

# Markets Gateway Browserless Coding For C# .Net via Token Authentication

---

Browserless Basic Instructions and Sample Code

10/19/2015



## Table of Contents

Configuring C# for Markets Gateway Sandbox .....	3
C# Markets Gateway Class .....	3
C# Sample code for the Sandbox that utilizes the class above .....	7

## Configuring C# for Markets Gateway Sandbox

A C# project was developed for the purposes of connecting to the Markets Gateway Sandbox which utilizes Token Authentication, and is able to send / receive XML.

#1 Open Visual Studio. **Note:** Code was developed using Visual Studio 2010 version 4.0, and will not work without code revisions (removing LINQ commands) for anything earlier than VS10.

#2 Copy the code provided below into your project.

#3 Invoke the various methods of the class below (provided later) to accomplish the sending, and receiving of XML to Markets Gateway.

(WebControl.cs):

### *C# Markets Gateway Class*

```
using System;
using System.Linq;
using System.Collections.Generic;
using System.Text;
using System.Net;
using System.IO;
using System.Windows.Forms;
using System.ComponentModel;
using System.Globalization;

namespace MarketsGatewayUsingOpenAM
{
    class WebControl
    {
        public string User { get; set; }
        public string Password { get; set; }
        public string XML_SendStr { get; set; }
        public string OpenAM_URL { get; set; }
        public string Web_URL { get; set; }
        public enum XMLTypes { XMLQuery, XMLSubmit };
        public XMLTypes XMLType { get; set; }
        private const string querySoapAction = "/xml/query";
        private const string submitSoapAction = "/xml/submit";

        public string sendXMLRoutine()
        {
            string soapaction;
            HttpPost hp = new HttpPost();
            string response = "";

            soapaction = (XMLType == XMLTypes.XMLQuery) ? querySoapAction : submitSoapAction;
            hp.Password = Password;
            hp.User = User;
            hp.WebURL = OpenAM_URL;
            hp.TokenID = hp.openamGetToken();
            hp.WebURL = Web_URL + soapaction;
```

```
    if (hp.systemConnect())
    {
        //Send your packet
        response = hp.Upload(XML_SendStr);
        hp = null;
    }
    return response;
}
}

class HttpPost
{
    private HttpWebRequest Connection;
    private Dictionary<string, string> openAM_KeyValuePairs;
    private string url;
    private bool isOpenAM = false;
    public string User { get; set; }
    public string Password { get; set; }
    public string TokenID { get; set; }
    public string WebURL
    {
        get { return url; }
        set
        {
            url = value;
            if (Connection == null)
            {
                try
                {
                    Connection = (HttpWebRequest)WebRequest.Create(url);
                }
                catch (Exception e)
                {
                    MessageBox.Show("Exception attempting to connect:" + e.Message);
                }
            }
        }
    }

