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.NET (C#) Authorization Header Sample Code

The following document shows sample code for an example of generating the Authorization Header using C# in the .NET framework.

Prerequisites to connecting QA and Production:

- Access granted to the Amex for Developer's Portal by an Amex Enablement Manager
- Received and installed the Amex Server TLS certificates on Client Server's Truststore.
- Shared valid Client Certificate with Amex for QA Environment
- Amex has installed the Client Certificate and provided back the Client ID and Client Secret keys.

Client Certificate Requirements (No Client Certificates Required for Sandbox)

- Certificate must be signed by a valid Certificate Authority
- Certificate cannot be Self-Signed
- The validity must be 1 or 2 years, and must still have at least 9 months before expiry
- The Certificate file must contain the full chain (Root, Intermediate, Leaf)

Sample C# Code (.NET)

```csharp
using System;
using System.Collections.Generic;
using System.Collections.ObjectModel;
using System.Security.Cryptography;
using System.Text;
using System.Text.Json;
using System.Text.Json.Serialization;
using System.Threading.Tasks;

namespace HelloWorld {
    class Program {
        private static readonly string SIGNATURE_FORMAT = "{0}\n{1}\n{2}\n{3}\n{4
}\n{5}\n{6}\n";
        private static readonly string AUTH_HEADER_FORMAT = "MAC id=\"{0}\",ts=\"
{1}\",nonce=\"{2}\",bodyhash=\"{3}\",mac=\"{4}\"";
        static void Main (string[] args) {
            string clientKey = ""; // Insert Client Key Here
            string clientSecret = ""; // Insert Client Key Here
            string requestUrl = ""; // APIGEE URL here
            Uri url = new Uri (requestUrl);
            string queryParams = ""; // Query Params needs to be specified in GET
 call for HMAC.
            string resourcePath = url.AbsolutePath + queryParams;
            string host = url.Host;
            int port = url.Port;
            string httpMethod = "GET";
            Payload ps = new Payload ();
            // string payload = JsonSerializer.Serialize(ps); // Payload needs to
 be set for POST
            string payload = "";
            string nonce = Guid.NewGuid ().ToString ();
            string ts = DateTimeOffset.UtcNow.ToUnixTimeMilliseconds ().ToString
();
            string macAuth = GenerateMacHeader (clientKey, clientSecret, resource
Path, host, port, httpMethod, payload, nonce, ts);
            Console.WriteLine (macAuth);
        }

        private static string GenerateMacHeader (string clientKey, string clientS
ecret, string resourcePath, string host, int port, string httpMethod, string payl
oad, string nonce, string ts) {
            //create crypto using client secret
            var hmac = new HMACSHA256 (Encoding.UTF8.GetBytes (clientSecret));
            hmac.Initialize ();
```

```
//body hash generation
        byte[] rawBodyHash = hmac.ComputeHash(Encoding.UTF8.GetBytes(payload)
);

        string bodyHash = Convert.ToBase64String(rawBodyHash);


        //create signature
        string signature = string.Format(SIGNATURE_FORMAT, ts, nonce, httpMet
hod, resourcePath, host, port, bodyHash);
        byte[] signatureBytes = hmac.ComputeHash(Encoding.UTF8.GetBytes(signa
ture));
        string signatureString = Convert.ToBase64String(signatureBytes);


        return string.Format(AUTH_HEADER_FORMAT, clientKey, ts, nonce, bodyHa
sh, signatureString);
    }
  }
}
```

