Manual

MOBOTIX Cloud

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BeyondHumanVision

MOBOTIXCLOUD

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Support

If you need technical support, please contact your MOBOTIX dealer. If your dealer cannot help you, he will contact the support channel to get an answer for you as quickly as possible.

If you have internet access, you can open the MOBOTIX help desk to find additional information and software updates. Please visit:

www.mobotix.com > Support > Help Desk

Notices

General Notices

- This Manual is for reference only.
- All designs / procedures shown are subject to change without prior written notice.
- All trademarks and registered trademarks mentioned are the properties of their respective owners.
- Please visit our website www.mobotix.com or contact your local service engineer for further information.

Precautions for Use

- Device operability is subject to network capabilities of the install location. Please contact your local sales representative for information on network requirements.
- Handle the device with care. Do not apply shock or drop the device. Failure to adhere may cause the device to malfunction.
- This device is designed to be used indoors.
- Do not directly disconnect device from the power when running. Power down by pressing the power button on the front of the device.
- Do not use the device in hot or humid environments for an extended period of time. Failure to adhere causes component degradation and shortened life span of the device.
- Do not expose the device to a direct heat source.
- Ensure that all data is wiped from the device before disposal.

Legal Notes

Legal aspects of video and sound recording:

You must comply with all data protection regulations for video and sound monitoring when using MOBOTIX AG products. Depending on national laws and the installation location of the MOBOTIX Cloud, the recording of video and sound data may be subject to special documentation or it may be prohibited. All users of MOBOTIX products are therefore required to familiarize themselves with all applicable regulations and to comply with these laws. MOBOTIX AG is not liable for any illegal use of its products.

Declaration of Conformity

The products of MOBOTIX AG are certified according to the applicable regulations of the EC and other countries. You can find the declarations of conformity for the products of MOBOTIX under **www.mobotix.com > Support > Download Center > Marketing & Documentation > Certificates & Declarations of Conformity**.

Disclaimer

MOBOTIX AG does not assume any responsibility for damages, which are the result of improper use or failure to comply to the manuals or the applicable rules and regulations. Our General Terms and Conditions apply. You can download the current version of the General Terms and Conditions from our website www.mobotix.com by clicking on the **General Terms and ConditionsGeneral Terms and Conditions** link at the bottom of every page.

RoHS Declaration

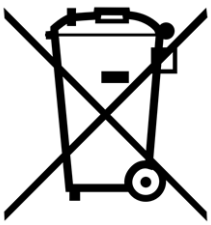
The products of MOBOTIX AG are in full compliance with European Unions Restrictions of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive 2011/65/EC) as far as they are subject to these regulations (for the RoHS Declaration of MOBOTIX, please see **www.mobotix.com > Support > Download Center > Marketing & Documentation > Certificates & Declarations of Conformity**).

Disposal

Electrical and electronic products contain many valuable materials. For this reason, we recommend that you dispose of MOBOTIX products at the end of their service life in accordance with all legal requirements and regulations (or deposit these products at a municipal collection center). MOBOTIX

products must not be disposed of in household waste! If the product contains a battery, please dispose of the battery separately (the corresponding product manuals contain specific directions if the product contains a battery).

Information for Users on Collection and Disposal of Old Equipment and used Batteries within the European Union



These symbols on the product's packaging or accompanying documents indicate that used electrical and electronic products and batteries should not be disposed together with household waste. For more information about collection and recycling of old products and batteries, please contact your dealer, point of sale or local municipality. In accordance with national legislation, penalties may be applicable for incorrect disposal of this waste.

Information for Disposal in Countries Outside the European Union

When discarding these items please contact your dealer or local authorities for further information regarding the correct method of disposal.

1

Delivered Parts, Connectors, and Dimensions

This section contains the following information:

