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National Resource Centre  
for EHR Standards  
India

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# **A guide for using C-DAC's SDK for ANSI/HL7 v2.8.2-2015 in .Net Application**

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**Created by:**  
National Resource Centre for EHR Standards,  
Centre for Development of Advanced Computing (C-DAC), Pune, India

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## REVISION HISTORY

Date	Version	Description
14/01/2019	1.0	Document describes the way to convert existing jars of C-DAC's SDK for ANSI/HL7 v2.8.2-2015 to .net dlls using IKVM.NET which can be referred in .Net application

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## INTRODUCTION

There may arise instances where Java and .Net code need to communicate with each other e.g., there exists only Java libraries for some algorithm, protocol, or feature which may be required in a .Net application. One solution could be to redevelop the whole algorithm, protocol, or feature in .Net and consume it for application. The other solution could be to work upon calling Java based library in .Net and focus on application development.

There are some initiatives on interoperability between Java and .Net. This guide particularly focuses on converting Java library to .Net for use in .Net based applications.

IKVM.NET is an open source implementation of Java for Microsoft .Net Framework that provides tools to enable Java and .Net interoperability. IKVM.NET provides a tool ikvmc that converts Java bytecode to .NET dlls and exe.

## PURPOSE

This document provides a step by step approach to build java library to produce a .dll using IKVM.Net. The Java library referred in this guide is C-DAC's SDK for ANSI/HL7 v2.8.2. developed by Centre for Development of Advanced Computing (C-DAC) Pune. The HL7 SDK is a Free and Open Source Software (FOSS) Library used to enable ANSI/HL7 v2.8.2 standard based message exchange of healthcare information.

## SCOPE

The scope of the document is to provide steps on how to create a dll using IKVM.NET's tool, ikvmc and use that dll in the .Net Application. This document is only for reference purpose. The approach for implementation may vary from application to application based on the requirements, resources, and scope. User may choose a different platform/mechanism than IKVM.NET to achieve Java and .Net interoperability.

## PREREQUISITE

.Net Framework 2.0 or above

## STEPS TO CONVERT JARS TO DLL

- Download IKVM.NET binary ikvmbin-8.1.5717.0.zip
- Extract the zip to some folder having permission
- Copy SDK's jars (including third party jars) in extracted bin folder of IKVM.NET
- Open Command prompt
- Navigate to IKVM.NET bin folder

- Execute the following command to convert Patient Administration System's jar to dll:

```
ikvmc -target:library -out:hl7PatientAdmin.dll commons-codec-1.3.jar  
commons-collections-3.2.jar hl7base282.jar en_US.jar  
patientadministration282.jar
```

Where, *hl7PatientAdmin.dll* is output dll after converting Patient Administration jar along with dependency jars. In above example, IKVM options used:

- *-target:<target-type>*: "*-target:library*" : generates a .dll
- *-out:<outputfile>*: "*-out: hl7PatientAdmin.dll*": Specifies the name of the output file.

Here, *commons-codec-1.3.jar*, *commons-collections-3.2.jar*, *hl7base282.jar*, *en\_US.jar* are the dependency jars required for *patientadministration282.jar*

- There are multiple [options] that can be used with the ikvmc tool. For more details please go through IKVM user guide link provided in reference.
- As per user's requirement, other system's jars can be converted to dll with same steps.

For e.g. To convert Observations System, *observationreporting282.jar* is required with dependency jars, then the command will be:

```
ikvmc -target:library -out:hl7ObservationReporting.dll commons-codec-1.3.jar  
commons-collections-3.2.jar hl7base282.jar en_US.jar  
observationreporting282.jar
```

- The dll will be created in the bin folder of IKVM.NET by the name provided to the *-out* option in the command.

## STEPS TO USE DLL IN .NET APPLICATION

- To use created dll, add created dll along with IKVM.NET dlls based on type of application to project reference.

For e.g. For a .Net Console Application below IKVM.NET dlls are required in project reference:

- IKVM.OpenJDK.Core.dll
- IKVM.Runtime.dll
- IKVM.OpenJDK.XML.Parse.dll
- IKVM.OpenJDK.Security.dll
- IKVM.OpenJDK.Util.dll
- IKVM.OpenJDK.XML.API.dll

## NOTE

- The guide is constructed assuming the implementer has access and knowledge of HL7v 2.8.2 version specification.
- The dll created from SDK for HL7 v2.8.2 libraries using IKVM.NET is tested only for following purposes:
  - Programmatically populated HL7 message event
  - Serialize programmatically populated HL7 message in to. hl7
  - Parsing of existing HL7 file and serializing it

In evidence of any material error, change, correction, concerns or assistance regarding this document, you are requested to contact at: [nrc-help@cdac.in](mailto:nrc-help@cdac.in)

## REFERENCE

- Refer below link to know brief about ANSI/HL7 v2.8.2-2015  
<https://www.nrces.in/standards/hl7-international/hl7-v2.8.2>
- Refer below link for more information about ikvmc command  
<http://www.ikvm.net/userguide/ikvmc.html>  
Refer below link to download IKVM.NET binary  
<http://weblog.ikvm.net/2015/08/26/IKVMNET81ReleaseCandidate0.aspx>.