

Huddle Hub

Configuration Guide

Models: One, One+

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Table of Contents

1	Introduction	3
1.1	Huddle Hub	3
1.2	Documentation	4
2	Understanding Huddle Hub	5
2.1	Rooms, Sessions and Roles	5
2.2	TV, Touch Screen, Wireless Webcam	6
2.3	Reaching a Room	6
2.4	Finding the IP address of a HHO unit	7
2.5	Capabilities and Performances	8
3	Connecting to the Web Console	9
3.1	Connect via Ethernet Interface	9
3.2	Connect via Wireless Interface (HHO+ only)	9
4	Using the Web Console	11
5	Configuring Huddle Hub One	13
5.1	Huddle Hub	13
5.2	Room	13
5.3	Welcome Screen	14
5.4	Webcam	17
5.5	TV	17
5.6	Network	18
5.6.1	Wired	18
5.6.2	Wireless (HHO+ only)	19
5.7	Update	24
5.8	Advanced	25
5.9	System Status	26
6	Appendices	27
6.1	Wi-Fi Regions, Channels and Frequencies (HHO+ only)	27



6.2	Restore and Reset procedures	27
6.3	Default values	28
Index	30



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.
- Experiencing a smooth integration between Huddle Hub and your favorite video-conference software.

The Huddle Hub unit is currently available in two versions:

Product name	Short name used in the manual	Connectivity
Huddle Hub One	HHO	Wired
Huddle Hub One+	HHO+	Wired + Wireless

When this guide refers generically to HHO, it means any possible model, while HHO+ means specifically Huddle Hub One+.

A companion app (HHApp) is available for Windows, MacOS, Android and iOS. On laptops and PCs presentations can be sent or received with any recent version of the Chrome, Firefox or Edge browsers. A stand alone version of the audio/video Huddle Hub Driver (HHDriver) is available for Windows and MacOS. On laptops and PCs, both Browser (+ HHDriver) or HHApp are the available options for using the wireless camera feature.

Client type	Presentation	Wireless Camera
Windows	Browser or HHApp	Browser (+ HHDriver) or HHApp
MacOS	Browser or HHApp	Browser (+ HHDriver) or HHApp
Android	HHApp	not available
iOS	HHApp	not available



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. 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 4.0-1.pdf" means that this version of the User Guide covers all product versions starting with "4.0" (e.g. 4.0.1, 4.0.5 etc) and it's version 1 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, HHDriver and HHO units up to date, and to download the most recent version of 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 HHO unit is plugged to peripherals (TV and webcam) and the participants meet.

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 portrays the situation of a company that has two HHO units:

- HHO Ground Floor
 - Huddle room 1
- HHO First Floor
 - Board room

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:** we call "host" the presenter that starts a video-conference using the Wireless Camera, thus sharing the VC software screen with the other participants.



2.2 TV, Touch Screen, Wireless Webcam

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. Switch on your HHO and your TV and you will see the Welcome Screen, which contains instructions about connecting to that room and about accessing the session. This Welcome Screen can be customized.

Touch Screen

HHO can be used together with a touch screen, replacing a common HDMI display. In this case, when the USB out of the touch screen is connected to the USB port of the HHO, the touch surface can be used to annotate over the presentation and the annotation layer is streamed to the connected participants devices.

Wireless Camera

HHO can also connect a USB Webcam. The HHO unit will make this webcam available to the HHOApp clients or browser connected to the room, through a virtual camera driver, with no need of any cable.

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 HHOApp, 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 room that belong to the 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 addresses of the HHO units 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 Capabilities and Performances

HHO is capable of amazing performances. However, what you are actually able to do with it depends on the unit type, on its configuration, on the IT infrastructure it's inserted into, and on the performances of the computer and devices used as clients.

