

Case Study

Survey Management System

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Project Name	Survey Management System
Application URL	NA
Development Technology	.Net Core, C#
Industry/Domain	Employee Wellness System

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About The System

Due to the global pandemic in 2020, the world came to a standstill and the employee started working from homes. Longer work hours, while being trapped in their homes meant more stress. Keeping the employee health and wellness in mind, the Survey Management System has been conceived.

With its three types of surveys, it aims to understand the wellness of the employees, their satisfaction levels and other details.

Background

Vivant Limited is a consulting company based in London that provide different types of consultancy services to clients. One of their services is an Employee Wellness System, which helps understand the sentiments of the employees.

Description

The principal purpose of the this system is for organisations to be enable their remote employees to complete risk assessments on the suitability of their home working environment and/or to monitor on a timely basis a remote or internal employee's general wellbeing. The Employer will gain access through the brochure site with a secure login facility. They will be able to access all data, including all Employee information with progress reports, analytics and diagnostic information provided. The Employee will not be able to access the site through direct login but via individual links to specific actions (such as a risk assessment or a wellbeing survey). The access will be provided within a web browser context that can work equally efficiently on a desktop/laptop computer or on a mobile device via the web browser. Employers will be charged a fee based on either a) transactional usage (ie the number of employees and the number/frequency of assessments/surveys) or b) a volume usage licence which will allow unlimited usage. The system will have an administration portal for Analytics Limited purposes and shall include facilities such as a dashboard of management (usage) data of on-going activities, information by specific Employer in order to ascertain usage and hence appropriate charging, a facility to create, configure and monitor Employer usage. It will NOT have the ability to see individual employee information. The system and process are supervised by Administrators

Challenges

- **Security:**
 - This was the biggest challenge as the client wanted a fool-proof system with a key concentration on encryption
 - We also had to decide between relational / non-relational database keeping the security of the system in mind
- **Low Costing:**
 - The client wanted separate databases for each user and wanted to keep the costs low.

- **Flexibility:**
 - The client wanted to create dynamic organisational hierarchy for their customers so we need a flexible database model
- **New Learning:**
 - We had to encounter a new learning curve w.r.t. Azure SQL

Solution

- We used a mix of both SQL / no-SQL data store to achieve the client's requirement of a flexible, yet secure system
- We significantly reduced development costs by
 - Using Azure Elastic pool
 - Using free instances provided by Azure
 - Recommending the client to use the free SSL certificate provided by Azure
- We used Azure Architecture to safe-guard client data within the system
- We used Azure Dev Ops to plan things and successfully deliver the project, while keeping the client in loop at each stage of the project
- The system developed by us is a highly scalable, data isolated, simple & reliable data storage system which is robust and can handle the load

End to End Technical Solution

- **Dynamic Functionality**
This is a unique system where an organisation can upload all their employees and send them the surveys. They can create dynamic attributes corresponding to each employee and filter data or apply data restrictions based on those dynamic attributes.
- **Testing**
With sanity testing, we have also done regression testing, load testing and scenario based testing. Our team made sure that all the gaps are identified in testing process and development team fill those gaps with optimal solution.
- **Internal Logics**
There are various modules in the system where complex internal calculations are working. One instance is for analytics where we are calculating individual employee scores and storing them in our database. The completion of any survey and reflection of that data on Analytics section is almost instantaneous.
- **Server Infrastructure**
We are using Azure to host the system which is beyond level secured. Web apps are reliable and secured to host the application. No external user can connect to Azure SQL instance as only Azure services are allowed to access and the access is not public. Features like these make the system secure.
- **Secure database planning**
NoSQL is based on application design pattern but to keep the system secured, initially the database was being designed. So it covers all the security requirements. Everything passing through API endpoints are encrypted by secured token. If a front end client tries to connect to the server it will be rejected due to unmatched salt string and token validation.

- **Quick Analytics and Actionable Insights**
The platform provides a detailed view of the application health and performance to make right decisions for business improvement. It also provides deep insights into app's response times CPU & memory utilization, throughput and error trends.
- **Storage Security (Role Based Access Control)**
Restricting access based on the need to know and least privilege security principles is imperative for organizations that want to enforce security policies for data access.
- **Multi-Factor Authentication**
In a security provision that utilizes several authentications and verification methods before accessing protected information.
- **Send Grid / Twilio Integration**
Application is integrated with 3rd party apps for sending emails and sms from the system.