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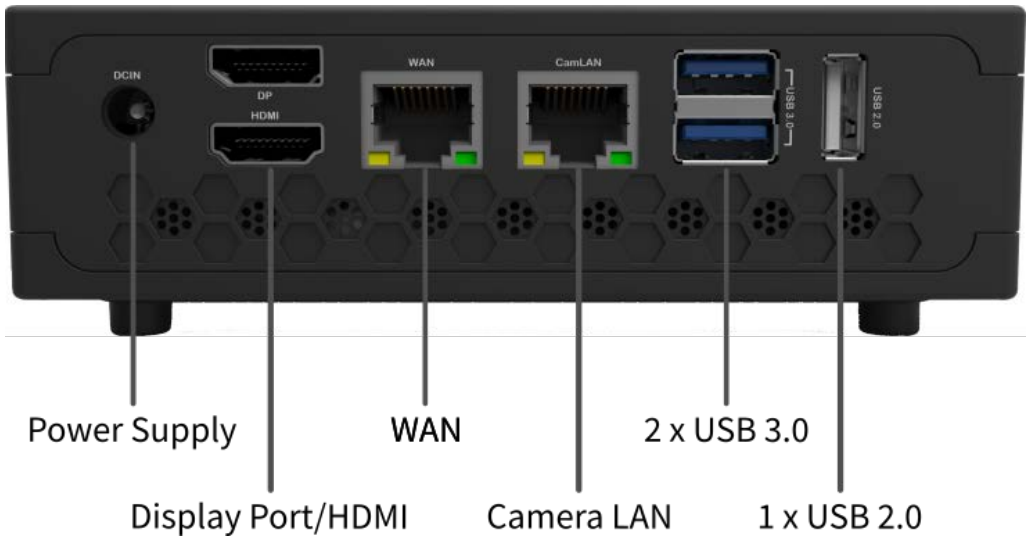
MOBOTIX Cloud Bridge – Scope of Delivery

Scope of Delivery MOBOTIX Cloud Bridge

Item	Count	Description
1.1	1	MOBOTIX Cloud Bridge
1.2	1	Wall mount
1.3	1	Power cord
1.4	3	External power supply
1.5	1	Important Safety Instructions
1.6	1	MOBOTIX Cloud Attach ID

MOBOTIX Cloud Bridge – Connectors (Front)

MOBOTIX Cloud Bridge – Connectors (Rear)



MOBOTIX Cloud Bridge – Dimensions

2

Installation and Setup

This section contains the following information:

Overview **14**

Additional Bridge and Camera Settings **21**

Overview

This is a quick overview of the physical and networks installation for a MOBOTIX Cloud installation.

CAUTION!
Operate the MOBOTIX Cloud Bridge only on a stable, level, vibration-free and well-ventilated surface.

Keep the it away from moisture, dust, heat and direct sunlight.

To ensure sufficient cooling and ventilation, leave a space of at least 15 cm to the sides and at least 30 cm to the top. Place the power supply unit at a sufficient distance from the MOBOTIX Cloud Bridge.

Internet Connection

Install the Internet connection to the facility. Obtain as much bandwidth as you can at a reasonable cost. Higher bandwidth provides faster response for the user. If using a 1MP HD camera, we recommend about 500 kbps upload speed per camera. Consumer-grade bandwidth is acceptable. You do not need "business grade".

DHCP Enabled

It is best to make sure the router supplied by your Internet provider has DHCP-enabled. The MOBOTIX Cloud Bridge and most cameras will use DHCP IP addresses by default. If you need to implement static IP addresses on either the MOBOTIX Cloud Bridge or the cameras, please read the section Additional Bridge and Camera Settings, p. 21.

MOBOTIX Cloud Bridge Connection

Connect the MOBOTIX Cloud Bridge to the Internet. Use the WAN Ethernet port on the bridge and connect to your router or modem. This can be done either through a switch or directly. DO NOT CONNECT THE MOBOTIX Cloud Bridge CamLAN PORT TO YOUR REGULAR NETWORK -- IT IS FOR CAMERAS ONLY! Accidental connection of the MOBOTIX Cloud Bridge to an existing network will serve addresses to any devices that are set to DHCP client. The CamLAN port does not allow Internet connection whatsoever. It is a private network designed just for cameras in order to isolate them from the wide area network (WAN).

