Loxodon Framework Connection

Developed by Clark

Requires Unity 2018.4 or higher.

This is a network connection component, implemented using TcpClient, supports IPV6 and IPV4, automatically recognizes the current network when connecting to a domain name, and connects to the server according to the address list given by DNS.

Installation

Install via OpenUPM (recommended)

OpenUPM can automatically manage dependencies, it is recommended to use it to install the framework.

Requires nodejs's npm and openupm-cli, if not installed please install them first.

```
# Install openupm-cli,please ignore if it is already installed.
npm install -g openupm-cli

#Go to the root directory of your project
cd F:/workspace/New Unity Project

#Install loxodon-framework-connection
openupm add com.vovgou.loxodon-framework-connection
```

Install via Packages/manifest.json

Modify the Packages/manifest.json file in your project, add the third-party repository "package.openupm.com"'s configuration and add "com.vovgou.loxodon-framework-connection" in the "dependencies" node.

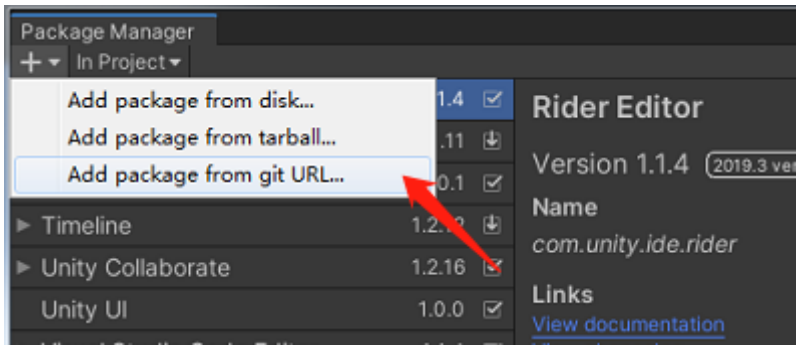
Installing the framework in this way does not require nodejs and openm-cli.

```
{
  "dependencies": {
    ...
    "com.unity.modules.xr": "1.0.0",
    "com.vovgou.loxodon-framework-connection": "2.0.0"
  },
  "scopedRegistries": [
    {
      "name": "package.openupm.com",
      "url": "https://package.openupm.com",
      "scopes": [
        "com.vovgou",
        "com.openupm"
      ]
    }
  ]
}
```

Install via git URL

After Unity 2019.3.4f1 that support path query parameter of git package. You can add https://github.com/vovgou/loxodon-framework.git?path=Loxodon.Framework/Assets/LoxodonFramework to Package Manager

- Loxodon.Framework.Connection: https://github.com/vovgou/loxodon-framework.git?path=Loxodon.Framework.Connection/Assets/LoxodonFramework/Connection



Install via *.unitypackage file

Download Loxodon.Framework.Connection.unitypackage, import them into your project.

