



Huddle Hub One / Huddle Hub One+

Configuration Guide

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1 Introduction

1.1 Huddle Hub

Huddle Hub™ product family is the answer to the needs of modern teamwork, which is increasingly based on content presentation and video-conference. Thanks to Huddle Hub, these activities can be performed everywhere in your organization, in traditional meeting or huddle rooms, but also in offices, open-space areas, or even lounges. Every place in your company / organization - whether AV equipped or not - can be used as a huddle room:

- Taking advantage of existing large displays and webcams, but also using only individual devices. Or combining the two.
- With no cables for the TV, and no cables for the webcam.
- Running up to four concurrent sessions on a single Huddle Hub unit.
- Experiencing a smooth integration between Huddle Hub and your favorite video-conference software.

The Huddle Hub solution is made of two components:

- The Huddle Hub unit, currently available in two versions: Huddle Hub One (HHO) and Huddle Hub One+ (HHO+);
- The Huddle Hub App (HHApp or simply App), a companion software available for Windows, MacOS, iOS and Android devices. Though HHApp is the best way to unleash all the power of the Huddle Hub solution, presentations can also be received on any web browser without the need of installing any app.

The two models HHO and HHO+ are identical except for network connectivity: both models allow **wired connection**, but Huddle Hub One+ also embeds a **wireless network adapter** for Wi-Fi connectivity, thus supporting a **dual-network configuration**.

Given that HHO+ includes all the functionality of HHO, when this guide refers to HHO it means HHO or HHO+. HHO+ specific features will be highlighted with the "HHO+ only" marker.

1.2 Documentation

HRT provides a thorough and exhaustive documentation, consisting of the following manuals:

- **Quick Start Guide:** a very short guide that contains the essential steps to start using HHO and HHApp. Available in the box of the product and in the support section of HRT website (www.hrt.website).
- **Specification, Safety and Conformity:** describes all the technical specifications, the safety precautions and the conformity of HHO to national/international rules and certification requirements. Available in the box of the product and in the support section of HRT website (www.hrt.website).
- **User Guide:** shows the user how to use and get the most from Huddle Hub App. Available in the



support section of HRT website (www.hrt.website).

- **Installation Guide:** from unpacking to deployment, a short guide to install your HHO unit and choose among different network configurations. Available in the support section of HRT website (www.hrt.website).
- **Configuration Guide:** directed to IT Managers or IT staff members, it explains how to configure HHO to better suit the company needs. Available in the support section of HRT website (www.hrt.website).
- **Network Security Guide:** contains recommendations for the IT Manager or Network Security Manager, aimed at designing and implementing a secure deployment of HHO units in the organization's infrastructure. Available in the support section of HRT website (www.hrt.website).
- **FAQ:** the support section of HRT website (www.hrt.website) contains also a dynamically updated knowledge base with the answer to the Frequently Asked Questions.

Before consulting our documentation, please check that the product version printed on the cover page of your manual matches your HHO and HHApp versions, and that the manual version is the latest one. Manual numbering follows the following scheme:

<Manual name> <Product version> - <Manual version> . pdf

For example, "User Guide 2.0-3.pdf" means that this version of the User Guide covers all product versions starting with "2.0" (e.g. 2.0.1, 2.0.5 etc) and it's version 3 of the manual itself.

HRT supports only the latest release of its software, which is always available free of charge. Users and IT Managers are invited to keep their HHApp and HHO units up to date, and to download the most recent version the manuals from the support section of HRT website.



2 Understanding Huddle Hub

2.1 Rooms, Sessions and Roles

Rooms and Sessions

For our purposes, a **session** is the sitting together of a group of people, with the intent of either making or assisting to a presentation, or to perform a video-conference.

A session happens in a **room**, which usually corresponds to a physical place where the participants meet. However, HHO extends the concept of room to the group of participants that join the same session, wherever they are.

HHO supports **up to 4 rooms per unit**, each one able to host one fully independent session. Each room is identified by a name, that can be set to match a specific place (e.g. "Main meeting room", "1st floor huddle room" etc.) or a group of users it's reserved for (e.g. "Marketing dept.", "IT Demo", etc.) or any other criteria that meets your needs.

A session starts when the first participant connects to a room, and ends when the last participant closes his connection.

The following example portraits the situation of a company that has two HHO units, each one with four enabled rooms:

- HHO Ground Floor
 - Lobby
 - Huddle room 1
 - Huddle room 2
 - Admin & Finance
- HHO First Floor
 - Board room
 - CEO's virtual huddle room
 - Sales department
 - Production department

Each room can host up to 64 participants per session.

Hub room and Virtual rooms

The place where the HHO unit is physically present and installed is called **hub room**, while the other three rooms are called **virtual rooms**. The existence of the hub room is optional, because you can decide to install HHO in your company data center and not to connect to any device except the company LAN. In this case all the four rooms will be "virtual".



Passcode

Sessions can be protected with a **passcode**, which ensures the privacy of your meeting. The passcode is a 4 digits random number, generated when the session starts, that is visible on the TV screen or in the toolbar of the participant that started the session or in the one of the participants that already joined it. Passcode protection can be disabled.

