

DMX[®] ProFusion iS[®]

Network Update Guide

Revision 6.2
February 2014

Abstract

This document presents the architecture, functionality, and operation of the network update option for ProFusion[®] iS.

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INTRODUCTION

As the leading on-premise digital systems, ProFusion® iS platform provides extensive programming, engaging message marketing, and flexible scheduling and zoning. ProFusion gives you total control over what your customers see and hear.

Powered by Moods industry leading back-end management system, Unity, you are free to focus on your business while the professionals at Mood / DMX ensure your service is performing exceptionally.

In furtherance of our fully-managed philosophy, DMX has provided network update services for select ProFusion platforms since early 2000, to allow you a truly hands-free solution.

Network update accommodates the same fully-managed solution offering and product features our customers have learned to expect from DMX.

If you have any questions regarding the information contained in this document please contact Mood Customer Service: 877-369-8863.

FUNCTIONALITY

ProFusion network update allows you to receive updates from DMX on a daily basis via your network to the ProFusion device, either directly from DMX via the Internet, or for qualifying customers, from your own server.

The ProFusion device is configured with a connection window of your choosing, during which time the device will connect to the server and:

- Upload status, playback, and health information;
- Check for and download configuration, content, messaging, and software updates;
- Before disconnecting, upload information about the current connection.

The ProFusion device will only connect for the time allotted by the pre-established window. To ensure the best service performance possible, the ProFusion device prioritizes downloads.

Configuration is always downloaded first, which contains all the settings on the device such as dayparts, network settings, permissions, and styles. Further, we know the importance of your Message Marketing service, so ProFusion will download your messaging content and schedules as part of the configuration to ensure no unnecessary delays in playing your new messages.

During their operation, ProFusion devices keep track of the styles you play, and assigns each one a priority level according to this usage data. During the update, content is downloaded according to this priority to ensure you get what you want to hear or see the most, first.

In case of network disruption, ProFusion will continue to attempt connections to the server for the entire duration of the update window. Should a connection be interrupted or the window end in the middle of a transfer, at the next update the device will resume where it left off, instead of starting over.

The network update model is designed so that you get the same amount of content as you would on disc update, downloaded daily instead of monthly. As an added benefit, Message Marketing and configuration changes can be delivered much faster than what's possible with disc update.

There's no cause for concern if a device misses a few days of connectivity, as enough overhead is built in to the update model to accommodate for this. Should your network connection be down for an extended period of time, DMX can increase your connection window at your request, or send update discs to your locations if your device(s) have a CD or DVD-ROM drive, and regardless your ProFusion devices will keep playing.

TECHNICAL / SETUP

Ethernet Port: All ProFusion devices come pre-installed with a 10/100Mbps RJ45 Ethernet LAN port.

IP Address: You may assign a static address to the ProFusion device, or should your network support DHCP, you may assign one dynamically. Name resolution (DNS) is not used by the ProFusion device unless it is a Pandora device.

While the IP information may be assigned manually via the device control panel, DMX must have this information to ensure that in the unlikely event your device needs to be replaced, the new device will arrive completely pre-configured and ready to go.

Bandwidth: ProFusion devices come with the ability to internally throttle their download speed without any changes to your network. By default, DMX recommends a minimum of 64Kbps for ProFusion devices that play audio content exclusively and 256Kbps for ProFusion devices that also utilize visual content. ProFusion devices will not use network bandwidth at any time other than during the scheduled update window.

All ProFusion devices throttle their allowed bandwidth to the rates listed above by default to ensure your network is not overly taxed by the update. These throttle settings may be custom configured to meet your needs.

