**[C#] Triển khai truyền và nhận UDP Broadcast**

Gần đây tác giả muốn sử dụng các gói tin quảng bá để xử lý một chút, sau khi nghiên cứu một chút, tôi đã lập một bản ghi đơn giản trong bài viết này.

Để gửi UDP Broadcast, chúng ta có thể tạo một thực thể đối tượng Socket với ProtocolType Udp như sau, gọi SetSocketOption để thực hiện một số cài đặt và gửi dữ liệu phát sóng mà chúng ta muốn gửi đến vị trí IPAddress.Broadcast.

{

BroadcastMessage(Encoding.ASCII.GetBytes(message), port);

}

private static void BroadcastMessage(byte[] message, int port)

{

using (var sock = new Socket(AddressFamily.InterNetwork, SocketType.Dgram,

ProtocolType.Udp))

{

sock.EnableBroadcast = true;

sock.SetSocketOption(SocketOptionLevel.Socket, SocketOptionName.Broadcast, true);

var iep = new IPEndPoint(IPAddress.Broadcast, port);

sock.SendTo(message, iep);

}

}

Khi nhận các gói quảng bá, chúng ta cũng cần tạo một thực thể đối tượng Socket với ProtocolType Udp, liên kết Ổ cắm với vị trí IPAddress.Any và sử dụng Socket.ReceiveFrom để nhận tin nhắn quảng bá.

{

ReceiveBroadcastMessage((ep, data) =>

{

var stringData = Encoding.ASCII.GetString(data);

receivedAction(ep, stringData);

}, port);

}

private void ReceiveBroadcastMessage(Action<EndPoint, byte[]> receivedAction, int port)

{

using (var sock = new Socket(AddressFamily.InterNetwork,

SocketType.Dgram, ProtocolType.Udp))

{

var ep = new IPEndPoint(IPAddress.Any, port) as EndPoint;

sock.Bind(ep);

while (true)

{

var buffer = new byte[1024];

var recv = sock.ReceiveFrom(buffer, ref ep);

var data = new byte[recv];

Array.Copy(buffer, 0, data, 0, recv);

receivedAction(ep, data);

Thread.Sleep(500);

Application.DoEvents();

}

}

}

Cuối cùng, một ví dụ mã hoàn chỉnh được đính kèm:

using System.Collections.Generic;

using System.ComponentModel;

using System.Data;

using System.Drawing;

using System.Linq;

using System.Net;

using System.Net.Sockets;

using System.Text;

using System.Threading;

using System.Threading.Tasks;

using System.Windows.Forms;

namespace WindowsFormsApplication8

{

public partial class Form1 : Form

{

public Form1()

{

InitializeComponent();

}

private void button1\_Click(object sender, EventArgs e)

{

BroadcastMessage("This is a test message", 9051);

}

private void Form1\_Load(object sender, EventArgs e)

{

backgroundWorker1.RunWorkerAsync();

}

private void backgroundWorker1\_DoWork(object sender, DoWorkEventArgs e)

{

ReceiveBroadcastMessage((EndPoint ep, string data) =>

{

this.Invoke((MethodInvoker)delegate()

{

listBox1.Items.Add(string.Format("received: {0} from: {1}",

data, ep.ToString()));

});

}, 9051);

}

private static void BroadcastMessage(string message, int port)

{

BroadcastMessage(Encoding.ASCII.GetBytes(message), port);

}

private static void BroadcastMessage(byte[] message, int port)

{

using (var sock = new Socket(AddressFamily.InterNetwork, SocketType.Dgram,

ProtocolType.Udp))

{

sock.EnableBroadcast = true;

sock.SetSocketOption(SocketOptionLevel.Socket, SocketOptionName.Broadcast, true);

var iep = new IPEndPoint(IPAddress.Broadcast, port);

sock.SendTo(message, iep);

}

}

private void ReceiveBroadcastMessage(Action<EndPoint, string> receivedAction, int port)

{

ReceiveBroadcastMessage((ep, data) =>

{

var stringData = Encoding.ASCII.GetString(data);

receivedAction(ep, stringData);

}, port);

}

private void ReceiveBroadcastMessage(Action<EndPoint, byte[]> receivedAction, int port)

