
Software Requirements Specification

for

NewPipe

Version 0.15.1

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of the open-source application NewPipe. It will explain the purpose and features of the application, the interfaces of the application, what the application will do and the constraints under which it must operate. This document is intended for users of the application and potential developers.

1.2 Document Conventions

This Document was created based on the IEEE template for System Requirement Specification Documents.

1.3 Intended Audience and Reading Suggestions

- Typical Users, such as people who want to use NewPipe to watch videos, listen to music etc.
- Programmers who are interested in contributing to the project by further developing it or fix existing bugs.

1.4 Product Scope

NewPipe is an Open Source streaming client for Android. It provides a privacy friendly access to existing streaming services like YouTube or Soundcloud. The app is designed in such a way that it only transports information necessary for playing the media to external servers and thus protects the privacy of its users. Basic functions are organized in such a way that they are accessible to all and several tools that enhance the users' experience with streaming services are at their disposal.

1.5 References

NewPipe's website:

<https://newpipe.schabi.org/>

NewPipe's GitHub page:

<https://github.com/TeamNewPipe/NewPipe>

NewPipe's F-Droid page:

<https://f-droid.org/packages/org.schabi.newpipe/>

IEEE Template for System Requirement Specification Documents:

<https://goo.gl/nsUFwy>

GNU General Public License version 3:

<https://www.gnu.org/licenses/gpl-3.0>

Mailing List:

newpipe@list.schabi.org

IRC Chat:

<http://webchat.freenode.net/?channels=%23newpipe>

Bug tracker:

<https://sentry.schabi.org/>

2. Overall Description

2.1 Product Perspective

NewPipe has been created with the purpose of getting the original YouTube experience on the users' smartphones without depending on google play services on Android phones. The application offers extended privacy for the users, as it does not use any Google framework libraries or the YouTube API. People can use additional features that do not exist in the YouTube app, such as playing only the audio of a video on the background, using a popup mode that creates a floating video player or downloading a video or audio of their choice.

It is an open source project with an active developer team to support it and solve issues that arise. The application was developed only for Android devices.

2.2 Product Functions

Main Page:

- Trending: Displays YouTube videos that are currently trending.
- Subscriptions: Displays the channels a user is subscribed to. Users can import or export their YouTube subscriptions.
- Bookmarks: Contains videos that were bookmarked by users and their playlists.
- Search: Advanced search bar for videos, containing filter options for search results and search suggestions based on previous searches.
- Menu (top-right): Contains shortcuts to the Downloads, History and Settings pages.
- Sliding Menu (top-left): Displays all of the pages the users can access.

Sliding Menu:

- YouTube – SoundCloud (beta) option (below logo): Changes application mode between YouTube and SoundCloud.
- Trending: Displays the Trending page (described in Main Page).
- Subscriptions: Displays the Subscriptions page (described in Main Page).
- What's New: Displays the most recent videos from the subscribed channels.
- Bookmarks: Displays the Bookmarks page (described in Main Page).
- Downloads: Displays the download process of videos or audios, as well as the ones that have been already downloaded. The users can play the downloaded content using the media player of their choice or delete the files.

- History: Displays the user's video history. Users can choose to display the videos by most played, play them on the background, play every video or play them in popup mode.
- Settings: Displays the Settings page, where users can customize the application.
- About: Displays information about NewPipe and cites links for the project's GitHub page, the donation page, NewPipe's website and its privacy policy. The second tab contains the application's license and the third-party licenses that are used.

Video Play Page:

- Video quality selection: Displays the video qualities for the users to choose.
- Share: Video share option on other possible applications.
- Add To: Adds the video to an existing playlist or creates a new one.
- Background: Plays the audio of the video on the background.
- Popup: Opens the video on the popup player.
- Download: Opens the download section, where users can choose the name of the file, whether they want video or audio only, the quality of the downloaded video or audio and the number of threads to be used in downloading.

Settings:

- Video & Audio: Displays the default options for video and audio playback for the users to customize, such as default resolution, default video and audio format, player options and application behavior.
- Download: Contains the settings for the download paths and the filename characters.
- Appearance: Offers the user options to customize NewPipe's appearance, such as the theme, the video captions or the tabs on the main page.
- History & Cache: Options on keeping or wiping the video history and cached data.

- Content: Displays settings about the YouTube content (content country, age etc.) that appears on the application.

2.3 User Classes and Characteristics

- Typical Users, such as people who want to use NewPipe to watch videos, listen to music etc.
- Privacy aware Users, such as people who want to keep track of their data and rely on FLOSS software.
- Programmers who are interested in contributing to the project by further developing it or fix existing bugs.

2.4 Operating Environment

- Android KitKat (versions 4.4 – 4.4.4)
- Android Lollipop (versions 5.0 – 5.1.1)
- Android Marshmallow (versions 6.0 – 6.0.1)
- Android Nougat (versions 7.0 – 7.1.2)
- Android Oreo (versions 8.0 – 8.1)
- Android Pie (versions 9.0)

2.5 Design and Implementation Constraints

NewPipe is developed in Java and it is built using Android Studio. It uses no APIs and only sends information that are required to get video and channel details through NewPipe Extractor. Any information that the users want to keep is stored on their devices.

