PCTV Systems
Broadway 2T

PCTV Systems – Broadway 2T

User's Guide

GB   January 2011

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General Information

Safety Information

Please read and follow these instructions for your own safety and to ensure that your device functions properly.

Broadway 2T is meant for use as described in this user manual only (intended use). PCTV Systems S.à r.l. assumes no liability for activation or use and its consequences in a way other than specified in the user manual.

Warranty is declared void in case of improper use.

Note that **Broadway 2T** was developed for indoor use only.

Power Cable and Plug

Please be sure to follow the following instructions in order to prevent the device from malfunctioning and to prevent electrical shock, fires, and injuries:

- You need to remove the power plug to disconnect the power completely.

- When disconnecting the power to your box, always unplug it by pulling the plug itself and not the cable.

- Do not ever plug in or unplug the power cable with wet hands.

- Keep the power cable away from heaters and radiators.

- Never put heavy objects on the power cable.

- Do not try to repair the power cable yourself or to modify it in any way, shape, or form.

- Regularly clean off the dust, dirt, etc. from the plug.

- If you drop the box or damage it in any fashion, disconnect the power plug.

- If you notice smoke, strange smells, or noises, disconnect the power plug. Contact your dealer immediately.

- During a thunderstorm, do not connect or disconnect the antenna or data transmission lines.

Where Not to Install the Box

Do not install the box in any of the following locations:

- In direct sunlight, next to radiators or other heat sources or in vehicles parked in direct sunlight with all the windows rolled up and the doors closed,

- Locations with extremely high temperatures (35°C/95°F or greater) or levels of humidity (90% or greater),

- Very dusty or sandy locations,

- Locations where there are vibrations, shaking or slanted surfaces underneath. This could damage the components in the box.

- On flammable surfaces such as cloth-covered tables.

- Keep the box away from flower vases, bathtubs, sinks, etc., and from locations where the box is exposed to precipitation. The box may be severely damaged if any liquid enters it.

Problems with Other Devices

- Set up the box in a horizontal position and do not place any heavy objects on it.

- Do not place the box on an amplifier or any other device that gives off heat.

Housing and Internal Components

- Never remove or open any part of the housing and do not try to perform any repairs yourself. Any maintenance or repair work should be done by a qualified technician.

- Keep fingers and objects away from the inside of the box.
  It is dangerous to touch any of the components inside the box. Doing so may injure you and damage the box.

- Do not place any objects on the box.

- The box should only be cleaned with a soft, dry, anti-static cloth.

Condensation

Condensation may develop in the box in the following circumstances:

- Right after a nearby heater or radiator which has been turned on,

- In a very humid or steam-filled room,

- If the box was moved from a cold location to a warm one.

Condensation in the box may cause it to malfunction. In this case, turn off the box and wait around 1 hour until the condensation has evaporated. Then you can use it again.

Non-Use

- If you are not planning to use the device for a long period, you should unplug it from the power socket.

Accessories

- Use only the accessories included with or recommended for the device in order to minimize the risk of fire, electrical shock or interference.

- CAUTION: **Broadway 2T** may only be used with the power adaptor supplied.

CE Conformity Statement

PCTV Systems S.à r.l. hereby declares that this TV reception equipment complies with the fundamental requirements and other relevant terms and conditions of EC directive number 2004/108/EEC.

The CE declaration of conformity and identical construction for this product can be downloaded from http://www.pctvsystems.com/compliance.

Possible changes or additions which could no longer be included in this user guide are described in the readme file or on the PCTV Systems Internet site at http://www.pctvsystems.com/support.
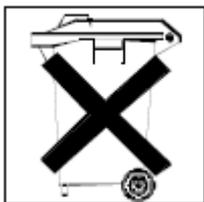
Disposal and Recycling

Do not dispose of electric components in the garbage. Either return defective or unwanted devices to the retailer or take them to an appropriate recycling station!

Overview

Welcome to Broadway 2T by PCTV Systems

Dear customer,

We would like to thank you for choosing a PCTV Systems product. You have made an excellent decision.

Broadway 2T by PCTV Systems is a new way to watch live TV on your Apple® iPhone® and iPad® – at home via Wi-Fi or around the world via the Internet. **Broadway 2T** is a standalone device which connects to your DVB-T/Freeview TV aerial and streams live TV wirelessly to mobile Apple® devices – the iPhone®, iPad®, and iPod Touch®.

Live TV can be watched over your home Wi-Fi network or it can be streamed over the Internet anywhere in the world where your Apple® device has an Internet connection.

The **Broadway 2T** networked TV receiver features two DVB-T tuners, hardware H.264 compression and support for the ultra-fast 802.11n wireless network (Wi-Fi) standard.

It connects to your home Wi-Fi router, converts the live TV signal to H.264 format and streams it wirelessly to mobile Apple® devices as well as to any PC or Mac®.
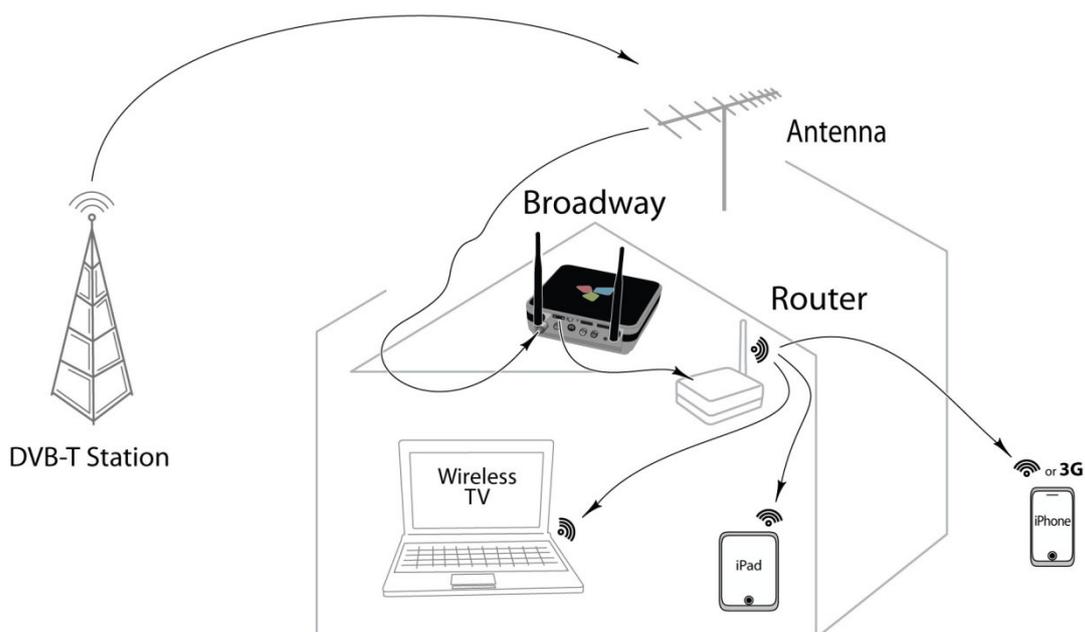
As you have the choice to connect **Broadway 2T** wirelessly, you are free to position **Broadway 2T** at the spot with best DVB-T reception (within the wireless network range of your router). Doing so, you have access to DVB-T everywhere in your home - even if you live in an area with weak DVB-T signal.

Broadway 2T enables two usage scenarios: TV streaming to Apple® mobile clients (handhelds) and Macintosh® Computers and secondly TV streaming to Windows® PCs.

In the first scenario, **Broadway 2T** is operated via the web browser being part of Apple® mobile devices and the Safari browser on your Mac®.

When using a Windows® PC, **Broadway 2T** is operated via the included TV viewing application **TVCenter**.

Alternatively, you can use Microsoft Windows® Media Center to watch TV. We strongly recommend a wired connection (your Broadway box connected to the router via Ethernet cable), if you use Windows® Media Center as TV application. In a wireless setup with Windows® Media Center you might face significant video drop-outs and jerkiness because of higher data rates.

Broadway 2T is the smart way to enjoy your favorite TV programs – everywhere!

We hope you have lots of fun with your new product.
Your PCTV Systems Team

Deliverables

Broadway 2T by PCTV Systems consists of the following components:

Hardware - the Broadway 2T Box

Streams digital TV content to one mobile device and/or one PC connected to your local network.

For further details, please refer to the chapter The Broadway 2T Box.

Software

DistanTV mobile

DistanTV mobile is a browser-based application which enables your mobile device or Mac® PC -regardless if connected to your local network or via the Internet- to play back the TV program streamed from **Broadway 2T**.

For further details, please refer to the chapter DistanTV mobile.

TVCenter

Besides watching TV on your Windows® PC, the application also offers the possibility to time shift and schedule recordings. This way you will not miss a minute of your favorite TV show.
For further details, please refer to the TVCenter Manual. You can open the manual under: ***Windows Start > Programs > PCTV Systems > Documentation***

The Broadway-Tool

It's a tool incorporated into TVCenter, which enables the Windows® PC you use for watching TV to detect and identify the TV tuners integrated into **Broadway 2T** and to access the streamed TV content.

For further details, please refer to the chapter The Broadway-Tool.

The Broadway 2T Box

Inputs and Buttons – Front Side

- **Standby Button**
  if you press this button longer than 3 seconds **Broadway 2T** will go to standby. To wake-up **Broadway 2T** from standby, press this button again.

- **USB Connector**
  reserved for future use.

Inputs and Buttons – Rear Side

- **LAN Input**
  if you want to establish a wired connection between **Broadway 2T** and the router of your local network, connect the Ethernet cable here.

- **Wi-Fi Button**
  if you press this button, the **Broadway 2T** operation mode switches from WLAN to Ethernet mode and vice versa.

- **RES Button**
  if you press this button longer than 5 seconds, the **Broadway 2T** factory settings will be restored.

> **Note:** a pointed object e.g. the tip of a pen is required to press this button.

- **USB Connector (twice)**
  reserved for future use.

- **ANT Input**
  Connect your rooftop antenna or the included mini DVB-T antenna here.

- **CVBS Input**
  connect an analog video source, like a camcorder or set-top box here.

- **S-Video Input**
  connect an analog video source, like a camcorder or set-top box here.

- **L, R AUDIO Inputs**
  connect an analog audio source here.

- **IR Input**
  for future use connect the included IR-Blaster-Cable here.

  Be aware that the IR Input and the IR-Blaster-Cable are reserved for future purpose.

- **12V – 2A Input**
  connect the included power supply unit here.

LEDs

Ready LED   WLAN LED

- **Ready-LED**
  blinks white – after **Broadway 2T** was connected to the power source and during the booting process (this might take a time) or when you change between WLAN and Ethernet mode and vice versa.
  A **fast blinking** means the firmware is being loaded.
  A **slow blinking** means **Broadway 2T** waits for an IP address to be assigned.
  lights white – **Broadway 2T** received an IP-address from the router of the network and is ready to use.
  not illuminated – **Broadway 2T** is in standby mode or without power supply.

- **WLAN-LED**
  blinks green –data is being transferred via the wireless connection.
  lights green – **Broadway 2T** is in WLAN mode.

The Power Supply Unit

⚠️ | **Broadway 2T** may only be used with the provided power supply unit.

The power supply unit is delivered with an interchangeable plug.
The included plug depends on your location.

Insert the Plug

Before first use, insert the included power plug into the power supply unit body. Proceed as follows:

- Slide the top of the plug into the designated slot on the power supply unit body as shown in Figure a.

- Push the plug (see Figure b) until it audibly clicks into place (see Figure c).

Change the Plug

If you need to change the plug for use in another region, proceed as follows to release the plug:

- Unplug the power supply unit.

- Pull the *Open* button downwards.
  The button is located on the power supply unit, underneath the power plug.

- The plug pops out.

- Now insert the appropriate plug as described in the section "Inserting the plug".

For purchasing different or spare plugs, please visit:
http://webshop.pctvsystems.com.

The Software

DistanTV mobile

> Note: Depending on your client device, a dedicated user interface will be displayed.
> A compact user interface will be displayed on devices with low resolution (e.g. iPhone®), whereas a standard user interface will be displayed on devices with high resolution (e.g. iPad®, Mac® and Windows® PCs).

- The **compact user interface** looks like this:
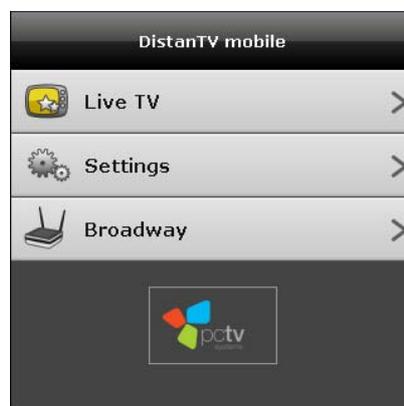
  The compact user interface provides an overview of all available functions.