Roles

During a session, we identify the following **roles**:

- **Participant**: anyone who is connected to the session.
- **Presenter**: any participant who is currently sharing his/her screen with the other participants.
- **Viewer**: any participant who is receiving the presenters' screen.
- **Host**: the case where a presenter starts a video-conference using the Huddle Hub Virtual Driver as camera, thus sharing the VC software screen with the other participants.
- **Active Speaker**: during a video-conference based on the Multicam Feed, and with Multicam layout set to *Active speaker*, the participants whose camera stream is in the main frame of the layout.

2.2 TV, Webcam and Multicam Feed

TV Sets and Projectors

In a typical scenario, your HHO unit will be installed in a meeting room, huddle room or another shared space, and will be **connected to a large TV set with an HDMI cable**. We've defined this room as **hub room**, while the remaining HHO rooms are called **virtual rooms**. What happens in those virtual rooms? How do the participants see the presentation?

There are a few possible options:

- **Individual devices**: any participant can **receive the presentation on his/her own device**, either a PC, a tablet or a smartphone.
- **TV set**: **Smart TVs** can receive the presentation through a **web browser**. **Android TVs** can receive the presentation like any other Android device can. They just need to have the Huddle Hub Android TV app installed. Other TVs need an **Android dongle** attached to one of their HDMI ports.
- **Mixed mode**: some participants look at the presentation on their individual device, and the others on the TV. This is always possible in the hub room

Welcome screen

In case your HHO unit is connected to a display through its TV port, when no session is in progress it will show a *Welcome Screen*, which contains instructions about downloading the Huddle Hub App and



about accessing the session. This Welcome Screen can be customized.

Webcam

HHO can also connect to a **USB Webcam**. This is possible only in the hub room, because it has to be plugged to the unit. The HHO unit will make this webcam available to the HHApp clients connected to the hub room, through a virtual camera driver, with no need of any cable.

Multicam Feed (experimental feature)

Warning: Multicam Feed is a beta and experimental feature. It is not yet matured and can still be unstable, but can be very useful and we decided to offer it to you to try.

During video-conferences, the feature called **Multicam Feed** allows the participants of the hub room session to add the camera streams of up to 6 devices, thus realizing a true multi-camera video-conference system.

2.3 Reaching a Room

Whether you want to present your screen to the other participants, or to receive their presentation on your device, you have to **connect to a room**. To achieve this, you have to:

1. Connect your device to the same network HHO is connected to.
2. Select the room you want to use for your presentation.

Network connection

The network to use can be either the company LAN or HHO+ embedded access point (*HHO+ only*).

LAN connection

The task of installing and configuring HHO to make it visible to all users on the LAN is your Network Administrator's responsibility. Under this configuration, your device will be able to access HHO through the standard network configurations you already use to access your company LAN, and when you start your HHApp, you will see a list of all the available rooms associated with the connected HHO units.

Warning: Although HHO and devices are properly configured to access the same LAN, in complex network configurations you may experience problem in reaching the active rooms. If this happens, contact your network administrator or consult the Configuration Guide.

Embedded Access Point connection (HHO+ only)

You can directly connect to your HHO+ unit, provided that you are in the range of its embedded Wi-Fi



access point and that it's been configured to allow such a connection. To do so, on your device select the Wi-Fi name (SSID) of the HHO+ you want to connect to. By default, the SSID is "huddlehub" and the password is "huddlehub", but they may have been changed (recommended!). Ask your Network Administrator for the HHO+ Wi-Fi credentials .

Using this approach, you can reach only the rooms that belong to HHO+ unit you are directly connected to.

Mixed connection (HHO+ only)

Both the methods described above can be used at the same time, and any session may have participants connected either ways.

Discovering the room to connect to

Automatic Discovery Service

If both HHO and your device have been properly configured, at its start HHApp will show the list of the available rooms. This list is prepared and presented to you through a network **discovery service**. When the service is enabled (and allowed by local network configurations), HHApp can automatically search for HHO rooms on the network.

Manual Search

In some network configurations, the automatic discovery service may not be able to reach all the HHO units and show all their available rooms. For these cases, HHApp offer a *Find Rooms* function, that you can use to reach the rooms through the IP address of the HHO unit that hosts them (see next chapter about finding the IP address of a HHO unit).

2.4 Finding the IP address of a HHO unit

There are cases when you need to know the IP address your HHO unit:

- to download HHApp from the unit;
- to configure HHO unit with its Web Console;
- to attend a session using your web browser;
- to connect to a room that cannot be reached through the *discovery service*.

When HHO is connected to the company LAN, its IP address is either dynamically assigned by the DHCP server of the network or statically assigned during its configuration.

- If the unit is connected to a TV or a monitor, and no presentation is in progress, you can read its IP address on the welcome screen. HHO+ units may have two IP addresses: one for the wired connection and one for their embedded Wi-Fi network adapter.
- If other participants already entered that room, you can ask them to read the IP address they are



connected to (: > Settings > Room info).

- If none of the previous methods is possible, you have to contact your Network Administrator to get the IP address of the HHO unit you want to connect to.

2.5 Performances

HHO is capable of amazing performances. However, what you are actually able to do with it depends not only on the unit itself, but also on its configuration and on the IT infrastructure it's inserted into, and on the performances of the computer and devices HHApp is installed on:

- Up to 4 rooms per unit: this feature is always available.
- Up to 64 participants per room, totaling 256 participants per unit: current maximum number of participants depends on the available bandwidth of your network, in particular on those of the involved access points, and on their type, available channels and frequencies.
- Up to 4 concurrent presentations on the same TV screen: this is possible only in the hub room.
- Multicam Feed (experimental feature): it allows up to 6 devices to add their camera to the video stream composed by the Huddle Hub virtual driver. This feature is available only in the hub room, and only if a webcam is plugged to the unit and it's not been disabled in the configuration. Performances are strictly dependent on the performances of the computer that is running the video-conference software and on those of the external webcam.



