USAID MEDICINES, TECHNOLOGIES, AND PHARMACEUTICAL SERVICES (MTaPS) PROGRAM

Improved Access. Improved Services. Better Health Outcomes.

Digital Regulatory System Strenghening

Pharmadex 2

Deployment Guide

International Version

March 2022

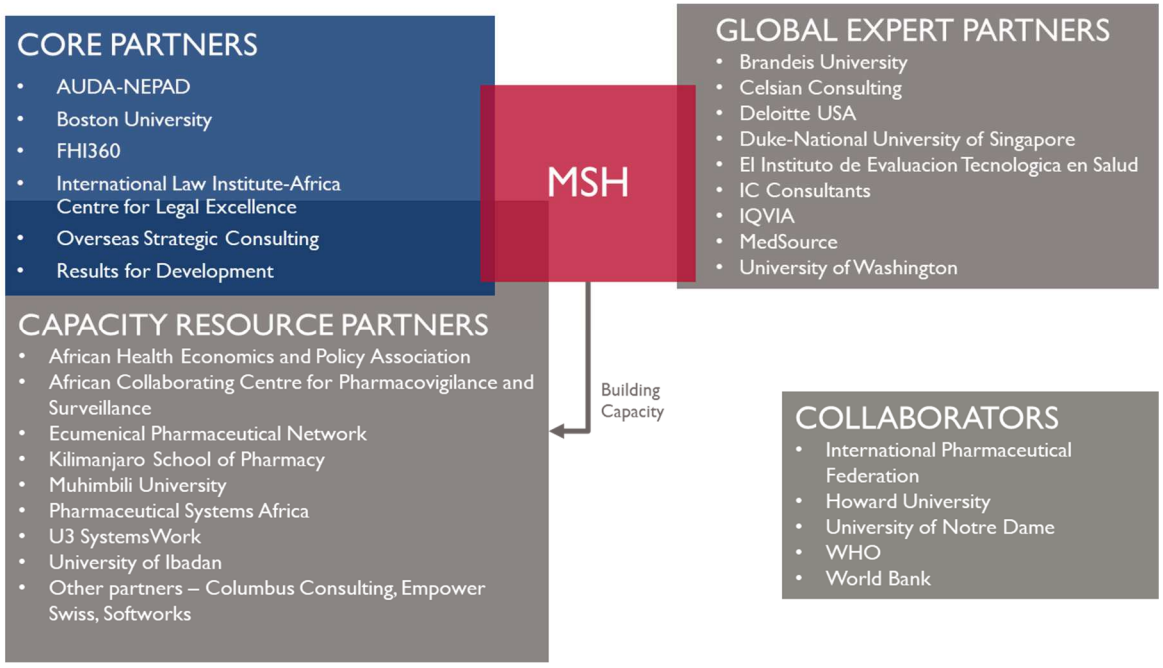
USAID
FROM THE AMERICAN PEOPLE

This document is made possible by the generous support of the American people through the US Agency for International Development (USAID) contract no. 7200AA18C00074. The contents are the responsibility of Management Sciences for Health and do not necessarily reflect the views of USAID or the United States Government.

About the USAID MTaPS Program

The USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program enables low- and middle-income countries to strengthen their pharmaceutical systems, which is pivotal to higher-performing health systems. MTaPS focuses on improving access to essential medical products and related services and on the appropriate use of medicines to ensure better health outcomes for all populations. The program brings expertise honed over decades of seminal pharmaceutical systems experience across more than 40 countries. The MTaPS approach builds sustainable gains in countries by including all actors in health care—government, civil society, the private sector, and academia. The program is implemented by a consortium of global and local partners and led by Management Sciences for Health (MSH), a global health nonprofit.

