

Payment File Download Service

Introduction

Corporation ABC are using SQL Server as their ERP backend. Finance has reported that Corporation ABC is migrating to BANK Ltd in the coming months.

HR has engaged with BANK Ltd in the meantime regarding the monthly salary payments. They are concerned how the payment files will be send to the bank and ultimately be processed by the 24th of each month.

BANK Ltd has informed HR that they a have a portal by which salary files can be uploaded for processing on a monthly bases.

Business Requirement

On the 24th of each month, a payment file (csv format), must be exported with employee salary information from the ERP database to a locked down shared HR folder. The file will be accessible by a HR employee whom will upload the payment file via the bank's portal.

Solution Summary

A Windows Service running under the LocalService Account with a Scheduled Export Job will be deployed to the Production Environment of Corporation ABC.

The Scheduled Job will execute when the Windows Service is started and on the 24th day of each month at 08h00. The Scheduled Job will handle the tasks of exporting employee salary information from the ERP Database and saving the information to a Payment File in CSV format.

The Locked Down Shared HR Folder will have access rules assigned for a specific Windows User and only the HR User will have the ability to access the employee salary information before uploading to a secure BANK Ltd portal.

Technical Design

The purpose of these diagrams is to record the Technical Design for the Payment File Download Service.

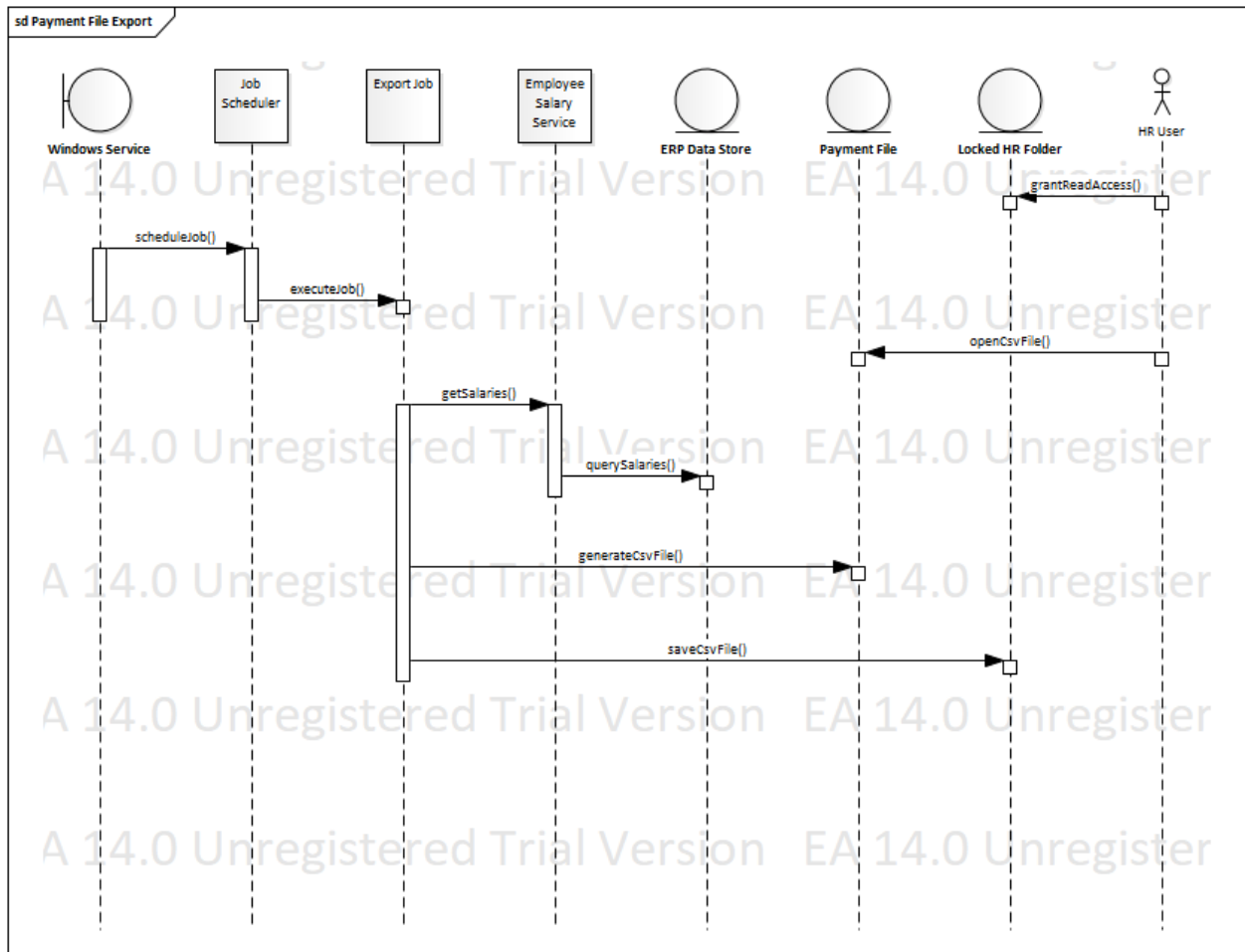


Figure 1: Payment File Export

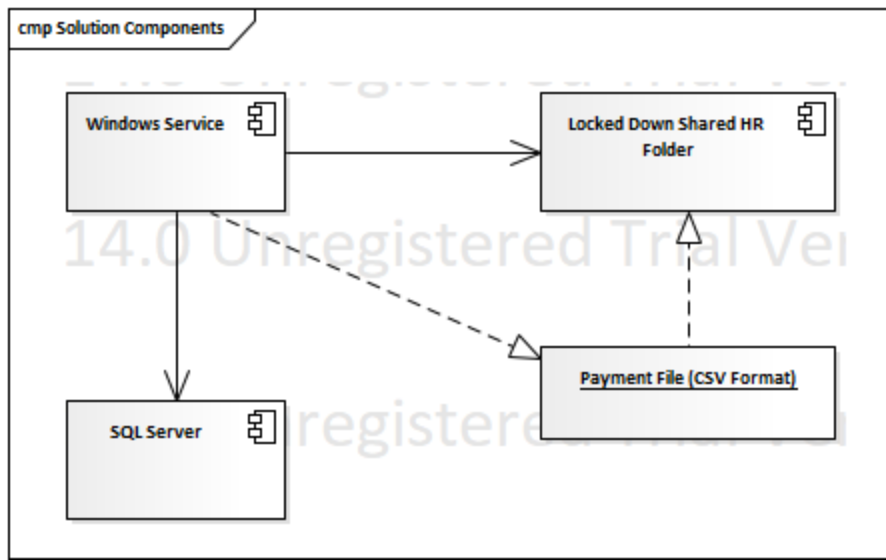


Figure 2: Solution Components

LocalService Account Provisioning

The Windows Service will run under the LocalService Account in the Production Environment of Corporation ABC.

The LocalService Account will be granted Read Only permissions to the ERP Database hosted on SQL Server.

Read/Write permissions will also be assigned to the Locked Down Shared HR Folder for the LocalService Account so that the CSV file may be saved to disk.

Locked Down Shared HR Folder

The HR Folder will be created by the Windows Service if it does not exist. The HR Folder location will be specified as a Windows Service configuration setting.

The HR User Account that will be granted access to the HR Folder will be specified as a Windows Service configuration setting.

The Windows Service will ensure that Read Only Access Rules are applied to the HR Folder for the specified HR User Account before saving the CSV file to the specified location.

The HR Folder will be shared with the specified HR User Account.

Scheduled Export

A Scheduled Job will be created by the Windows Service that will export data from the specified ERP Database and save a Payment File in CSV format to a Locked Down Shared HR Folder on the 24th day of every month at 08h00.