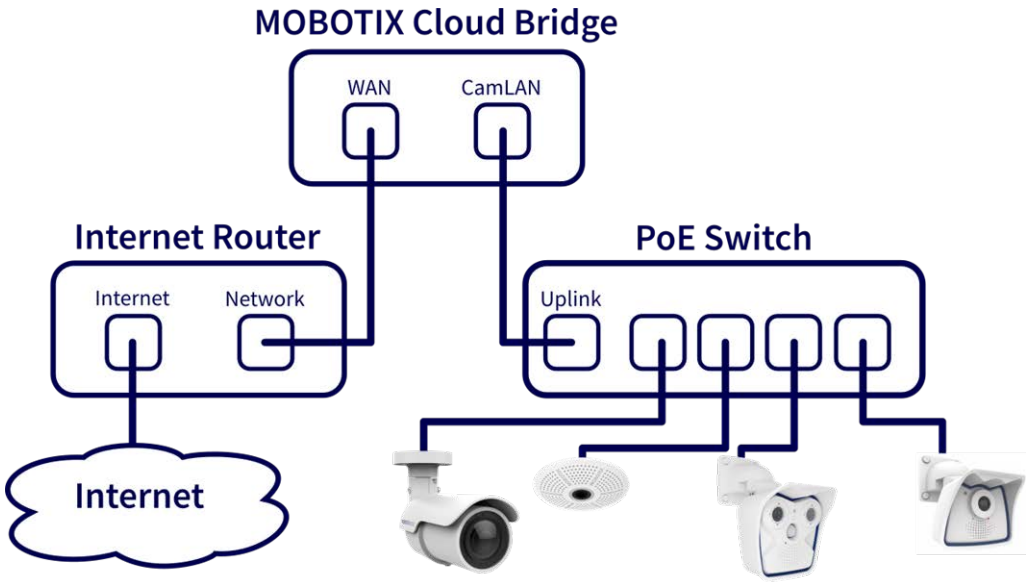


Fig. 1: Standard connection with PoE switch attached to CamLAN port

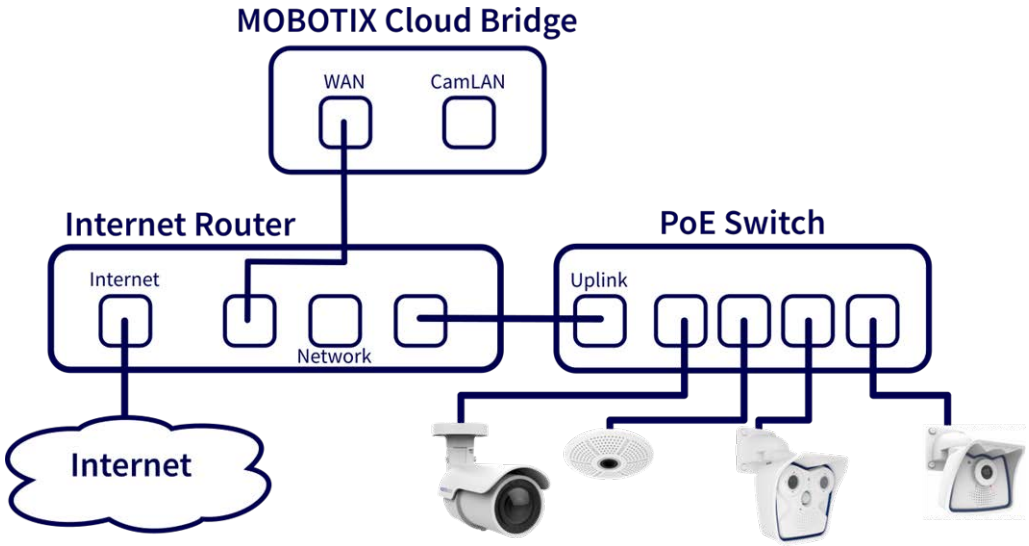


Fig. 2: Alternative connection with PoE switch attached to Internet router (CamLAN port is not used)

CAUTION!
Do not connect the WAN port **and** the CamLAN port of the bridge to the Internet router!