3 Connecting to the Web Console

The tool you use to configure your HHO unit is the **Web Console**, accessible using any common web browser, like Chrome, Edge, Safari, Firefox and many others. From the Web Console, you can manage every parameter of your HHO.

To use the Web Console you have to connect to the HHO unit you want to configure.

Before you start your first HHO connection and configuration, we recommend that you read the **Network Security Guide**, that contains important information about the secure deployment of HHO and HHO+ units.

3.1 Connect via Ethernet Interface

To access your HHO through its Ethernet interface, the unit must be switched on and connected to the company LAN using an Ethernet cable. For security reasons, during your first configuration you should configure your HHO unit using a standalone network, that is a network that is not connected to your corporate network (see Huddle Hub One Network Security Guide).

1. Connect HHO to the network by plugging its Ethernet connector.
2. Switch the unit on.
3. HHO ships with Ethernet interface and DHCP enabled, so the unit will receive an IP address. The IP address of HHO depends on your company LAN address family (e.g. 192.168.1.x), on your DHCP server and in general on your network configuration.
4. Get the IP address of the HHO unit, either attaching an HDMI display to its port (the IP address appears in the welcome screen) or using a network tool to discover which IP address it's been assigned (see also [Finding the IP address of a HHO unit](#)^[7]).
5. Type the IP address in a web browser and access the Web Console of your HHO unit. Both HTTP and HTTPS connections are available; for security reasons HTTPS is the suggested mode.

3.2 Connect via Wireless Interface (HHO+ only)

You can access the Web Console using a wireless direct connection to the Wi-Fi network of your HHO+. To ensure maximum security, during your initial configuration you should configure your HHO+ unit without connecting it to your corporate network (see Huddle Hub One Network Security Guide).

1. Move to the room where HHO+ has been installed and make sure the unit is switched on.
2. Open the wireless network selection screen on your device and connect it to HHO+ network. The factory default parameters are:
 - SSID: huddlehub
 - Security: WPA2
 - Password: huddlehub
 - Wi-Fi band: 5 GHz



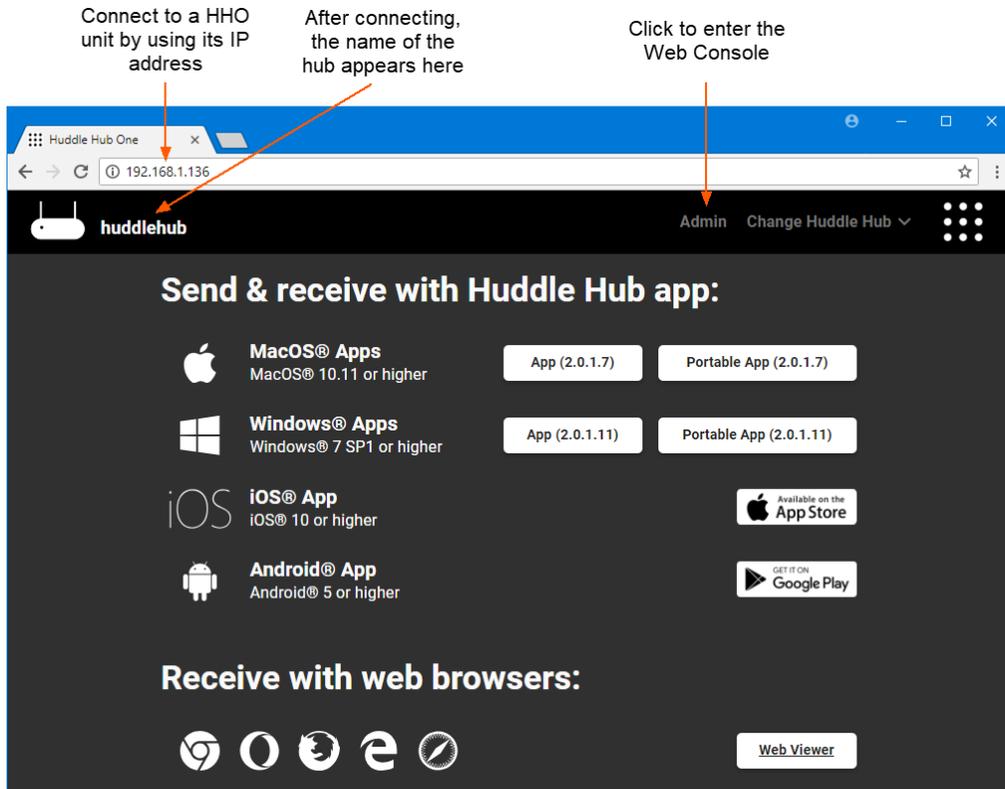
3. Once connected to the wireless network of HHO+, get its IP address, either attaching an HDMI display to its port (the IP address appears in the welcome screen) or using a network tool to discover which IP address it's been assigned. The default IP address of HHO+ on its own wireless network is 10.3.2.1, but it may have been changed by a previous configuration (see also [Finding the IP address of a HHO unit](#) ⁽⁷⁾).
4. Type the IP address in a web browser and access the Web Console of your HHO+ unit. Both HTTP and HTTPS connections are available; for security reasons HTTPS is the suggested mode.