The MTaPS Consortium



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Acronyms and Abbreviations

MTaPS	Medicines, Technologies, and Pharmaceutical Services
HDD	Hard Disk Drive
RAM	Random Access Memory
SSD	Solid State Drive
USAID	US Agency for International Development

Contents

PROJECT SUMMARY

Program Name:		USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program
Activity Start Date And End Date:		September 20, 20–September 19, 2023
Name of Prime Implementing Partner:		Management Sciences for Health
Contract Number:		7200AA18C00074
MTaPS Partners	**Core Partners**	Boston University, FHI 360, Overseas Strategic Consulting, Results for Development, International Law Institute-Africa Centre for Legal Excellence, NEPAD
	Global Expert Partners	Brandeis University, Deloitte USA, Duke-National University of Singapore, El Instituto de Evaluacion Technologica en Salud, ePath, IC Consultants, Imperial Health Sciences, MedSource, QuintilesIMS, University of Washington
	Capacity Resource Partners	African Health Economics and Policy Association, Ecumenical Pharmaceutical Network, U3 SystemsWork, University of Ibadan, University of Ghana's World Health Organizations (WHO) Pharmacovigilance Collaborating Center, Kilimanjaro School of Pharmacy, Muhimbili University, Pharmaceutical Systems Africa
	Collaborators	International Pharmaceutical Federation, Howard University, University of Notre Dame, WHO, World Bank

OBJECTIVE

This document helps deploy Pharmadex 2 software first time, along with the demo database.

The audience of it is IT persons that are responsible to install and maintain the Pharmadex 2 software. Minimal qualification requirements are:

- Ability to install and configure programs and components in the selected Operation System.
- The MySQL knowledge.

PRE-CONDITIONS

Regardless of deployment configuration selected, the following pre-conditions should be fulfilled:

- At least 2 GB of free RAM
- At least 10GB of free SDD/HDD
- Operation Systems:
  - Windows Server 2016 and above
  - Windows 10
  - Linux, released after 2018. Tested on Ubuntu 18.04.4 LTS and above
- MySQL R 5.7
  - Server
  - Workbench
- Oracle Java JDK 1.8. OpenJDK 1.8 has been tested on Linux Ubuntu, but not Windows
- Internet connection. Properties of it should suit minimal requirements for Google Mail
- Binary Pharmadex 2 distribution (see below)
- Pharmadex 2 demo database (https://github.com/MSH/Pharmadex2/tree/main/database[1])
- The own, private Google Mail account

PHARMADEX 2 BINARY DISTRIBUTION

The possibility to build the Pharmadex 2 software directly from the source codes is possible, however is not covered by this document. However, this manual describes deployment from the binary distribution. For current, the MSH staff may get this distribution from the corporative GitHub, address is

The descriptions of binary components may be found in the respective file README.md

STEPS TO DEPLOY

PREPARE TO INSTALL

1. Install using the vendor's deployment manual:
   1.1. MySQL
   1.2. Java JDK 1.8
2. Restore the demo database to MySQL using MySQL Workbench or the command line

[1] For current, available only to MSH staff

3. Copy the binary application pharmadex2-0.0.1.jar and application.properties to the dedicated folder, e.g. applications/pharmadex2

CONFIGURE

LOCAL TCP/IP PORT

In the **application.properties** file edit the values marked bold:

DATABASE

In the application.properties file edit the values marked bold:

spring.datasource.url =
jdbc:mysql://localhost/pdx2?useSSL=false&useUnicode=yes&characterEncoding=UTF-8&characterSetResults=UTF-8&**serverTimezone=Europe/Kiev**
spring.datasource.username = **username**
spring.datasource.password = **password**

LOGS

In the application.properties file edit the values marked bold:

logging.file.path=/**home/alexk/pharmadex/log**

the good choice is:

logging.file.path= ./log/

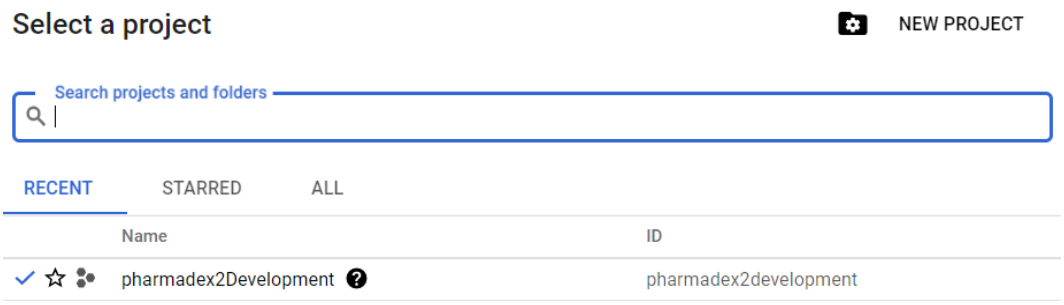
GOOGLE AUTHENTICATION

The Pharmadex 2 uses OATH2[2] to allow authenticate using Google login. For each deployment, the Google Authentication should be configured separately.

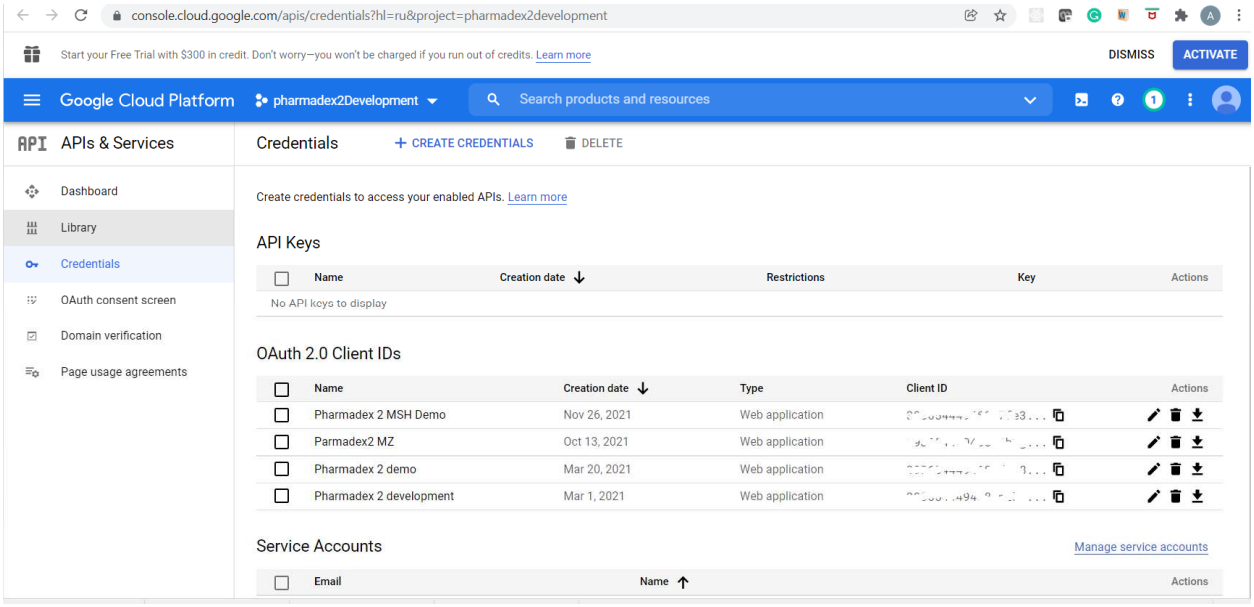
The original Google guide is here. The application type is Web Application