The Scheduled Job will run when the Windows Service has been started as a fallback procedure for when the employee salary information needs to be amended and to generate a new Payment File in CSV format.

ERP Database Export

The ERP Database Export will use a SQL Server Connection to connect to the specified SQL Server using theConnectionString configuration setting for the Windows Service.

The employee salary information will be queried from the SQL Server Database using a Select Query for the Employee and Salary Tables.

Data formatting and validation will occur during the export process in accordance with BANK Ltd's guidelines for uploading employee salary information.

Payment File In CSV Format

The Payment File will be saved to a Locked Down Shared HR Folder using the naming format - employee-salaries-2401180900.csv

The filename will end with the export Date/Time in file format as a reference for when the file was exported and to ensure that the file is not replaced by the Windows Service during any further exports.

Multiple Payment Files may be saved to the Locked Down Shared HR Folder for upload via BANK Ltd's portal.

Data Model

The Physical Model Design of the ERP Database Tables that are required by the Windows Service to download the employee salary information from.

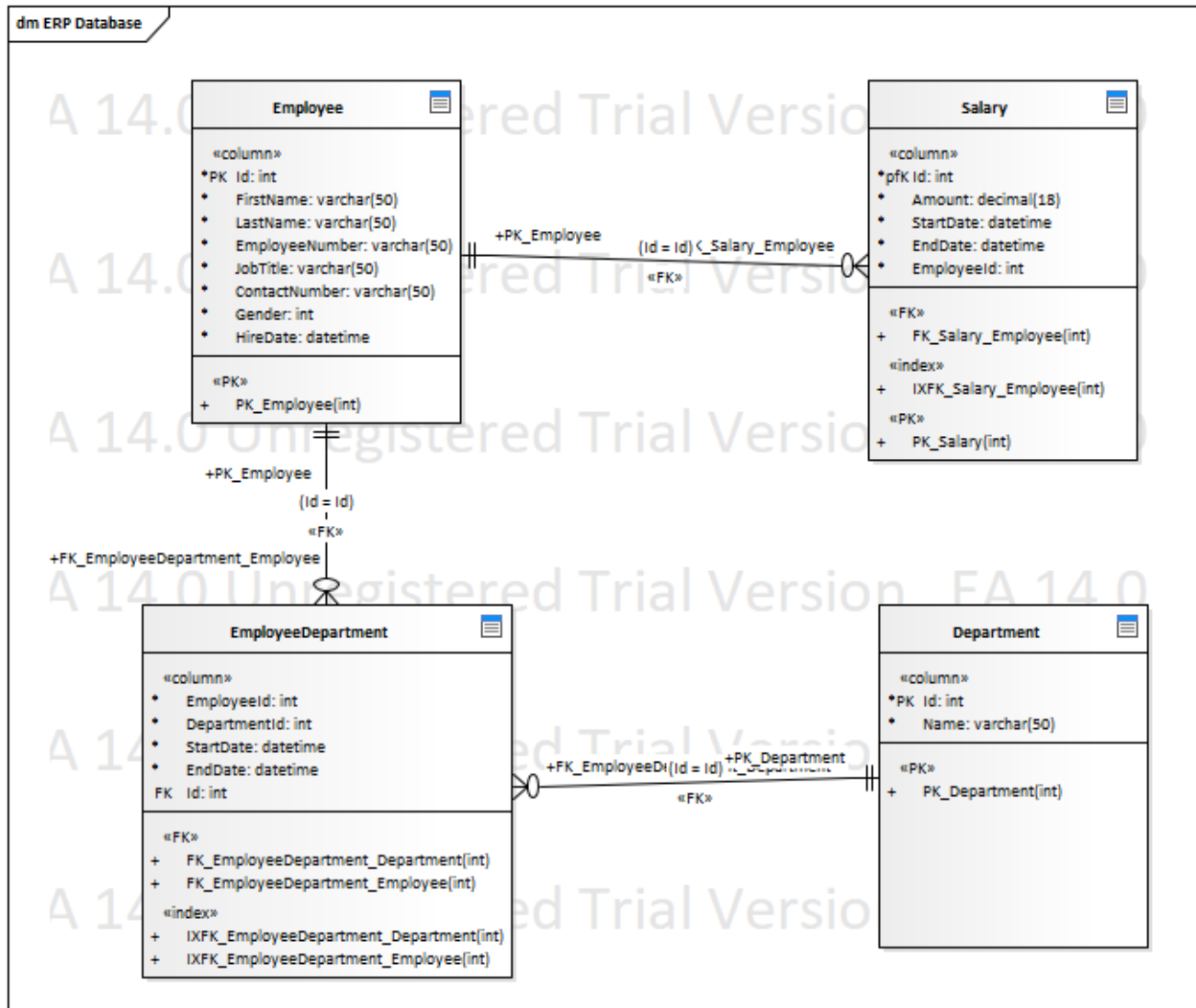


Figure 3: ERP Database Tables

NuGet Package Review

The following NuGet packages were reviewed for implementing the solution requirements -

- Topshelf [Windows Service] - <https://www.nuget.org/packages/topshelf>
- FluentScheduler [Job Scheduler] - <https://www.nuget.org/packages/FluentScheduler/>
- Ninject [Dependency Injection] - <https://www.nuget.org/packages/Ninject/4.0.0-beta-0134>
- ServiceStack.Text [CSV File Generation] - <https://www.nuget.org/packages/ServiceStack.Text/>
- Dapper [Micro ORM/DataAccess] - <https://www.nuget.org/packages/Dapper/>]

Risk Matrix

	Negligible	Minor	Moderate	Significant	Severe
Very Likely	HR User forgets to check the Locked Down Shared HR Folder and upload the latest Payment File on the 24th day of the month	Employee salary information is incorrectly captured and the Windows Service export is uploaded to the secure Bank portal with the incorrect values	Permissions for SQL Server table access are modified during SQL Server maintenance which prevent a successful export	Locked Down Shared HR Folder permissions are changed or overridden by domain policies which prevent a successful export	An unhandled exception causes the Windows Service to stop and the scheduled export date is missed