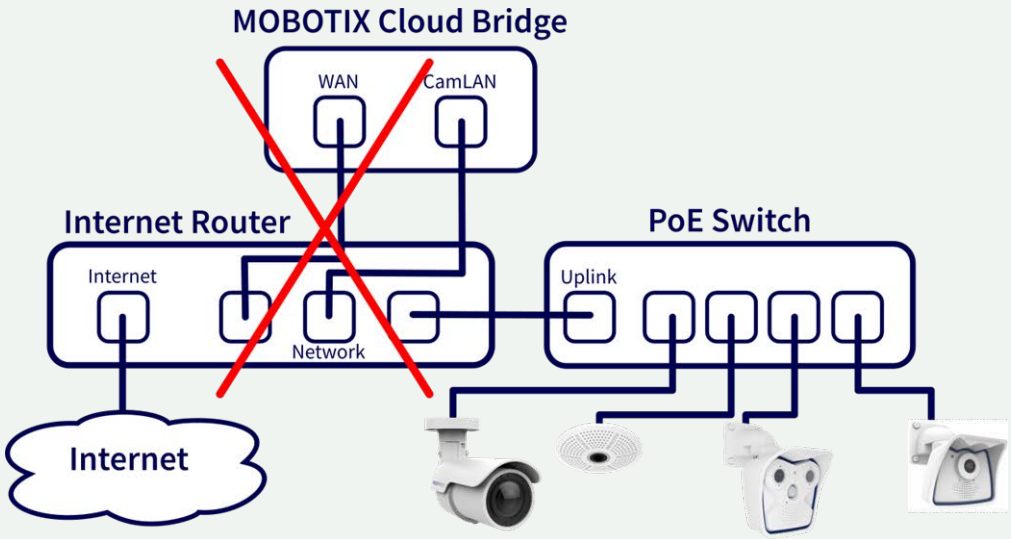


Fig. 3: Faulty connection of WAN and CamLAN ports to Internet router

PoE Switch

Connect an Ethernet PoE switch to the CamLAN port of the MOBOTIX Cloud Bridge. The MOBOTIX Cloud Bridge CamLAN port provides DHCP addresses for the cameras and is non-routable to the WAN. Alternatively, cameras may be connected to the same switch as the WAN port of the bridge. If you are using managed switches, be sure to enable Multicast.

Log Into your MOBOTIX Cloud Reseller Account and Create a Customer Account

Login into your MOBOTIX Cloud account at www.mobotixcloud.com/login.html. If your company does not have an account, please contact MOBOTIX support (support@mobotix.com). After logging in, you will see your Reseller Dashboard, and you can create a sub-account by clicking the **Add Sub-Account** button. After the account has been created, select the **Eye** icon next to the customer name to jump into the sub-account.

Attach the Bridge to a Customer Account

Attach the MOBOTIX Cloud Bridge to the customer account by pressing the **Add Bridge** button on the dash-board page. Enter the **Attach ID** of the bridge you are installing. A bridge can only be attached to one account at a time. If you have already added the bridge to another account (for testing or evaluation) you need to delete it from the previous account before you can add it to another account.

Bridges cannot be re-used between customers. They need to be returned to MOBOTIX so that the data can be erased and the hardware re-certified. A new bridge is required for each new customer location.