  To access a function, you just have to click on/touch the respective button, e.g. click on the **Live TV** button, if you want to watch TV.

  Click on the **Home** button, to get back to the functions overview.

- The **standard user interface** looks like this:

The Configuration Pages – an Overview

DistanTV mobile offers two configuration options.

- The ***Settings*** page – is relevant for streaming Live TV.

- The ***Broadway*** pages – offer the possibility to configure the **Broadway 2T** device according to your needs.

Important

If, after changing the configuration of **Broadway 2T,** you are no longer able to access it, we recommend to restore **Broadway 2T** to factory defaults settings. For details on how to restore your device to factory defaults, please refer to chapter: <u>Restore Broadway 2T to Factory Defaults.</u>

The Settings Page

Select this option to make general changes to the DistanTV mobile user interface and change the video preview settings by selecting the appropriate profile.
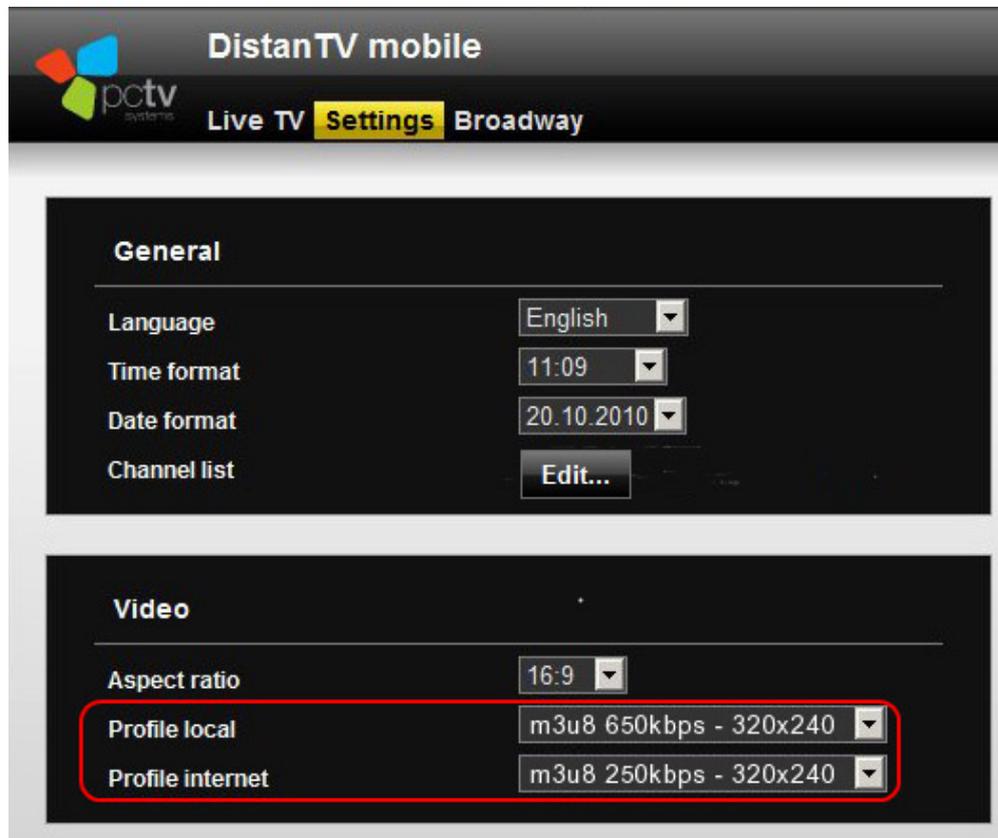
- Select **Profile local** to choose the appropriate data rate within your local network.

- Select **Profile internet** to choose the appropriate data bandwidth of your WAN. Please keep in mind that the bandwidth might be restricted by the upload speed of your internet connection.

Within the **General** section, you can create favorite TV Channel lists by clicking the **Edit…** button.

For further details on this subject, please refer to chapter:

How to Create Favorite TV Channel Lists.

The Broadway-Pages

Select this option to configure your **Broadway 2T** device.

Following options are available:
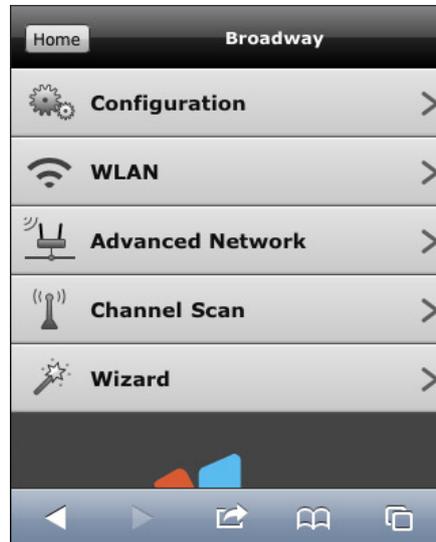
Configuration
select this option to change the login passwords and the hostname of your **Broadway 2T**. If needed, this is where you can reboot or restore **Broadway 2T** to factory defaults.

WLAN
select this option to enable the wireless functionality of the device and make the needed changes.

Advanced Network:

select this option to manually assign a static IP address (LAN or WLAN) to your **Broadway 2T.**

Channel Scan
select this option to run a channel scan.

Wizard
select this option to start the Broadway Setup Wizard.
The Wizard will guide you through the **Broadway 2T** setup procedure helping you configure the way the device is connected to the router. In addition to that you can also use the Wizard to run a TV channel scan.

TVCenter

For further information regarding the PCTV Systems TV viewing software TVCenter, please refer to the TVCenter manual.

To open the TVCenter manual on your PC go to:
Windows Start>Programs>PCTV Systems>Documentation>TVCenter Manual

The Broadway-Tool

This TVCenter tool is software, which runs in the background. It facilitates watching TV on your Windows® PC using the PCTV Systems TV viewing application TVCenter.
Its main purpose is to detect the TV tuners integrated into **Broadway 2T** (the tool automatically searches for an available **Broadway 2T** in every network your Windows® PC is connected to).

In addition, you can use this tool to access the configuration pages of **Broadway 2T**.
For further details, refer to the chapter: <u>How to Open the Configuration Pages</u>.

An icon in the lower taskbar indicates that the tool is running.

> The Broadway-Tool is automatically installed during the installation of TVCenter.

Launching the Broadway-Tool

By default, the Broadway-Tool is set to automatically start with TVCenter.

Should you manually stop the Broadway-Tool you can launch it anytime by clicking on: ***Windows Start > Programs > PCTV Systems > Tools > Broadway.***

In addition, you can then select from the context menu to start automatically.

The Broadway-Tool Icons

Note: if you are using Win 7, the icons in the Quick Launch bar might be hidden. In this case, click on the ***Show hidden icons*** button to make them visible again.

The red Broadway-Tool icon
shows there was no **Broadway 2T** detected in your local network.

The green Broadway-Tool icon
shows there was a **Broadway 2T** detected in your local network.

The Broadway-Tool Context Menu

To be able to access all options of the context menu, **Broadway 2T** has to be connected to your local network and detected by the Broadway-Tool.

To open the context menu, click on the Broadway-Tool icon in the taskbar.

The available menu items are:
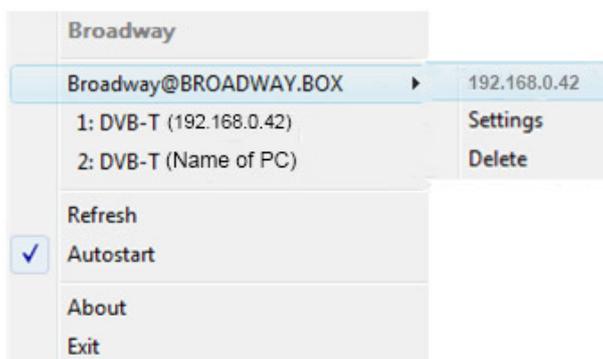
Hostname

Note that the default **Broadway 2T** hostname is ***broadway.box***

Select this menu item to see the IP-address of your **Broadway 2T** or to change the settings of the device.

Following sub-menu items are available:

Settings

Select this item, to open the ***Broadway*** configuration pages of DistanTV mobile.

> Note: A Web browser has to be installed on your PC to be able to access the DistanTV mobile configuration pages.

Delete

Select this item to remove all stored information regarding **Broadway 2T** from your system. This option is only available, if your **Broadway 2T** is currently not in use.

TV Tuner

Right underneath the hostname, you can see which **Broadway 2T** tuner is in use.

- DVB-T (without suffix): your box is connected to the network, but not in use.

- DVB-T (without suffix) being disabled: your box is momentarily not connected to the network.

- If your box was found within the network and is in use, in addition to DVB-T, the IP-address (or the name) of the corresponding client device will be displayed.
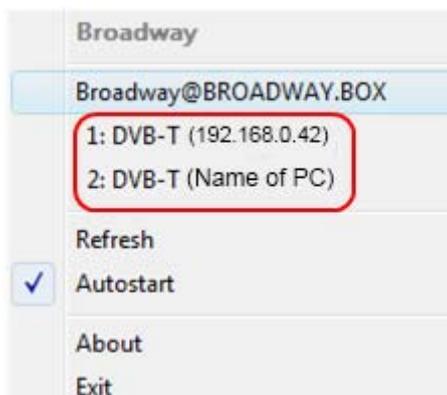
Refresh

If you removed informaion regarding **Broadway 2T** from your systems, select this option to refresh this information.

Autostart

When this option is checked, the Broadway-Tool will automatically start with Windows®.

If you do not want the Broadway-Tool to automatically start with Windows®, click on this menu-item to uncheck the option.

About

Select this menu item to get important information about the **Broadway 2T**, e.g. the installed software version.

You will need this information when contacting the PCTV Systems Customer Support.

Exit

Select this menu item to close the Broadway-Tool.

Setting Up your Broadway 2T

You have two possibilities to set up the **Broadway 2T**:

- wired setup – the Ethernet Mode
  Broadway 2T is connected via an Ethernet cable to the router of your network (recommended initial setup to get the most robust connection)

- wireless setup – the WLAN Mode
  Broadway 2T is connected wirelessly to the router of your local network (this way you can place **Broadway 2T** on the spot with the best DVB-T reception within your wireless local network)

Go to the setup scenario that suits you best and follow the instructions.

Broadway Placement

You can place **Broadway 2T** on a flat surface or mount it on the wall.
If you decide to mount it on the wall use the included mounting kit (including a drilling template).

If you decide to place it on a flat surface, make sure to attach the rubber feet as shown in the illustration below.
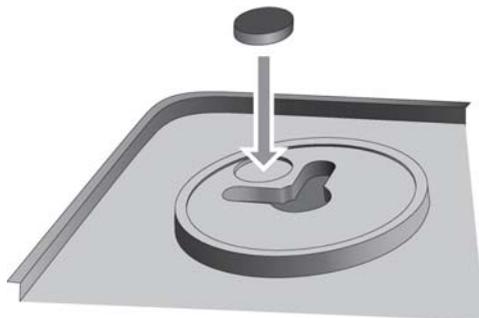
Wired Setup – the Ethernet Mode

This is the easiest and fastest way to setup your **Broadway 2T** and then watch digital TV in your local network.

We recommend this procedure for the initial **Broadway 2T** setup.

Use this setup scenario when the TV signal source and the router of your network are in proximity.
E.g. your DVB-T signal comes out of an antenna wall-socket and your broadband Internet connection is right beside the antenna-socket. In this case a wired connection between **Broadway 2T** and router would be the optimum solution.

For a successful installation follow these steps:

1. Connect **Broadway 2T** to your router using an Ethernet cable

2. Connect the plugged in power supply unit to **Broadway 2T**

3. Access **Broadway 2T** via a web browser

4. Follow the instructions of the Wizard

    ▪ connect to antenna

    ▪ run a channel scan

5. Watch TV

Each step will be explained in detail in the following chapters.

Note that an Internet connection is strongly recommended.

Step 1: Connect to Router

▪ Use the provided Ethernet cable to connect **Broadway 2T** to the router of your local network.

Ethernet connection

ANT   C S   S-VIDEO   L AUDUO R   IR   12V ⎓ 2A

Router

Ethernet cable for wired connection

Step 2: Connect to Power Source

Caution: you may use **Broadway 2T** only with the provided power supply unit.