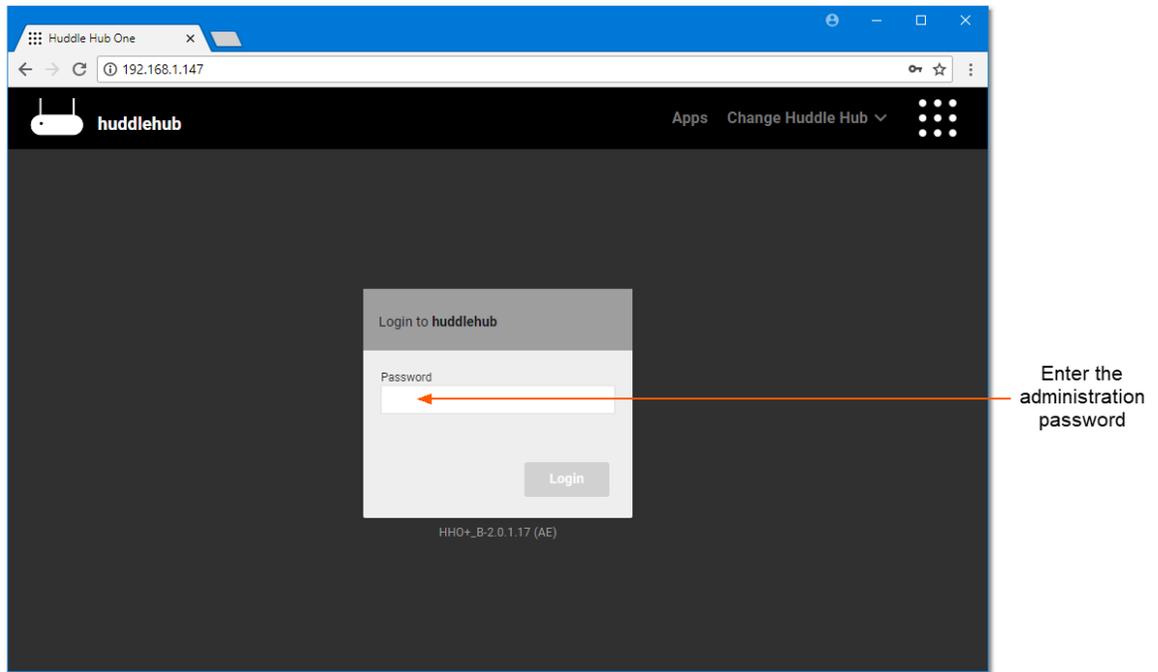
4 Using the Web Console

When you know the IP address of the HHO unit you want to configure, you have to type it in the address bar of your browser, and press Enter.

Locate the **Admin** button at the top and click it.



To enter the Web Console, you need to type the administration password in the login dialog:

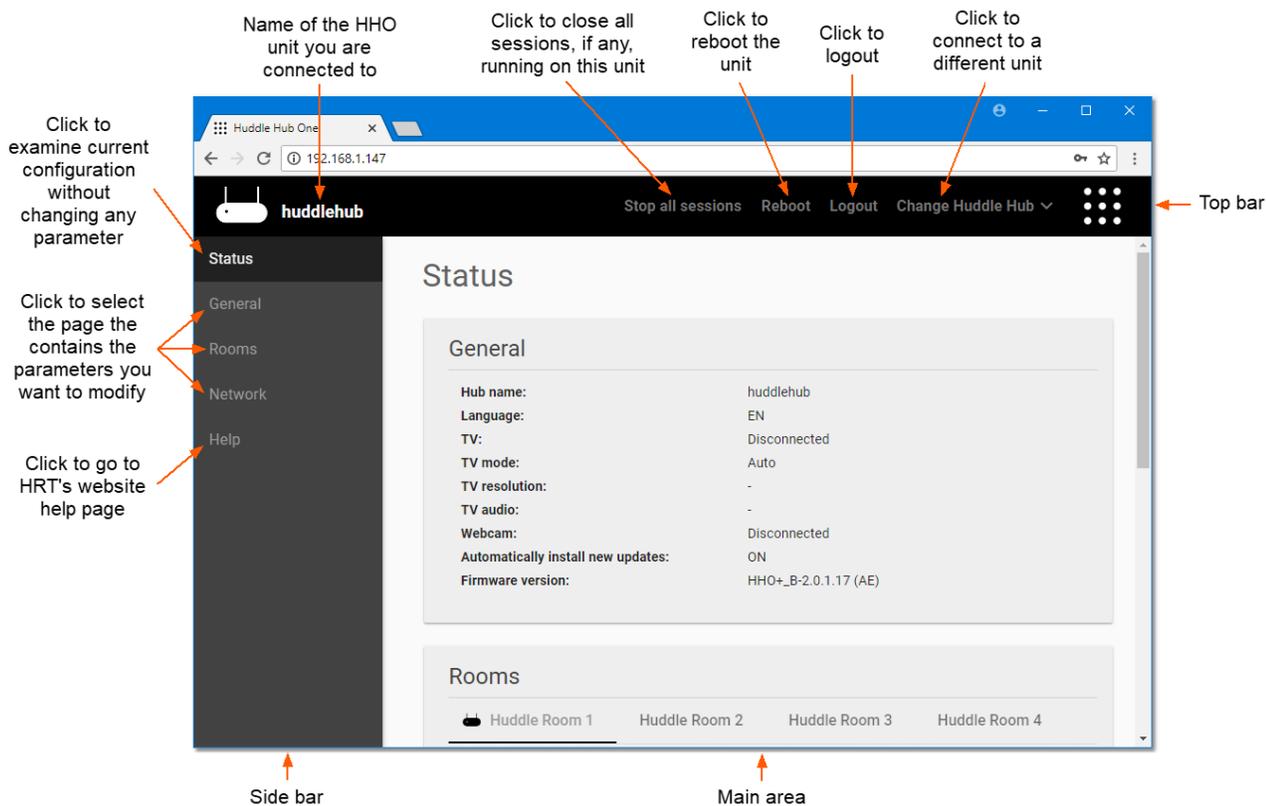


The factory default password is “admin”.

Tip: for security reasons, changing the administration password should be your very first configuration task.

The Web Console has three zones:

- The *Top bar*, with the name of HHO and some control buttons.
- The *Side bar*, on the left, that allows to select among the various configuration pages
- The *Main area*, which shows the configuration parameters.



Top bar controls

The four buttons in the *Top bar* have the following purposes:

Stop all sessions - This button is visible only if at least one of the HHO rooms is hosting a session. When clicked, it closes the sessions and disconnects the participants. A dialog asks you to confirm (or cancel) the operation.

Reboot - This button asks for a confirmation and then reboots HHO. This operation has the same effect as turning off and on the device using the power button. The Reboot procedure closes the current session and disconnects all the users connected to HHO.

Logout - It disconnects you from the Web Console and brings you back to the login page.

Change Huddle Hub - It opens a list of the available HHO units on the network and allows to switch from one to another without quitting the Web Console. The list shows HHO names and their IP addresses.

Side bar controls

Clicking on the buttons of the *Side bar* you affect the content of the *Main area*, which will show the corresponding page:

- *Status* is a read-only page that recaps all the parameters.
- *General*, *Rooms* and *Network* take you to the pages where you can change the corresponding group of parameters.
- *Help* is link that opens HRT's support page in a new tab of your browser.

Main area

The parameters pages show three buttons at their bottom:

Apply - It saves the changes. Some modifications affect the possibility to access the Web Console (for example, if the connection is through the Wi-Fi network and you disable the Wi-Fi interface of HHO+). For this reason, when you apply the changes with the **Apply** button, the system shows the instructions to access the console again and confirm the changes.

Cancel - This button discards the changes.

Default - It loads the factory defaults of the current configuration section.

The *Main area* can show other section-specific buttons, which will be explained in the following chapters.

5 Configuring Huddle Hub One

5.1 Status page

The *Status* page is a read-only area that recaps all the parameters. It's useful to have a look at the entire configuration without making any change.

This is the only available section when HHO is hosting one or more sessions, as reported by the message "Session is running. Modifications disabled".

Please see the following chapters for a detailed description of the parameters.

5.2 General page

This section contains HHO general configuration parameters.

Hub name

This is the name of the device and identifies your HHO unit. Assign unique names to multiple HHO units connected to the same network. Name can be from 4 to 16 characters long: numbers, uppercase and lowercase letters, underscore and dash can be used; special characters and spaces are not admitted.

When starting, if a HHO unit finds another unit with the same name in the network, it will add a postfix number to its name to make it unique.

Admin password

The password field contains the keyword to access the Web Console. It can be from 5 to 48 characters long: numbers, uppercase and lowercase letters, underscore and dash are admitted; special characters and spaces are not allowed. The default value is "admin". The checkbox *Show password* makes your password visible while typing.

Language

Select the user interface language for HHO Web Console and for the welcome screen.

TV mode

When set to *Auto* (the default setting), HHO scans the available resolutions of your TV; if Full-HD mode is available, HHO selects it, otherwise it selects the resolution that the TV set identifies as "favorite".

In *Manual* mode, you can select the mode you prefer from a list of *Available resolutions* (the star icon next to one of the items identifies the favorite mode of the TV). When you click an item in the list, a



Try button appears, which allow you to test if the selected mode actually works. If it does, you can safely click **Apply** to confirm the changes you made.

Enable Multicam (experimental)

Warning: Multicam Feed is a beta and experimental feature. It is not yet matured and can still be unstable, but can be very useful and we decided to offer it to you to try.

Tick the checkbox if you want to allow the participants of a session to use the Multicam Feed feature.

Automatically install new updates at boot

If this checkbox is active, at every power-on or reboot HHO connects to the HRT software repository to search for firmware updates, and automatically installs the latest release. The automatic update requires a network connection to Internet.

Welcome background color

The *Welcome Page* appears when your HHO is connected to a TV. The section on the left cannot be modified, and contains the name of the room, the passcode, the IP address of the hub and other useful information.

The rest of the screens shows an image, which you can customize.

When the image - whether the default or a custom one - does not fit the entire area, the rest of the screen will be filled with the selected background color. Click on the control to open a color selection dialog.

Welcome background image

Either select *Default* or *Custom*. In this second case, the **Load image** button appears and by clicking it you open a file selection dialog. Supported formats are JPEG and PNG. The image will be squeezed, if necessary, to fit into the available area.