- Releases

Quick Start

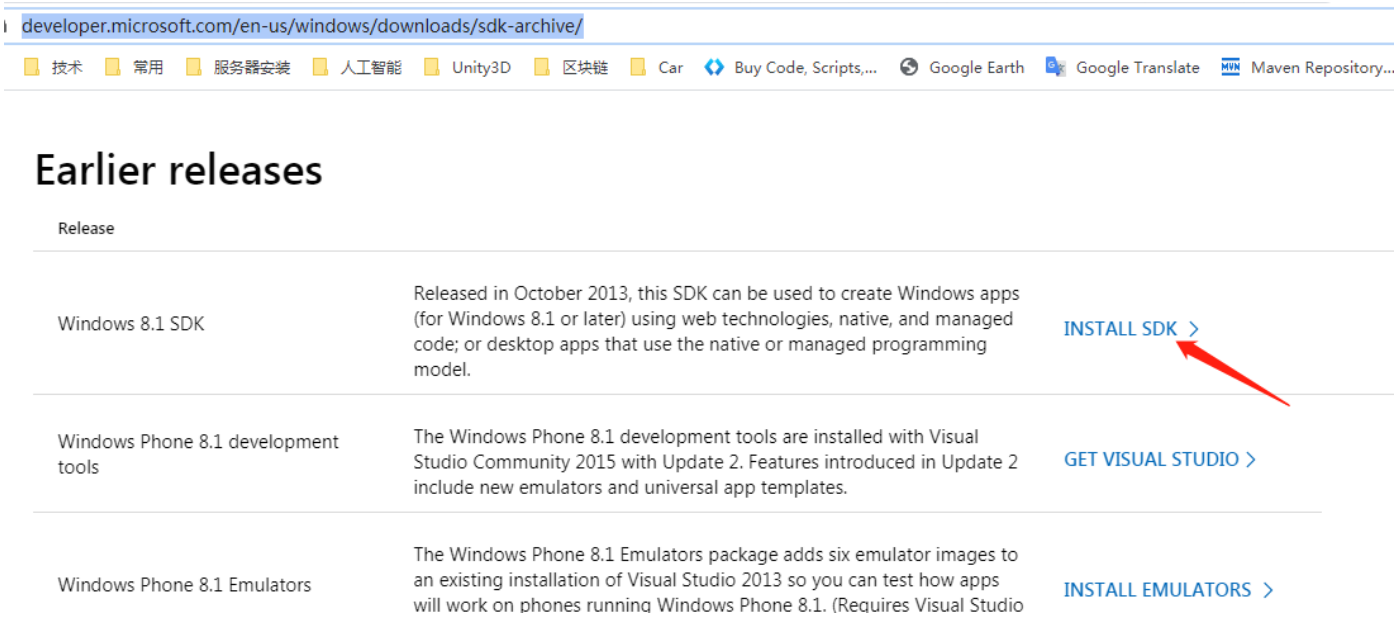
```
IConnector<Request, Response, Notification> connector;
ISubscription<EventArgs> eventSubscription;
ISubscription<Notification> messageSubscription;
async void Start()
{
    //Create TcpChannel
    var channel = new TcpChannel(new DefaultDecoder(), new DefaultEncoder(), new HandshakeHandle
    channel.NoDelay = true;
    channel.IsBigEndian = true;

    //TLS encryption is optional
    channel.Secure(true, "vovgou.com", null, (sender, certificate, chain, sslPolicyErrors) =>
    {
        //Verify self-signed certificates
        if (sslPolicyErrors == SslPolicyErrors.None)
            return true;

        if (certificate != null && certificate.GetCertHashString() == "3C33D870E7826E9E83B4476D6
            return true;

        return false;
    });

    //Create Connector
    connector = new DefaultConnector<Request, Response, Notification>(channel);
    connector.AutoReconnect = true;

    //Subscribe to events
    eventSubscription = connector.Events().ObserveOn(SynchronizationContext.Current).Subscribe((
    {
        Debug.LogFormat("Received Event:{0}", e);
    });

    //Subscribe to notification messages
    messageSubscription = connector.Received().Filter(message =>
    {
        //Filter messages
        if (message.CommandID > 0 && message.CommandID <= 100)
            return true;
        return false;
    }).ObserveOn(SynchronizationContext.Current).Subscribe(message =>
    {
        Debug.LogFormat("Received Notification:{0}", message);
    });

    //Send a notification message
    Notification notification = new Notification();
    notification.CommandID = 10;
    notification.ContentType = 0;
    notification.Content = Encoding.UTF8.GetBytes("this is a notification.");
    await connector.Send(notification);
```

```
    //Send a request message and receive a response message.
    Request request = new Request();
    request.CommandID = 20;
    request.ContentType = 0;
    request.Content = Encoding.UTF8.GetBytes("this is a request.");
    Response response = await connector.Send(request);
}
```