Make sure the included power adapter is inserted into the body of the power supply unit.
For further details, see chapter [The Power Supply Unit](#).

▪ Connect your **Broadway 2T** to a wall socket using the provided power supply unit.
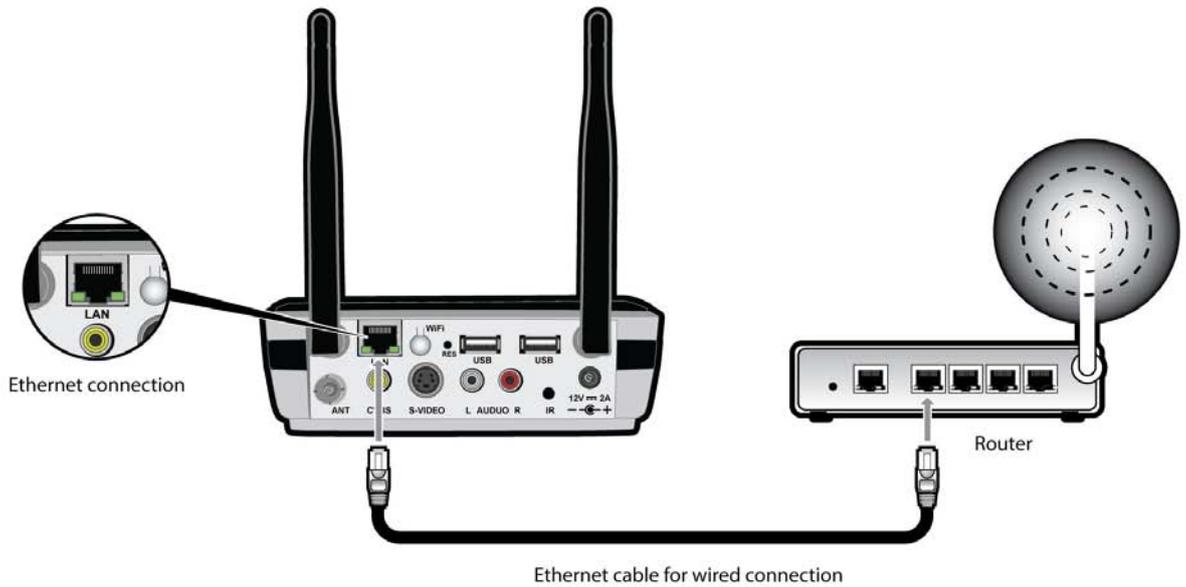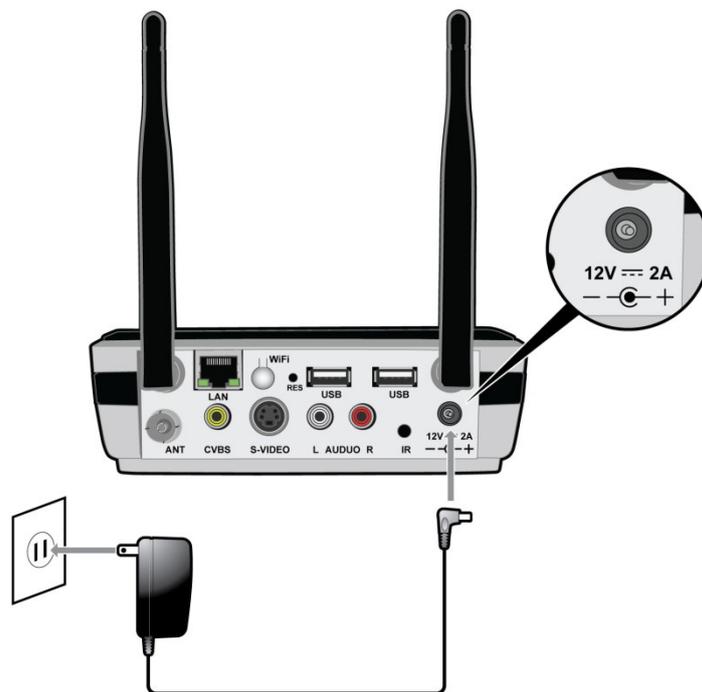
▪ **Broadway 2T** starts automatically.

▪ Wait until the Ready LED lights constantly. **Broadway 2T** is now ready for use.
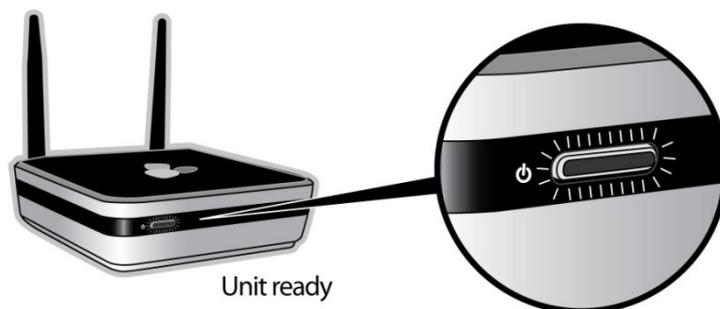
Step 3: Access Broadway 2T

For the setup procedure you can access **Broadway 2T** using either:

1. an Apple® mobile device

2. a Macintosh® Computer

3. a Windows® PC

> *Important:* BEFORE accessing **Broadway 2T**, make sure the router is connected to the Internet and your client device is connected to the local network.

- Start the web browser of your device.

- In the URL address field type in: ***distan.tv***

> Alternatively, you can either type in the *IP Address* of your **Broadway 2T** device (to be found on your router's status page) or ***broadway.box*** when using **Broadway 2T** in a Windows® environment.

- The user interface opens with the login dialog.

- Enter your ***Administrator Password.***

> Note: The default administrator password is ***admin***.
> For security reasons, we recommend to change this password as soon as possible.
>
> For further details, see chapter [How to Change the Broadway Login Data](#).

- The Broadway Setup Wizard opens.

Step 4: Follow the Instructions of the Broadway Setup Wizard

The Broadway Setup Wizard helps you to easily configure your **Broadway 2T** device and run the first channel scan.

Just follow the instructions of the Wizard and:

- When prompted to choose how to connect **Broadway 2T** to the router, make sure to select the option *Operate wired (via cable)*.

- When selecting the channel scan parameters, make sure to select the correct location from the *Location* drop-down menu.

- Connect a rooftop antenna (recommended) or the provided DVB-T mini antenna to the antenna input (ANT) of your **Broadway 2T**.

If you use the provided mini DVB-T antenna, position it as high and as close to a window, as possible.

Reception depends on your location and can be impaired by steel-reinforced walls as well as tall neighbouring buildings. In this type of environment, an outdoor/roof antenna is required. Please connect the ANT-Input of your **Broadway 2T** to your rooftop antenna using a double shielded antenna cable in order to get the best possible signal quality

In Great Britain, in most cases indoor reception with the provided mini DVB-T antenna will not be possible.

To avoid possible damage from the magnetic field surrounding the mini DVB-T antenna foot, maintain a sufficient distance from any components that are sensitive to magnetic forces, especially computer hard disk drives.

- After successfully completing the Wizard the *Live TV* page opens.
  You are ready to watch TV now.

If you want to watch TV using the PCTV Systems application TVCenter, please refer to chapter Watch TV Using PCTV Systems TVCenter.

Wireless Setup – the WLAN Mode

This setup enables you to position **Broadway 2T** in the place of your home with the best DVB-T reception. This way, you can enjoy digital TV within your local network even in areas where DVB-T reception is rather poor.

Use this setup scenario, if there is a longer distance between TV signal source and router.
E.g. you decide to place the **Broadway 2T** in the attic of your home where the DVB-T signal is good. Your router is located one floor below. In this case, the installation of a wired connection between **Broadway 2T** would mean cumbersome efforts. **Broadway 2T**'s integrated Wi-Fi function overcomes this problem in a most convenient way with the optional WLAN mode.

For a successful installation, follow these steps:

1. Connect **Broadway 2T** to your router using an Ethernet cable

2. Connect the plugged in power supply unit to **Broadway 2T**

3. Access **Broadway 2T** via a web browser

4. Follow the instructions of the Wizard

   - configure WLAN connection

   - place on the spot with best DVB-T reception and Wi-Fi connection

   - connect to antenna

   - run channel scan

5. Watch TV

Each step will be explained in detail in the following chapters.

Note that an Internet connection is strongly recommended.

Step 1: Connect to Router

▪ Use the provided Ethernet cable to connect **Broadway 2T** to the router of your local network.

Ethernet connection

Router

Ethernet cable for wired connection

Step 2: Connect to Power Source

> *Caution:* you may use **Broadway 2T** only with the provided power supply unit.
>
> Make sure the included power adapter is inserted into the body of the power supply unit.
> For further details, see chapter [The Power Supply Unit](#).

- Connect your **Broadway 2T** to a wall socket using the provided power supply unit.
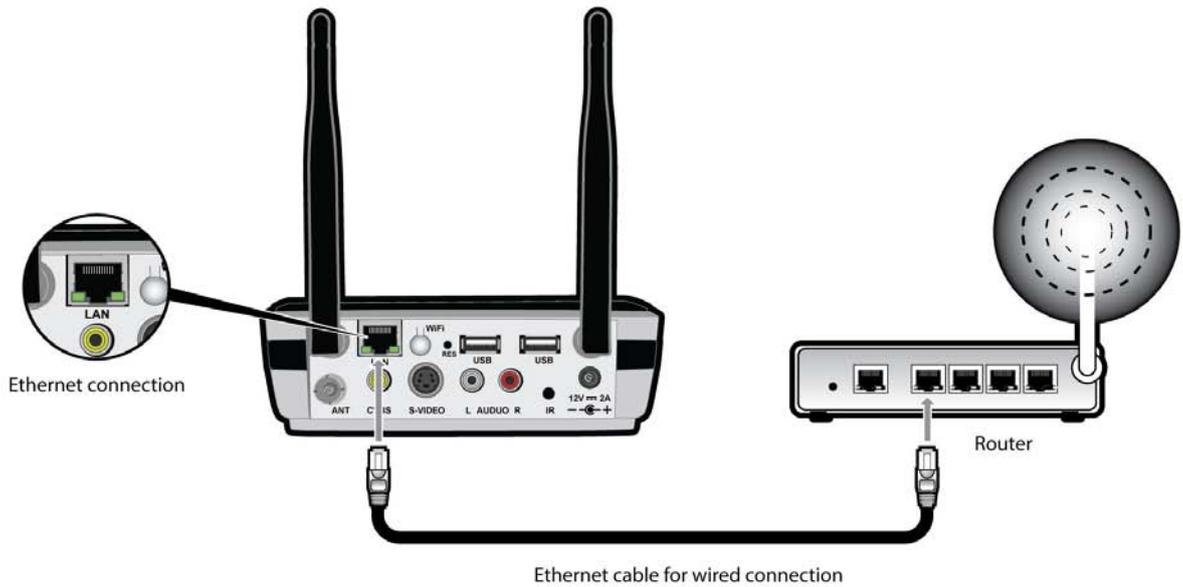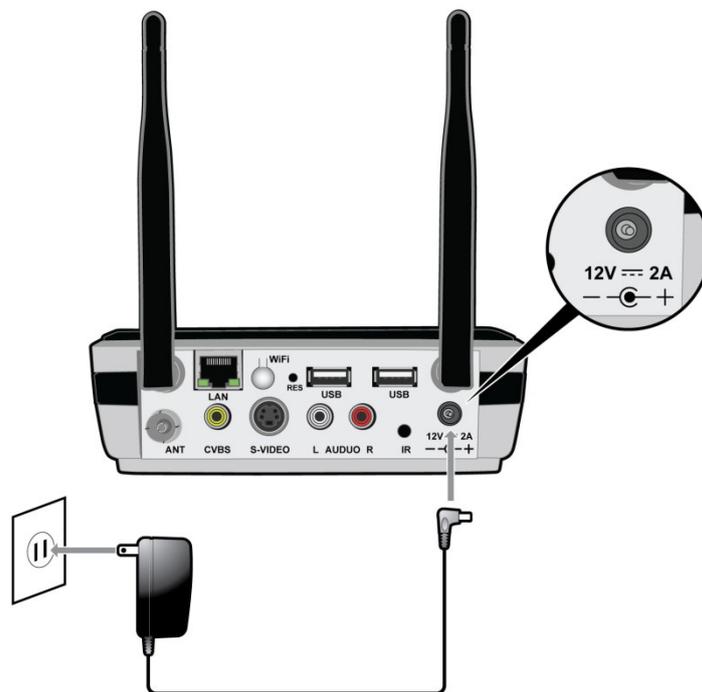
- **Broadway 2T** starts automatically.
- Wait until the LED lights constantly. **Broadway 2T** is now ready for use.
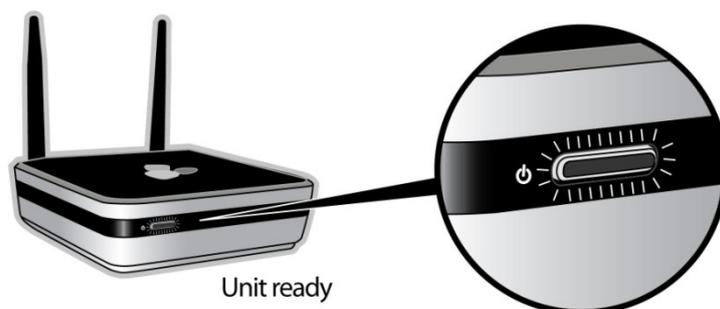
Step 3: Access Broadway 2T

For the setup procedure you can access **Broadway 2T** using either:

1. an Apple® mobile device

2. a Mac® PC

3. a Windows® PC

> ***Important:*** BEFORE accessing **Broadway 2T**, make sure the router is connected to the Internet and your client device is connected to the local network.