2.6 User Documentation

- General information about the application can be found on [NewPipe's website](#) and [GitHub page](#).

- A [FAQ page](#) with tutorials for new users is provided on the website.
- New releases and announcements are posted on the [blog page](#) and the [GitHub repository](#).
- Assistance for user or developer problems and bug reporting is done via the [issues page](#) on GitHub.

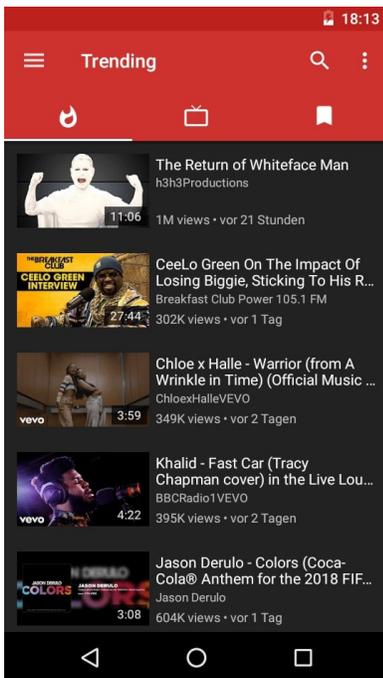
2.7 Assumptions and Dependencies

NewPipe's back end is developed in Java and makes use of NewPipe Extractor to provide every necessary information. The front end is developed in Android Studio. Therefore, up to date versions of Java and Android Studio are required to be installed on a developer's system.

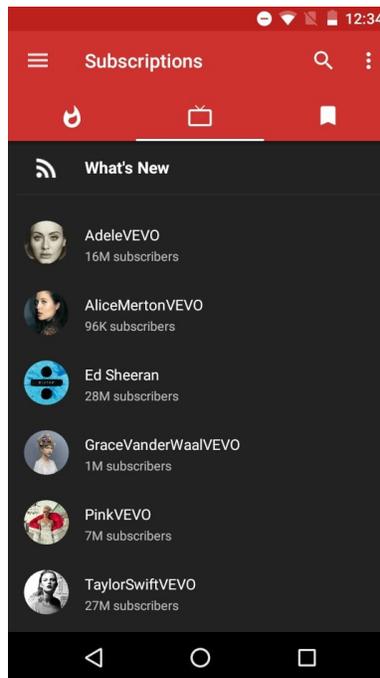
3. External Interface Requirements

3.1 User Interfaces

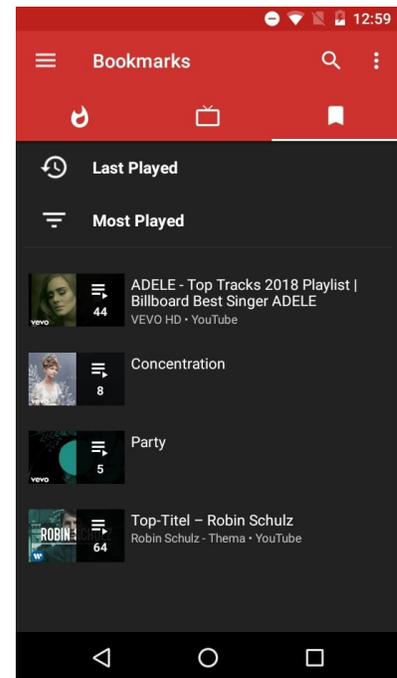
1. Main Pages of NewPipe:



Trending tab

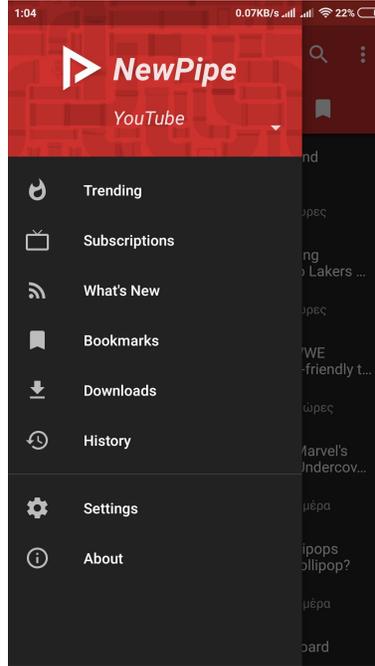


Subscriptions tab

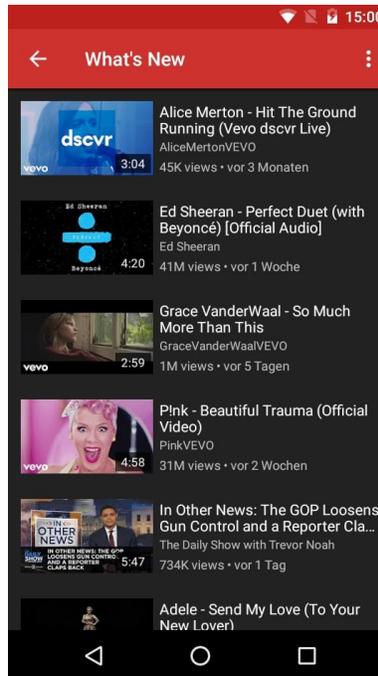


Bookmarks tab

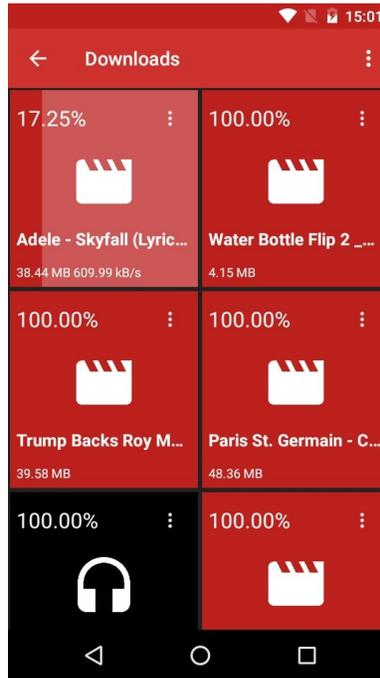
2. Sliding Menu:



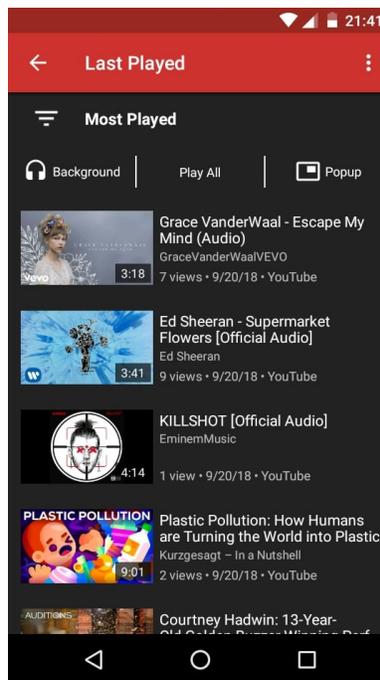
3. What's New Page:



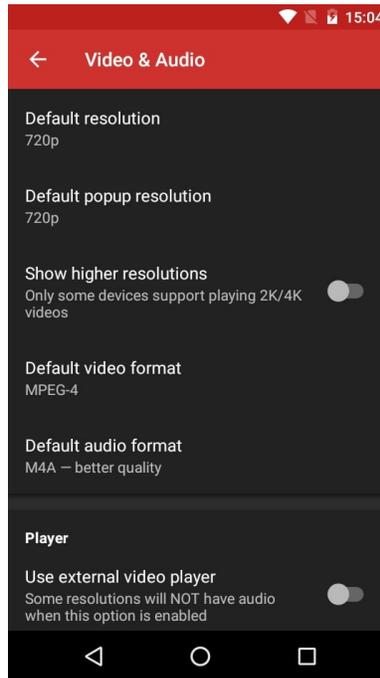
4. Download Page:



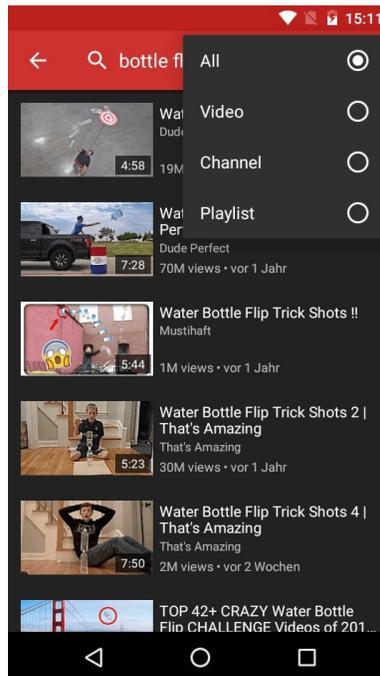
5. History Page:



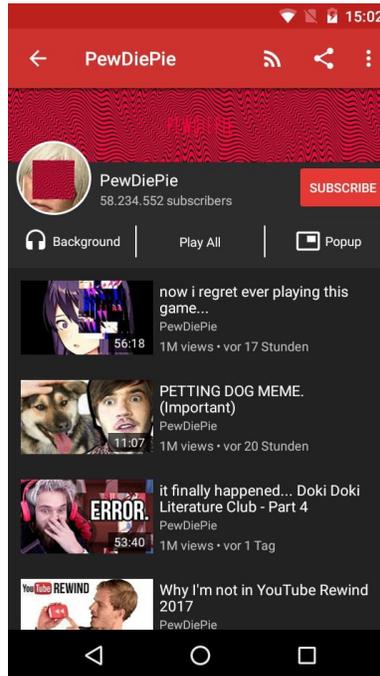
6. Settings Page:



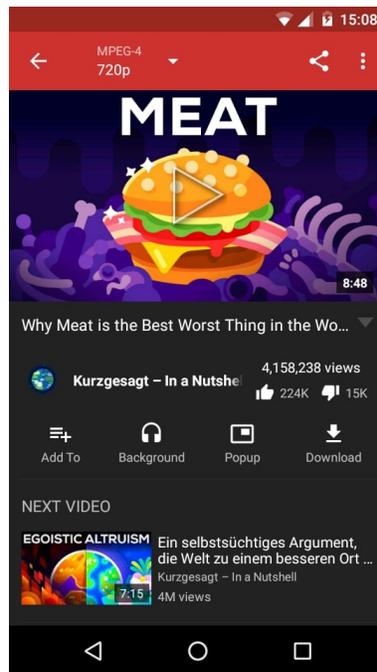
7. Search:



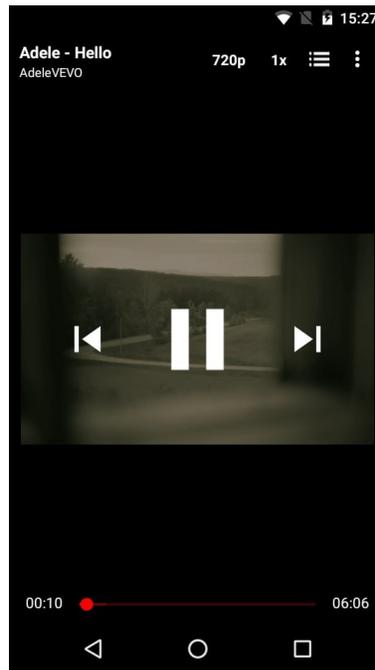
8. Channel Page:



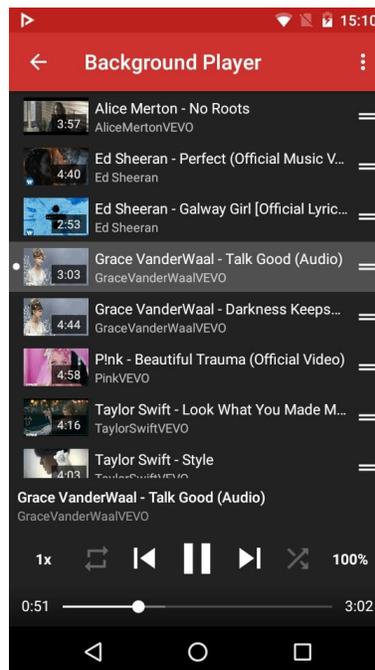
9. Video Page:



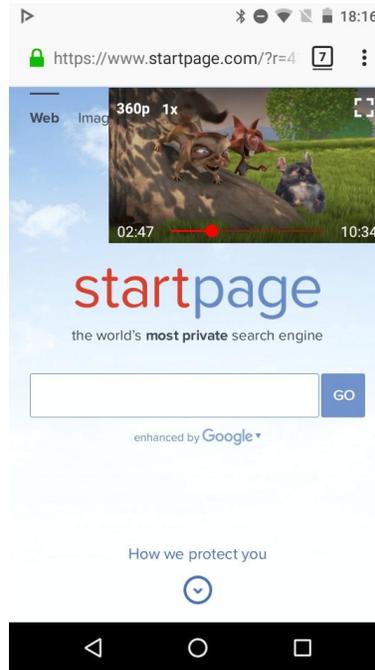
10. Video Player:



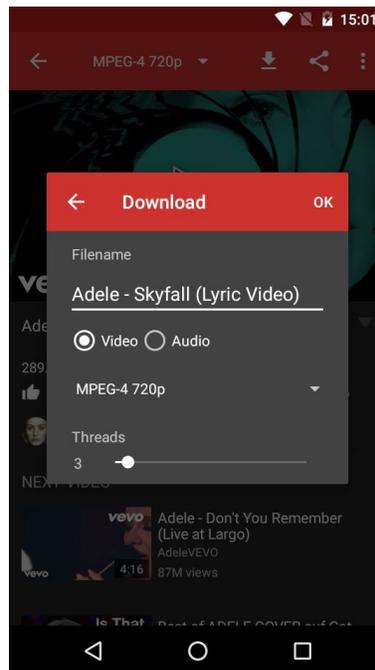
11. Background Player:



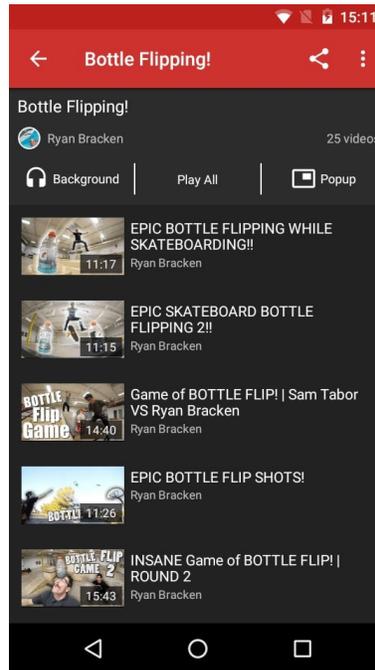
12. Popup Player:



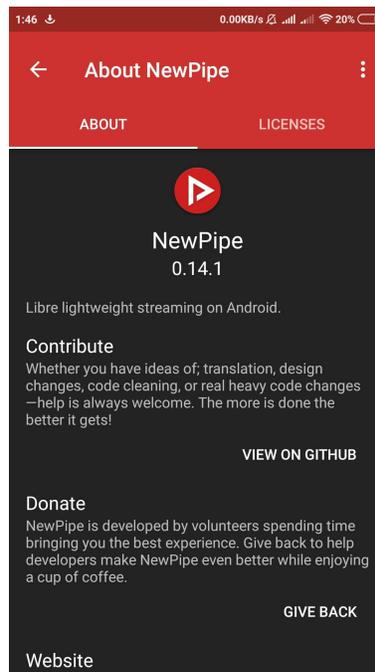
13. Download Dialog:



14. Playlist Page:



15. About Page:



3.2 Hardware Interfaces

NewPipe requires Android 4.4 or newer versions. No further requirements are needed for the application to operate.

3.3 Software Interfaces

NewPipe uses only the NewPipe Extractor at its core, in order to fetch search results, videos and channels from YouTube. Neither Google framework libraries nor the YouTube API are used in the application.

Section 2.7 includes additional information about software interfaces that are used for development purposes.

3.4 Communications Interfaces

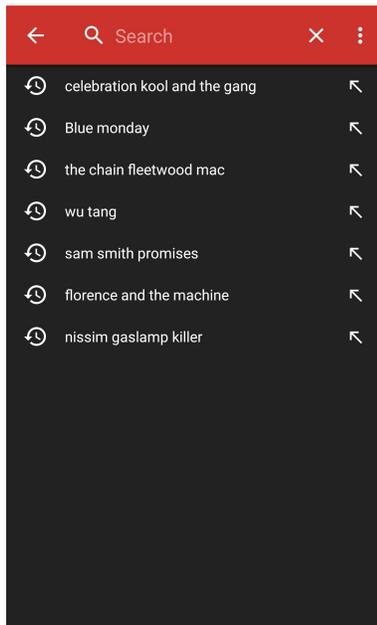
NewPipe requires an internet connection to send requests to NewPipe Extractor or update to a newer version.

4. System Features

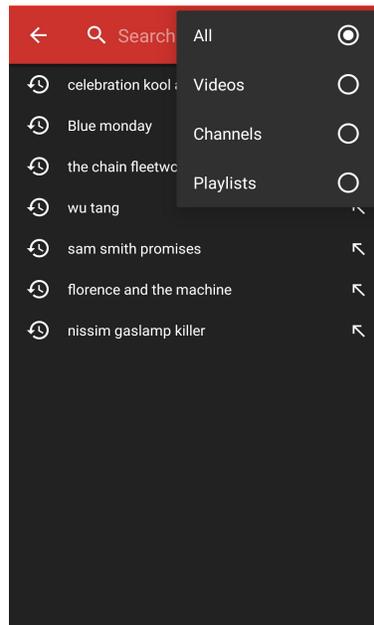
In this section the most prominent features of NewPipe will be demonstrated and explained how they function.

4.1 Advanced Video Search

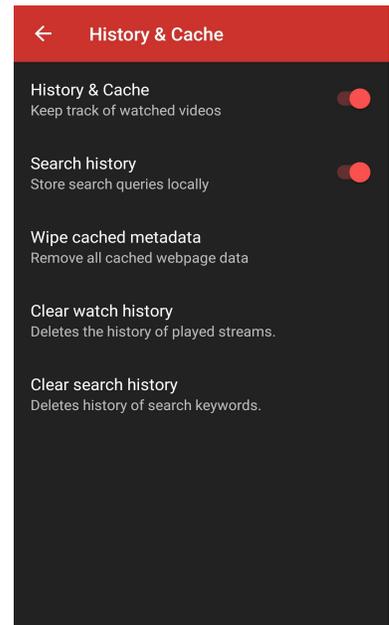
NewPipe offers the users the ability to search for the content of their choice. The filter menu allows them to choose between all content, video, channels or playlists only. In addition, NewPipe is set to keep the users' search history. Users can easily delete a specific search under the search bar or change the default settings through the Settings → History & Cache menu:



Video search with the search history shown below



Search filters



History & Cache settings on the Setting menu

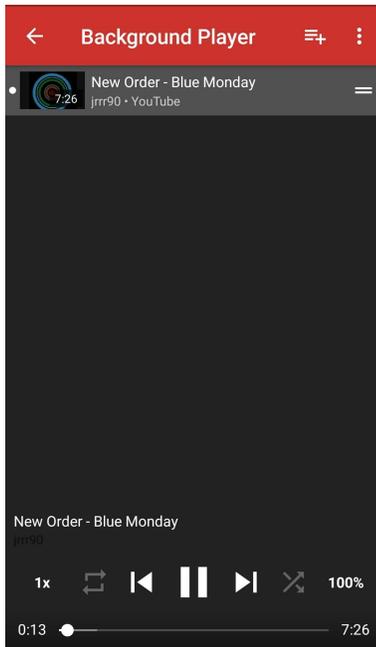
4.2 Watch and Listen to YouTube Videos

NewPipe offers an enhanced experience for any YouTube fan. Users can choose between watching a video in the classic way through NewPipe's video player or choose to playback a video with Background or Popup modes:

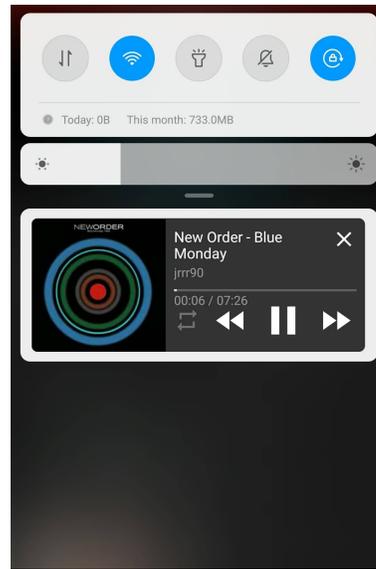


NewPipe's normal video player

In Background mode only the audio of the video is played and users can use their devices freely or even close the display:

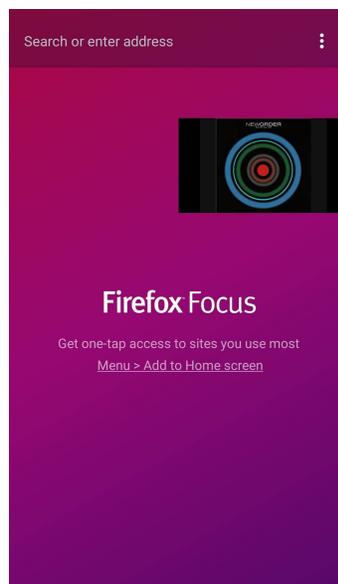


Background player page with the list of the songs in queue

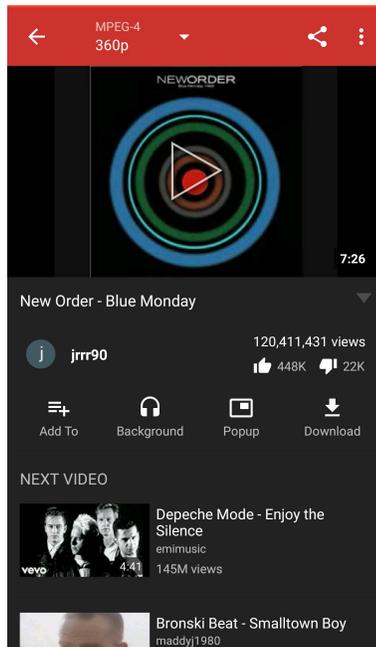


Background player on notifications

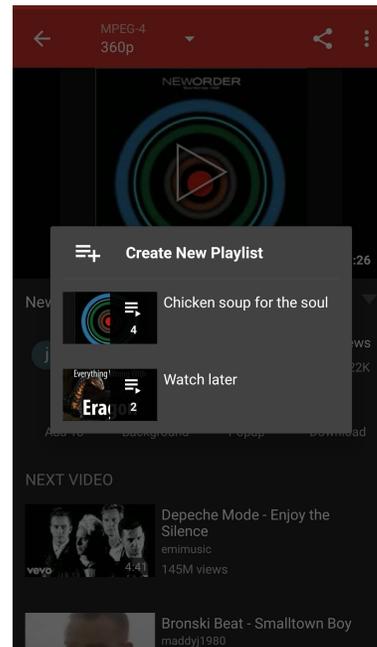
The Popup mode opens a floating window player on the device's screen that users can watch to while browsing on other apps:



General information about a video, such as the description and amount of views and likes – dislikes the video has, are also shown on the video playback page and a button to bookmark the video and add it on a playlist is available to the users:



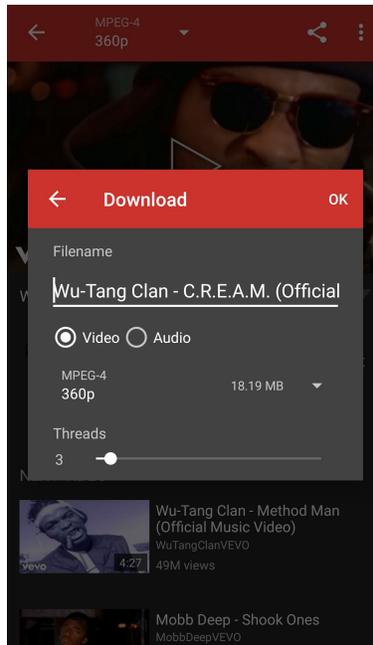
Video player page



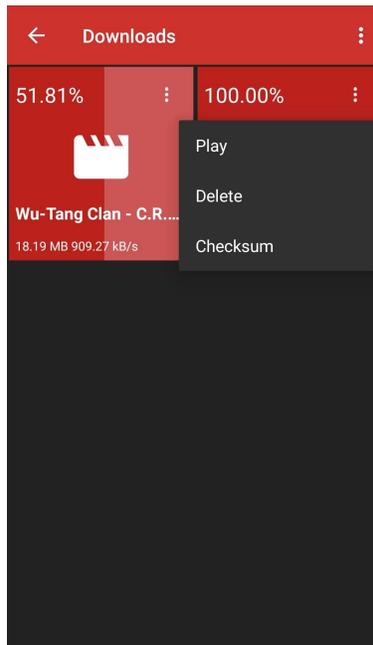
Bookmark option to create a playlist or add video to an existing one

4.3 Downloads

NewPipe's download feature allows users to download easily any video or audio track they want. In the download dialog box users can set the title as they want, choose between video or audio download, select the file format and the resolution they want:

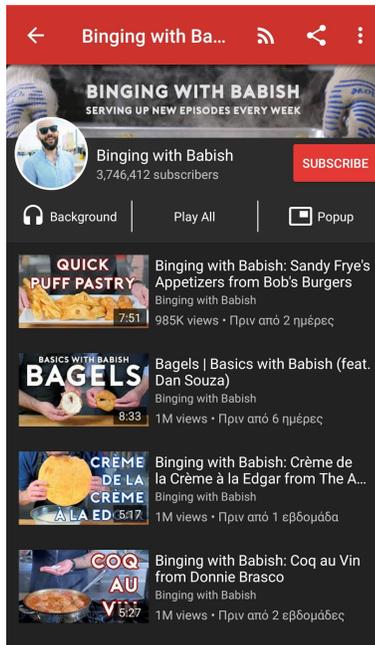


In the Downloads page users can manage every download they have made through the application or watch the progress of each download. The option to play a video or audio track through their system's media player or delete a download is also available:

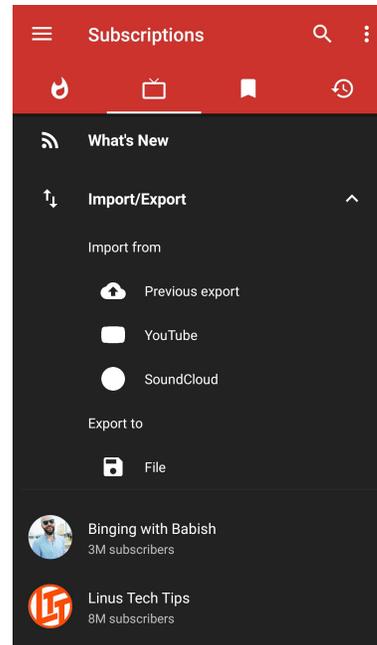


4.4 Subscriptions

Users can subscribe to their favorite channels with one click on the channel's page. On the Subscriptions tab they can keep track of all their subscribed channels, while the ability to import or export their subscriptions is also given to them:

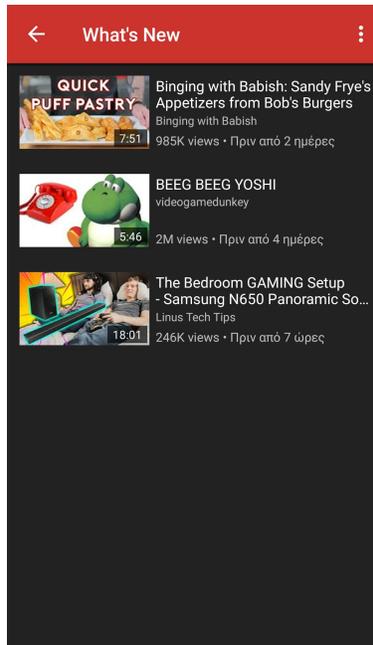


YouTube channel page



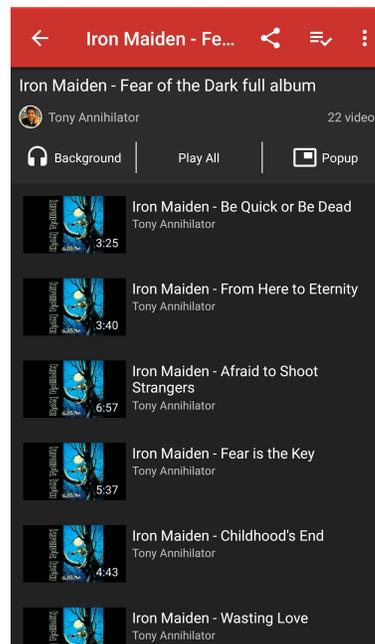
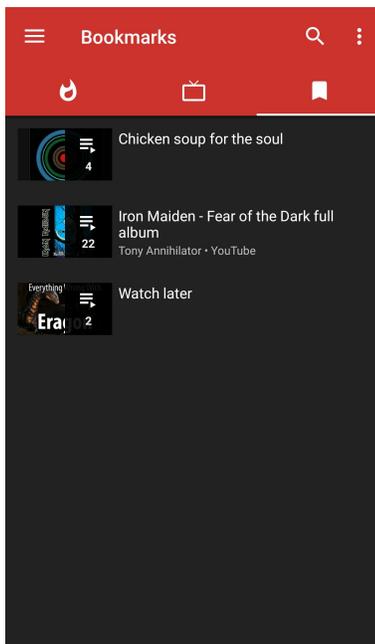
Subscriptions tab with the Import/Export options

