IIS 7/8/10

Geoblock Module

Introduction

This document describes the installation and manual of the IIS 7 geoblock module. The module attaches itself to the beginning of the IIS 7 request pipeline. It checks the country of the request based on it's clients IP address. The GeoIP2 database file by MaxMind is used to do this (http://www.maxmind.com).
With the IIS 7 management console you can specify the settings of the module.

The installation of the module will be described first and then we will talk about the configuration of the geoblock module.

This update is built using .net framework 4.8, so it will also work on IIS 8 / IIS 10

Installation

The installation of the module consists of two parts. The interface must be registred to the IIS management console in order to set the configuration of the module. The second step is to include the module for the applications.

Copy the files to the server

The module consists of 3 files

- `IISGeoIP2blockModule.dll`: Contains all the code;
- `geoblockModule_schema.xml`: Defines the configuration of the module;
- `GeoLite2-Country.mmdb`: The file to determine the country by IP.

The dll file needs to be copied to:
`%windir%\System32\inetsrv`

The schema xml file needs to be copied to:
`%windir%\System32\inetsrv\config\schema`

The geo ip data file can be put anywhere you like. Make sure the user under which IIS runs can read the file (`IIS_IUSR)`.

Adding the dll to the global assembly cache (GAC)

To register the file to the global assembly cache (GAC), drag the dll to:
`%windir%\assembly`

For newer versions of windows like Windows Server 2008R2, you can't drag the dll to the assembly folder anymore. You have to use another tool. You can use `gacutil.exe` which comes with Visual Studio. Due to the licensing on this tool, I cannot include it into the download unfortunately. You will need 3 files:

- `gacutil.exe`
- `gacutil.exe.config`
- `gacutlc.dll`

Run a command prompt as administrator and change the directory to the folder where `gacutil.exe` and `IISGeoIP2blockModule.dll` are located. Perform the following command:
`gacutil.exe /i IISGeoIP2blockModule.dll`
It will output: `Assembly successfully added to the cache`

It should be visible in the GAC on this location:
`%windir%\Microsoft.NET\assembly\GAC_MSIL\IISGeoIP2blockModule`

Register the UI to IIS management console

The configuration section

First, IIS needs to be aware of the configuration schema. In order to register the schema open the following file using notepad.
(Note: use **notepad** and not notepad++ or another tool!)
```
%windir%\System32\inetsrv\config\applicationHost.config
```

Find the following node
```
<sectionGroup name="system.webServer">
```
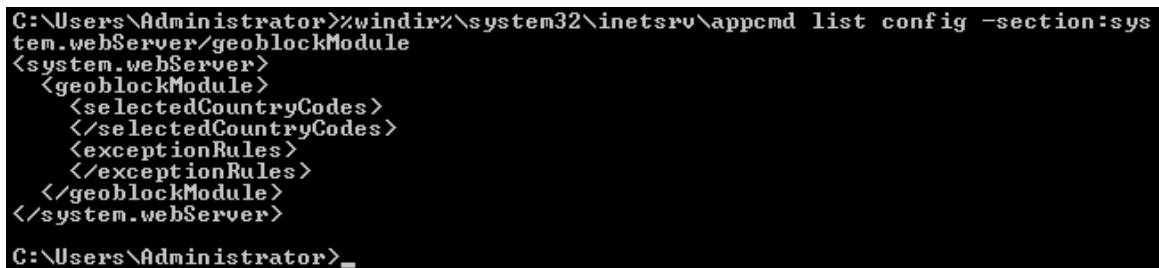
And add the following childnode to it
```
<section name="geoblockModule" overrideModeDefault="Allow" />
```

```
<configSections>
        ...
        <sectionGroup name="system.webServer">
            <section name="geoblockModule" overrideModeDefault="Allow" />
        ...
```

To check whether IIS recognizes the config run the following command
```
%windir%\system32\inetsrv\appcmd list config -
section:system.webServer/geoblockModule
```

If the output looks like the screenshot below, the schema is registered.
If not, you did something wrong. Make sure the schema file is copied
to the correct locations and that you did not make a typo or something.
And of course use good old simple notepad.

```
C:\Users\Administrator>%windir%\system32\inetsrv\appcmd list config -section:sys
tem.webServer/geoblockModule
<system.webServer>
  <geoblockModule>
    <selectedCountryCodes>
    </selectedCountryCodes>
    <exceptionRules>
    </exceptionRules>
  </geoblockModule>
</system.webServer>

C:\Users\Administrator>_
```

Find the following node
```
<modules>
```

And add the following childnode to it
```
<add name="Geoblocker"
type="IISGeoIP2blockModule.GeoblockHttpModule, IISGeoIP2blockModule,
Version=2.4.1.0, Culture=neutral, PublicKeyToken=50262f380b75b73d"
preCondition="runtimeVersionv4.0" />
```

The UI page

The next step is to register the module interface to the IIS management console. That will enable us to save and update configurations. Open the following file with notepad

```
%windir%\System32\inetsrv\config\administration.config
```

Find the following node
```
<moduleProviders>
```

And add the following childnode to it
```
<add name="Geoblocker"
type="IISGeoIP2blockModule.GeoblockModuleProvider,
IISGeoIP2blockModule, Version=2.4.1.0, Culture=neutral,
PublicKeyToken=50262f380b75b73d" />
```

Also find the following node
```
<modules>
```

And add the following childnode to it
```
<add name="Geoblocker" />
```

Now launch the IIS management console (run → inetmgr)
You will see the geoblocker module icon in the features view of every website and application.