Update Protocols:

FTP – Currently, all ProFusion devices are capable of utilizing the passive FTP protocol for network updates. In passive mode FTP the client (ProFusion device) initiates both connections to the server, solving the problem of firewalls filtering the incoming data port connection to the client from the server. When opening an FTP connection, the client opens two random unprivileged ports locally ($N > 1023$ and $N+1$) N being the first port opened. The first port contacts the server on port 21, but instead of then issuing a `PORT` command and allowing the server to connect back to its data port, the client will issue the `PASV` command. The result of this is that the server then opens a random unprivileged port ($P > 1023$) and sends the `PORT P` command back to the client. The client then initiates the connection from port $N+1$ to port P on the server to transfer data. From the server-side firewall's standpoint, you will need to ensure the following communication channels are open in order to support passive FTP:

FTP server's port 21 from anywhere (Client initiates connection)

FTP server's port 21 to ports > 1023 (Server responds to client's control port)

FTP server's ports > 1023 from anywhere (Client initiates data connection to random port specified by server)

FTP server's ports > 1023 to remote ports > 1023 (Server sends ACKs (and data) to client's data port)

While the standard FTP protocol itself is not encrypted, all configuration data transferred to the ProFusion device is protected by 64-bit private key encryption. Profusion iS content files use 128-bit private key encryption. Further, all data on the ProFusion device remains encrypted, and is only decrypted into memory when needed.

SFTP – Currently, only the ProFusion iS platform is capable of utilizing the SFTP protocol for network updates (all other ProFusion platforms are capable of FTP only). SFTP or “Secure File Transfer Protocol” communicates on network port 22. If you will be utilizing the SFTP protocol on your device(s), you will need to ensure that network traffic on port 22 is not hindered in any way between the ProFusion device and the FTP server.

Many firewalls contain a policy to block streaming media, and this may also interfere

Update Size: ProFusion iS device requires 3-6MB per connection.

Update Window: A one hour window is recommended for ProFusion devices that play audio content exclusively while a four hour window is recommended for ProFusion devices that also utilize visual content. Update windows may be staggered to reduce the number of devices updating simultaneously.

Software Updates: DMX continually improves the ProFusion product software. These updates are downloaded to your device during the regular network update connection and are installed automatically.

Security: ProFusion iS is based upon hardened operating systems and custom software. ProFusion devices will not accept any inbound connections, and will only initiate outbound FTP connections to perform network updates.

Firewall/Proxy Compatibility: ProFusion devices are compatible with nearly any firewall, from Enterprise class firewalls to SOHO gateways. NAT and PAT translation are supported. Proxy support is limited to transparent proxies of which do not require any client-side software or configuration.

GETTING STARTED

Getting started with network update is as easy as 1-2-3.

First, ensure that you've read and understand all the requirements and options from the **Technical** section of this document. Contact your DMX Dealer Representative should you have any questions.

Second, provide your DMX Order Representative with the following information so that your ProFusion device may be configured correctly:

- Whether your network requires static or DHCP addressing.
- If you require static addressing, for **each device** provide:
 - **IP address**
 - **Subnet mask**
 - **Default gateway**
- Keep in mind, if you are going to be utilizing static addressing, you **must** confirm with your Network Administrator, or equivalent, as to what the proper **IP**, **Gateway** and **Subnet** information should be for the network that the ProFusion device be plugged in to. Failure to do so may result in connectivity issues and delays in receiving updates.
- Simply provide a specific local time when the device should connect; provide one hour for ProFusion iS with audio content, or four hours for ProFusion iS with visual content.

Third, after your ProFusion device arrives pre-configured and ready to go, your Technician will arrive at the scheduled time to install your device and ensure network updates are functioning properly. Please ensure you have a working Ethernet connection where the device will be installed.

Self-Installation, if chosen, requires you to perform a network update test to ensure the update connection through your network will operate successfully.

To perform this operation on ProFusion iS from the 'Network Control' menu, scroll to and select 'Set Configuration', and then 'Test Network Connection'. The ProFusion control panel will display 'Connect Successful' with an installation PIN number. This PIN number verifies the ProFusion device has successfully connected to the update server.

Should the control panel display 'Connect Failed!' please ensure your network is setup correctly for ProFusion network updates, and that the IP information that was provided is correct.

Migrating Customers will be sent a configuration disc that will, once loaded, convert the ProFusion device to network update. You may receive a 'System: LOCKED' message when selecting the 'Test Network Connection' menu item. Should this occur, please call DMX Customer Service at (877) 369-8863 during normal business hours for an unlock code.

FUNCTIONAL DIAGRAM

