

FUNDO TV

WiFi-Based Entertainment Solution



Technical Solution Document

29th November 2018

Introduction



Wifi-soft Solutions Pvt. Ltd. is a private held company based in India with offices in Pune, India, Dubai, UAE and Austin, USA. Wifi-soft is a complete wireless networking company and offers a complete range of solutions for the WiFi industry which includes indoor and outdoor access points, hotspot controllers and cloud-based OSS/BSS for managing public WiFi hotspots.

Wifi-soft has been managing WiFi hotspots worldwide for over 12 years and has rich experience of managing public WiFi in venues likes airports, shopping malls, hotels, resorts, casinos, RV Parks, marinas, train stations, hospitals, govt building, public parks, cafes and many other venues.

Our products are deployed in more than 45 countries and in over 10000+ venues. We serve more than 10 million user logins each month and bring over 1 million new users online. Our cloud-based hotspot management solution – WiFi LAN – is widely used as OSS/BSS/NMS for managing public Wi-Fi hotspots. UniBox hotspot controller is an intelligent network access controller that provides all the features required for managing public-access networks in a single appliance. UniMax Access Points are simple, plug-n-play, enterprise-class access points that can be centrally managed in the Cloud. Lastly, we also provide 802.3af/at compliant PoE switches for powering devices like APs, cameras, phone remotely using PoE technology. Our Advertisement and Marketing solutions help operators monetize their WiFi infrastructure through proximity marketing, push notifications, advertisements and social media.

Company Highlights

- ✓ 12+ year old company
- ✓ Managing tens of thousands of hotspots worldwide
- ✓ Customers in over **45 countries**
- ✓ Handle 10+ millions user logins each month
- ✓ Managed WiFi in over **400+ Whole Foods** grocery stores across US and Europe.
Whole Foods is world's largest organic retailer
- ✓ Helped system integrated setup WiFi for **US army bases** in Afghanistan
- ✓ Worked with **Verizon** in setting up WiFi onboard USS Enterprise (World first nuclear aircraft carrier)
- ✓ Deployed several controllers for **Bell Canada** for student housing projects
- ✓ Supplied and installed over **3000 Smart AP** for vacation rental company in the US
- ✓ Working with BSNL on setting up WiFi hotspots across **800 sites in India**
- ✓ **Mumbai WiFi** project with **MTNL**
- ✓ Worked with VNPT, Vietnam in setting up a **city-wide WiFi hotspots** in Hai Phong
- ✓ Managed WiFi for over 50 leading casinos in Las Vegas and Nevada
- ✓ Worked with **OYO, Sayaji and Mango** hotel chains
- ✓ Worked with Department of Transportation in setting up WiFi in **Texas, Florida, Michigan, Iowa and California**
- ✓ Have managed WiFi for airports in **Hawaii, Cancun** (Mexico), **Burlington**(US), **Hamburg**(Germany), **Cyprus, Eindhoven**(Netherlands) and many more
- ✓ Deployed over **18,000 WiFi routers** on buses

FundoTV – Entertainment on Move

FundoTV is the name of the product that provides WiFi-based entertainment and video streaming in public vehicles and public places. The solution is designed to provide access to infotainment content like TV shows, movies, songs and other content to travelers in buses, trains, metros, boats and other public places. FundoTV can be also used for venues like museums, train stations, training institutes, schools/colleges to stream educational, informational or training audio-visual content to the end users.

FundoTV makes it possible for operators to provide infotainment to the users at fraction of the cost of other infotainment solutions. The setup is very simple and users can access the content easily on their mobile phones via web browser or mobile app. The content is stored locally on the unit so the access to the content doesn't consume any Internet bandwidth.