▪ Start the web browser of your device.

▪ In the URL address field type in: ***distan.tv***

> Alternatively, you can either type in the ***IP Address*** of your **Broadway 2T** device (to be found on your router's status page) or ***broadway.box*** when using **Broadway 2T** in a Windows® environment.

▪ The user interface opens with the login dialog.

▪ Enter your ***Administrator Password.***

> Note: The default administrator password is ***admin***.
> For security reasons, we recommend to change this password as soon as possible.
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> For further details, see chapter [How to Change the Broadway Login Data](#).

▪ The Broadway Setup Wizard opens.

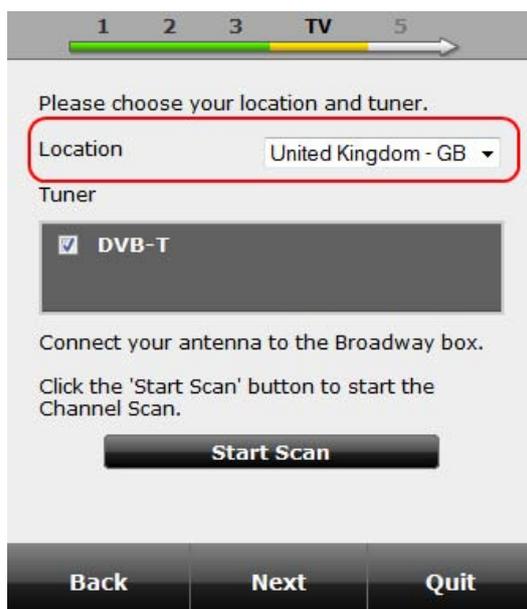# Step 4: Follow the Instructions of the Broadway Setup Wizard

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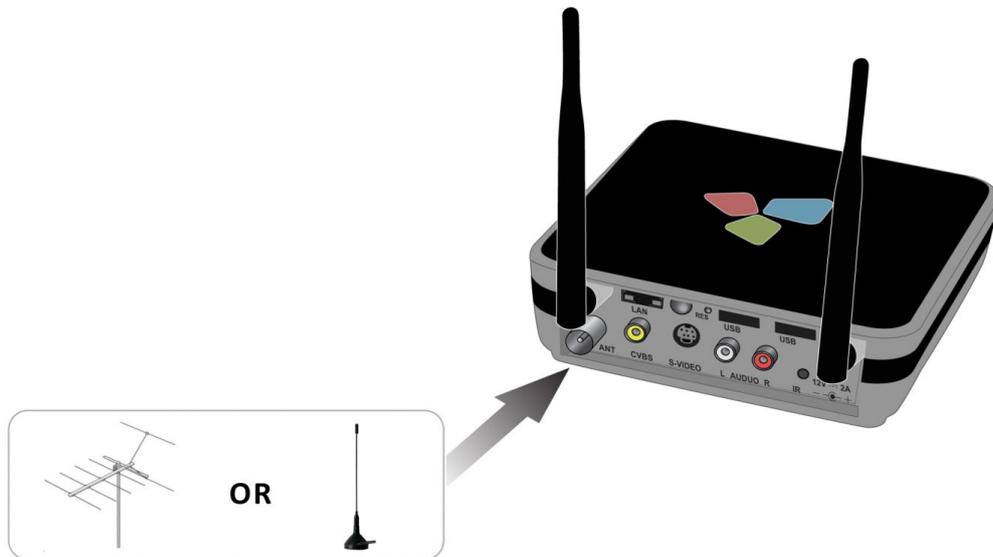
Just follow the instructions of the Wizard and:

- When prompted to choose how to connect **Broadway 2T** to the router, make sure to select the option *Operate wirelessly (WLAN)*.

- When prompted to place **Broadway 2T** on the location with the best DVB-T reception please do so. Make sure to stay within the wireless network range of your router.
  You can place **Broadway 2T** on a flat surface or mount it on the wall.
  If you decide to mount it on the wall use the delivered mounting kit (including a drilling template).
  If you decide to place it on a flat surface, make sure to attach the rubber feet as shown in the illustration below.

- When selecting the channel scan parameters, make sure to select the correct location from the *Location* drop-down menu.

- Connect a rooftop antenna (recommended) or the provided DVB-T mini antenna to the antenna input (ANT) of your **Broadway 2T**.

If you use the provided mini DVB-T antenna, position it as high and as close to a window as possible.

Reception depends on your location and can be impaired by steel-reinforced walls as well as tall neighbouring buildings. In this type of environment, an outdoor/roof antenna is required. Please connect the ANT-Input of your **Broadway 2T** to your rooftop antenna using a double shielded antenna cable in order to get the best possible signal quality

In Great Britain, in most cases indoor reception with the provided mini DVB-T antenna will not be possible.

To avoid possible damage from the magnetic field surrounding the mini DVB-T antenna foot, maintain a sufficient distance from any components that are sensitive to magnetic forces, especially computer hard disk drives.

■ After successfully completing the Wizard the *Live TV* page opens.
  You are ready to watch TV now.

If you want to watch TV using the PCTV Systems application TVCenter, please refer to chapter Watch TV Using PCTV Systems TVCenter.

Access Broadway 2T

Via your Local Network (LAN)

To access **Broadway 2T** using a mobile device or a Mac® PC connected to your local network we recommend the **following procedure**:

1.   Connect your mobile device or Mac® PC to your local network.

2.   Access **Broadway 2T** via the browser of your mobile device or Mac® PC.

Each step will be explained in detail in the following chapters.

> Note:
> Since the procedure to access **Broadway 2T** is the same for both using a mobile device or a Mac®, we only describe in the following how to access **Broadway 2T** using a mobile device.

Step 1: Connect your Mobile Device to your Local network.

Depending on the mobile device you are using connecting it to the local network might differ.
For further information regarding this topic, refer to the documentation of your mobile device.

This step is mandatory.

Step 2: Access Broadway 2T via the Browser.

- Start the browser of your mobile device.

- In the URL address field type in: **distan.tv**

Alternatively, you can either type in:
the ***IP-Address*** of your **Broadway 2T** device or
broadway.box when using **Broadway2T** in a Windows® environment.

- The mobile user interface opens with the login dialog.

- Enter your TV viewing PIN.

Note: The default TV viewing PIN is ***0000***.
For your safety we recommend to change this PIN as soon as possible.

For further details, see chapter How to Change the Broadway Login Data.

Via the Internet (WAN-Access)
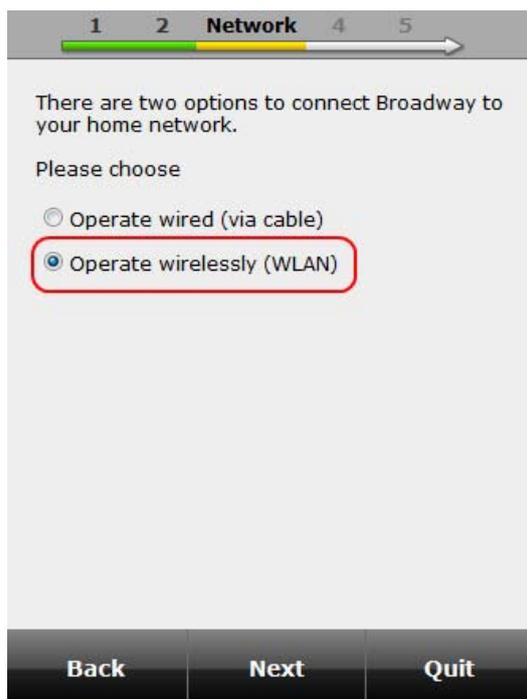
Accessing **Broadway 2T** via the Internet enables you to watch TV.

Being a media server **Broadway 2T** allows a client device like an iPhone®, iPod touch®, iPad® or a Mac® PC, to access it also via the Internet.
Once the connection between any of these client devices and the **Broadway 2T** is established, the client device accesses the channel lists saved on your **Broadway 2T** and you can watch TV anywhere.

Important Information:

In general, TV streaming with DistanTV mobile to your client device, can be performed via a Wi-Fi network or through a UMTS/3G connection (Not via GPRS/EDGE!).

Please note the following when using a UMTS/3G network:
- Streaming of video might be blocked by your UMTS operator. In case of streaming problems, please check the correct function of DistanTV mobile by connecting your client device to a Wi-Fi router with broadband Internet access.
- Be aware of potential high data traffic cost, if you don't have a "flat-fee" UMTS contract.
- Be aware of a potential bandwidth throttling by your operator when reaching a certain total data volume ("fair flat" contracts).
  Example:
  Your fair flat volume is 2GB per month and you are streaming at a data rate of 150kb/s. This will give you approx. 30h of pure TV streaming time per month until your connection speed will be decreased to e.g. GPRS speed – which makes any further streaming through this connection impossible.

Requirements

To access **Broadway 2T** via the Internet following requirements have to be met:

- If you wish to access the TV content streamed by **Broadway 2T**, ensure the web browser of your client device supports *M3u8-Playlists containing H.264-videos with AAC-sound*.
  Otherwise, the streamed video data cannot be played back.

- The *Port Forwarding* option of your router has to be enabled.

Broadway 2T is communicating via the Ports *80* and *65001*.

Make sure these two communication ports are open in your router and firewall configuration.
For further details, please refer to the user manual of your router and/or the help of your firewall software.

- You need to know the *external IP Address* of your network.
  Depending on your Internet provider, this may constantly change. To overcome this problem we recommend using a *dynamic DNS* service.

For further details on port forwarding and dynamic DNS please refer to the document: "*Requirements for DistanTV mobile*" on our website: http://www.pctvsystems.com/support.

Access Broadway 2T

To access **Broadway 2T** via the Internet follow these steps:

- Make sure your client device is connected to the Internet.

- Start the browser of your client device.

- In the URL address field type in either
  the *external IP-address* of your network or
  the *dynamic DNS hostname* of your network.

- A login dialog opens.

- Enter your TV viewing PIN.

Note: The default TV viewing PIN is *0000*.
For your safety we recommend to change this PIN as soon as possible.

For further details, see chapter How to Change the Broadway Login Data.

Watch TV

Using DistanTV mobile

- Select the option *Live TV* from the user interface.
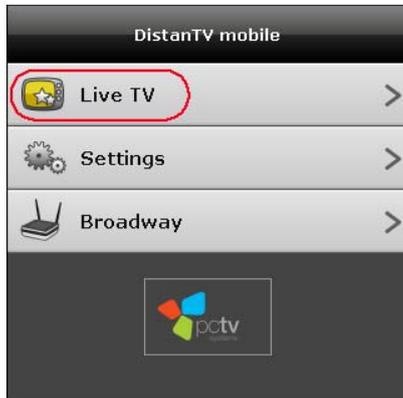
- The channel list opens.
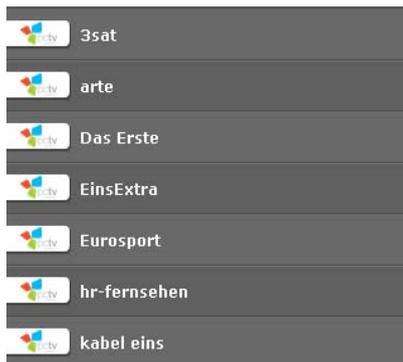
- Select the desired channel and enjoy the TV program.

