equivalent to the production environment and changes must be deployable so that testers are able to complete functional and performance testing configurations or extensions before the changes are deployed in the preproduction and final production environments.

4.2.2 Supporting QA Infrastructure Configuration

- Lenovo ThinkPad P51 Laptop
- ThinkPad Docking Station
- Windows 10
- VPN
- Firewall support
- VLAN access
- Smart Phone
- Admin Rights

4.3 Acceptance Environment

*For each environment necessary for system construction (**Development, QA** and **Acceptance**), provide detailed specifications for the **Workstation** and **Supporting Infrastructure** that will be used (including hardware and operating system requirements, all necessary installed packages and tools, and needed directory structures that will be utilized to store all construction components).*

4.3.1 Acceptance Workstation Configuration

The Acceptance Environment must assure that the network has routers and switches set up correctly. Must be able to connect with one another between the many seperate locations. For emails, we must make sure that Outlook will be our main service and a dedicated server is up and running for it. The DBMS of the database must be MYSQL and is properly configured for Monstrocity INC. Frequent backups from AWS services are a must for an accepted workstation configuration.

4.3.2 Supporting Acceptance Infrastructure Configuration

- Email Spam/Virus Filters
- Emails accessible from any device
- Untangle supports
- Different subnets
- Backups schedule
- API services