

B&B ELECTRONICS **TECHNICAL NOTES**



Vlinx™ Ethernet to Serial Servers

Connecting Directly Through Winsock

Overview

We receive many questions about the best way to integrate a Vlinx Ethernet to serial server into a system. The answer is most always that if you have control of the application software, we recommend making the connection using Socket Services using Winsock. Of course, if you don't have that option, we do provide a COM port redirector to allow you to use Vlinx in your existing application as well. For this technical note, we'll explain how to write or modify your software to use a Winsock connection.

Getting Started

If you have used a Vlinx Ethernet Serial Server before this point chances are you used the Virtual COM port feature to abstract your application away from even knowing it was talking to a remote device. For most applications this is fine, however there are many who want to remove this layer and speak directly to the device through Winsock.

The Source Code

Before we take a look at the code for this application there are a few things that should be noted. This application was developed in Microsoft Visual C++ 6.0. The code can be copied from this document and placed right into your compiler. It is currently formatted for legibility and may require adjustments once copied into the compiler software.

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RR-WDP

The CPP File

```

//*****
//Sample Winsock Communications Application
//B&B Electronics Manufacturing Company
//*****

#include <winsock.h>
#include <stdio.h>

#define DATA_SIZE 1024

static char *sendbuf = "This is a test.";

//*****
//Function: ConnectToServer()
//Returns a handle to the connected socket if successful
//*****
SOCKET ConnectToServer(char *ip, char *port)
{
    SOCKET hSocketHandle = INVALID_SOCKET;
    int     returnValue;
    struct sockaddr_in serverAddress;

    /* Create a socket for connection*/
    hSocketHandle = socket(PF_INET, SOCK_STREAM, 0);
    if (hSocketHandle < 0)
    {
        //Error
        printf("socket error!\n");
    }
    else
    {
        memset(&serverAddress, 0, sizeof(serverAddress)); //clear servAddress structure

        //Setup servAddress structure
        serverAddress.sin_family = PF_INET; // set to TCP/UDP
        serverAddress.sin_addr.s_addr = inet_addr(ip);
        serverAddress.sin_port = htons(atoi(port));

        //Connect to socket
        returnValue = connect(hSocketHandle, (struct sockaddr *)&serverAddress, sizeof(serverAddress));

        if (returnValue < 0)
        {
            printf("connection fail!\n");
            closesocket(hSocketHandle);
            hSocketHandle = INVALID_SOCKET;
        }
        return hSocketHandle;
    }
}

//*****
//Function: Main()
//*****
void main(int argc, char *argv[])
{
    WSADATA wsd;
    SOCKET hSocketHandle;
    char recv_data[DATA_SIZE];
    int length;
    int returnValue;

    if (argc < 3)
    {
        //Error out - argument list incorrect
        printf("Usage: %s <server ip> <port>\n", argv[0]);
    }
}

```

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```

else
{
    printf("Test Socket Mode .....\\n");
    if(WSAStartup(0x0101, &wsd) != 0)
    {
        //Error Condition
    }
    else
    {
        //Make Connection
        hSocketHandle = ConnectToServer(argv[1], argv[2]);
        if (hSocketHandle == INVALID_SOCKET)
        {
            //Error Condition
        }
        else
        {
            //Send Message to server
            printf("send .....\\n");
            length = strlen(sendbuf);
            returnValue = send( hSocketHandle, sendbuf, length, 0 );

            if (returnValue != SOCKET_ERROR )
            {
                printf(" %d bytes sent\\n", returnValue);
            }

            // Check to see if there are any messages waiting
            printf("receive .....\\n");
            length = sizeof(recv_data);
            returnValue = recv( hSocketHandle, recv_data, length, 0 );
            if (returnValue != SOCKET_ERROR ) {
                printf(" %d bytes received\\n", returnValue);
            }
        }

        // socket clean up
        closesocket(hSocketHandle);
        WSACleanup();
    }
}
return;
}

```

This example uses the Winsock API to make a connection to a Vlinx Ethernet Serial Server before performing one send and one receive operation. The application expects two parameters to be passed when opened. The first will be the IP address of the remote Vlinx Ethernet Serial Server and the second will be the Port number for the same device (hardware default: 4000). To test out this code simply create a VC++ console application project and use code as is. The Main() function within the sample should of course replace the Main() within the project. Note that the colons within the MAC address are ignored and that the number values are in hexadecimal. However in the sample code these values are placed in the byte array as decimal numbers.

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Summary

Using this code you will be able to send a receive messages from your Vlinx Ethernet Serial Server. By making only a few small modifications to the source code supplied within this document you can create a fully functional Winsock communication application.

Questions welcome.

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