{

using (var sock = new Socket(AddressFamily.InterNetwork,

SocketType.Dgram, ProtocolType.Udp))

{

var ep = new IPEndPoint(IPAddress.Any, port) as EndPoint;

sock.Bind(ep);

while (true)

{

var buffer = new byte[1024];

var recv = sock.ReceiveFrom(buffer, ref ep);

var data = new byte[recv];

Array.Copy(buffer, 0, data, 0, recv);

receivedAction(ep, data);

Thread.Sleep(500);

Application.DoEvents();

}

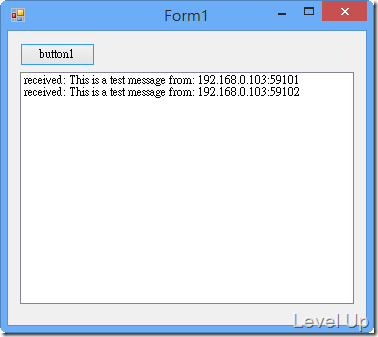
}

}

}

}

Kết quả chạy như sau:

[](https://dotblogsfile.blob.core.windows.net/user/larrynung/1301/623d28d297f6_1395A/image_2.png)

Private Sub Winsock1\_DataArrival(ByVal bytesTotal As Long)

Dim BytesData() As Byte

Dim StringData As String

If StringMode Then

Winsock1.GetData StringData

Else

Winsock1.GetData BytesData

StringData = BytesToHex(BytesData)

End If

With Text1

.SelStart = &H7FFF

.SelText = "["

.SelText = StringData

.SelText = "]"

.SelText = vbNewLine

End With

End Sub

Private Function BytesToHex(ByRef Bytes() As Byte) As String

'Quick and dirty Byte array to hex String, format:

'

' "HH HH HH"

Dim BytePos As Integer

For BytePos = 0 To UBound(Bytes)

BytesToHex = BytesToHex & Right$("0" & Hex$(Bytes(BytePos)), 2) & " "

Next

BytesToHex = Left$(BytesToHex, Len(BytesToHex) - 1)

End Function

Private Sub Winsock1\_DataArrival(ByVal bytesTotal As Long)

Dim sData() As Byte

Dim i As Integer

For i = 0 To bytesTotal - 1

Winsock1.GetData sData, vbByte

Text2.Text = Text2.Text & Right$("0" & Hex$(sData(i)), 2) & " "

Next

Text2.Text = Text2.Text & vbCrLf

End Sub

5a000001 S // Tạo kết nối

da0000011400a9fe2f57a9fe2f57 R //Trả về kết nối thành công

da0000010100c6780002ffffffff // Trả về có kết nối nhưng PLC chưa lưu IP của máy tính = connect fail (phải dùng thêm lệnh 5a000011 để kết nối thành công)

//////////////////////////////////////////

5a000011 // Làm mới kết nối (PLC sẽ lưu lại IP máy tính kết nối) (Khi connect fail thì dùng lệnh này để connect)

5a000022 // Xóa địa chỉ IP cũ đã lưu trong PLC

Số thanh ghi SD

///////////////////////////////////////////////

10050

SD

SD

57010000001111070000ffff030000fe03000062001c0a161400000000000000000000000000000000000000000411040000000000000000000000000003000000000000030000210042270000000000000000000000002100432700000000000000000000000021005a27000000000000000000000000 //Lấy địa chỉ IP của PLC

10074

SD

10051

//////////////////////////////////////////////////

5a0000ff S // Lấy Challenge Code

da0000ff914a0c000000000000100200f0a832a34d79872800001003 R // Trả về 10 Byte Challenge Code

Challenge Code

da0000ff914a0c000000000000100200f0a832a34d79872800001003

///////////////////////////////////////////////

Độ dài phía sau

Mặc định gửi

57010000001111070000ffff030000fe03000020001c0a161400000000000000000000000000000000000000000121010000000001 S // Lấy thông tin PLC

Mặc định nhận

Độ dài phía sau

d70100000011117f000000a80300ffff03000038009c0a18140000000000000000000000000000000000000000000001210100000046583555432d33324d542f4400000000914a000800000000 R // Trả về thông tin PLC

d70100000011117f000000a80300ffff0300002c009c0a181476410000000000000000000000000000000000000000012101000000014880012400452604190971