Likely	Windows Service is restarted to export the Payment File again after ERP data amendments	The incorrect Payment File is selected for upload to secure Bank Portal	SQL Server performance affects the exporting of employee salary information to a CSV file	Updates to the ERP Database Schema affect the querying of data and the employee salary information export fails	HR User is off sick or on holiday on the 24th day of the month when the upload of employee salary information is meant to take place
Possible	Error logs do not capture the underlying error information correctly so it is hard to ascertain what when wrong without debugging the Windows Service	Windows Service is deployed with incorrect Log On account and is unable to access the resources needed to perform a successful export	Windows Service configuration settings are modified with values that cause unexpected results	Secure banking portal is offline for CSV upload by HR User for a number of days on around 24th day of month	ERP Database is offline during scheduled employee salary information export
Unlikely	The built in Service Recovery Steps for the Windows Service fail it does not recover after an error or when restarting the Production Environment	Windows Update changes affect the operation of the Windows Service on the Windows Server Operating System	Security flaw in the Windows Service puts employee salary information and personal details at risk of being exposed	Windows Service has been stopped manually on 24th day of month and needs to be started manually	Employee salary information in CSV file is shared via email or distributed to other users
Very Unlikely	Windows Service has not been deployed to Production Environment before 24th day of the month	Windows Service is manually uninstalled or disabled in the Production Environment	Windows Server date and time settings are changed which will affect the Scheduled Job expected execution time	SQL Server authentication method is changed and Windows Service can no longer connect to the ERP Database	Windows Server that hosts the Windows Service is offline or has crashed before 24th day of the month