HARMONY™ NETWORK REQUIREMENTS

MOOD:MEDIA

Version 1.1

AUDIENCE

This document is designed for IT professionals interested in learning about the network requirements of Mood's Harmony™ Media Player.

TABLE OF CONTENTS

INTRODUCTION

The Mood Harmony media player is compact and powerful – capable of powering HD multimedia. Its small size, multiple connectivity options and noiseless operation make it a versatile media player that can easily be installed anywhere.

Mood's Harmony player is powered by a hardened distribution of Google Android with limited user privileges. All non-essential programs and services have been removed and packages are updated to address security concerns.

NETWORK REQUIREMENTS

All mandatory network traffic initiates from the Harmony media player. In other words, the traffic is always outbound from the media player making it safe and easy to operate on a client network. Mandatory traffic includes: content updates (downloaded and stored locally to the device), live feeds updates (e.g. weather, news, social feeds, etc), software updates, health reporting, and proof of play reporting.

Outbound Traffic: Content, feeds, monitoring, proof of play, software and security.

These ports must be open for outbound initiated traffic to the the following URLs:

- **HTTP/HTTPS TCP80 & TCP443**
    - harmony.moodmedia.com (dynamic IP - CDN)
    - harmony.moodmedia.com/feeds
    - mvision-us.moodmedia.com
- **NTP/UDP123**
    - 2.android.pool.ntp.org (default)
    - **OR** to a Custom NTP Address (i.e. locally hosted NTP server or Google NTP Server)

NOTE: *Additional traffic may be needed to accommodate specific user/content requirements*

EXPLANATION OF NETWORK TRAFFIC

Every 5 Minutes: The media player initiates an HTTPS connection to the Harmony server to transmit a small amount of data, including device status information (aka 'Heartbeat').
Note: The Heartbeat frequency can be adjusted.

When new content is available: The player downloads the content over HTTPS. Large multimedia files are downloaded in chunks. The integrity of each chunk is tested using a SHA256 algorithm before the next chunk is downloaded. In addition, interrupted transfers are resumed at the last received part to further optimize data usage.

DOWNLOAD WINDOWS & BANDWIDTH THROTTLING

Download Windows: In order to limit the impact of the Harmony player on the network, it can be configured to download content only during specific hours of the day. Outside of the download windows, the network will only be used to send minimal "heartbeat" information back to the Mood servers. New video or audio content will not be transferred outside the download windows.

Bandwidth Throttling: The Harmony player can be configured to throttle the amount of bandwidth it uses. Bandwidth throttling can be set to different values throughout the day.

BANDWIDTH REQUIREMENTS

In order to fully take advantage of the Audio & Video services, Mood Media recommends a minimum network speed of 512kbit/s down and 128kbit/s up. Higher bandwidth speeds will provide more consistent service by shortening transfer times. *Higher bandwidth speeds will improve the overall in-store experience.*

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