Additional buttons

Load firmware - By pressing this button, a dialog appears that allow you to load a HHO firmware file. This feature is useful in case your HHO is not able to connect to the software repository to download the updated version itself. Firmware files are available at HRT website.

Check for updates - Pressing this button, HHO connects to the HRT software repository to check if a new firmware update is available. In case the system finds a new release, a dialog asks you to confirm (Update) or abort (Cancel) the operation.



Warning: HHO may appear unresponsive for a few minutes after power-on or reboot. The effective time required for the update operation depends on the speed of the Internet connection.

5.3 Rooms page

Every HHO unit can enable up to four rooms, each one hosting an independent session.

The **hub room** is the one where the TV and webcam - if any - are installed and connected to the unit. In the *Rooms* page the hub room is always the leftmost one, and is identified by a small HHO icon before its name.

The **Create new** button creates a new room, and the **Delete room** button removes an existing room (except the hub room, which cannot be removed).

Each room can be configured by the following parameters:

Room name

The name that will appear in the Huddle Hub App clients when the participants choose a room to start or join a session. Max 16 characters.

Passcode protection

When checked, a passcode is required to join a HHO session. The passcode is a random four digits number, automatically generated by the system when session starts. Every new participant must type in the passcode to join the session.

Web viewer on HTTPS

When viewing a presentations with a web browser, a HTTP connection is used. By enabling this checkbox you allow an HTTPS connection also.

While connecting to a room with HTTPS, you may receive a security warning from your browser. This happens because the SSL certificate provided by the HHO web server is self-signed, and this is a normal situation with secure servers located on embedded systems. You can confirm you want to proceed.

5.4 Network page

5.4.1 Wireless connection (HHO+ only)

The Wi-Fi functionality of HHO+ can be configured to work in *Access point* or *Station* (client) mode.

It can be disabled, also, but you cannot disable both the wired and wireless connections.



Access Point mode

When configured in *Access point* mode, HHO+ creates its own wireless network and works as a common Wi-Fi access point.

SSID

This is the Wi-Fi SSID of HHO+ and corresponds the *Hub name* as defined in the *General* page.

Password

The password field contains the keyword for the wireless connection to HHO+. The admitted password follows the industry standard 8 to 63 characters specification. The default value is "huddlehub".

Show password

Tick this checkbox to make your password visible.

Hide SSID password in status

Tick this checkbox to hide your password from status page of HHO+.

Hide SSID password in TV welcome screen

Tick this checkbox to hide your password from the welcome screen in case a TV is connected.

Share mode

This parameter manages the connection between HHO+ wireless and wired interfaces:

- *Routing + NAT*: in this case HHO+ manages the NAT (Network Address Translation), lets the Wi-Fi clients reach the company LAN resources connected, including Internet, through HHO+ Ethernet port by natting the clients addresses to the Ethernet interface. From the company LAN to HHO+ wireless network, the connection must be managed by route tables, forwarding the traffic to HHO+ Ethernet interface. There's no firewall isolation between the two subnets, wired and wireless.
- *Routing*: the system only routes the Wi-Fi traffic to the Ethernet interface, without natting the addresses. Even in this case there's no firewall isolation between the wired and wireless subnets and the dialog between the two interfaces is managed by the company LAN route tables only.
- *Bridge*: the system creates its Wi-Fi network as an extension of the company LAN, using the same address family, for example on the same 192.160.1.0 subnet. With this configuration, the IP address of HHO+ Wi-Fi interface is the same of the wired network interface. In Bridge mode, being HHO+ Wi-Fi network an extension of the company LAN, the Wi-Fi clients are virtually on the same company LAN. For this mode, the correct Wi-Fi operation depends on HHO+ wired interface settings.
- *None*: means no connection between HHO+ Wi-Fi clients and the company LAN resources.



In the sharing modes *Routing + NAT* and *Routing*, when the *LAN access to session participants only* option is active, among all the users wirelessly connected to HHO+ access point, only the participants of HHO+ work session can access the company LAN resources.

IP

This is the static IP address of HHO+ on the wireless subnet. The default is 10.3.2.1, a private address from the 10.0.0.0 family of private addresses, designed to be used for local networks.

Warning: use private address spaces only, to avoid conflict with public addresses. Other possible private networks are 172.16.0.0 and 192.168.0.0.

Country

Every HHO+ unit is configured at factory level for a specific Wi-Fi region, because of the different laws that regulate the radio emission in every country. Every Wi-Fi region has a list of admitted countries and the country where HHO+ is used must be selected from this list. The Wi-Fi region of your product is visible on the product label. See also [Wi-Fi Regions, Channels and Frequencies](#)^[24].

Frequency

HHO+ is a non-concurrent dual band Wi-Fi device. It can operate at 2.4 or at 5 GHz and this parameter allows you to change the operating band. For further information please see [Wi-Fi Considerations](#)^[23].

IEE 802.11ac

In case of 5GHz band, the 802.11ac standard can be enabled or disabled. The 802.11ac standard complies with the previous standards, but some 802.11n devices experience problems with the ac. As a general rule, keep the 802.11ac enabled for maximum performances and disable it in case of compatibility problems with older devices.

Channel

The Channel parameter allows to configure the operating Wi-Fi channel among the list of available channels, which depends on the Wi-Fi region.