Components of FundoTV solution

The FundoTV solution consists of the following components –

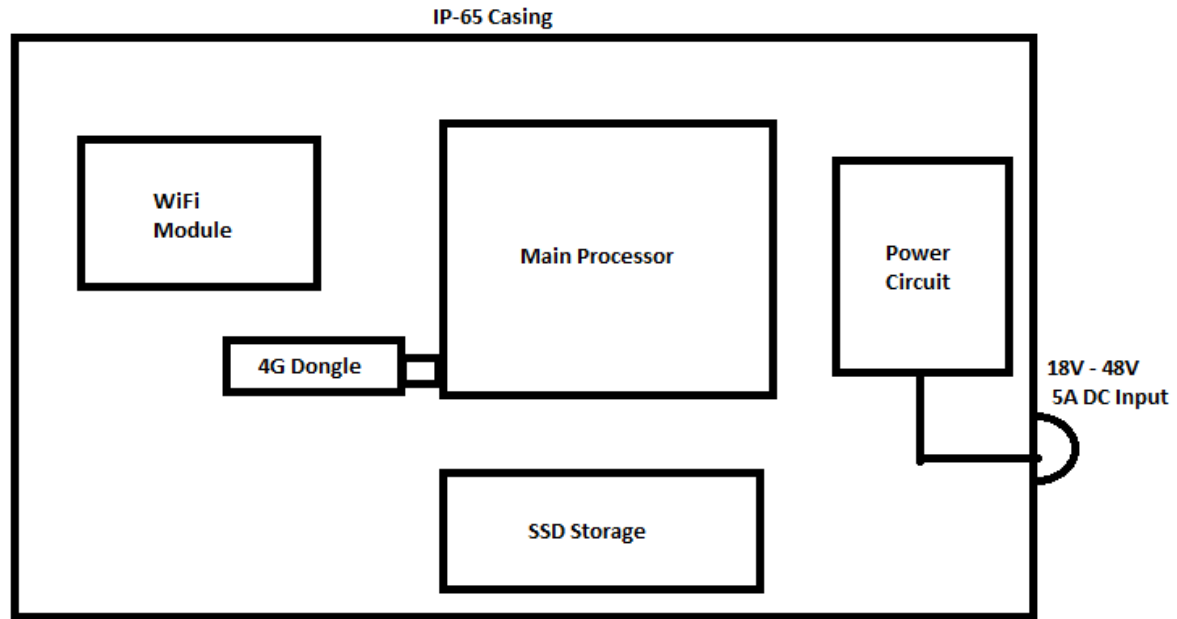
1. FundoTV Content Router
2. WiFi Network (optional)
3. Mobile App / Mobile Browser
4. Content Manager

FundoTV Content Router

The content router is the main component of this solution. The router is a combination of various components and is responsible for storing and streaming the content to the users. It consists of a WiFi router, main processing board, power circuit, storage device like Solid State Drive (SSD) and related circuitry. All the above components are housed in an IP-65 casing to ensure that the unit is weather and dust proof.

The content router may also have connectivity to the Internet to download the content from the central storage and for syncing the data and analytics from the device to the cloud. The connectivity can be provided using a 4G-Dongle or regular Internet broadband connection.

The diagram below shows the components of the FundoTV router



WiFi Module

This component is responsible for broadcasting the WiFi signal to the end users. The Wifi module comes with internal 3 DBi antennas which is sufficient for covering a radius of around 25-30 meters. WiFi module supports both 2.4 GHz and 5 GHz radio. The end user devices that support 5 GHz will automatically utilize the wider frequency spectrum. Each WiFi module is capable of handling around 40 – 45 streaming users when both frequency bands are utilized.

It is possible to add an additional WiFi module to handle additional 30-40 users. Both WiFi module will be designed to operate in non-overlapping channels to provide good connectivity to the end users.

Main Processor

This board is responsible for running the management and streaming software. It is also responsible for interfacing with the data storage to retrieve the content and stream it. The board needs to have sufficient memory and CPU to handle the concurrent audio-visual streams from multiple end users. It is also responsible for running special algorithms that ensure optimal WiFi channel utilization.

Storage

The SSD or storage is responsible for storing the content and providing fast data retrieval. It also needs to be reliable and sturdy to handle the vibrations and harsh vehicular and outdoor environments. Generally we recommend using reliable Solid State Drives with high read-write cycles. The storage should be large enough to store all the content locally.

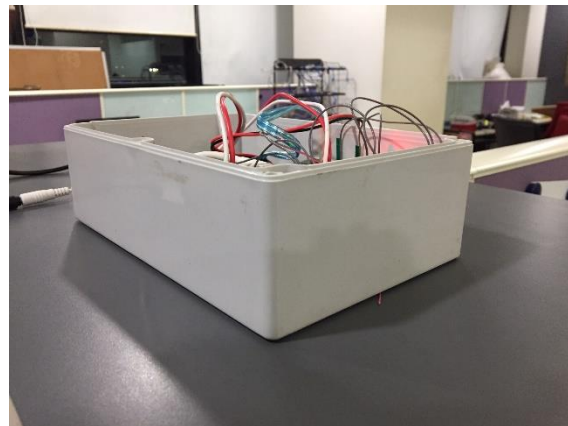
Power Circuit

Vehicles provide power through their battery which is often unregulated and unreliable. It also is susceptible to voltage spikes and fluctuations. The power circuit is responsible for regulating the power from the vehicle batteries and providing a reliable and constant power supply to the internal components. The power circuit should be able to handle variable voltages and currents from the battery and have surge protection circuit to handle sudden spikes in voltages. It also needs to ensure that it provides adequate current to power all the components during their peak performance.