Please note that the buttons *Pause, Rewind* and *Seek* in the Player User Interface are not fully functional yet. We are eagerly working to improve this temporary inconvenience for you.

Please make sure to regularly check the PCTV Systems Web site http://www.pctvsystems.com/support for firmware updates.

For details on how to update your **Broadway 2T** with the latest firmware go to: Update the Broadway 2T Firmware.

Using PCTV Systems TVCenter

To watch TV on your Windows® PC using TVCenter we recommend the **following procedure**:

1. Install TVCenter

2. Start TVCenter and the Broadway-Tool

3. Run a channel scan

4. Watch TV

Each step will be explained in detail in the following chapters.

Step 1: Install TVCenter 6.4.1 or Later

This application enables you to watch the TV content streamed by **Broadway 2T** on your Windows® PC.

> You will need administrator rights to install the software.
> In order to use the applications user rights are sufficient.

To install the application please follow these steps:

- Insert the installation disc into the corresponding drive of your PC.

- From the automatically opened Launcher, choose the option: **TVCenter**.

- Follow the instructions on the screen until the installation is completed. When requested, type in the serial code from the CD sleeve.

> After installation, if you are prompted to restart your computer, please do so. This restart needs to be done in order for the software to function properly.

Step 2: Start TVCenter and Broadway-Tool

- By default, the TVCenter application starts automatically after a successfully finished installation.
  In case the TVCenter application does not start automatically, you can open it manually by clicking on:
  Windows Start > Programs > PCTV Systems > TVCenter

- By default the Broadway-Tool starts automatically with TVCenter. Please wait, until it indicates that your **Broadway 2T** was found, before running a channel scan.

Note: the green Broadway-Tool icon in the taskbar indicates the Broadway-Tool is running and a **Broadway 2T** was found in your local network.

When using Win 7, the icons in the Quick launch bar might be hidden. Click on the ***Show hidden icons*** button to make them visible.

Step 3: Run a Channel Scan

Important: Before accessing **Broadway 2T**, make sure the PC you want to use and the **Broadway 2T** box are both connected to the local network.

Even if you have used your PC to setup your **Broadway 2T** and ran a channel scan using the Broadway Setup Wizard, you have to run a channel scan using TVCenter.
The most comfortable way to run a channel scan with TVCenter is using the TVCenter Setup Wizard.

- By default, the TVCenter Setup Wizard starts automatically after a successfully finished installation.
  In case the TVCenter Setup Wizard does not start automatically, you can open it manually by clicking on:
  Windows Start > Programs > PCTV Systems > TVCenter Wizard

- Follow the instructions of the TVCenter Setup Wizard.

  - On the Device Configuration page, make sure to select the correct TV Antenna Input for your **Broadway 2T** device.
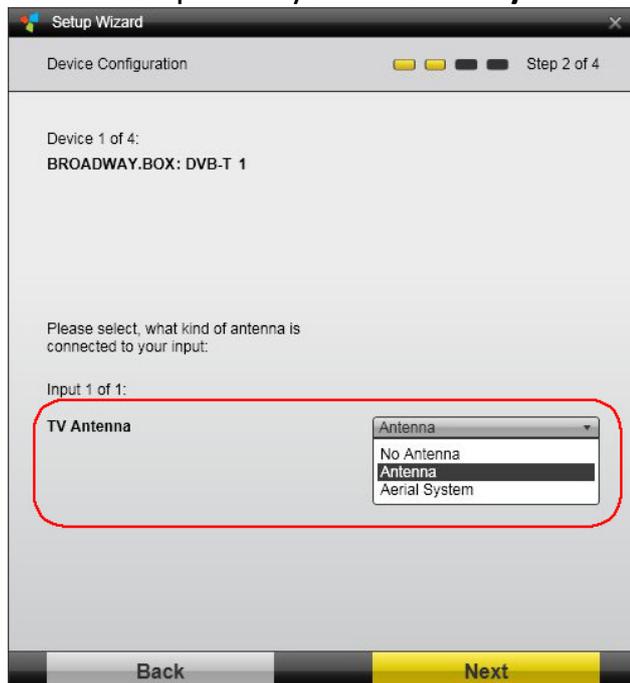
    Select:
    No Antenna - if you don't want to use the respective tuner
    Antenna – if you use the delivered mini DVB-T antenna or your rooftop antenna
    Aerial System – if the TV-signal is distributed via a Master Antenna TV (MATV)/Cable Antenna TV (CATV) system.

- On the Channel Scan page make sure to select the correct *Location* from the drop-down list.

This way the channel scan will be accurate.

Step 4: Watch TV

After successfully completing the TVCenter Setup Wizard the TVCenter TV viewing application starts automatically.

- ▪ Click on the ***Select Channel*** button to open the channel list and change the channels.

Select Channel
(opens channel list)

For further information how to use TVCenter, please refer to the TVCenter Help or User's Guide.

How To…

Switch from Ethernet Mode to WLAN Mode

If your **Broadway 2T** is successfully connected to the router via an Ethernet cable and you want to establish a wireless connection to the router you have three possibilities to do so:

1. ***Using the Broadway Setup-Wizard***
    To use the Broadway Setup-Wizard follow this steps:

    - Access **Broadway 2T**
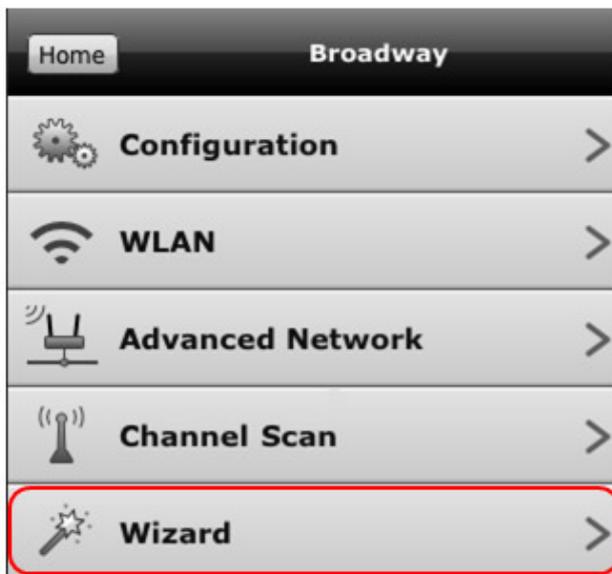
    - Open the **Broadway** configuration Page

    - Select the **Wizard** option

    - Follow the instructions of the Wizard

    Make sure to select the option ***Operate wirelessly (WLAN)*** when prompted.

2. Using the Broadway configuration pages

- Access **Broadway 2T**

- Open the **Broadway** configuration Page

- Select the **WLAN** option

- Click on the **Enable WLAN** button

- Manually make the needed changes

3. Activating the Wi-Fi Button

Activating the Wi-Fi button will switch from Ethernet mode to the last used configuration in WLAN mode.

> You can use this possibility to switch from Ethernet mode to WLAN mode **ONLY** if you have already used your **Broadway 2T** in WLAN mode and the configuration did not change.

- Press the Wi-Fi button on the back of your **Broadway 2T**

- You may unplug the network cable in order to change the place of the **Broadway 2T** box, if desired

- **Broadway 2T** switches to the last used WLAN configuration

Switch from WLAN Mode to Ethernet Mode

Caution: If your **Broadway 2T** is wirelessly connected to the router and you decide to switch to a wired connection, make sure to connect your Broadway box via Ethernet cable to your router.

You have three possibilities to do so:

1. ***Using the Wizard***
   To use the Broadway Setup Wizard follow these steps:
   - Access **Broadway 2T**
   - Open the ***Broadway*** configuration Page
   - Select the ***Wizard*** option
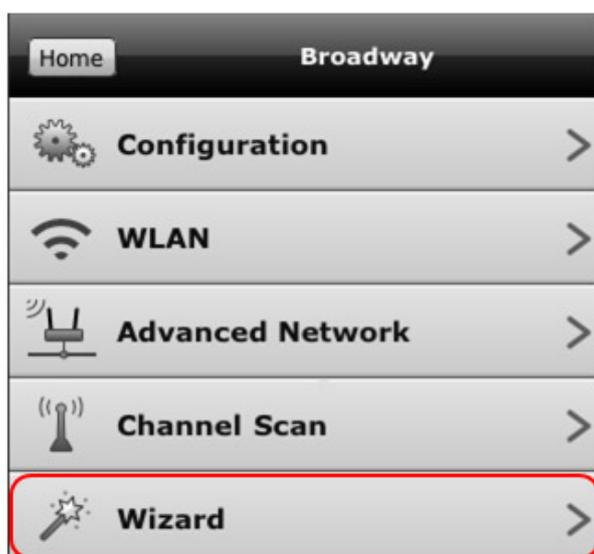
   - Follow the instructions of the Wizard

   Make sure to select the option ***Operate wired (via cable)*** when prompted.

2. Using the Broadway configuration pages

- Access **Broadway 2T**

- Open the **Broadway** configuration Page

- Select the **WLAN** option

- Click on the **Disable WLAN** button

- While rebooting, use an Ethernet cable to connect **Broadway 2T** to your router

3. Activating the Wi-Fi Button

Press the button and **Broadway 2T** switches from WLAN mode to Ethernet mode.

- Press the Wi-Fi button on the back of your **Broadway 2T**

- Use an Ethernet cable to connect **Broadway 2T** to your router

- **Broadway 2T** switches to Ethernet mode

Assign a Static IP Address

Within the DHCP environment, your router automatically assigns IP addresses to all connected network devices. Since these IP addresses may constantly vary, it is very helpful to manually assign a static IP address to your **Broadway 2T**.

After manually assigning a static IP address, you have to remember one constant IP address only in order to access your **Broadway 2T.**

Please note that the assignment of static IP addresses should be done by very advanced users only.

You have the possibility to manually assign a static IP address for LAN or WLAN access. Since the process is identical, in following it is described for LAN exemplary.

To apply a static IP address, please follow these steps:

- Access **Broadway 2T**

- Open the *Broadway* configuration page

- Select the option *Advanced Network*

The following dialog opens:
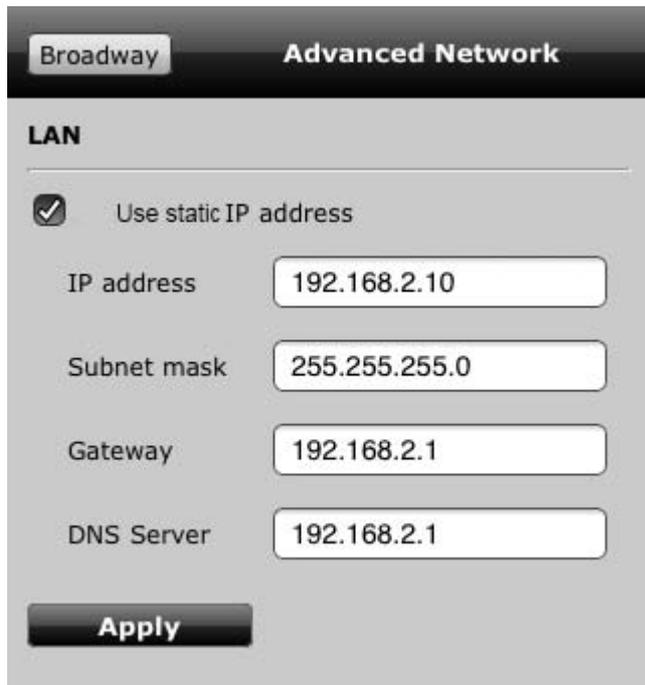
- Click *Use static IP address*
- Choose an *IP address*
- Choose a *Subnet mask*
- Choose a *Gateway*
- Choose a *DNS Server*

Make sure to choose a static IP address outside the DHCP environment your router uses to assign IP addresses and ensure it is not assigned in the network already.

- Click the *Apply* button to confirm your entries.

If you are not satisfied with the manually assigned static IP address, you can always restore your **Broadway 2T** to Factory Defaults.

For details on how to reset your **Broadway 2T**, please refer to chapter

Restore Broadway 2T to Factory Defaults.