By selecting Auto, the system will choose the best performing option at the moment of the configuration and every time system gets switched on or rebooted. For further information please see [Wi-Fi Considerations](#)^[23].

Channel width

Channel width should be chosen considering the compatibility with the connected devices. Not every device will work at higher values, especially for the 2.4GHz band. A good rule of thumb is to use



20MHz for the 2.4GHz band and 40MHz for the 5GHz band. Use higher values whenever your devices support them, and lower ones for compatibility with older devices.

Select Auto if you want the system to choose the best performing option at the moment of the configuration and every time system gets switched on or rebooted.

For further information please see [Wi-Fi Regions, Channels and Frequencies](#)^[24].

Secondary channel

The channels in the 2.4GHz band are spaced 5MHz apart. The 5GHz band channels have 20MHz bandwidth available. Whenever the channel width selected is bigger than the available “room” of the configured channel (for example >20MHz for 5GHz), adjacent channels will be affected.

The secondary channel selector allows to configure the direction of the adjacent channel to be used. It gets forced to *Below* (automatic) when the primary channel is at the beginning of the range, forced to *Above* (automatic) when the primary channel is at the end of the range, and you can manually select *Below* or *Above* when the primary channel is in the middle of the range.

DHCP server

Tick this checkbox to enable the internal DHCP server of HHO+. This DHCP server automatically assign the IP address and configure the network parameters of the connected clients.

DHCP range

The DHCP range delimits the available addresses to be automatically assigned to the connected clients.

Authentication

The available authentication standards for the Wi-Fi clients are WPA and WPA2. The WPA/WPA2 option lets the system negotiate the standard with the client.

SSID broadcasting

Tick this checkbox to enable the broadcasting of the SSID and make it visible to Wi-Fi scanners. Hiding the SSID is possible, but all the available technical literature explains that this practice is not recommended.

Client isolation

Tick this checkbox to prevent devices wirelessly connected to HHO+ from reaching each other.



Station mode

When configured in *Station* mode, HHO+ connects to the company Wi-Fi network (WPA2-PSK) exactly as any other Wi-Fi client device. With this configuration, the wired interface is disabled.

Connect to a hidden network

By ticking this checkbox, you make HHO+ able to reach a hidden SSID. In this case you have to manually specify the name of the desired network.

SSID

This is the SSID of the network to connect with. Unless you want to connect to a hidden network (see above), the connection procedure is the same used for any wireless device:

1. press the **Search AP** button to scan for the available wireless networks;
2. click on the list of found Wi-Fi networks, and select the SSID you want to connect to;
3. insert the password.

Password

The Password field contains the keyword for the Station mode connection to the desired wireless network. The admitted password follows the industry standard 8 to 63 characters specification.

Show password

Tick this checkbox to make your password visible while typing.

Country

Every HHO+ unit is configured at factory level for a specific Wi-Fi region, because of the different laws that regulate the radio emission in every country. Every Wi-Fi region has a list of admitted countries and the country where HHO+ is used must be selected from this list. The Wi-Fi region of your product is visible on the product label. See also [Wi-Fi Regions, Channels and Frequencies](#)^[24].

IP Addressing

When in *Station* mode, HHO+ can acquire the whole network configuration from the DHCP server of the connected network. Otherwise, it's possible to specify the static *IP address* and the other network parameters, like the *network mask*, the *gateway* and the *DNS*.



5.4.2 Wired connection

This configuration section manages the behavior of the wired connection to the company LAN.

DHCP mode

When the wired connection works in *DHCP* mode, the IP address of the Ethernet interface and the configuration of the wired network is assigned by the DHCP server of the connected company LAN.

DNS from DHCP

If this checkbox is active, the DNS (Domain Name System) address is assigned by the DHCP server, otherwise a *DNS* field must be filled with the DNS server address.

Static mode

When in *Static* mode, the static IP address and the network parameters of the wired interface must be set.

IP

This is the static IP address of HHO on the wired network. It's important to use private address spaces to avoid conflict with public addresses. Possible private networks are 10.0.0.0, 172.16.0.0 and 192.168.0.0.

Netmask

The netmask identifies the address range of the local subnet.

Gateway

The gateway is the address of the computer who manages all the traffic external to the local subnet.

DNS

In static mode, the DNS server address must be configured.

Disabled mode

When disabled, the wired connection doesn't work. It's not possible to disable both the wireless (*HHO+ only*) and wired interfaces.

5.5 Help page

This link opens the support page on the HRT website in your default Internet browser.



6 Wi-Fi Considerations (HHO+ only)

For optimal performances, HHO+ requires the right choice of frequencies and channels. The subject would require a treatment which is beyond the scope of this manual; however, we will provide some hints that will assist you in small-scale installations, while we recommend that HHO+ be installed by professional integrators on larger-scale situations.

Frequency

The Wi-Fi standard currently offers two frequencies: 2.4 GHz and 5 GHz. 2.4 GHz frequency band is usually very crowded, and given that HHO+ has 5 GHz capability also, we recommend using this frequency band instead (*Network page > Access point mode parameters > Frequency*).

Channels

HHO+ supports auto selection of the best performing channel: by selecting Auto, (*Network > Access point mode parameters > Channel*) the system will choose the best option at the moment of the configuration and every time system gets switched on or rebooted. To get the most from this feature, we suggest you reboot the system periodically, or at least when changes in the Wi-Fi environment happen.