The following table summarizes the capabilities of the different models in different configurations:

Unit type	Operation mode	Wi-Fi AP	Wireless presentation quality	Wireless camera quality	Room max users	Room max presenters
HHO	Huddle	N/A	1080p, 30fps	720p, 30fps	12	6
	Meeting	N/A	1080p, 30fps	720p, 30fps	64	4
	Auditorium	N/A	720p, 10fps	-	150	1
HHO+	Huddle	enabled	1080p, 30fps	720p, 30fps	12*	6
	Meeting	disabled	1080p, 30fps	720p, 30fps	64	4
	Auditorium	disabled	720p, 10fps	-	150	1

* Max 4 users and 4 presenters when HHO+ Wi-Fi Access Point configured at 2.4GHz

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: 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



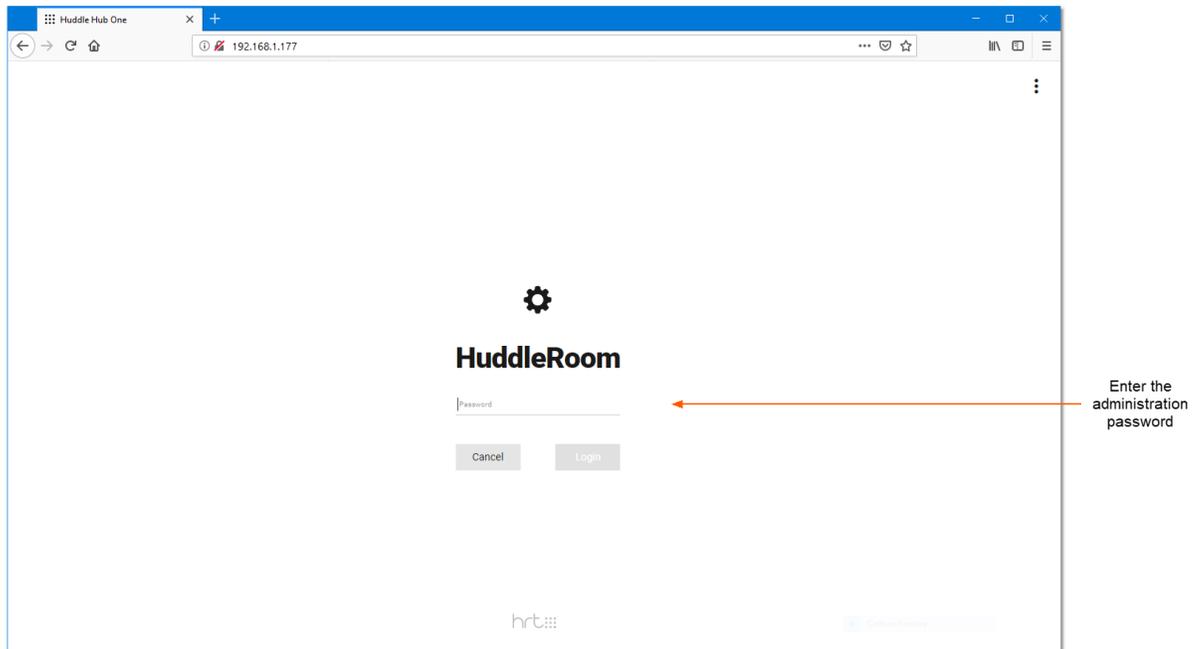
3. Once connected to the wireless network of HHO+, get its IP address, either attaching an HDMI display to its port (the IP address appears in the welcome screen) or using a network tool to discover which IP address it's been assigned. The default IP address of HHO+ on its own wireless network is 10.3.2.1, 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.

To enter the Web Console, click the three-dots menu on the top right of the page and select the **Admin** item. 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 areas: *Sidebar*, *Top bar* and *Body*:

Sidebar

At the top of the sidebar, you find a link with the name of the Huddle Hub you are connected to. Below it, the list of the configuration sections. Each link takes you to the pages where you can change the corresponding group of parameters:

Huddle Hub - general parameters.

