# Exploring Hybrid Encryption for Enhanced Security of Electronic Health Record in Cloud Environment

## **1** Introduction

The purpose of this configuration manual is to offer the short summary of the necessary requirements for building this web application application. It outlines the systematic steps required to successfully develop, run, test, replicate the project. The next sections of this document are organized as follows: Module 2 will be covering the system configuration, Module 3 detailed about the creation of the database and tables, Module 4 explains database connection through the web.config file, and Module 5 addresses deployment on Azure.

## 2 System Configuration

#### 2.1 Visual Studio & Setup of ASP .Net Environment

C# is the programming language which is utilized for developing the numerous web applications. This project code is developed using Visual Studio 2022 Integrated Development Environment (IDE). Visual Studio 2022 can be freely downloaded and installed from here. https://visualstudio.microsoft.com/vs/



Figure 1: Microsoft Visual Studio official website

It was chosen because it is a free, open-source as well as user-friendly IDE that supports multiple platforms and also allows programming in various languages such as C#, Python, JavaScript, etc. The recommended text editor is Visual Studio 2022 with version 17.10.5. The ASP.NET Framework 4.8 should be downloaded to compile and run the web application.

About Microsoft Visual Studio

## **Visual Studio**

Microsoft Visual Studio Professional 2022 (64-bit) - Current Version 17.10.5 © 2022 Microsoft Corporation. All rights reserved.

Installed products:

ADL Tools Service Provider - 1.0 ASA Service Provider - 1.0 ASP.NET and Web Tools - 17.10.344.38934 Azure App Service Tools v3.0.0 - 17.10.344.38934 Azure Data Lake Tools for Visual Studio - 2.6.5000.0 Azure Functions and Web Jobs Tools - 17.10.344.38934 Azure Stream Analytics Tools for Visual Studio - 2.6.5000.0 C# Tools - 4.10.0-3.24324.8+04fb39164c99c519832109f21b22630bc9246fce Common Azure Tools - 1.10 GitHub Conilot - 0.2.894.62884

Product details:

This package contains services used by Data Lake tools

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Figure 2: Visual Studio Professional 2022

#### 2.2 Database Server Setup

The project utilizes a Microsoft SQL database to store the application's data. This technology allows the application to connect - both local as well as cloud-based data storage. The version of Microsoft SQL Management Studio used is 20.2. To establish a connection with the database the user must enter authentication credentials. Various open source versions of the SQL Management tool are available for free download online.



Figure 3: SQL Server Management Studio

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Microsoft .NET Framework

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#### 2.3 Hardware specifications

- RAM: 8 GB
- Processor: Intel Core i5
- Hard Disk Drive: 10GB HDD

#### 2.4 Software specifications

- OS Used: Microsoft Windows 11
- Language: C# , ASP.Net framework
- IDE used: Visual Studio 2022

## **3** Database & Tables Creation

In the code repository on GitHub, the folder DB contains **new\_latest.sql** file.Using that database and tables are created on MS SQL Server.

https://github.com/Rashmi-coder125/PGP-Encryption\_TEST

### 4 Database connection using web.config

The application connects to local as well as the cloud databases using a web.cofig file.

Figure 4: Database Connection web.config file

## 5 Cloud Deployment

#### 5.1 New Web App Creation on Azure

This web application is deployed into the Azure cloud. Windows Azure supports development in nearly any language & also offers cloud based public services. This application utilizes the Windows Azure cloud service. Firstly, log in to the cloud environment. Select the App Service to create a new application in the Azure cloud. Once the application is deployed a cloud access URL is provided.

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	Activity log							JSON View	
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Figure 5: Application Deployment in Cloud

#### 5.2 Create Cloud Database

The screenshot below illustrates the option to create the database in the Azure Cloud. Note that the database connection details varies on the different cloud platforms.



Figure 6: Create Cloud Database

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🔷 Tags	Location : East US Connection string	gs : Show database connection strings				
Diagnose and solve problems	Subscription (move) : Azure for Students Starter Pricing tier	: Free				
📕 Query editor (preview)	Subscription ID : 5160574e-cc9c-410e-95d2-71f1bbacc10c Earliest restore pr	oint : 2024-08-05 13:22 UTC				
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> Monitoring						
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> Help						
	Used space Remaining space Allocated space Max storage					
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Figure 7: Database created for Application in Cloud

#### 5.3 Publish Updated details in Cloud Environment

Any updates to this current codebase should also be published to the cloud. Local changes can be updated in the azure cloud environment. Figures 7 & 8 below illustrate the option to publish changes from a local machine to the azure cloud environment.



Figure 8: Publish code changes

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Resource group	appdb				
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Figure 9: Publish Code Changes in Cloud