



# HARMONY™ NETWORKING REQUIREMENTS

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MOOD: MEDIA

## AUDIENCE

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

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## 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. Harmony currently runs Google Android 8.1 (Oreo). 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.

- HTTPS/TCP443
  - harmony.moodmedia.com (dynamic IP – CDN)
- NTP/UDP123
  - 2.android.pool.ntp.org
  - Custom NTP Addresses (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 a HTTP/HTTPS connection to the Harmony server to transmit a small amount of data including device status information (aka 'Heartbeat')

**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 part to further optimize the network 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 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.

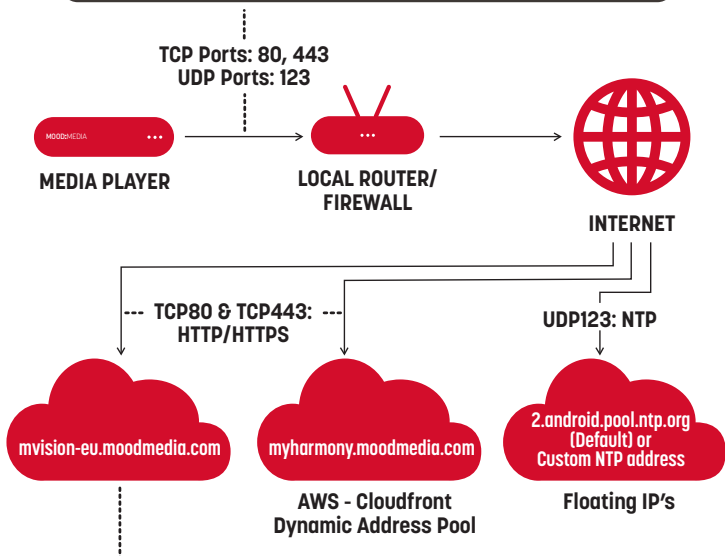
**Bandwidth Throttling:** In addition, the Harmony player can be configured to throttle the amount of bandwidth it uses. Bandwidth throttling can be set to different values throughout the day.

## **BANDWIDTH REQUIREMENTS**

In order to fully take advantage of the Audio & Video services, Mood 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 therefore improve the overall instore experience.*

# HARMONY™ MEDIA PLAYER NETWORK REQUIREMENTS

Requests made over these ports include: Content Delivery, Software Updates, Player Heartbeats, and Network Time. All Requests are initiated by the media player.



Mood Media optional content such as live weather, RSS Feeds, Twitter Feeds.