Run a channel scan using DistanTV mobile

- From the compact user interface select the option ***Broadway***
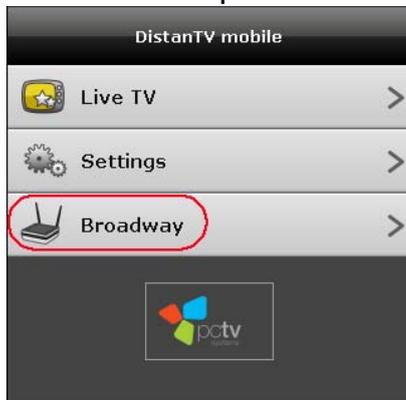
- Enter your Administrator Password

Note: The default administrator password is ***admin***.
For security reasons, we recommend to change this PIN as soon as possible.

- Select the option ***Channel Scan***.

- In the Channel Scan page choose the desired settings.
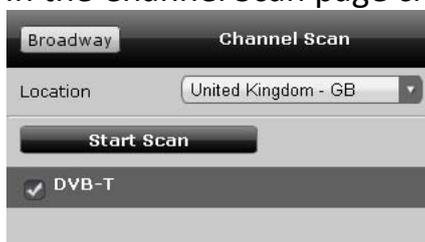
Make sure you select the correct location.
Only this way the channel scan will be accurate.

- Click the ***Start Scan*** button to start the channel scan.

Improve the Quality of the Video Preview

Depending on the resources of your network, you can choose between different predefined profiles.

Changing the default profile improves the quality of the video preview.

The predefined profiles are divided into local and Internet profiles.
If you want to change the quality of the video preview in your network, select a local profile and for the video preview via Internet select an Internet profile.

To do so, follow these steps:

- Access your **Broadway 2T**

- Open the *Settings* configuration page

- In the Video section, select the appropriate profiles from the drop-down menus.
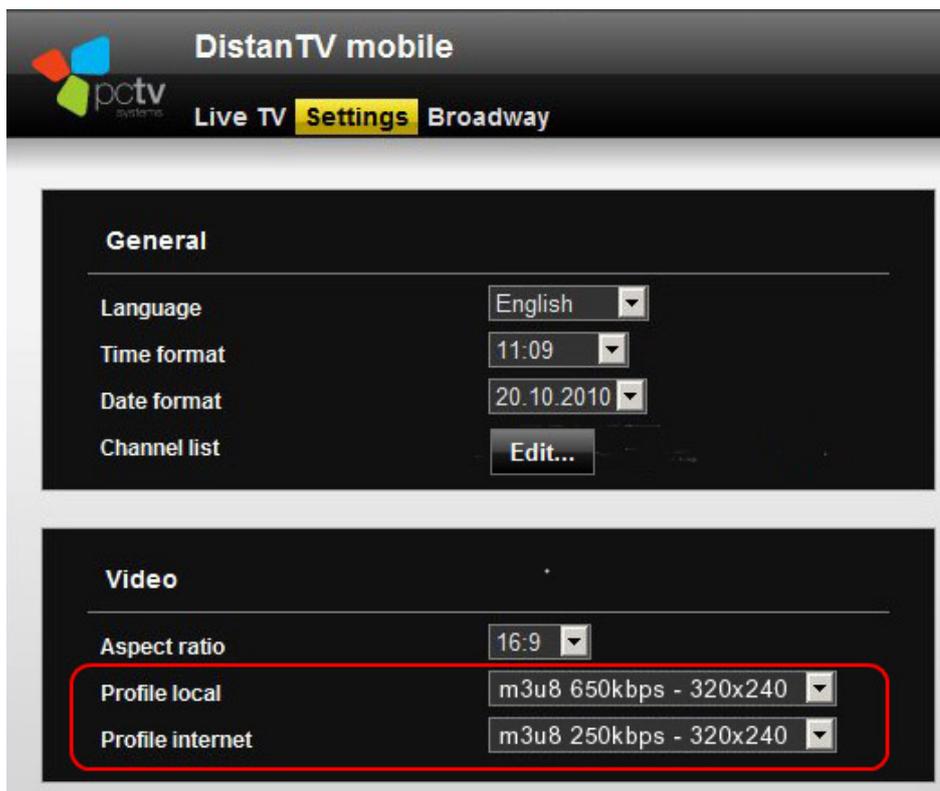
Create Favorite TV Channel Lists

To create a favorite TV channel list follow these steps:

- Access your **Broadway 2T**

- Open the *Settings* configuration page

- Click on the *Edit…* button in section General>Channel list

- Following page opens
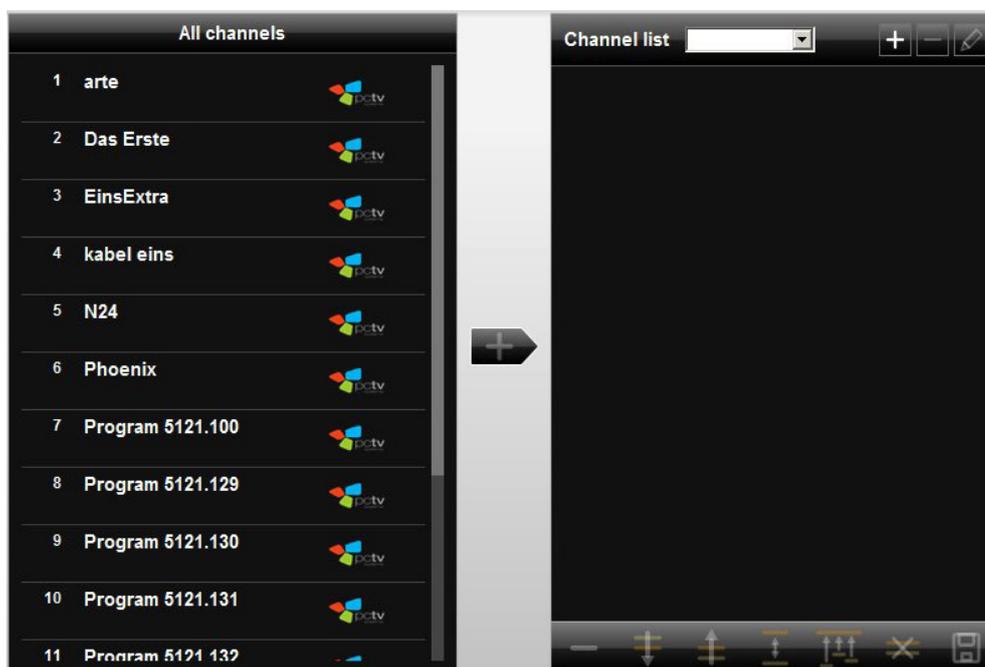
- Click on the ⊞ button located in the right corner of the top bar.

- In the pop-up dialog enter the name of the favorite TV channel list and confirm with *OK*.

- In the **All channels** pane select the channels you want to save in the newly created favorite TV channel list.
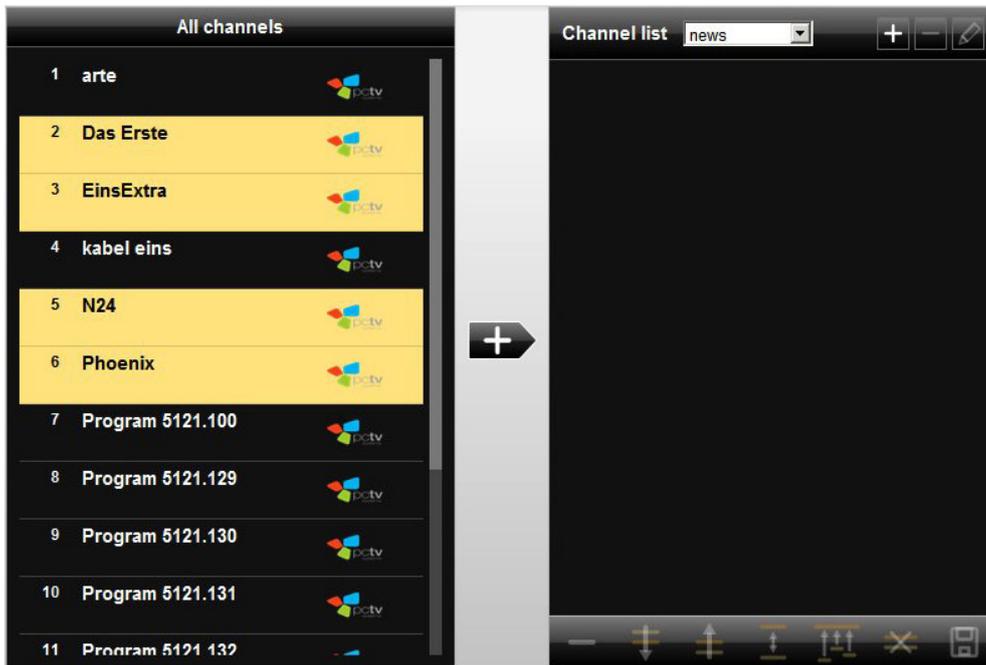
- Now click on the ⊞ button.
- The selected channels will appear in the channel list pane.
- Click on the 🖫 *Save* button to save the favorite TV channel list you created.
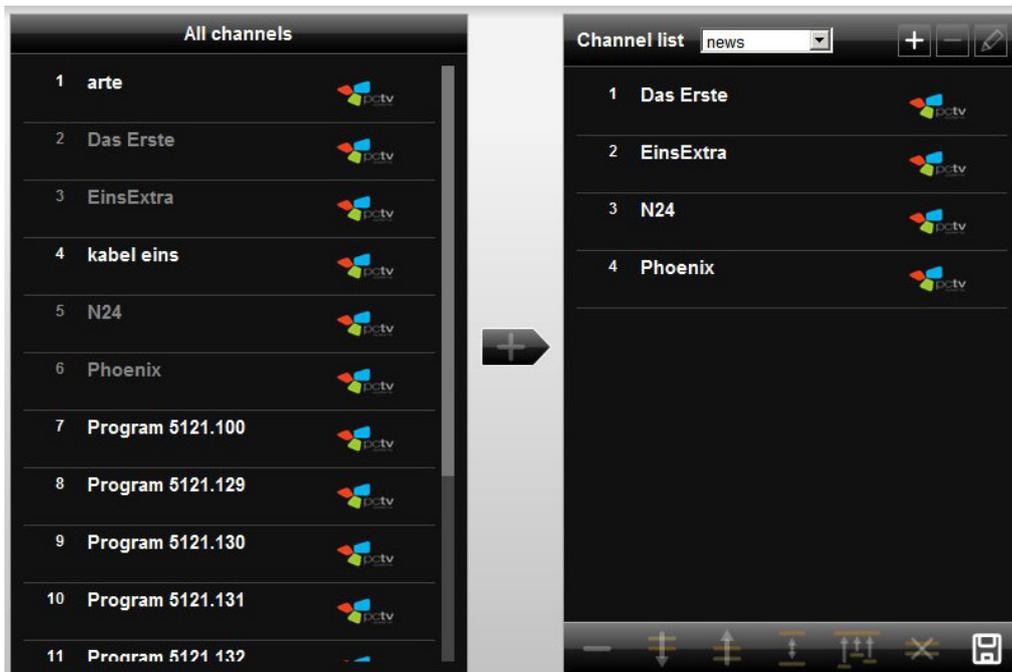
Edit Favorite TV Channel Lists

57

To edit a favorite TV channel list follow these steps:

- Access your **Broadway 2T**

- Open the ***Settings*** configuration page

- Click on the ***Edit…*** button in section General>Channel list

- On the appearing page, select from the ***Channel list*** drop-down menu the favorite TV channel list you want to edit.
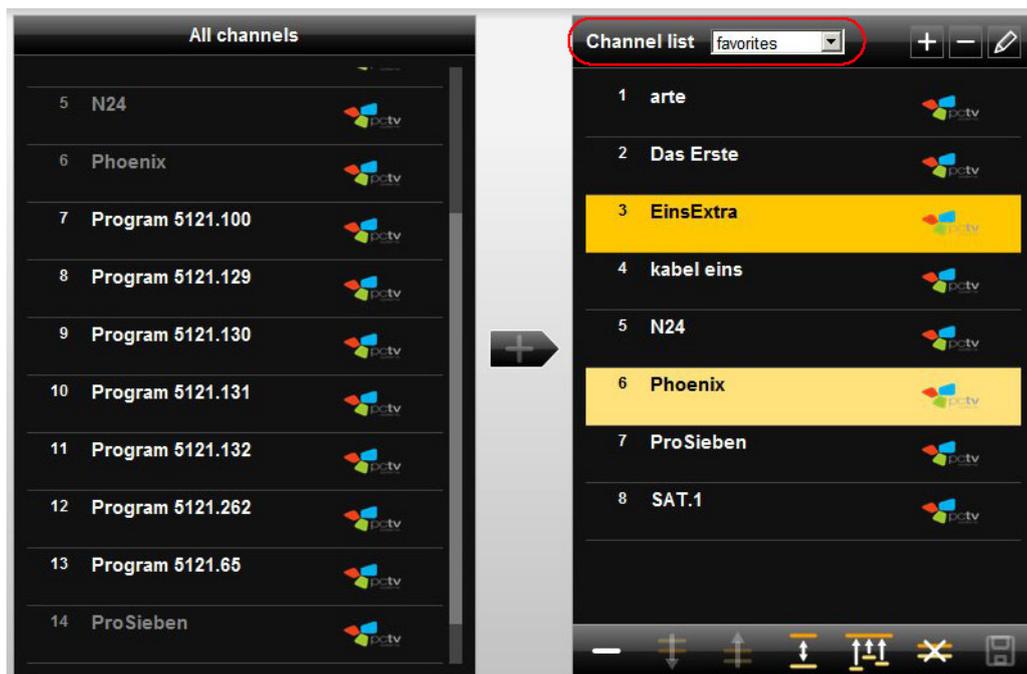
- Make the desired changes