    public string openamGetToken()
    {
        string tokenResult = "";
        StringBuilder responseData = null;
        try
        {
            if (User != "" && Password != "")
            {
                Connection.ContentType = "application/json";
                Connection.Headers.Set("X-OpenAM-Username", User);
                Connection.Headers.Set("X-OpenAM-Password", Password);
                Connection.ContentLength = 0;
                Connection.ProtocolVersion = System.Net.HttpVersion.Version11;
                Connection.Method = "POST";
                Connection.Accept = "*/*";
                Connection.KeepAlive = true;

                //Get the response back and store into responsedata
                responseData = GetResponseData();
            }
        }
    }
}
```

```
openAM_KeyValuePairs = responseData.ToString().Remove(0, 1).Split(',')
    .Select(value => value.Split(':'))
    .ToDictionary(pair => pair[0].Replace("\"", ""), pair => pair[1].Replace("\"",
""));

//Get the tokenId and use as Cookie back in main request
tokenResult = openAM_KeyValuePairs["tokenId"];
}
else
{
    MessageBox.Show("You must first provide a username and password");
}
}
catch (Exception ex)
{
    MessageBox.Show("Exception attempting to obtain token:" + ex.Message);
}
finally
{
    Connection = null;
}
return tokenResult;
}

//Call this After openAM_GetToken Routine
public bool systemConnect()
{
    bool connectionConfigured = false;
    try
    {
        if (TokenID != "")
        {
            Connection.ContentType = "text/xml";
            Connection.ProtocolVersion = System.Net.HttpVersion.Version11;
            Connection.Method = "POST";
            Connection.KeepAlive = false;
            Connection.Headers.Set("Cookie", "pjmauthtrain=" + TokenID);
            connectionConfigured = true;
        }
        else
        {
            MessageBox.Show("No token ID provided");
        }
    }
    catch (Exception ex)
    {
        MessageBox.Show("Exception attempting to connect to web using token:" + ex.Message);
    }

    return connectionConfigured;
}

public string Upload(string uploadString)
{
    StringBuilder rd = null;
    byte[] byteArray = Encoding.ASCII.GetBytes(uploadString);
```

```
Connection.ContentType = byteArray.Length;
Stream postStream = Connection.GetRequestStream();
postStream = Connection.GetRequestStream();
postStream.Write(byteArray, 0, byteArray.Length);
postStream.Close();

//Assign the response object of 'WebRequest' to a 'WebResponse' variable.
rd = GetResponseData();

Connection = null;
return rd.ToString();
}

private StringBuilder GetResponseData()
{
    StringBuilder rd = new StringBuilder();

    WebResponse WebResponseObject = Connection.GetResponse();

    using (Stream stream = WebResponseObject.GetResponseStream())
    {
        StreamReader reader = new StreamReader(stream, Encoding.UTF8);
        rd.Append(reader.ReadToEnd());
    }

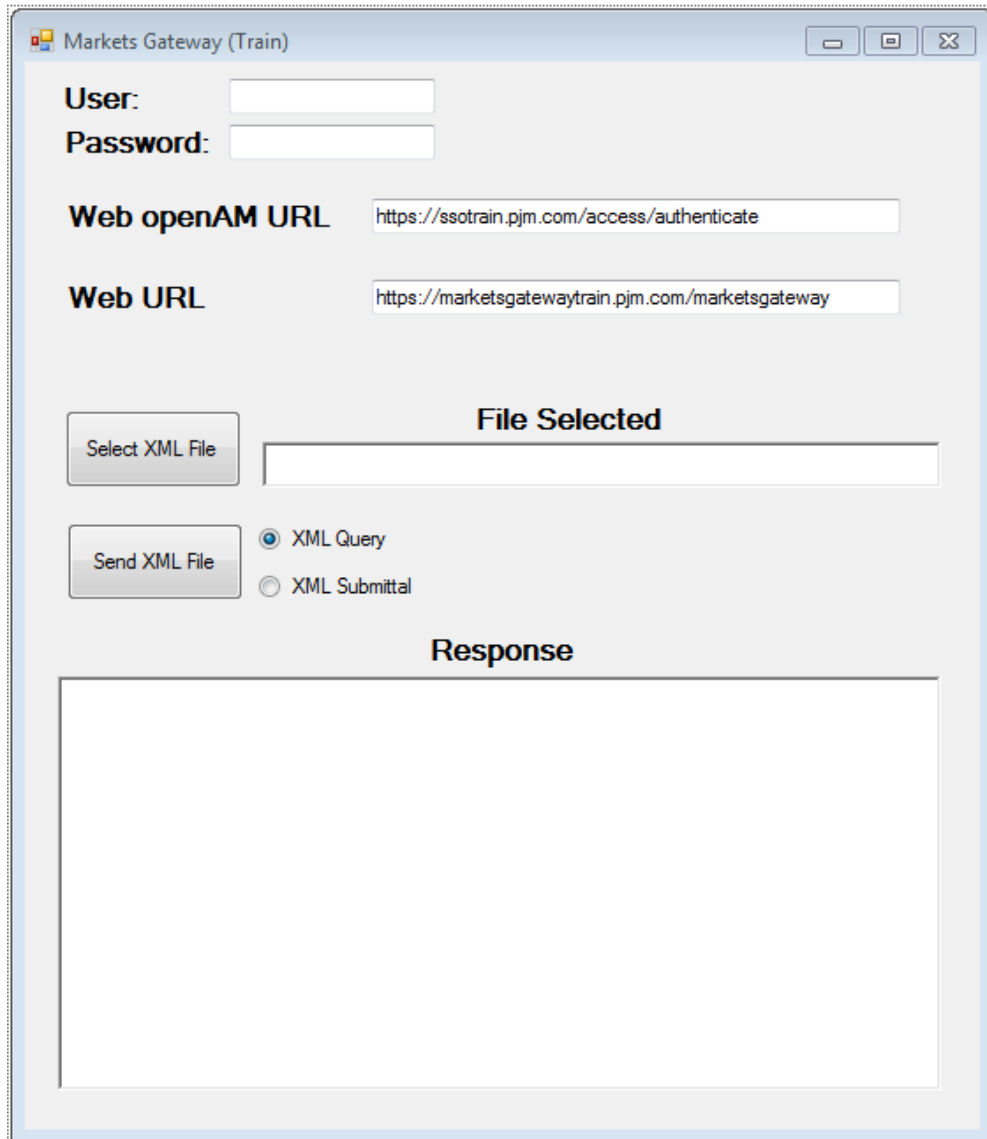
    WebResponseObject.Close();
    WebResponseObject = null;

    return rd;
}
}
```