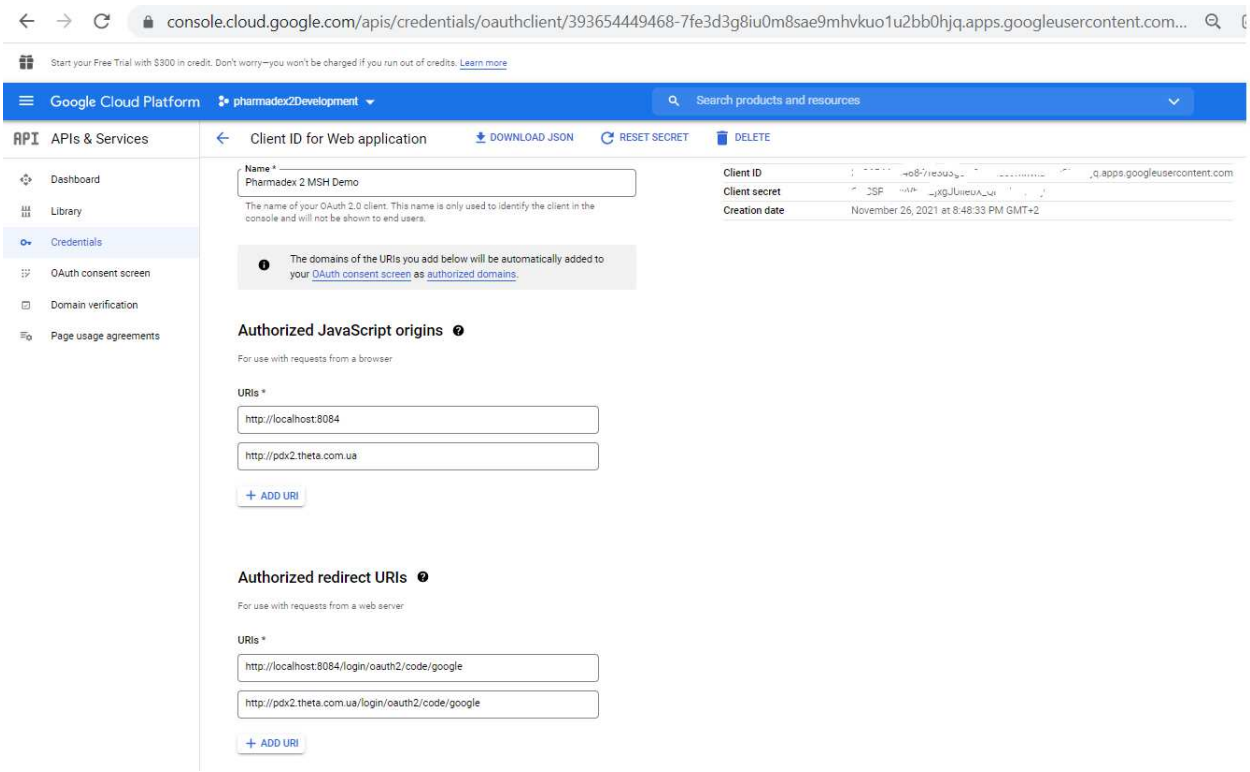
https://developers.google.com/adwords/api/docs/guides/authentication

The process is cumbersome, thus below screens from the current configuration:



[2] The theory is here https://developers.google.com/identity/protocols/oauth2 The Pharmadex 2 uses the web-server applications scenario.


console.cloud.google.com/apis/credentials?hl=ru&project=pharmadex2development
Start your Free Trial with $300 in credit. Don't worry—you won't be charged if you run out of credits. Learn more
DISMISS
ACTIVATE
Google Cloud Platform
pharmadex2Development
Search products and resources
APIs & Services
Credentials
+ CREATE CREDENTIALS
DELETE
Dashboard
Library
Credentials
OAuth consent screen
Domain verification
Page usage agreements
Create credentials to access your enabled APIs. Learn more
API Keys
Name
Creation date
Restrictions
Key
Actions
No API keys to display
OAuth 2.0 Client IDs
Name
Creation date
Type
Client ID
Actions
Pharmadex 2 MSH Demo
Nov 26, 2021
Web application
Parmadex2 MZ
Oct 13, 2021
Web application
Pharmadex 2 demo
Mar 20, 2021
Web application
Pharmadex 2 development
Mar 1, 2021
Web application
Service Accounts
Manage service accounts
Email
Name
Actions


