Emergency Managers Weather Information Network

Protocol and Specifications

ByteBlaster Server Protocol

Prepared by Danny Lloyd
May 8, 2010

EMWIN ByteBlaster Server Protocol
Version 1.0

A byteblaster server is an EMWIN packet relay application. It has the responsibility of receiving EMWIN packets and relaying them to connected clients, managing a user defined number of client connections, and reporting the user load and configuration to the Host Master.

The Host Master is an application that runs at NWS Headquarters. This application maintains a list of public and private servers. It also performs load balancing between the connected servers.

The byteblaster server will connect to the Host Master using TCP/IP. It should remain connected at all times. In the event that the connection is lost, the byteblaster server should attempt to reconnect to the Host Master the next time that a status reporting packet is required. The IP address for the Host Master is 205.156.51.131 port 1001.

The byteblaster server will send the following pipe delimited status packet to the Host Master every 15 seconds. (Note change to every 1 minute).

HH:MM
|Ahost address:host port
|Nnumber connected
|Mmaximum connections
|SPU if public or |SPR if private
|DE1200 or |DE2400 or |DE9600 or |DE19200 or |DW
|V
byteblaster server software version (developer specific)
|LC-
byteblaster location (user/operator specific)

Here is an example:

```
02:03|A67.47.220.78:1000|N0|M10|SPR|DE9600|V3.3.2919|LC-Weather Message .Net Version
```

The HH:MM field is the current UTC time. The DE1200, DE2400, DE9600, or DE19200 designator is the speed of the serial ingest engine. If the byteblaster server is receiving data from the EMWIN internet stream, it should respond |DW. The version field is the byteblaster server software version number.

If the byteblaster server identifies itself as DE9600, DE19200 or DW and is a public server SPU, then it will be a candidate for the byteblaster public network. This type of server is published for all users to access.

Note: If a private IP address is used in the status packet, the server should report as a private server (SPU). Private addresses are 10.0.0.0 through 10.255.255.255, 172.16.0.0 through 172.31.255.255, and 192.168.0.0 through 192.168.255.255.

Note: If the byteblaster server is receiving data from a serial port, it should only relay data when the received data is 95 to 100 percent good. If the received data quality falls below 95 percent, it should no longer send data. The clients will disconnect when they fail to receive data.

Note: It is important that the byteblaster server insure the integrity of the byteblaster network. If the byteblaster server is reporting as a public server, it should only pass packets from the EMWIN data stream. If the server has the ability to pass packets from other weather sources, it should switch itself to private mode. All public byteblaster servers should be relaying the same data.

The following command is recognized by the host master.

WhatsMyIP?

Response: YourIPIsXXX.XXX.XXX.XXX

> Note: This command is used to determine the server's public IP address. If the server does not have a static IP address, this command should be sent after the initial connection and then once every 6 minutes. The address that is returned should be used in the status updates to the Host Master.
>
> A Server with a static IP address is not required to use this command.

Every 12 minutes, the byteblaster server should verify that all clients have sent a status message. The original protocol required the client to check in every 4 minutes. See the EMWIN Protocol document for specifics.

As each client connects, they will identify themselves. Send version 1 style packets to all clients, unless they identify as a version 2 client. You will find that some clients fail to identify properly.

If the byteblaster server has reached maximum connections, you should send the client the latest public server list and disconnect the client. See the EMWIN Protocol document for the server packet format.

Note: The public server list that is received from the Host Master has been load balanced and the server with the lowest number of connections is at the top of the list.

The Host Master will send a list of public servers every 10 minutes. You must receive this list and send it to each connected client in the order that it was received. See the

EMWIN Protocol document for the client format for the Public Server List. The server list will be received in the following:

ServerList|XXX.XXX.XXX.XXX:1000|XXX.XXX.XXX.XXX:1000|

You should store the list internally and send it back out the proper format for the clients to process.

While all of the above internal activities are occurring, the byteblaster server will be receiving EMWIN data packets. These packets should be relayed to the connected clients without any error checking or modification. The client has the responsibility for validating the received EMWIN data packets. As indicated earlier, the host master can modify the received version 1 data packet to meet version 2 specifications and relay the revised packet to clients that identify as version 2 clients.

Note: A byteblaster server that is ingesting from the internet should only connect to NWS servers. See the See the EMWIN Protocol document for a list of direct connect satellite servers.

EMWIN ByteBlaster Server Protocol
Version 1.1

A byteblaster server is an EMWIN packet relay application. It has the responsibility of receiving EMWIN packets and relaying them to connected clients, managing a user defined number of client connections, and reporting the user load and configuration to the Host Master.

The Host Master is an application that runs at NWS Headquarters. This application maintains a list of public and private servers. It also performs load balancing between the connected servers.

The byteblaster server will connect to the Host Master using TCP/IP. It should remain connected at all times. In the event that the connection is lost, the byteblaster server should attempt to reconnect to the Host Master the next time that a status reporting packet is required. The IP address for the Host Master is 205.156.51.131 port 1001.