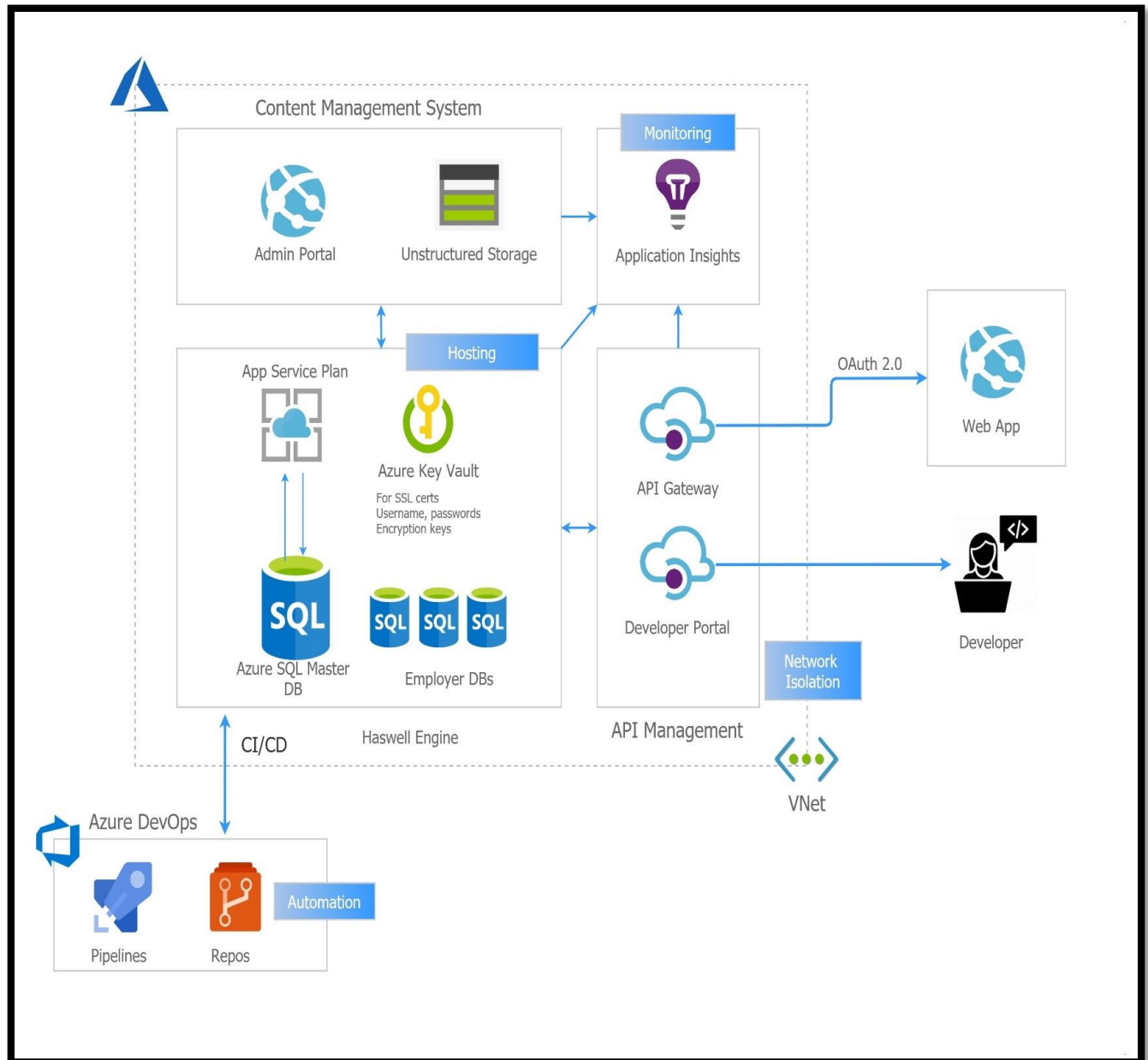
Benefits We Delivered

The project development is solely based on the Agile Work methodology. This raised our projects to a peak level of quality, security, profit, promotion, etc. We design, build, configure, test and then release the potentially shippable project increment. This process cycle is also performed in an iterative manner or sprints.

Listing of major benefits delivered:

- Cost Efficient - The online employee survey system development reduces your infrastructural costs, saves papers, reduces the required workforce and boosts ROI.
- Convenience - Extremely simple to fill and submit. The system encourages engagement and increases the response rate.
- Time saving - A one-stop-solution to create, administer and analyse surveys. A centralised system saves a considerable amount of time.
- Accuracy - Replacement of a traditional manual entry system with a more streamlined process to achieve accurate results.
- Phenomenal user experience - A quick analysis of the response as soon as the survey is complete. Fast tabulation of data and availability in multiple formats.
- Advanced benefits include:
 - Accumulation of reliable data in actual time
 - Wide variety of types of questionnaire
 - Multiple-survey construction using the same device.
- Derivative benefits include:
 - Higher Employee Satisfaction
 - Increased Employee Loyalty
 - Higher Employee Retention leading to Lower Employee Turnover

Technical Architecture



Summary

To summarize, following key results have been achieved

- **New Age System** – We have developed a fast, reliable, highly scalable, load and fault tolerant smart system that not only has a smooth UI, but has concise panels for easy navigation. It is a responsive system and serves as a one stop portal
- **New Security Standards** – Right from encryptions to two-factor authentications and separate databases per client, we have ensured the top level security for the system

- **Analytics** – Once the employee fills the survey, their results are shown instantaneously in the analytics section that help in a quick turn-around in case of any action that is required.
- **Employee Benefits** – Such a system is really helpful for companies to keep a track of their employees' wellness and mental health. This enables them to take the required action on the same.