console.cloud.google.com/apis/credentials/oauthclient/393654449468-7fe3d3g8iu0m8sae9mhvkuo1u2bb0hjq.apps.googleusercontent.com...
Start your Free Trial with $300 in credit. Don't worry—you won't be charged if you run out of credits. Learn more
Google Cloud Platform
pharmadex2Development
Search products and resources
APIs & Services
Client ID for Web application
DOWNLOAD JSON
RESET SECRET
DELETE
Dashboard
Library
Credentials
OAuth consent screen
Domain verification
Page usage agreements
Name *
Pharmadex 2 MSH Demo
The name of your OAuth 2.0 client. This name is only used to identify the client in the console and will not be shown to end users.
Client ID
Client secret
Creation date
November 26, 2021 at 8:48:33 PM GMT+2
The domains of the URIs you add below will be automatically added to your OAuth consent screen as authorized domains.
Authorized JavaScript origins
For use with requests from a browser
URIs *
http://localhost:8084
http://pdx2.theta.com.ua
+ ADD URI
Authorized redirect URIs
For use with requests from a web server
URIs *
http://localhost:8084/login/oauth2/code/google
http://pdx2.theta.com.ua/login/oauth2/code/google
+ ADD URI

After configuration it will be necessary to copy Client ID and Client secret to the application.properties

OATH2

spring.security.oauth2.client.registration.google.client-id=**client_id**

spring.security.oauth2.client.registration.google.client-secret=**client_secret**

INSTALL AS A SERVICE

For Linux the official guide is here https://docs.spring.io/spring-boot/docs/current/reference/html/deployment.html#deployment.installing.nix-services.system-d

For Windows the official guide is here https://docs.spring.io/spring-boot/docs/current/reference/html/deployment.html#deployment.installing.windows-services

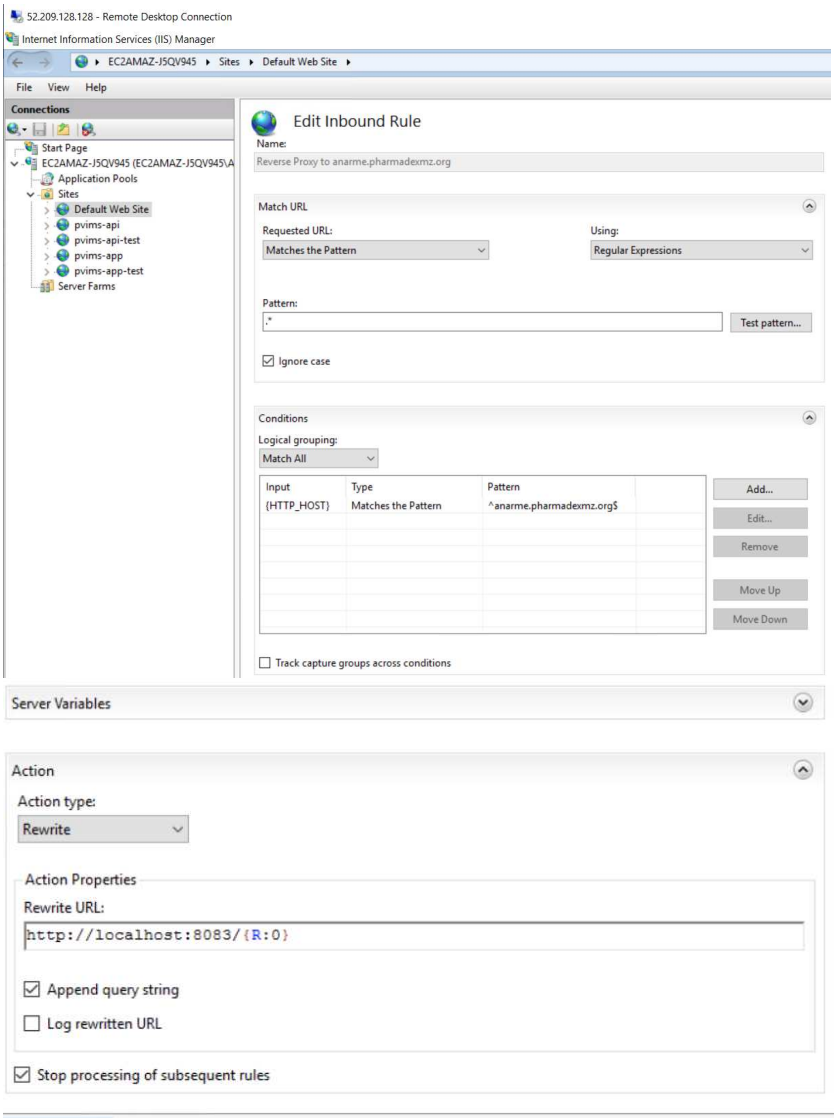
Examples of the configurations are in the binary distributive. The folders are “windows” and “Linux”.