### ***C# Sample code for the Sandbox that utilizes the class above***

#1 I created a form to utilize, and to invoke the appropriate routines defined in the class code above. The form created was as follows:

**NOTE:** The code above is exclusively for the sandbox due to the cookie definition highlighted in **Yellow** above. You could easily make that a passed in parameter to generalize for the sandbox/production environment once the cookie for the production environment is defined.



Markets Gateway (Train)

User:

Password:

Web openAM URL

Web URL

Select XML File

Send XML File  XML Query  XML Submittal

Response

#2 The code that creates the above screen is as follows

(MarketsGatewayForm.designer.cs):

```
namespace MarketsGatewayUsingOpenAM
{
    partial class frmGateway
    {
        /// <summary>
        /// Required designer variable.
        /// </summary>
        private System.ComponentModel.IContainer components = null;

        /// <summary>
        /// Clean up any resources being used.
        /// </summary>
        /// <param name="disposing">true if managed resources should be disposed; otherwise,
false.</param>
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            this.txtResponse = new System.Windows.Forms.RichTextBox();
            this.lblResults = new System.Windows.Forms.Label();
            this.btnSelectFile = new System.Windows.Forms.Button();
            this.btnUploadFile = new System.Windows.Forms.Button();
            this.lblFileSelected = new System.Windows.Forms.Label();
            this.lblUser = new System.Windows.Forms.Label();
            this.lblPassword = new System.Windows.Forms.Label();
            this.txtUser = new System.Windows.Forms.TextBox();
            this.txtPassword = new System.Windows.Forms.TextBox();
            this.txtOpenAMURL = new System.Windows.Forms.TextBox();
            this.lblURL = new System.Windows.Forms.Label();
            this.txtGatewayURL = new System.Windows.Forms.TextBox();
            this.lblWebURL = new System.Windows.Forms.Label();
            this.radQuery = new System.Windows.Forms.RadioButton();
            this.radSubmit = new System.Windows.Forms.RadioButton();
            this.txtFileSelected = new System.Windows.Forms.RichTextBox();
            this.SuspendLayout();
            //
            // txtResponse
            //
            this.txtResponse.DetectUrls = false;
            this.txtResponse.Location = new System.Drawing.Point(19, 349);
            this.txtResponse.Name = "txtResponse";
        }
    }
}
```



```
this.txtResponse.Size = new System.Drawing.Size(501, 235);
this.txtResponse.TabIndex = 0;
this.txtResponse.Text = "";
//
// lblResults
//
this.lblResults.AutoSize = true;
this.lblResults.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)0));
this.lblResults.Location = new System.Drawing.Point(226, 324);
this.lblResults.Name = "lblResults";
this.lblResults.Size = new System.Drawing.Size(90, 20);
this.lblResults.TabIndex = 1;
this.lblResults.Text = "Response";
//
// btnSelectFile
//
this.btnSelectFile.Location = new System.Drawing.Point(23, 198);
this.btnSelectFile.Name = "btnSelectFile";
this.btnSelectFile.Size = new System.Drawing.Size(100, 44);
this.btnSelectFile.TabIndex = 2;
this.btnSelectFile.Text = "Select XML File";
this.btnSelectFile.UseVisualStyleBackColor = true;
this.btnSelectFile.Click += new System.EventHandler(this.btnFileSelected_Click);
//
// btnUploadFile
//
this.btnUploadFile.Location = new System.Drawing.Point(24, 262);
this.btnUploadFile.Name = "btnUploadFile";
this.btnUploadFile.Size = new System.Drawing.Size(100, 44);
this.btnUploadFile.TabIndex = 3;
this.btnUploadFile.Text = "Send XML File";
this.btnUploadFile.UseVisualStyleBackColor = true;
this.btnUploadFile.Click += new System.EventHandler(this.btnSendFile_Click);
//
// lblFileSelected
//
this.lblFileSelected.AutoSize = true;
this.lblFileSelected.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)0));
this.lblFileSelected.Location = new System.Drawing.Point(252, 193);
this.lblFileSelected.Name = "lblFileSelected";
this.lblFileSelected.Size = new System.Drawing.Size(114, 20);
this.lblFileSelected.TabIndex = 4;
this.lblFileSelected.Text = "File Selected";
//
// lblUser
//
this.lblUser.AutoSize = true;
this.lblUser.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)0));
this.lblUser.Location = new System.Drawing.Point(18, 11);
this.lblUser.Name = "lblUser";
this.lblUser.Size = new System.Drawing.Size(52, 20);
this.lblUser.TabIndex = 6;
this.lblUser.Text = "User:";
//
// lblPassword
```

```
//
this.lblPassword.AutoSize = true;
this.lblPassword.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
this.lblPassword.Location = new System.Drawing.Point(19, 36);
this.lblPassword.Name = "lblPassword";