If you prefer to manually select the channel, we recommend using a Wi-Fi channel analysis tool to understand which channels are already occupied and which are not. Select a free channel, or a channel that contains only weak signals from other access points.

The Web Console will allow only channels legally permitted by the country regulations of the region the HHO+ unit has been configured for (see [Wi-Fi Regions, Channels and Frequencies](#)^[24]).



7 Appendices

7.1 Wi-Fi Regions, Channels and Frequencies (HHO+ only)

Regions

Every HHO+ unit is configured at factory level for a specific Wi-Fi region, because of the different laws that regulate the radio emission in every country. Every Wi-Fi region has a list of admitted countries and the country where HHO+ is used must be selected from this list. The Wi-Fi region of your product is visible on the product label.

The product labeled WW (World Wide) is limited to the subset of frequencies accepted in every country.

Frequencies

Product with label EU (can be used in all the countries of the European Union plus Andorra, Iceland, Liechtenstein, Monaco, Norway, Switzerland):

2.412GHz ~2.472GHz (CH 1-13)

5.180GHz ~ 5.240GHz (CH 36-40-44-48)

Product with label NA (can be used in United States and Canada):

2.412GHz ~2.462GHz (CH 1-11)

5.180GHz ~ 5.825GHz (CH 36-40-44-48-149-153-157-161-165)

Product with label JP (can be used in Japan):

2.412GHz ~2.472GHz (CH 1-13)

5.180GHz ~ 5.240GHz (CH 36-40-44-48)

Product with label CN (can be used in China):

2.412GHz ~2.472GHz (CH 1-13)

5.180GHz ~ 5.825GHz (CH 36-40-44-48-149-153-157-161-165)

Product with label AE (can be used in United Arab Emirates):

2.412GHz ~ 2.472GHz (CH 1-13)

5.180GHz ~ 5.240GHz (CH 36-40-44-48)

5.745GHz ~ 5.825GHz (CH 149-153-157-161-165)

Product with label IN (can be used in India):

2.412GHz ~ 2.472GHz (CH 1-13)

5.180GHz ~ 5.320GHz (CH 36-40-44-48-52-56-60-64)



5.745GHz ~ 5.825GHz (CH 149-153-157-161-165)

Product with label WW (can be used in any country):

2.412GHz ~2.462GHz (CH 1-11)

Channels

The channels in the 2.4GHz band are spaced 5MHz apart. The protocol requires 25MHz of channel separation, which means that it is possible for adjacent channels to overlap and then interfere with each other. For this reason, only channels 1, 6, 11 are typically used in the US to avoid interference. In the rest of the world, the four channels 1, 5, 9, 13 are typically recommended. The 2.4GHz frequency band is usually heavily crowded because most devices operate on that band.

The 5GHz band channels have 20MHz bandwidth available. Unlike the 2.4GHz band, the channels are non-overlapping, therefore all channels have the potential to be used in a single wireless system.

Channel width

Channel width should be chosen considering the compatibility with the connected devices. Not every device will work at higher values, especially for the 2.4GHz band. A good rule of thumb is to use 20MHz for the 2.4GHz band and 40MHz for the 5GHz band. Use higher values whenever your devices support them, and lower ones for compatibility with older devices.

Standard	Band	Width
802.11b	2.4GHz	20MHz
802.11g	2.4GHz	20MHz
802.11n	2.4GHz	40MHz
802.11n	5GHz	40MHz
802.11a	5GHz	40MHz
802.11ac	5GHz	80MHz

7.2 Restore and Reset procedures

Reset procedure

This procedure resets the configuration to the default parameters, discarding all current settings. The internal software is not reinstalled and the firmware version does not change.

How to reset:

1. make sure Huddle Hub is up and running;



2. locate the Restore button on the back of the unit;
3. press the Restore button and keep pressed for 5 seconds;
4. the unit will now reboot with default parameters.

Restore procedure

This procedure completely wipes the current firmware and does a full firmware re-installation. The firmware version changes to the one originally installed on the unit (and it's then updated if connected to the internet).

How to restore:

1. make sure Huddle Hub is off;
2. locate the Restore button on the back of the unit;
3. switch on Huddle Hub by plugging the power cable or pressing the Power button (without pressing Restore);
4. now press the Restore button and keep pressed for 5 seconds;
5. the unit will now reboot and reinstall the system, please allow a few minutes for this operation.

7.3 Default values

General

Hub name: "huddlehub"

Admin password: "admin"

Language: EN

TV mode: Auto

Enable multicam: No

Automatically install new updates: Yes

Rooms

(one room only defined by default)

Room name: "Room 1"

Passcode protection: Yes

Web viewer on HTTPS: No



Network

Wireless connection

Mode: Access point

SSID: "huddlehub"

Password: "huddlehub"

Hide SSID password in status: Yes

Hide SSID password in TV welcome screen: Yes

Share mode: None

IP: 10.3.2.1

Country:

label EU: IT

label NA: US

label JP: JP

label CN: CN

label IN: IN

label AE: AE

Frequency: 5GHz

802.11ac: Yes

Channel: Auto

Channel width: Auto

DHCP server: Yes

DHCP range start: 2

DHCP range end: 254

Authentication: WPA2

SSID broadcasting: Yes

Client isolation: Yes

Wired connection

Mode: DHCP

DNS from DHCP: Yes



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