PROVIDE ACCESS FROM THE INTERNET

To provide access from the Internet it will be a good idea to establish a proxy gateway like Nginx or Apache2. The example of virtual server configuration for Apache 2 is in the binary distributive, folder “Linux”.

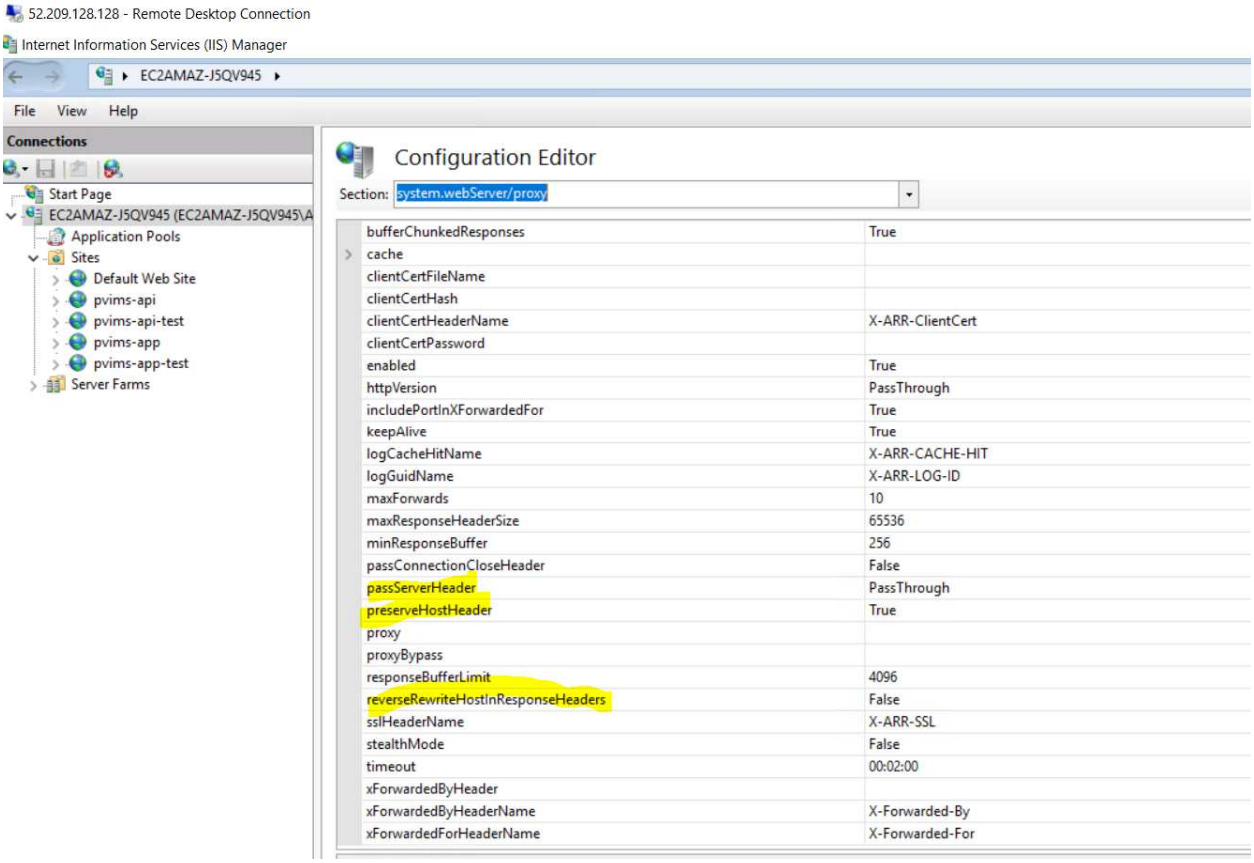
IIS AS A GATEWAY FOR SPRING BOOT APPLICATION

REDIRECT RULES, URL REWRITE MODULE



SPECIAL CONFIGURATIONS

https://serverfault.com/questions/936922/setting-up-iis-reverse-proxy-to-preserve-host-headers



EXAMPLE OF WEB.CONFIG FOR THE DEFAULT IIS SITE

```
<?xml version="1.0" encoding="UTF-8"?>
<configuration>
        <system.webServer>
    <rewrite>
      <rules>
                        <rule name="Reverse Proxy to www.pharmadexmz.org/mozambique"
stopProcessing="true">
                                <match url="mozambique/.*" />
                                        <conditions>
                                                <add input="{HTTP_HOST}"
pattern="^www.pharmadexmz.org$" />
                                        </conditions>
                                <action type="Rewrite" url="http://localhost:8081/{R:0}" />
                        </rule>
                        <rule name="Reverse Proxy to www.pharmadexmz.org"
stopProcessing="true">
                                <match url=".*" />
                                        <conditions>
                                                <add input="{HTTP_HOST}"
pattern="^www.pharmadexmz.org$" />
                                        </conditions>
                                <action type="Rewrite"
url="http://localhost:8081/mozambique/{R:0}" />
                        </rule>
                        <rule name="Reverse Proxy to pharmadexmz.org/mozambique"
stopProcessing="true">
                                <match url="mozambique/.*" />
                                        <conditions>
                                                <add input="{HTTP_HOST}"
pattern="^pharmadexmz.org$" />
                                        </conditions>
                                <action type="Rewrite" url="http://localhost:8081/{R:0}" />
                        </rule>
                        <rule name="Reverse Proxy to pharmadexmz.org"
stopProcessing="true">