Following options are available:

In the top bar
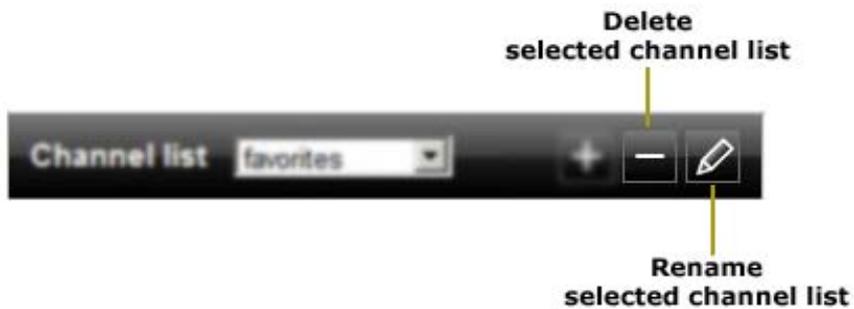
In the bottom bar
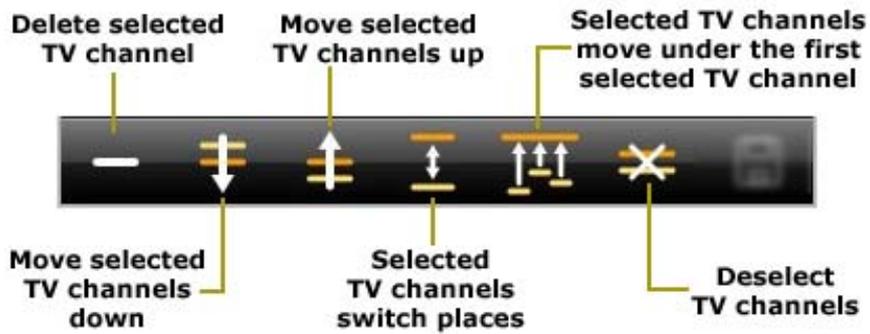
- When finished, click the 🖫 *Save* button to save the performed changes.

Use the Analog Video Inputs

Broadway 2T offers you the possibility to connect an analog video source to it. This video source can be an analog video recorder, an analog camcorder or a cable or satellite set-top box.

If you wish to access the connected analog video source and stream the video content using **Broadway 2T** please follow these steps:

- Access **Broadway 2T**

- Open the *Live TV* page

- From the *Channel list* drop-down menu select *External AV inputs*
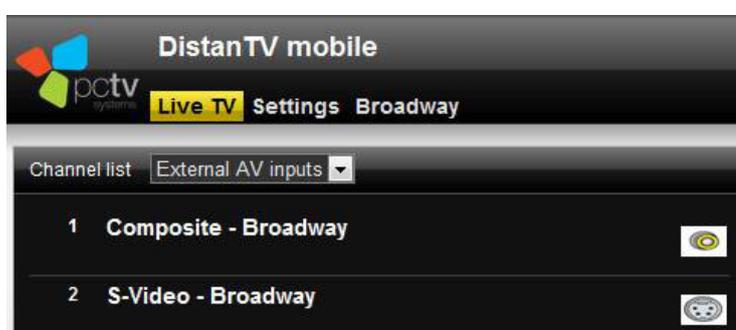
- Select the respective AV input

Open the Configuration Pages (LAN access)

There are two possible ways to open the configuration utility.

Via a web browser

- Open the web browser installed on your client device (mobile Apple® device, Mac® or Windows® PC)

- In the address-field of the browser, type:
  distan.tv – an Internet connection is required
  IP-address of your **Broadway 2T**

- ***hostname*** of your **Broadway 2T** – only works in a Windows® environment

> The default hostname of your **Broadway 2T** is ***broadway.box***

- In the appearing login dialog type the required data

- The ***Broadway*** configuration pages open

Via the Broadway-Tool

- Click on the green Broadway-Tool icon in the taskbar

- From the context menu, select the option: ***BROADWAY.BOX > Settings***

- In the now open login dialog, type the required data

- The ***Broadway*** configuration pages open

> Login data - important
>
> Please note that at delivery and after you restore the **Broadway 2T** to factory settings the two passwords you might need to log in are:
>
> - Administrator Password: ***admin***
>   needed to change network and **Broadway 2T** settings or to run a channel scan.
>
> - TV viewing PIN: ***0000***
>   needed to access **Broadway 2T** and watch TV.

Change the Broadway 2T Login Data

To change your **Broadway 2T** login data follow these steps:

- Access **Broadway 2T**

- Open the *Broadway* configuration pages

- Go to: Configuration > Access control

- Click on the respective *Change* button
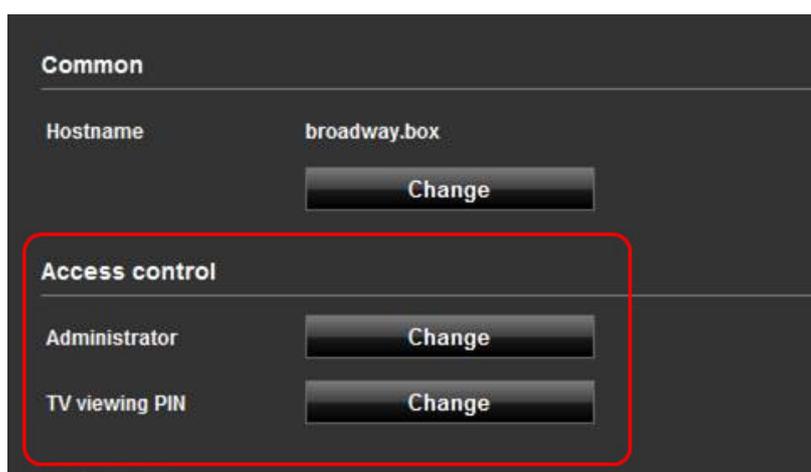
- In the popup window, enter a new Password/PIN

- Confirm your changes by clicking the *OK* button

Login data - important

Please note that at delivery and after you restore the **Broadway 2T** to factory settings the two passwords you might need to log in are:

- Administrator Password: *admin*
  needed to change network and **Broadway 2T** settings or to run a channel scan.

- TV viewing PIN: *0000*
  needed to access **Broadway 2T** and watch TV.

Change the Broadway 2T Hostname

The hostname labels a device connected to a computer network and is used by the network to identify the device.

The default hostname of **Broadway 2T** is ***broadway.box***.

You may want to change the hostname in order to be able to identify your **Broadway 2T** device in a network containing more than one **Broadway 2T** device.

To change the hostname of your **Broadway 2T** follow these steps:

- Access **Broadway 2T**

- Open the ***Broadway*** configuration pages

- Go to: Configuration > Common>Hostname

- Click the ***Change*** button
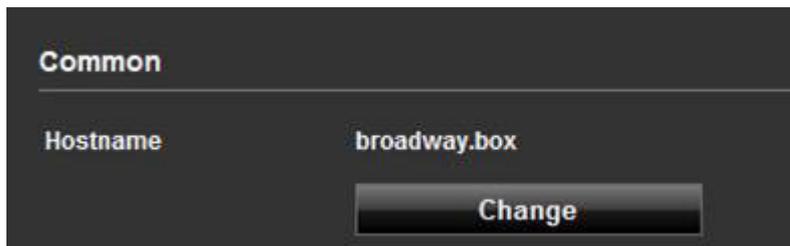
- Enter a new hostname in the pop-up window

- Confirm your changes by clicking the ***OK*** button

The new hostname cannot exceed *15* characters.
Following characters are allowed:
 - upper and lower case letters
 - numerals
 - the special characters: "**.**" and "**-**"

- The system will reconfigure, please wait.

Update the Broadway 2T Firmware

In order to take advantage of the latest product improvements, you should regularly check the PCTV Systems Web site http://www.pctvsystems.com/support for the latest firmware updates.

> After updating the firmware, all personal settings remain unchanged.

To update your firmware, please do the following:

- From the PCTV Systems web site, download the new firmware and save it on the hard drive of your PC. If needed, unpack it.

- Open the **Broadway** configuration pages.

- Go to Configuration

- In the Firmware section, click the **Browse** button to navigate to the downloaded and unpacked new firmware file and open it.
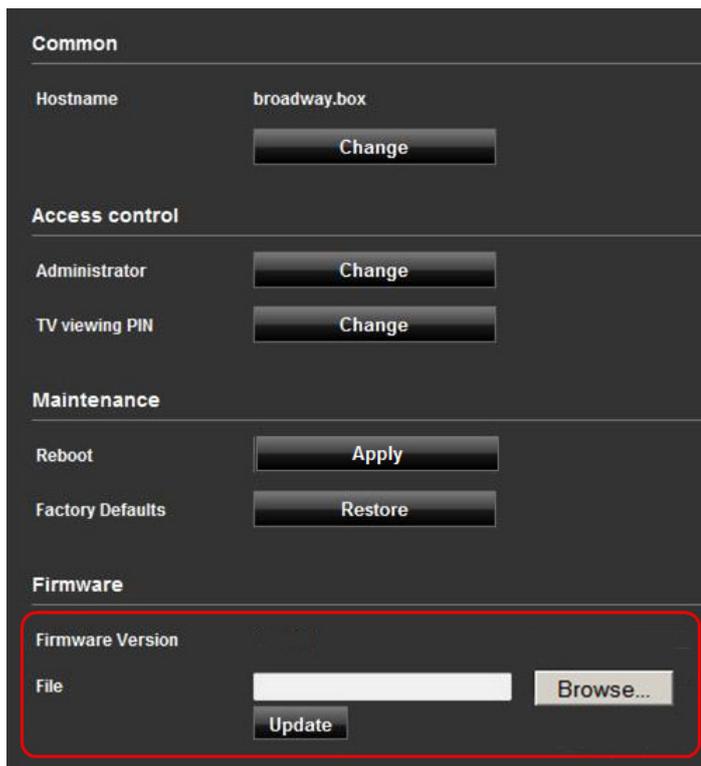
- Click the **Update** button

- **Broadway 2T** will reboot automatically.

> **Important:**
> Do not interrupt the **Broadway 2T** power supply while updating the firmware.

Reboot Broadway 2T

If the **Broadway 2T** behaves unexpected, a reboot of the device might be useful.

After a reboot, the configurations of your **Broadway 2T** remain the same.