Room - room name and protection.

Welcome screen - details for the customization of the welcome page showed when the system is idle, with no presentation running.

Webcam - audio/video USB devices configuration.

TV - settings of the connected HDMI display/projector output.

Network - Ethernet and WiFi (HHO+ only) configuration.

Update - update strategy settings.

Advanced - advanced parameters.

System Status - a read-only page that recaps all the information.

At the bottom of the *Sidebar* you find four links:

Stop sessions - This link is visible only if there is at least one session in progress. When clicked, it closes the sessions and disconnects the participants. A dialog asks you to confirm (or cancel) the operation.

Reboot - This link 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.

Help - The question mark at the bottom is a link to HRT's support page (which opens in a new tab of your browser).

Top bar

Some configuration section has two or more pages, use the Top bar to navigate through them.

Body

It contains the parameters to examine or configure. In the pages that allow changing the values, you find three buttons at the 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, when available.

The *Body* can contain other section-specific buttons, which will be explained in the following chapters.

5 Configuring Huddle Hub One

5.1 Huddle Hub

Huddle Hub name

This is the name of the device and identifies your HHO unit. To avoid confusion, please assign unique names when you have 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 post-fix 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.

Associate hub to Huddle Hub Enterprise (IP)

When one or more Huddle Hub Enterprise are connected over the network, this address connects the Huddle Hub to the Management System of the fleet. Look at the Huddle Hub Enterprise manuals for more information.

Language

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

System time zone

General settings for the system clock. It affects the update scheduling and the timestamps in the log files.

5.2 Room

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 of any kind.



Personal room

When checked, a random 8-digit *Room code* will be generated and associated to this room. Doing so, this room will become visible only to those clients that has the same Private room code in their configuration. It's a way to key specific rooms reserved for some users.

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.

Force passcode request to the first participant

If checked, even the first participant is required to enter the passcode when starting a session, which is visible on the welcome screen.

Do not activate this option if there is no screen connected tho the HDMI port of the unit, because in that case the first participant has no way to know the passcode.

5.3 Welcome Screen

HHO features a sophisticated, highly customizable welcome screen that appears on the display connected to the unit when no session is in progress.

The first group of parameters is about the image to show in the main area of the Welcome Screen.

Select if you want a static *Image*, a *Slideshow* or an image taken from an *URL*.

Image

This control appears if you chose *Image* in the first option. Either select one of the provided images 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.

Slideshow type

This control appears if you chose *Slideshow* in the first option. Select one of the listed themes, or *All* if you want images taken from all of them.

Slideshow timing

Enter the interval between the slides, in seconds.



Selected URL

This control appears if you chose *URL* in the first option. Enter the address of the page you want to show in the background. When the URL option is selected, the related URL page fills the page and only the optional Status bar can be added to the screen. Set an optional *Zoom* factor if you want to enlarge the received page.

Text (not available with URL background)

Choose the color of the text that will be shown on top of your background image.

Text shadow

Tick this checkbox to add a light shadow to the overlay text.

Clock (not available with URL background)

Tick the check-box if you want the clock included in the welcome screen. This clock needs Internet connection to be set, if not available the clock will not be shown.

Time zone

Select the welcome page UTC time zone.

12-Hour clock

By default the clock is in 24-Hour format, tick this check-box if you want it in 12-Hour format.

Band (not available with URL background)

This option is about enabling a side gray band below the information area that appears on the left of the welcome screen.

Transparent

Tick this check-box to make the band slightly transparent.

Access instructions

This option is about enabling the access instructions that appear on the left top of the welcome screen.

Show http

Tick this check-box to add the "http://" prefix to the IPs.

Show direct link to room

Tick this check-box to add the *"/room-name"* suffix to the IPs, to bypass the room selection screen.



Show status bar during presentation

Tick this check-box to add the status bar on the display during the presentation. The status bar recap all the information related to the room, like for example, the IP address, the room name, the number of connected devices and the passcode.

