How to bandwidth is used by zebrix?

Definition of bandwidth

- The term « bandwidth » represents the amount of data a network connection can transfer each second.
- The bandwidth is generally expressed in “kilobits per second” of “megabits per second” (Kbit/sec or Mbits/sec).
- Thanks to this value, it is possible to estimate the transfer duration for a given file on a network.
- The size of a file commonly expressed in kilobytes, megabytes and gigabytes (please note that 1 bytes = 8 bits)

Minimal recommended bandwidth

1 Mbit / s per screen is recommended. However, a fast bandwidth allows faster transfer of files. A lower bandwidth can be satisfying also, depending on the usage. We noticed that low bandwidth (<512 kbit / s) with big latency (e.g. GPRS / EDGE / Slow 3G) can cause connection instabilities.

When the media transfert to the screen will occur?

The content is downloaded when screens actuality need it, usually when starting the first reading of the contents, when installing a new screen in a store, or when new content is loaded on zebrix. You can also specify a night time to pre-send contents to screens before the first display. This would save bandwidth during the day.

What is the volume of data that will be used by zebrix screens?

Required data usage his is impossible to estimate, it depends on the type and number of media broadcasted on the screens. In all cases, zebrix uses compressed and optimized formats for both video and images, which limits the use of bandwidth. In addition to these media, there are also remote control flows of the screens, which represent only a few Mo per day, at most.

Common file size in digital signage projects

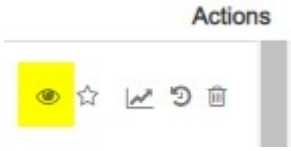
Size of image and video files that you will broadcast on your screens will vary depending on the quality of the image, the resolution (dimensions), and the duration (for videos).

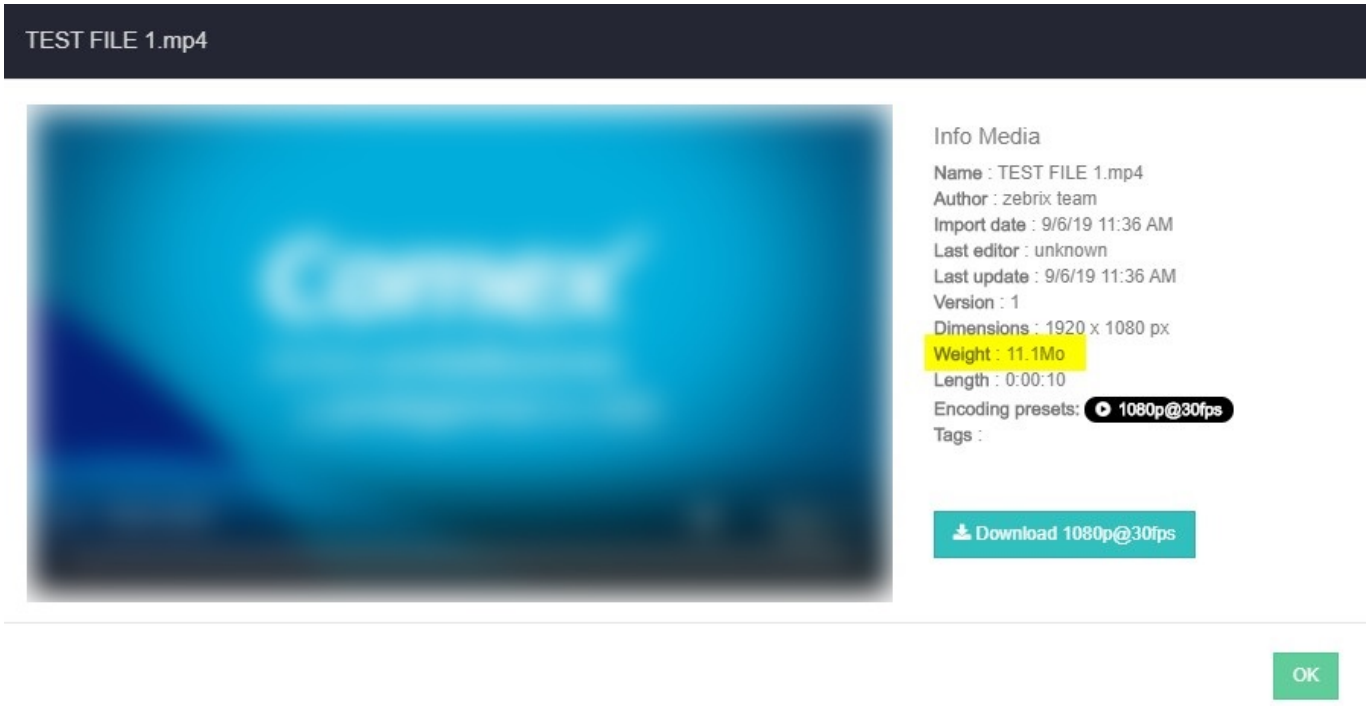
Here are examples of files size:

IMAGE	A full screen JPG image is generally between 200 and 500 KB (0.2 and 0.5 MB)
VIDEO	A good quality HD video rarely exceeds 1 MB per seconds of video (e.g. 30 seconds = 30 MB)
PAGE	A page size is the sum of all images and videos that are present in the page (e.g. 5 images and 1 video of 10 seconds will result in a total size of 12 MB ((5×500 KB) + 10 MB = 12 MB)
PLAYLIST	The playlist size is the sum of all items contained in the playlist (pages + videos + images). REMARK: if a content is present more than one time in the playlist, it only counts one time.

How to know the size of a file?

In zebrix, you can see the size of files in the preview window that can be opened from the media, page and playlist section in zebrix by using the following icon:





Example

- A 10 Megabits/seconds internet connection can transfer 1,25 Megabytes each second (this value is obtained by dividing 10 per 8 to convert “bytes” into “bits”)
- On this internet connection, a 100 MB (Megabytes) file will require 80 seconds to transfer.

Zebrix features to optimize files size and bandwidth usage

Automatic transcoding

If the image file dimensions are bigger than the resolution of the display (which is very often the case with high definition images), zebrix will automatically reduce the image resolution to the highest resolution a screen is capable to display.

If the video file quality is too high, and the video format is not optimized, zebrix will automatically optimize the file size by compressing it (without visible image quality loss). Thanks to this process, a video file size could possibly be divided by 2 to 10 depending of specifications of the original file.

Only one transfer is required

An image or video file is only transferred the first time it is set on a screen. The file will then be permanently stored on the device. The next time the media is set on the screen, the playback will start almost instantly.

Playlist changes: only new files are transferred

When a playlist is updated, only new files need to be transferred. So, a small update in a huge playlist should be easy and quick to transfer to screens. Some operations don’t require much bandwidth Only adding new videos or lots of new HD images to screens would really require lots of bandwidth, all other operations don’t require lots of bandwidth:

- Removing a content from the playlist
- Changing a text in a page
- Changing a schedule
- …

Reduce the bandwidth usage thanks to the zebrix cachebox

The zebrix cachebox is an additional device that is installed on premise that acts as a cache server for contents (images and videos). The usage of the cachebox in intended to reduce the bandwidth and data volume usage. When a screen is configured to use the cachebox, it will first try to download it from the cachebox that will supply the content to the screen. If the cachebox is not available, the screen will fall back to a mode which allows it to download from the zebrix datacenter directly (as standard setup). When many screens a same location request same files, these files are only

downloaded one time from the internet. The cachebox can be installed on site where many screens are located or in the headquarter or both.

Conclusion

When a content is set to a screen or a group of screens from zebrix, the transfer of every required files starts instantly to targeted screens, however, the content will only be displayed on screens when the content is completely transferred.

Please note that the bandwidth is shared between all devices present in the shops (laptops, servers, etc.) so the actual available bandwidth could be lower than the theoretical one. When two screens are present in the same shop, the bandwidth will be divided by two so it will take double of time to get the playlist transferred.