Open it and change some settings and click apply in the top right corner. Navigate away from the geoblock configuration page, reopen it and if the changed values are still present, the UI works as expected.

If the icon does not appear, check the event log for errors.

Register the module

Via Powershell (as admin):

New-WebManagedModule -Name "Geoblocker" -Type
"IISGeoIP2blockModule.GeoblockHttpModule, IISGeoIP2blockModule,
Version=$ReleaseVersion, Culture=neutral, PublicKeyToken=50262f380b75b73d"
-Precondition "runtimeVersionv4.0"

Modules

Use this feature to configure the native and managed code modules that process requests made to the Web server.

Group by: No Grouping

Name	Code	Module Type	Entry Type
Geoblocker	IISGeoIP2blockModule.GeoblockHttpModule...	Managed	Local

Configuration Manual

The configuration is done with a simple form. On the form you can enable or disable the blocking functionality and select the geo ip data file from maxmind. You can then select countries to allow or deny access. You can specify additional rules to make exceptions.
All the options are described in detail below.

Enable geoblock module

With this checkbox you can quickly enable or disable the module. This comes especially in handy when using the applicationHost.config option to attach the module to the websites and applications. Because adding and removing the module in the IIS 7 management console is not always straightforward.

Deny Action Type

Selects the type of action to be taken when a request is denied. The following list shows the available actions:
- Unauthorized
- Forbidden
- Not Found
- Abort

GeoIP2 data file

This value should contain a filepath to the GeoLite2-Country.mmdb (free) or GeoIP2-Country.mmdb (commercial) file by MaxMind. You can use the 'select file' button to browse for the file.

The file could be embedded in the module as a resource, but because the file should be updated every once in a while, the decision was made to make this configurable.

Allow / Deny access for

You have the choice to include or exclude the selected countries. When 'allow access for' is checked, only the selected countries are granted access. When 'deny access for' is checked, the selected countries are denied access.
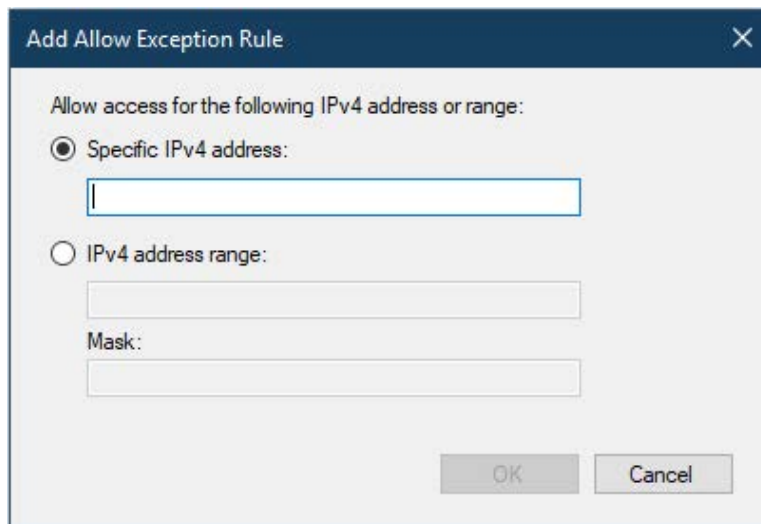
Country select

With the country list you can select the countries you want to allow or deny access. The countries in the list are retrieved from the country lookup class from MaxMind. Behind every country the country code is shown. This is the country code used by MaxMind.

Exception rules

There is a possibility that someone is blocked that should not be blocked. Or you always want to grant some clients access, or block them. To cope with these situations, you can specify exception rules. These rules are just like normal IPv4 address and domain restrictions in IIS 7. Select 'Add Allow Exception Rule'or 'Add Deny Exception Rule' in the top right task list to add a rule using the form below.

You can specify a single IP address, or an entire IP range. The geoblocker first checks the exception rules, before checking the country.

Apply / Cancel

In the top right corner you can find the apply and cancel actions. The actions are enabled when you change one of the settings. When apply is clicked, the changes are saved to the configuration file. When cancel is clicked, the form will reset to the last saved configuration.

Testing the geoblock module

Testing is quite simple. Configure the module for an application and make sure you will be blocked. Then make a simple request for an image or something that you can put in the application root folder. The page you will see will look something like this if you open it on the server itself.

When opened from a remote client, it will look like this

Note that the requested file can be in cache, so it will still display. Add a random string behind the request like `/welcome.png?randomness` to be sure the image is requested instead of being retrieved from cache.

IIS also has an module called 'Error Pages'. You can add the 403.6 error page with this module to give a more explanatory message to the users.