                                <match url=".*" />
                                        <conditions>
                                                <add input="{HTTP_HOST}"
pattern="^pharmadexmz.org$" />
                                        </conditions>
                                <action type="Rewrite"
url="http://localhost:8081/mozambique/{R:0}" />
                        </rule>
                        <rule name="Reverse Proxy to eperm.pharmadexmz.org"
stopProcessing="true">
                                <match url=".*" />
```

```
                                        <conditions>
                                                <add input="{HTTP_HOST}"
pattern="^eperm.pharmadexmz.org$" />
                                        </conditions>
                                <action type="Rewrite" url="http://localhost:8082/{R:0}" />
                        </rule>
                        <rule name="Reverse Proxy to anarme.pharmadexmz.org"
stopProcessing="true">
                                <match url=".*" />
                                        <conditions>
                                                <add input="{HTTP_HOST}"
pattern="^anarme.pharmadexmz.org$" />
                                        </conditions>
                                <action type="Rewrite" url="http://localhost:8083/{R:0}" />
                        </rule>
                        <rule name="PViMS HTTP to HTTPS Redirect" stopProcessing="true">
                                <match url=".*" />
                                <conditions>
                                        <add input="{HTTPS}" pattern="^OFF$" />
                                </conditions>
                                <action type="Redirect"
url="https://{HTTP_HOST}{REQUEST_URI}" appendQueryString="false" />
                        </rule>
        </rules>
    </rewrite>
    <tracing>
      <traceFailedRequests>
        <add path="*">
          <traceAreas>
            <add provider="WWW Server" areas="Rewrite" verbosity="Verbose" />
          </traceAreas>
          <failureDefinitions timeTaken="00:00:00" statusCodes="404, 500" />
        </add>
      </traceFailedRequests>
    </tracing>
        </system.webServer>
</configuration>
```

.