this.lblPassword.Size = new System.Drawing.Size(91, 20);
this.lblPassword.TabIndex = 7;
this.lblPassword.Text = "Password:";
//
// txtUser
//
this.txtUser.Location = new System.Drawing.Point(116, 10);
this.txtUser.Name = "txtUser";
this.txtUser.Size = new System.Drawing.Size(117, 20);
this.txtUser.TabIndex = 8;
//
// txtPassword
//
this.txtPassword.Location = new System.Drawing.Point(116, 36);
this.txtPassword.Name = "txtPassword";
this.txtPassword.PasswordChar = '*';
this.txtPassword.Size = new System.Drawing.Size(117, 20);
this.txtPassword.TabIndex = 9;
//
// txtOpenAMURL
//
this.txtOpenAMURL.Location = new System.Drawing.Point(197, 78);
this.txtOpenAMURL.Name = "txtOpenAMURL";
this.txtOpenAMURL.Size = new System.Drawing.Size(300, 20);
this.txtOpenAMURL.TabIndex = 11;
this.txtOpenAMURL.Text = "https://ssotrain.pjm.com/access/authenticate";
//
// lblURL
//
this.lblURL.AutoSize = true;
this.lblURL.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
this.lblURL.Location = new System.Drawing.Point(21, 78);
this.lblURL.Name = "lblURL";
this.lblURL.Size = new System.Drawing.Size(157, 20);
this.lblURL.TabIndex = 10;
this.lblURL.Text = "Web openAM URL";
//
// txtGatewayURL
//
this.txtGatewayURL.Location = new System.Drawing.Point(197, 124);
this.txtGatewayURL.Name = "txtGatewayURL";
this.txtGatewayURL.Size = new System.Drawing.Size(300, 20);
this.txtGatewayURL.TabIndex = 13;
this.txtGatewayURL.Text = "https://marketsgatewaytrain.pjm.com/marketsgateway";
//
// lblWebURL
//
this.lblWebURL.AutoSize = true;
this.lblWebURL.Font = new System.Drawing.Font("Microsoft Sans Serif", 12F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
this.lblWebURL.Location = new System.Drawing.Point(21, 124);
```

```
this.lblWebURL.Name = "lblWebURL";
this.lblWebURL.Size = new System.Drawing.Size(86, 20);
this.lblWebURL.TabIndex = 12;
this.lblWebURL.Text = "Web URL";
//
// radQuery
//
this.radQuery.AutoSize = true;
this.radQuery.Checked = true;
this.radQuery.Location = new System.Drawing.Point(133, 262);
this.radQuery.Name = "radQuery";
this.radQuery.Size = new System.Drawing.Size(78, 17);
this.radQuery.TabIndex = 14;
this.radQuery.TabStop = true;
this.radQuery.Text = "XML Query";
this.radQuery.UseVisualStyleBackColor = true;
//
// radSubmit
//
this.radSubmit.AutoSize = true;
this.radSubmit.Location = new System.Drawing.Point(133, 289);
this.radSubmit.Name = "radSubmit";
this.radSubmit.Size = new System.Drawing.Size(93, 17);
this.radSubmit.TabIndex = 15;
this.radSubmit.Text = "XML Submittal";
this.radSubmit.UseVisualStyleBackColor = true;
//
// txtFileSelected
//
this.txtFileSelected.DetectUrls = false;
this.txtFileSelected.Location = new System.Drawing.Point(135, 216);
this.txtFileSelected.Multiline = false;
this.txtFileSelected.Name = "txtFileSelected";
this.txtFileSelected.ScrollBars = System.Windows.Forms.RichTextBoxScrollBars.Horizontal;
this.txtFileSelected.Size = new System.Drawing.Size(385, 26);
this.txtFileSelected.TabIndex = 16;
this.txtFileSelected.Text = "";
this.txtFileSelected.WordWrap = false;
//
// frmGateway
//
this.AutoScaleDimensions = new System.Drawing.SizeF(6F, 13F);
this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
this.ClientSize = new System.Drawing.Size(542, 606);
this.Controls.Add(this.txtFileSelected);
this.Controls.Add(this.radSubmit);
this.Controls.Add(this.radQuery);
this.Controls.Add(this.txtGatewayURL);
this.Controls.Add(this.lblWebURL);
this.Controls.Add(this.txtOpenAMURL);
this.Controls.Add(this.lblURL);
this.Controls.Add(this.txtPassword);
this.Controls.Add(this.txtUser);
this.Controls.Add(this.lblPassword);
this.Controls.Add(this.lblUser);
this.Controls.Add(this.lblFileSelected);
this.Controls.Add(this.btnUploadFile);
this.Controls.Add(this.btnSelectFile);
```

```
this.Controls.Add(this.lblResults);
this.Controls.Add(this.txtResponse);
this.Name = "frmGateway";
this.StartPosition = System.Windows.Forms.FormStartPosition.CenterScreen;
this.Text = "Markets Gateway (Train)";
this.ResumeLayout(false);
this.PerformLayout();

}

#endregion
private System.Windows.Forms.RichTextBox txtResponse;
private System.Windows.Forms.Label lblResults;
private System.Windows.Forms.Button btnSelectFile;
private System.Windows.Forms.Button btnUploadFile;
private System.Windows.Forms.Label lblFileSelected;
private System.Windows.Forms.Label lblUser;
private System.Windows.Forms.Label lblPassword;
private System.Windows.Forms.TextBox txtUser;
private System.Windows.Forms.TextBox txtPassword;
private System.Windows.Forms.TextBox txtOpenAMURL;
private System.Windows.Forms.Label lblURL;
private System.Windows.Forms.TextBox txtGatewayURL;
private System.Windows.Forms.Label lblWebURL;
private System.Windows.Forms.RadioButton radQuery;
private System.Windows.Forms.RadioButton radSubmit;
private System.Windows.Forms.RichTextBox txtFileSelected;
}
}
```