4G Dongle

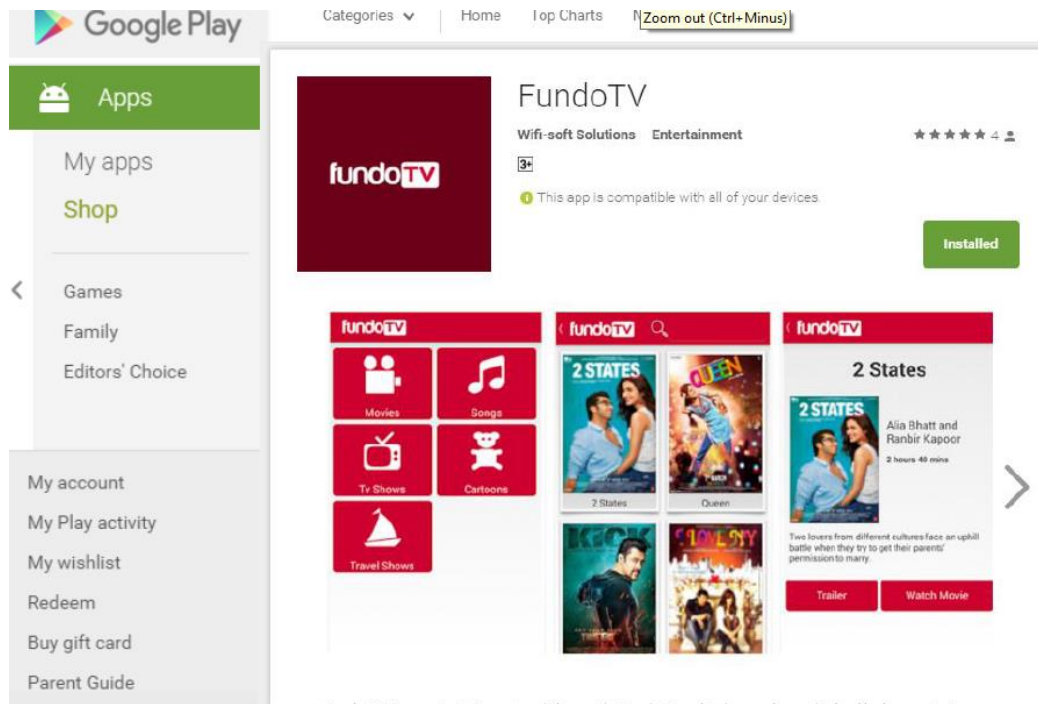
This is an optional component. The 4G dongle can be connected to the main circuit to provide Internet connectivity to the unit. The Internet connection can be used for syncing the content on the storage and for transferring the data and statistics from the unit to the central cloud.

The actual picture of the complete kit are as shown below:



Mobile App

The end user interacts with the FundoTV solution using a mobile app. The mobile app can be downloaded from Android Play store or Apple App Store. The mobile app contains a media player that is responsible for communicating with the FundoTV router and download the audio-visual content for streaming.



End users can also view the content using their web browser if they don't want to install the mobile app or don't have Internet connection to download the app.

User On-boarding

The end users need to register for the FundoTV service before enjoying the streaming content. The registration process is simple and can be modified based on operator's requirements. The user needs to fill a simple form and submit it. The information is sent to the cloud for collecting analytics and data about the user.

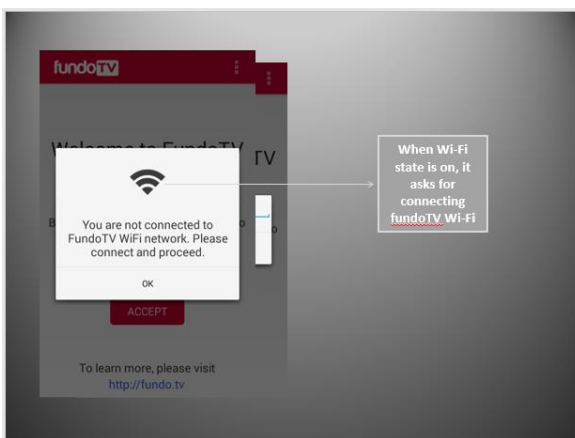
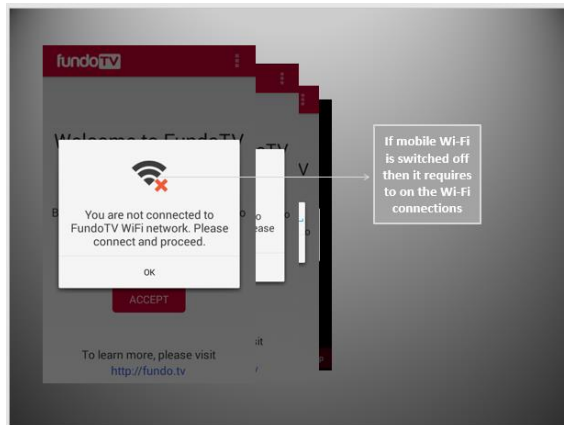
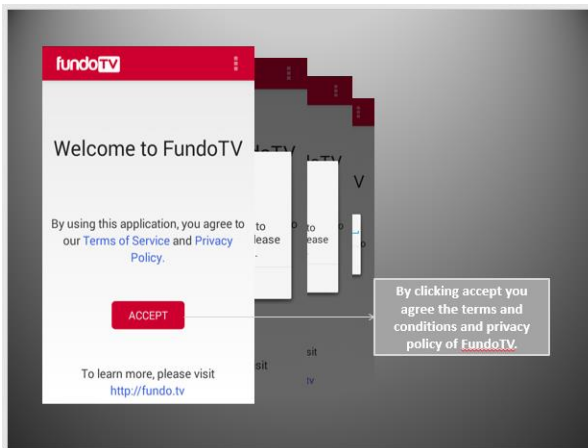