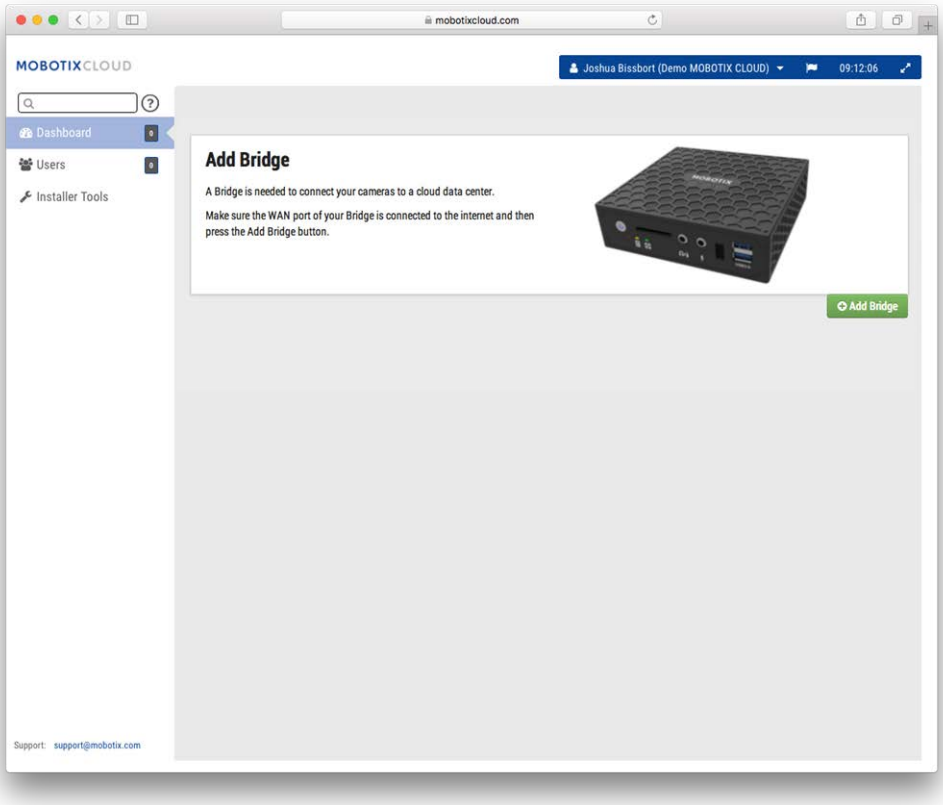


Fig. 4: Adding a bridge to MOBOTIX Cloud

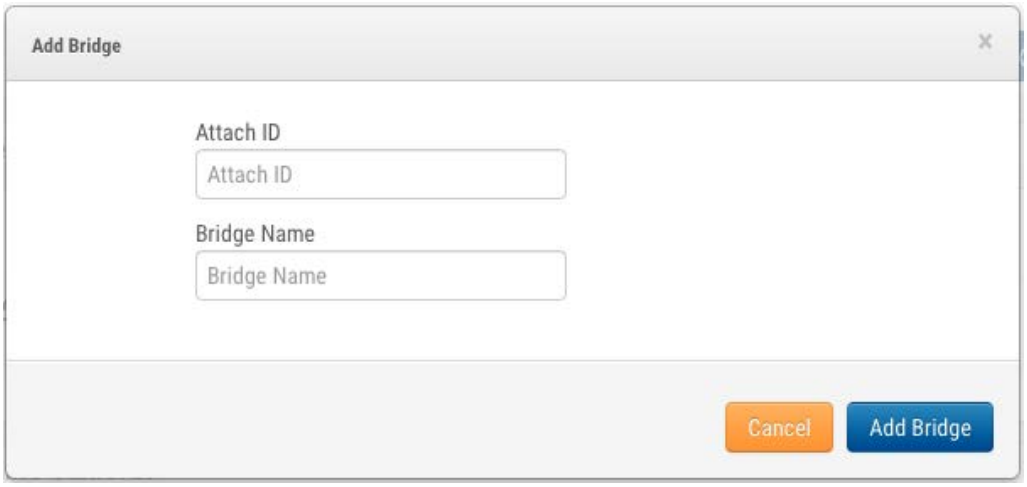


Fig. 5: Attaching a bridge to MOBOTIX Cloud by entering the Attach ID

Physically Install Cameras

Physically install the cameras; connect them to the PoE switch and power them up.

Prepare the Cameras

NOTE!

Preparing MOBOTIX **IoT** cameras for MOBOTIX Cloud is a lot easier using the free-of-charge **MxManagementCenter**. Start MxManagementCenter, and in the **Welcome** wizard, select **Add and start Pre-Configuration Mode**.

MxManagementCenter will help you accomplish these tasks:

- Update the camera firmware.
- Secure the camera system:
  - Set a secure password for the web interface and ONVIF access (use the **same user name and password for both**, the web interface and ONVIF access!).
  - Activate HTTPS for connections.
  - Disable public access.
- Configure basic settings:
  - Ethernet settings (DHCP/static IP address).
  - Basic image and exposure settings.
  - Apply proper settings for time and date.

To download MOBOTIX MxManagementCenter, open **www.mobotix.com > Support > Download Center > Software Downloads** or scan the QR code.

Add Cameras

The MOBOTIX Cloud Bridge will continually scan for cameras on the network. After about five minutes, a properly connected camera will appear on the **Customer Dashboard** as an **Available Camera**. Press the **Plus** sign to attach the cameras and start recording.