Sample Payload (Format JSON)

```
{
  "se_setup_request_count": 1,
  "message_id": "egr2bt362",
  "se_setup_requests": [
    {
      "record_number": "0000036500",
      "participant_se": "1021311634",
      "submitter_id": "1030026553",
      "se_detail_status_code": "36500",
      "se_status_code_change_date": "2015/12/25",
      "language_preference_code": "EN",
      "japan_credit_bureau_indicator": "0000036500",
      "marketing_indicator": "Y",
      "ownership_type_indicator": "D",
      "seller_transacting_indicator": "Y",
      "client_defined_code": "36500",
      "seller": {
        "seller_id": "GSMF093019APIX1006",
        "seller_url": "www.gsmfautomationtool.com/acquisition",
        "seller_status": "Success",
        "seller_mcc": "5999",
        "seller_legal_name": "John Doe",
        "seller_dba_name": "John Doe",
        "seller_business_registration_number": "0000036500",
        "seller_business_phone_number": "9914023611",
        "seller_email_address": "john.doe@example.com",
        "seller_currency_code": "USD",
        "seller_start_date": "2015/12/25",
        "seller_term_date": "2015/12/26",
        "seller_charge_volume": "36500",
        "seller_transaction_count": "425",
        "seller_chargeback_count": "425",
```

```
        "seller_chargeback_amount": "425",
        "seller_street_address": {
          "address_line_1": "100 Elm Street",
          "address_line_2": "Oak Avenue",
          "address_line_3": "Maple Court",
          "address_line_4": "Third Floor",
          "address_line_5": "Suite A",
          "city_name": "New York",
          "region_code": "NY",
          "postal_code": "85032",
          "country_code": "US"
        }
      },
      "significant_owners": {
        "first_owner": {
          "first_name": "FOFIRSTNM001",
          "last_name": "Smith",
          "identification_number": "0000036500",
          "date_of_birth": "2015/12/27",
          "street_address": {
            "address_line_1": "100 Elm Street",
            "address_line_2": "Oak Avenue",
            "address_line_3": "Maple Court",
            "address_line_4": "Third Floor",
            "address_line_5": "Suite A",
            "city_name": "New York",
            "region_code": "New York",
            "postal_code": "85032",
            "country_code": "US"
          }
        },
        "second_owner": {
          "first_name": "Adam",
          "last_name": "Smith",
          "identification_number": "0000036500",
          "date_of_birth": "2015/12/28",
          "street_address": {
            "address_line_1": "100 Elm Street",
            "address_line_2": "Oak Avenue",
            "address_line_3": "Maple Court",
            "address_line_4": "Third Floor",
            "address_line_5": "Suite A",
            "city_name": "New York",
            "region_code": "New York",
            "postal_code": "85032",
            "country_code": "US"
          }
        },
        "third_owner": {
          "first_name": "Adam",
          "last_name": "Smith",
          "identification_number": "0000036500",
          "date_of_birth": "2015/12/29",
          "street_address": {
            "address_line_1": "100 Elm Street",
            "address_line_2": "Oak Avenue",
            "address_line_3": "Maple Court",
            "address_line_4": "Third Floor",
            "address_line_5": "Suite A",
            "city_name": "New York",
            "region_code": "New York",
            "postal_code": "85032",
            "country_code": "US"
```

```
        }
      },
      "fourth_owner": {
        "first_name": "Adam",
        "last_name": "Smith",
        "identification_number": "0000036500",
        "date_of_birth": "2015/12/30",
        "street_address": {
          "address_line_1": "100 Elm Street",
          "address_line_2": "Oak Avenue",
          "address_line_3": "Maple Court",
          "address_line_4": "Third Floor",
          "address_line_5": "Suite A",
          "city_name": "New York",
          "region_code": "New York",
          "postal_code": "85032",
          "country_code": "US"
        }
      }
    },
    "authorized_signer": {
      "first_name": "Adam",
      "last_name": "Smith",
      "identification_number": "0000036500",
      "date_of_birth": "2015/12/31",
      "street_address": {
        "address_line_1": "100 Elm Street",
        "address_line_2": "Oak Avenue",
        "address_line_3": "Maple Court",
        "address_line_4": "Third Floor",
        "address_line_5": "Suite A",
        "city_name": "New York",
        "region_code": "New York",
        "postal_code": "85032",
        "country_code": "US"
      },
      "title": "MR."
    },
    "sale": {
      "channel_indicator_code": "DS",
      "channel_name": "CN",
      "represent_id": "36500",
      "iso_register_number": "0000036500"
    }
  }
 ]
}
```