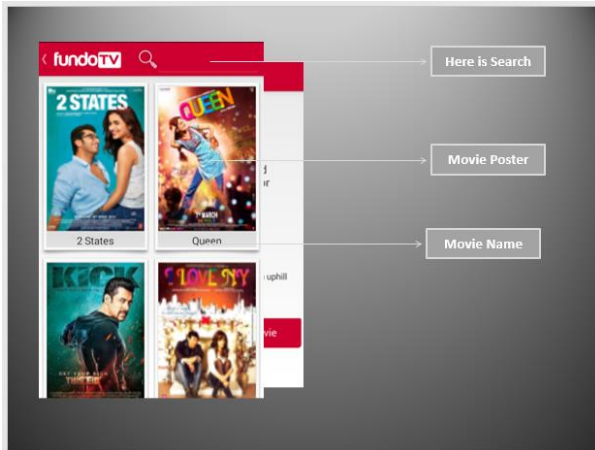


End User Experience

The end user interacts with the FundoTV router through the mobile app or web browser. In case of web browser, the user needs to type a URL in the browser to get directed to the welcome page.

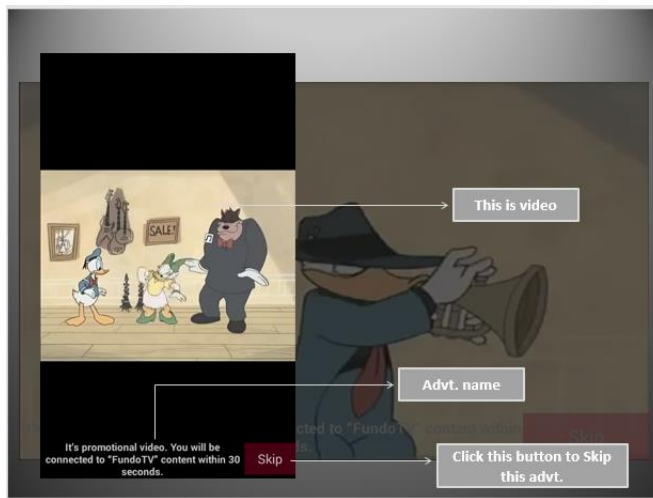
The screenshot below show the user's experience while using the FundoTV





Advertisement Insertions

The system is designed to show advertisements to the end users before the video start playing. The mobile app can show a video advertisement before the user get access to the content. This will help operator generate revenues from the advertisements.



Wifisoft is also working on a new feature that will allow operators to insert advertisements in the video and movie contents. This interstitial advertisement content will appear while the movie/video is playing. The advertisement model is similar to Youtube.

Content Manager

The content manager is a web application installed in the FundoTV router that allows operators to manage the content stored on the storage. It allows easy uploading of content and modifying the meta data of the content. The metadata stores information about the content e.g. the name of video, time period, etc.

The content for each video/audio is organized on the router. The end user can view the metadata while browsing through the stored content.

Installation

The installation of FundoTV router is quick and simple. The router comes with external power cable. The length of the cable can be adjusted as per the specifications of the operator. A standard 2 meter cable is provided by default.

The power cable can be directed connected to the power source like battery in the vehicle. The router contains a power circuit which is responsible for regulating the power fluctuations and spikes.

The enclosure is designed to withstand the vibrations and shocks during the normal vehicle operation. It needs to be mounted using screws. Generally the unit is placed in the center of the vehicle to provide maximum coverage and better connectivity. However, if the central mounting is not possible then the unit can be installed behind the driver in the bus or wherever the power source is easily available.

Management

Wifisoft can provide a complete managed service for management of the remote FundoTV routers. The management for the routers can be handled from the central server. Each router can be equipped with a 4G dongle which will provide Internet connectivity to the central store.

The router will be designed to periodically send the data and statistics of the end users to the server for analysis and reporting. This will allow operator to collect and analyze the data from all remote installations.

The central system can be installed in the operator's data center or hosted in private instance in Wifisoft Cloud. Alternatively, the operator can also take full control of the backend management of the routers through the management platform.