Wired interface label, interface icon and DNS label

Use this fields to customize the Access instructions for the wired network.

Wireless interface label, interface icon and DNS label (HHO+ only)

Use this fields to customize the Access instructions for the wireless network.

Weather widget (not available with URL background)

Tick this checkbox to include weather situation and forecasts in the welcome screen.

Location

Enter the location you want the weather reported for.

Valid formats are:

- City name and country code divided by comma.
- Zip code and country code divided by comma.

Use ISO 3166 country codes. If not specified US will be used by default.

Examples:

London, UK

94040, US

Type of view

Select your favorite weather view.

Forecast days

Select the forecasting horizon.

Units

Select the unit of measure for the weather widget.

Logo

Tick this checkbox to include a logo in the welcome screen. The default is the HRT logo, but you can upload any custom image.



5.4 Webcam

Mode

Webcam: select this mode if a webcam is plugged in to your HHO unit. It will be made available to the HHApp clients connected to the hub room, through a virtual camera driver, with no need of any cable.

None: no webcam is plugged or webcam disabled.

Webcam

If mode Webcam has been chosen, and if you have multiple webcams connected to the HHO unit, select the one you want to use.

Microphone

If mode Webcam has been chosen, and if you have multiple microphones connected to the HHO unit, select the one you want to use. You can also adjust its *Volume* level.

Speaker

If mode Webcam has been chosen, and if you have multiple speakers connected to the HHO unit, select the one you want to use. Select None to force the audio out on the HDMI port. You can also adjust its *Volume* level.

Force USB 2.0 (reboot is required)

The USB port of the HHO is a 3.0 type that can connect 2.0 devices too. Tick this check-box if your hardware is not compatible with this kind of port and expects a pure 2.0 USB port.

5.5 TV

TV mode

When set to *Auto* (the default setting), HHO scans the available resolutions of your TV and selects the largest compatible screen size.

Available resolutions

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.



Turn off HDMI when session is not running

Tick this checkbox if you want to force the HDMI display to go on sleep when there is no session running. You can configure the delay to wait for activities before going on sleep.

Annotation

Tick this checkbox to enable the annotation feature.

Send annotation to device

Tick this checkbox to enable the streaming of the annotation layer to the connected participants devices.

5.6 Network

5.6.1 Wired

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.

5.6.2 Wireless (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 to the *Hub name* as defined in the *Huddle Hub - 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.

Show SSID password in status

Tick this checkbox to show your password on status page of HHO+.

Show SSID password in TV welcome screen

Tick this checkbox to show your password on 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 sub-nets, 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 sub-nets 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 sub-net. 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.

LAN access to session participants only

In the sharing modes *Routing + NAT* and *Routing*, when this option is active, only the participants of HHO+ work session can access the company LAN resources. Other users wirelessly connected to HHO+ but not in a session cannot access the company LAN.

Client isolation option should be checked, to protect connected clients from being accessed by other connected clients.

Block access to private networks

In the sharing modes *Routing + NAT* and *Routing*, when this option is active (recommended), clients connected to the Wi-Fi adapter will not be permitted to reach private IPv4 addresses, defined by the following ranges:

- 10.0.0.0 – 10.255.255.255
- 172.16.0.0 – 172.31.255.255
- 192.168.0.0 – 192.168.255.255

IP

This is the static IP address of HHO+ on the wireless sub-net. 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](#)^[27].

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].

Warning: selecting the 2.4 GHz frequency the capabilities of your unit will get slightly limited, please see [Capabilities and Performances](#)^[8]

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](#)^[27].

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. Station mode is useful to connect an HHO unit to the company LAN when no cable is available or, in a dual network configuration, to connect it a secondary company LAN dedicated to guests.

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.