57010000001111070000ffff030000fe03000023001c0a1614000000000000000000000000000000000000000001a00200000007318d4869 S

Mã này ở đâu?

d70100000011117f000000a80300ffff03000024009c0a18140000000000000000000000000000000000000000000001a002000000ed68ce0e R

Độ dài phía sau

57010000001111070000ffff030000fe03000020001c0a1614000000000000000000000000000000000000000010020a0000000100 S // Stop PLC

Độ dài phía sau

57010000001111070000ffff030000fe03000022001c0a1614000000000000000000000000000000000000000010010a00000001000000 S // Run PLC

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110000000000000000000000000000000100 // ON Y0

Địa chỉ Y0

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110000000000000000000000000000000000// OFF Y0

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110001000000000000000000000000000100 //ON Y1

Địa chỉ Y1

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110001000000000000000000000000000000 //OFF Y1

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110008000000000000000000000000000100 //ON Y10

Địa chỉ Y10

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110008000000000000000000000000000000 //OFF Y10

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110009000000000000000000000000000100 //ON Y11

Địa chỉ Y11

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000001000000010000110009000000000000000000000000000000 //OFF Y11

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a0000000000000000000000000000010000000100001100f9030000000000000000000000000100 //ON Y

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a0000000000000000000000000000010000000100001100f9030000000000000000000000000000 //OFF Y

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000100000000010000110000000000000000001000c0000000ffff // K4Y0 = FFFF

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000100000000010000110000000000000000001000c00000000000 // K4Y0 = 0000

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000011000000000000000000100040000000ff00 //K2Y0 = FF

57010000001111070000ffff030000fe03000044001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000000010000010000110000000000000000001000c0010000ffffffff //K8Y0 = FFFFFFFF

57010000001111070000ffff030000fe03000044001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000000010000010000110008000000000000001000c0010000ffffffff //K8Y10 = FFFFFFFF

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000011000000000000000000100000000000ff00 //K1Y0

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000011000000000000000000100080000000ffff //K3Y0

57010000001111070000ffff030000fe03000044001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000000001000001000011000000000000000000100000010000ffffff0f //K5Y0

57010000001111070000ffff030000fe03000044001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000000001000001000011000000000000000000100040010000ffffffff //K6Y0

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000020000000000000000000000000000000d204 // D0 = 1234

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000100000000010000200000000000000000000000000000000a00 //D0 = 10

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000020000a00000000000000000000000000d204 //D10 = 1234

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000020000a000000000000000000000000000a00 //D10 = 10

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a00000000000000000000000000010000000001000020001400000000000000000000000000d204 //D20 = 1234

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a000000000000000000000000000100000000010000200014000000000000000000000000000a00 //D20 = 10

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a0000000000000000000000000001000000000100002000581b0000000000000000000000000100 //D7000 = 1

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a0000000000000000000000000001000000000100002000581b0000000000000000000000000a00 //D7000 = 10

57010000001111070000ffff030000fe03000042001c0a1614000000000000000000000000000000000000000014110a0000000000000000000000000001000000000100002000581b000000000000000000000000d204 //D7000 = 1234

SD8398, 8389 // la gi

SD10050,10051 Local IP

SD10060,10061 Subnet Mask

SD10064, 10065 Default getway

SD10074, 10075, 10076 MAC

SD10082 Speed Setting

SD10084 Port TCP

SD10086 Port Direct

Table Command

|  |  |
| --- | --- |
| X | 10 00 |
| Y | 11 00 |
| M | 01 00 |
| D | 20 00 Rigister |
| SD | 21 00 Rigister |
| SM | 02 00 |
| R | 27 00 Rigister |
| W | 30 00 Rigister |
| B | 14 00 |
| SB | 15 00 |
| F | 04 00 |
| S | 08 00 |
| T | 42 00 Rigister |
| ST | 4A 00 Rigister |
| C | 46 00 Rigister |
| LC | 56 00 |
| L | 03 00 |
| SW | 31 00 Rigister |
| Z | 60 00 Rigister |
| LZ | 62 00 |
|  |  |