Note------ this should be a domain name. Update this when this information is received.

The byteblaster server will send the following pipe delimited status packet to the Host Master once per minute.

HH:MM
|Ahost address:host port
|Nnumber connected
|Mmaximum connections
|SPU if public or |SPR if private
|DE1200 or |DE2400 or |DE9600 or |DE19200 or |DW
|V
byteblaster server software version (developer specific)
|LC-
byteblaster location (user/operator specific)
|EM-
system operator email address

Here is an example:

```
02:03|A67.47.220.78:1000|N0|M10|SPR|DE9600|V3.3.2919|LC-Weather Message .Net Version|EM-danny@wxmesg.com
```

The HH:MM field is the current UTC time. The DE1200, DE2400, DE9600, or DE19200 designator is the speed of the serial ingest engine. If the byteblaster server is receiving data from the EMWIN internet stream, it should respond |DW. The version field is the byteblaster server software version number.

If the byteblaster server identifies itself as DE9600, DE19200 or DW and is a public server SPU, then it will be a candidate for the byteblaster public network. This type of server is published for all users to access.

Note: If a private IP address is used in the status packet, the server should report as a private server (SPR). Private addresses are 10.0.0.0 through 10.255.255.255, 172.16.0.0 through 172.31.255.255, and 192.168.0.0 through 192.168.255.255.

Note: If the byteblaster server is receiving data from a serial port, it should only relay data when the received data is 95 to 100 percent good. If the received data quality falls below 95 percent, it should no longer send data. The clients will disconnect when they fail to receive data.

Note: It is important that the byteblaster server insure the integrity of the byteblaster network. If the byteblaster server is reporting as a public server, it should only pass packets from the EMWIN data stream. If the server has the ability to pass packets from other weather sources, it should switch itself to private mode. All public byteblaster servers should be relaying the same data.

The following command is recognized by the host master.

WhatsMyIP?

Response: YourIPIsXXX.XXX.XXX.XXX

Note: It is recommended that this command be sent after the initial connection and then once every 6 minutes. This allows the byteblaster server to know it's public ip address and send this address to the host master. . This feature helps servers properly identify themselves when they do not have a static IP address.

Every 12 minutes, the byteblaster server should verify that all clients have sent a status message. The original protocol required the client to check in every 4 minutes. See the EMWIN Protocol document for specifics.

As each client connects, they will identify themselves. Send version 1 style packets to all clients, unless they identify as a version 2 client. You will find that some clients fail to identify properly.

If the byteblaster server has reached maximum connections, you should send the client the latest public server list and disconnect the client. See the EMWIN Protocol document for the server packet format.

Note: The public server list that is received from the Host Master has been load balanced and the server with the lowest number of connections is at the top of the list.

The Host Master will send a list of public servers every 10 minutes. You must receive this list and send it to each connected client in the order that it was received. See the EMWIN Protocol document for the client format for the Public Server List and Direct Connect Satellite List. The server lists will be received from the Host Master in the following formats:

Version 1.0 format

The Server List packet begins with the prefix ServerList|, followed by the server domain name or ip address delimited by the pipe symbol.

ServerList|XXX.XXX.XXX.XXX:port|XXX.XXX.XXX.XXX:port|

Note: ByteBlaster servers that implement the 1.1 protocol should ignore this packet. The host master will stop sending this packet in a future release.

Version 1.1 format

Public Server List

The Public Server List packet begins with the prefix /PublicList/, followed by the server domain name or IP address delimited by the plus symbol, followed by the suffix \PublicList\.

/PublicList/address1:port+address2:port+address3:port\PublicList\

Direct Connect Satellite Server List

The Direct Connect Satellite Server List packet begins with the prefix /DirectList/, followed by the server domain name or IP address delimited by the plus symbol, followed by the suffix \DirectList\.

/DirectList/address1:port+address2:port+address3:port\DirectList\

You should store the list internally and send it back out the the format documented in the EMWIN protocol document.

While all of the above internal activities are occurring, the byteblaster server will be receiving EMWIN data packets. These packets should be relayed to the connected clients without any error checking or modification. The client has the responsibility for validating the received EMWIN data packets. As indicated earlier, the host master can modify the received version 1 data packet to meet version 2 specifications and relay the revised packet to clients that identify as version 2 clients.

Note: A byteblaster server that is ingesting from the internet should only connect to NWS servers. The ingest client should only connect to the servers received in the Direct Connect Satellite Server List.

In order to give the NWS the ability to shutdown selected servers, the Host Master can send the packet "/StopServerNow/". Upon receiving this packet, the ByteBlaster server should stop operation and alert the operator that their server has been stopped. The operator should send an email to the EMWIN team to determine the reason for stopping the server.

Note: There have been servers on-line that are not accepting connections due to firewall issues. This will allow the EMWIN Team to temporarily stop a server in the event of a problem.