Hide SSID password in TV welcome screen

Tick this checkbox to hide your password from the welcome screen in case a TV is connected. Disable this option only when using a dual network configuration, with the wireless adapter connected to a guest LAN, to make the password visible in the welcome screen as a courtesy to the guests.

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](#)^[27].

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*.

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 also [Wi-Fi Regions, Channels and Frequencies](#)^[27]).

5.7 Update

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 with access to Internet.

Scheduled installation of updates

This checkbox enables the updates scheduler. It's possible to define the frequency (weekly/monthly/etc.), the day of the week and the exact time for checking and installing the available updates.

Don't automatically apply major updates

This checkbox avoids the automatic installation of major updates and force to manually install these updates. Major updates (X.X.x.x) are not compatible with previous versions of the Apps, which must also be updated in order to work. When this option is selected, the system does not automatically install updates that break compatibility with the apps.

Additional buttons

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.



Manually load the 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.

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.

5.8 Advanced

Admin

From this section it's possible to disable the double confirmation after every configuration change.

Here you can also find a special button for a complete restore of the default settings.

Operation mode

This multiple choice control gives you the opportunity to tailor your HHO unit to your specific needs. There are three options:

- Huddle: this mode has been optimized for huddle rooms. It allows up to 12 users receiving the presentation and up to 6 simultaneous presenters. Quality is Full HD for presentations (1080p, 30fps) and HD for Wireless Webcam (780p, 30fps).
- Meeting: this mode has been optimized for meeting rooms. It allows up to 64 users receiving the presentation and up to 4 simultaneous presenters. Quality is Full HD for presentations (1080p, 30fps) and HD for Wireless Webcam (780p, 30fps).
- Auditorium: this mode has been optimized for very large rooms, like auditoriums. It allows up to 150 users receiving the presentation on their device. The feed received on the HHO USB port is automatically broadcasted to the connected participants devices.

Please see [Capabilities and Performances](#)  for further information.

From this section is also possible to disable the streaming of the presentation to the connected participants devices.

Discovery

HHApp features a discovery service whose purpose is to reach all the HHO units in the same network, get their address and prepare a list of all the available rooms.

In complex network environments, with multiple hubs connected to different sub-nets, the units of a sub-net are not able to reach the units of another one, and the clients connected to a sub-net would see only the hubs on the same network.

This may be a desired configuration, with sub-nets totally separated.



In the case you want to make the HApp clients able to reach HHO units on other networks, you can designate one hub as *Primary* and make the other hubs reach it, thus sharing their rooms list and the corresponding IP addresses. In this way the clients will see the list of all the rooms whose hosting hubs are connected to the primary one.

Tick the Primary hub checkbox if you want to make the current hub the primary one. Otherwise, if current hub is not the primary one, enter the IP address of the hub that has been defined as primary.

HTTPS

From this section you can upload a custom HTTPS certificate and replace the self-signed certificate generated from the HHO. When a custom certificate is in use, the browser stops sending security warnings at the connection with the HHO.

Proxy

This section allows to enter the configuration parameters to be used whenever the HHO needs to reach internet through a proxy.

NTP server

From here is possible to define a custom NTP server to replace the default one.

Logs

This section manages the log files deletion at reboot. A button allows to download the log files for troubleshooting purposes.

5.9 System Status

The *System Status* page is a read-only area that recaps all the parameters, useful when you want to have a look at the entire configuration without making any change.



6 Appendices

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

Regions

HHO+ Wi-Fi adapter conforms to the IEEE 802.11 n/ac standard.

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.

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.

6.2 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.

6.3 Default values

Huddle Hub

Hub name: "huddlehub"

Admin password: "admin"*

Language: EN

Automatically install new updates: Yes

Network

Wired connection

Mode: DHCP

DNS from DHCP: Yes

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

IEEE 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

Rooms

Room name: Room 1

Passcode protection: Yes

TV mode: Auto

Webcam mode: Webcam

* In versions prior to 2.0, the Admin password was "password", and the Wi-Fi SSID and password were "HuddleHubOne". If you have a unit originally distributed with a firmware version below 2.0, you will have to use those passwords to access.