In the What's New page users can check for recent videos their subscribed channels have uploaded:



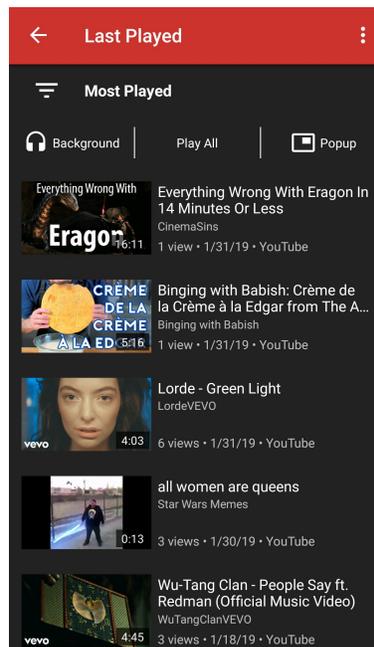
4.5 Bookmarks

The Bookmarks tab holds the playlists a user has made. By bookmarking videos and inserting them in a playlist, people can organize their music and the videos they want to watch:



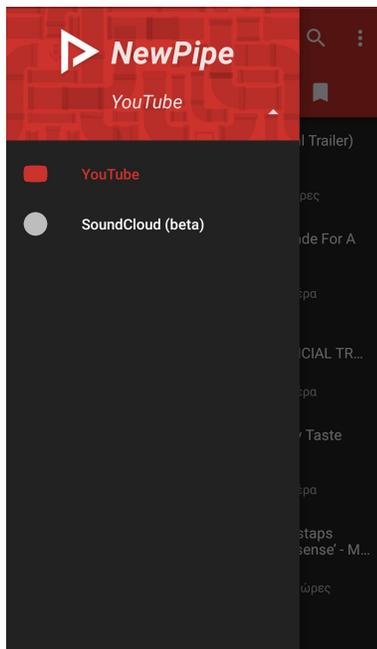
4.6 History

NewPipe stores a user's watch history on their device, so that they are able to check on their previously watched videos anytime or even see what their most played videos are:

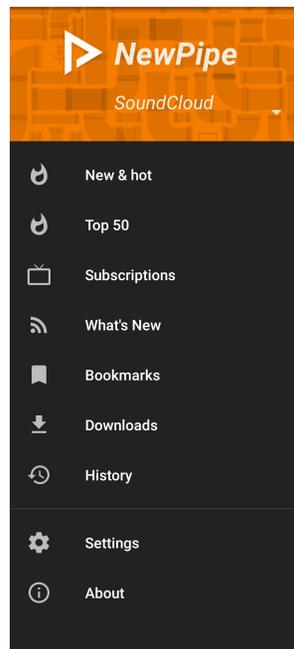


4.7 Ability to Change Between Platforms

Apart from YouTube, NewPipe offers support for the SoundCloud platform (in beta stage). Users can choose the platform of their preference through the option that is available in the sliding menu below the application's logo:



Platform selection in the sliding menu



The sliding menu for SoundCloud



List of SoundCloud videos in NewPipe

4.8 Privacy

NewPipe ensures extended privacy of the user's device and information. Through NewPipe Extractor, the application uses no proprietary Google APIs or YouTube APIs and only sends information that are required to get video and channel details. The users cannot log in their Google accounts, but through the aforementioned feature of importing their subscriptions or even their playlists they are able to have the application set up very quickly.

In addition, users can decide what information NewPipe keeps and what not through the application's settings and everything is stored exclusively on their devices.

The application's privacy policy is provided here: <https://newpipe.schabi.org/legal/privacy/>

4.9 Lightweight Design

Another important target of NewPipe is to be as light as possible on a device to ensure a pleasant experience for any Android user. The application is nothing less than fast and smaller in size than the official YouTube app.

NewPipe is battery-friendly and has little data consumption while running and features such as the background mode contribute to this even more.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

NewPipe's lightweight design requires no certain performance requirements, apart from a supported Android version (4.4+ as of 0.15.0).

5.2 Safety Requirements

NewPipe requires no safety measures to be taken into account. For any problems users come across the community is easily accessible and eager to listen and help them.

5.3 Security Requirements

The application does not have any security requirements and is free for anyone to use or develop.

5.4 Software Quality Attributes

NewPipe's simple and easy-to-use design provides a pleasant experience to any user. For development, the project is open to anyone that wants to program on Android and Java, but more importantly, to people that are eager and share the passion to contribute to the open-source community and expand the application.