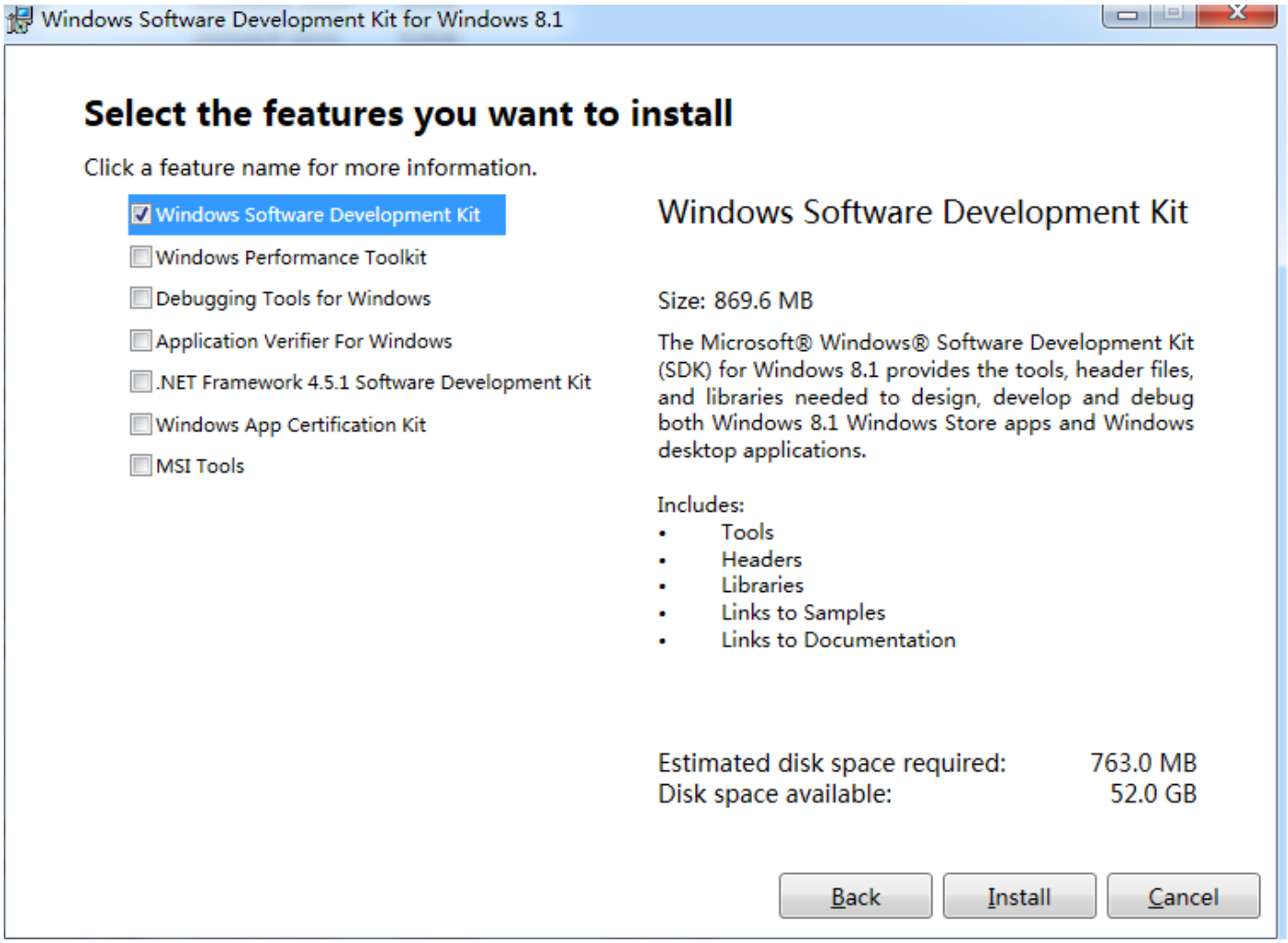
How to create a self signed certificate

Use makecert.exe and pvk2pfx.exe tools to create a self-signed certificate

- Download Makecert.exe from here



- Install Window 8.1 SDK



- Add "C:\Program Files (x86)\Windows Kits\8.0\bin\x64" to the operating system environment variable PATH
- Creating self signed certificates

```
makecert -r -pe -n "CN=vovgou.com" -b 01/01/2020 -e 01/01/2120 -sky exchange -a sha256 -len

pvk2pfx.exe -pvk vovgou.pvk -spc vovgou.cer -pfx vovgou.pfx
```

- Use self-signed certificates

```
TextAsset textAsset = Resources.Load<TextAsset>("vovgou.pfx");
X509Certificate2 cert = new X509Certificate2(textAsset.bytes, "123456");

var server = new Server(port);
server.Secure(true, cert, (sender, certificate, chain, sslPolicyErrors) =>
{
   //The server does not verify the client's certificate and returns true
   return true;
});
```

For the complete makecert.exe parameter reference click here

Create and use a self-signed certificate in Netty

```
public class ServerChannelInitializer extends ChannelInitializer<SocketChannel> {

        public void init() {
                try {
            selfSignedCertificate = new SelfSignedCertificate(
                        "vovgou.com");
                    sslContext = SslContext.newServerContext(
                        selfSignedCertificate.certificate(),
                        selfSignedCertificate.privateKey());
                } catch (Exception e) {
                    throw new RuntimeException(e);
                }
        }

        public void destroy() {
                if (selfSignedCertificate != null) {
                    selfSignedCertificate.delete();
                    selfSignedCertificate = null;
                }
        }

        @Override
        protected void initChannel(SocketChannel ch) throws Exception {
                if (sslContext != null) {
                    ch.pipeline().addLast(sslContext.newHandler(ch.alloc()));
                }
                ch.pipeline().addLast("encoder", factory.newMessageEncoder());
                ch.pipeline().addLast("decoder", factory.newMessageDecoder());
                if (this.handlers != null)
                    ch.pipeline().addLast(this.getEventExecutorGroup(), this.handlers);
        }
}
```

Contact Us

Email: yangpc.china@gmail.com

Website: https://vovgou.github.io/loxodon-framework/

QQ Group: 622321589