Index

- A -

- Access Point mode 19
- Admin password 13
- Advanced 25
- Android dongle 6
- Android TV 6
- Annotation 6,17
- Auditorium 25
- Authentication 19
- Automatic discovery service 6
- Automatically install new updates at boot 24
- Available resolutions 17

- B -

- Block access to private networks 19

- C -

- Channel 19
- Channel width 19,27
- Channels 27
- Check for updates 24
- Client isolation 19
- Configuration Guide 4
- Countries 27
- Country 19,22

- D -

- Default values 28
- DHCP mode 18
- DHCP range 19
- DHCP server 19
- Discovery service 7,25
 - automatic 6
 - manual search 6
- DNS 18
- DNS from DHCP 18
- Documentation 4
- Dual network 3

- E -

- Ethernet network adapter 3

- F -

- FAQ 4
- Force passcode request to the first participant 13
- Frequencies 27
- Frequency 19

- G -

- Gateway 18

- H -

- HDMI cable 6
- HHApp 3
- HHDriver 3
- HHO 3
- HHO+ 3
- Hidden network 22
- Hide SSID password in TV welcome screen 22
- Host 5
- HTTPS 25
- Hub selection bar 11
- Huddle Hub App 3
- Huddle Hub name 13
- Huddle Hub One 3
- Huddle Hub One+ 3

- I -

- IEE 802.11ac 19
- Installation Guide 4
- IP address 6,7,19
- IP Addressing 22

- L -

- LAN access to session participants only 19
- Language 13
- Load firmware 24

Login 11
Logout 11
Logs 25

- M -

Main Area 11
Major updates 24
Manuals 4
Multi-presentation 8

- N -

Netmask 18
Network
 wired 18
 wireless 19
Network connection
 embedded AP 6
 LAN 6
 mixed 6
Network Security Guide 4
NTP 25

- O -

Operation mode 25

- P -

Participant 5
Participants
 maximum number 5, 8
Passcode 5, 13
Password 19, 22
Performances 8
Personal room 13
Presentation
 multiple presenters 8
Presenter 5
Primary hub 25
 IP address 25
Primary room 5
Proxy 25

- Q -

Quick Start Guide 4

- R -

Reboot 11
Regions 27
Reset to default configuration 27
Restore 25
Restore to factory firmware version 27
Role
 host 5
 participant 5
 presenter 5
 viewer 5
Room 5, 6
 connect to 6
 searching by IP 6
 searching by name 6
Room name 13
Rooms 5
 maximum number 8

- S -

Secondary channel 19
Session 5
Share mode 19
Sidebar 11
Sleep HDMI 17
Specification, Safety and Conformity 4
SSID 19, 22
SSID broadcasting 19
Static mode 18
Station mode 22
Stop sessions 11
System Status 26

- T -

Time zone 13
Top bar 11
Touch screen 6
TV



TV
 Android 6
 connecting 6
TV mode 17

- U -

Updates scheduler 24
User Guide 4

- V -

Video-conference 6
Viewer 5

- W -

Web console 9
 connecting via Ethernet interface 9
 connecting via wireless interface 9
 login 11
 logout 11

Webcam 6,8
 audio HDMI 17
 force USB 2.0 17
 microphone 17
 mode 17
 speaker 17
 virtual driver 6
 volume 17
 wireless connection 6

Welcome screen 6
 access instructions 14
 background 14
 band 14
 clock 14
 image 14
 logo 14
 selected URL 14
 slideshow 14
 status bar 14
 text 14
 time zone 14
 type of view 14
 weather widget 14

Wi-Fi 19,27

Wired network configuration 18
Wireless camera 6
Wireless configuration
 access point mode 19
 station mode 19
Wireless network adapter 3