To reboot your **Broadway 2T** follow these steps:

- Access **Broadway 2T**
- Open the *Broadway* configuration pages
- Go to: Configuration > Maintenance
- Click on the Reboot *Apply* button
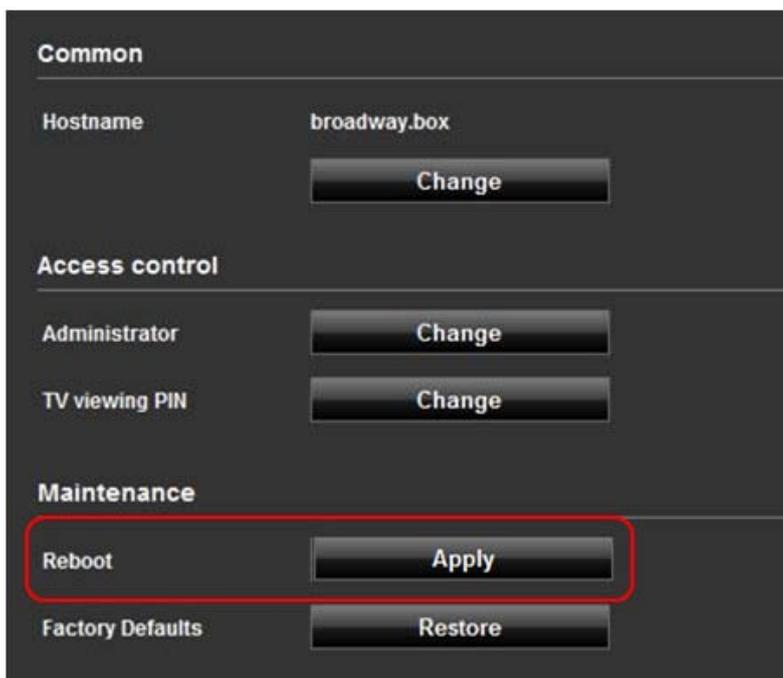
- Confirm by clicking the *OK* button
- **Broadway 2T** reboots automatically

Restore Broadway 2T to Factory Defaults

Caution: Before you restore your **Broadway 2T** to Factory Defaults, make sure your Broadway box is connected to the router via Ethernet cable.

All personal settings will be lost, when restoring to Factory Defaults.

You have two possibilities to restore **Broadway 2T** to factory defaults:

1. Press the **Reset**-button on the rear side of your **Broadway 2T** for 5 seconds or longer.

   If you want to use the **Reset**-button, a pointed object e.g. the tip of a pen is required.

2. Use the Configuration Pages.
   To do so, please follow the instructions below:

   ▪ Access **Broadway 2T**

   ▪ Open the *Broadway* configuration pages

   ▪ Go to: ***Configuration > Maintenance***

   ▪ Click on the Factory Defaults *Restore* button
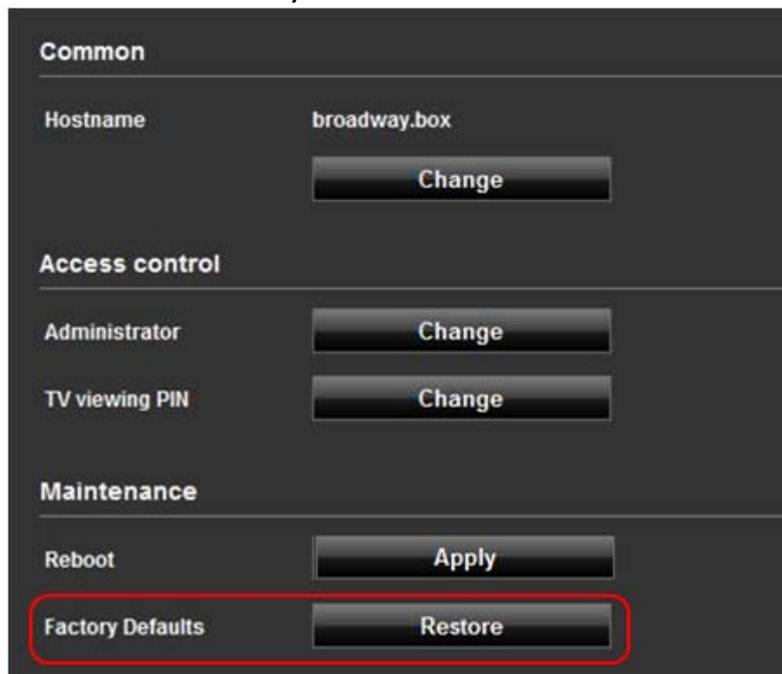
   ▪ Confirm by clicking the *OK* button

   ▪ **Broadway 2T** reboots automatically

Tips

Wireless Network Connection

Try to place your **Broadway 2T** in a central location, so that the signal spreads over a wide area of your home.

Try to reduce interferences caused by home appliances, which might work on the same frequency as your **Broadway 2T**.

Make sure the signal strength of the wireless network connection is at least "good".

Try to keep in mind that obstacles, such as: walls, steel-reinforced ceilings, glass fronts, etc. can influence "good" wireless network signal strength.

We recommend to secure your WLAN connection.

If you decided to hide the SSID of your network, **Broadway 2T** will not be able to find your wireless network.
You either have to deselect this option in your router during the **Broadway 2T** setup procedure or you can manually enter the WLAN parameters.

If you decided to enable the MAC-Filter of your router, your **Broadway 2T** might not be permitted the access to your wireless network.
You should disable this option during the **Broadway 2T** setup procedure.

DVB-T Reception

Make sure to connect the TV Tuner of your **Broadway 2T** to a good and robust DVB-T signal.

Place the delivered mini DVB-T antenna in the location at your home with the best DVB-T coverage.

The usage of a rooftop antenna improved DVB-T reception in most cases.

Legal Information

The PCTV Systems End User License Agreement

You can use **Broadway 2T** by PCTV Systems only under the conditions of PCTV Systems' End User License Agreement (EULA).

Please carefully read the PCTV Systems' EULA.

Additional License Information

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Parts of the TVCenter software use:

- **ffmpeg** - under the terms of the GNU General Public License V2
  For further details regarding the ffmpeg component, please refer to:
  http://ffmpeg.org/index.html.

- **md5.js 1.0b 27/06/96** - Javascript implementation of the RSA Data Security, Inc. MD5 Message-Digest Algorithm.
  Copyright (c) 1996 Henri Torgemane. All Rights Reserved.

Parts of Broadway 2T use:

- libdvbpsi - under the terms of the GNU General Public License V2
  For further details regarding libdvbpsi visit: www.videolan.org

- libiconv - under the terms of the GNU Library General Public License V2
  For further details regarding libiconv visit:
  www.gnu.org/software/libiconv

- libhdhomerun - under the terms of the GNU Lesser General Public License V3
  For further details regarding libhdhomerun visit: www.silicondust.com

- Goahead - Copyright GoAhead Software Inc., 1995-2000
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As applicable:

- The terms of the **GPL V.2** you can find here.
- The terms of the **LGPL V.2.1** you can find here.
- The terms of the **LGPL V.3** you can find here.
- The terms of the **Goahead** License you can find here.
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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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Version 3, 29 June 2007

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1.7 "Response Header" means the first portion of the response message output by the GoAhead WebServer, containing but not limited to, header fields for date, content-type, server identification and cache control.

1.8 "Server Identification Field" means the field in the Response Header which contains the text "Server: GoAhead-Webs".

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Exhibit A

GoAhead Trademarks, Logos, and Product Designation Information 01/28/00

Glossary

A

AAC: Abbreviation of *Advanced Audio Coding.* AAC is an encoding scheme for digital audio. It is the standard audio format for the Apple® mobile devices and the MPEG-4 video standard.

AES: Abbreviation of *Advanced Encryption Standard.* AES is an encryption algorithm implemented in software.

Aspect Ratio: is the width-to-height ratio of a TV-format. The most common aspect ratios of TV-formats are 4:3 and 16:9.

C

Client: A system (computer or program) in a network or on the Internet that requests files or services. The system (computer or program) that provides the files or services is called a server. The client can request a data transfer or a print job from the server.

CVBS: Abbreviation of *Composite Video, Blanking, and Sync.* also known as *Composite Video*.
Composite Video is a format of an analog television (picture only) signal before it is combined with a sound signal and modulated onto an RF carrier. In the Composite Video signal the information of both color and brightness are encoded.

D

Data rate: The data rate is also known as the bit rate. The bit rate measures how fast bits of data can be transferred over a medium in a given period of time. This rate is listed in bits per second (bps).

DHCP: Abbreviation of *Dynamic Host Configuration Protocol*. A DHCP-Server is usually part of the router and assigns an IP address to each computer in a network (see also "IP Address")

DVB-T: Abbreviation of *Digital Video Broadcasting Terrestrial*. Transmission standard for digital television via antenna.

Dynamic DNS: is a protocol or network service which allows client devices to update in real time their frequently changing external IP addresses, into the Domain Name System in order to participate in Internet communications more easily.

E

EDGE: Abbreviation of *Enhanced Data rates for GSM Evolution* also known as *Enhanced GPRS* (see also GPRS).

Encryption: is the process of transforming information using an algorithm to make it unreadable to anyone except those possessing special knowledge, usually referred to as a key.

Ethernet: The most common type of local-area network. Each node (computer or server) in the network checks whether any other computer is transmitting data. It then waits for the other computers to finish with their transmissions before it starts its own transmission. (see also "LAN")

F

Firmware: Firmware is system software stored in ROM or Flash memory. Firmware is not deleted when the system has been turned off.

G

GPRS: Abbreviation of *General packet radio service* is a packet oriented mobile data service on the 2nd and 3rd generation of cellular communication systems.

Among others, GPRS makes following services possible: Internet access, multimedia messaging services (MMS) and Internet applications for smart devices through wireless application protocol. (see also EDGE)

H

H.264: is a standard for video compression. It is also known as MPEG-4 Part 10, MPEG-4 AVC or MPEG-4 AVC.

HTML: Abbreviation of *Hyper Text Markup Language*. A document standard developed during the World Wide Web project that provides a simple logical structure for titles, headings, paragraphs, numbering, forms, tables and mathematical formulas as well as a language for defining hypertext links.

HTTP: Abbreviation of *Hyper Text Transfer Protocol*. A standard mechanism used on the Internet to share documents between servers and clients.

Host name: labels a device connected to a computer network and is used by the network to identify the device.

I

IP Address: Abbreviation of *Internet Protocol Address*. Every computer connected to the Internet receives a unique identification number that consists of four sections. This number is called an IP address. This allows other computers in the network to identify it, send data packets to it and to process data they have received from it.
An IP-address can be internal or external.
Internal IP-addresses are uniquely assigned to a particular computer or device connected to a local network.
External IP-addresses are routed on the Internet being this way reachable on the global Internet.

L

LAN: Abbreviation of *Local-Area Network*. A local network located in a building or on company premises that is based on private transmission media and equipment.

M

M3U8: is a MP3 Playlist, a variation of the M3U file format with Unicode support. One common use of the M3U file format is creating a playlist file that contains a single entry pointing to a stream on the Internet.

P

Port: The end point of a logical connection within a network. The port number indicates the type or the type of use of the port. Certain port numbers are reserved for specific applications. For example, port 80 is used for http communication.

R

Router: Routers, also known as "Intermediate Systems (IS)", are linking elements that interconnect two or more subnetworks. In addition to acting as a bridge, routers can expand the boundaries of a network (number of nodes, physical extension). Routers also control data traffic by not forwarding defective data packets.

S

Signal strength: is the performance indicator of the connection between a computer and a WLAN access point.

SSID: is the abbreviation of *Service set identifier* and it is a name that identifies a particular 802.11 wireless LAN. In other words the name of your wireless network.

Streaming: The act of transferring (compressed) video and audio files over the Internet. Streaming does not download all the data at once, but downloads it in stages using a store-and-forward method. The data does not arrive as a continuous file, but is cached in the buffer, which can create delays at the start of transmission. The computer receiving the data stream must have a program (player) installed on it to be able to decompress the data. Players are usually installed in browsers such as Internet Explorer. The speed and quality of the data depend heavily on how much bandwidth is available. In order to ensure smooth playback, the Internet connection should offer at least 300 Kbps in bandwidth.

S-Video: S-Video signals deliver brightness and color information separately through several cables. This means that the video does not need to be modulated and demodulated and image quality is not impaired as a result.

T

TKIP: Abbreviation of *Temporal Key Integrity Protocol* is a security protocol used in the IEEE 802.11 wireless networking standard. It was designed as a solution to replace WEP (Wired Equivalent Privacy) without requiring the replacement of legacy hardware.

TV Tuner: is a computer component that allows television signals to be received.

U

UMTS: Abbreviation of *Universal Mobile Telecommunications System* is a new standard in mobile telephony.

V

Video profile: is a predefined subset of video encoding specifications like data rate, graphic display resolution, etc. which guarantees stable video streaming.

W

WLAN: Abbreviation of *Wireless Local Area Network*. WLANs provide a Local Area Network (LAN) using radio instead of wires over a small area such as a home, office, or school. Most wireless LANs are based on the IEEE 802.11 standards.

WLAN Access Point: A Wireless Access Point is an electronic device that allows a wireless network device to connect to the LAN.

WPA: is the abbreviation of *Wi-Fi Protected Access* (**WPA** and **WPA2**) and is a certification program created by the Wi-Fi Alliance to indicate compliance with the security protocol created by the Wi-Fi Alliance to secure wireless computer networks.