#3 The code that resides behind the screen above, and drives the screen, which also defines the code behind the two critical buttons is provided below.

(MarketsGatewayForm.cs) :

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;

namespace MarketsGatewayUsingOpenAM
{
    public partial class frmGateway : Form
    {
        private string XML_to_Upload;
        public frmGateway()
        {
            InitializeComponent();
        }
        private void btnFileSelected_Click(object sender, EventArgs e)
    }
}
```

```
{
    // Create an instance of the open file dialog box.
    OpenFileDialog openFileDialog1 = new OpenFileDialog();

    // Set filter options and filter index.
    openFileDialog1.Filter = "XML Files (*.xml)|*.xml|Text Files (.txt)|*.txt";
    openFileDialog1.FilterIndex = 1;

    openFileDialog1.Multiselect = false;

    // Call the ShowDialog method to show the dialog box.
    DialogResult userClickedOK = openFileDialog1.ShowDialog();

    // Process input if the user clicked OK.
    if (userClickedOK == DialogResult.OK)
    {
        this.txtFileSelected.Text = openFileDialog1.FileName;
        System.IO.StreamReader sr = new System.IO.StreamReader(this.txtFileSelected.Text);
        XML_to_Upload = sr.ReadToEnd();
        sr.Close();
    }
}

private void btnSendFile_Click(object sender, EventArgs e)
{
    if (txtUser.Text != "" && txtPassword.Text != "")
    {
        WebControl c = new WebControl();
        c.User = txtUser.Text;
        c.Password = txtPassword.Text;
        c.XML_SendStr = XML_to_Upload;
        c.OpenAM_URL = this.txtOpenAMURL.Text;
        c.Web_URL = this.txtGatewayURL.Text;
        c.XMLType = (this.radQuery.Checked) ? WebControl.XMLTypes.XMLQuery :
WebControl.XMLTypes.XMLSubmit;
        this.txtResponse.Text = "Sending...";
        this.txtResponse.Refresh();
        this.txtResponse.Text = c.sendXMLRoutine();
    }
}
}
```