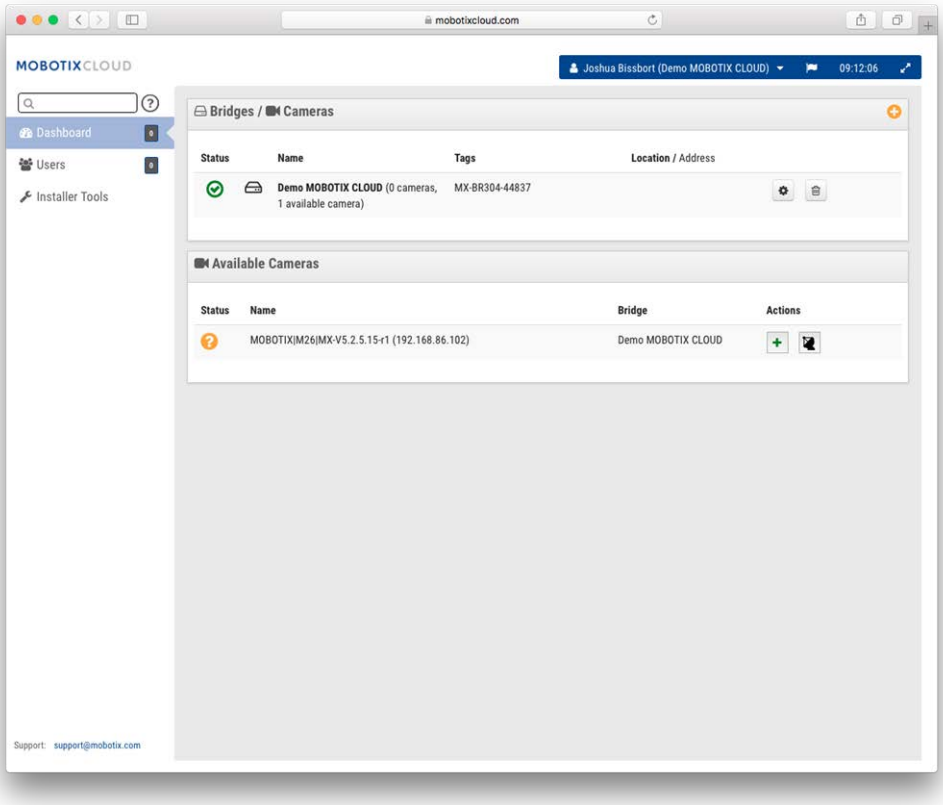


Fig. 6: Adding cameras to MOBOTIX Cloud

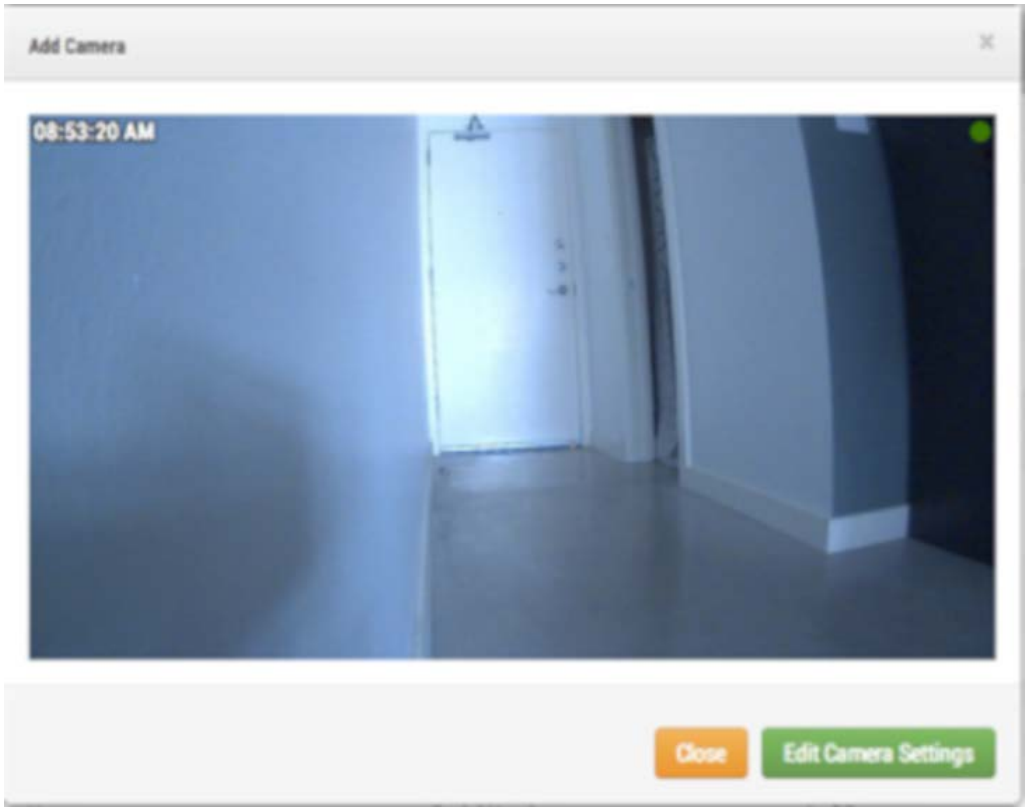


Fig. 7: New camera field of view

If no cameras appear after five minutes, cycle the power on the cameras. Some camera manufacturers only reply to ONVIF commands when the camera is first started. If the bridge is started after the camera, it may never be discovered without restarting the camera. To further troubleshoot, connect a laptop to the network with the cameras and scan to see if the cameras appear on the network.

NOTE! Some camera manufacturers will default to a static IP address and not DHCP. Verify this based on your camera manufacturer manuals and by testing on the network with the cameras.

Configure Camera Settings

Select the **Gear** icon next to the cameras on the **Customer Dashboard** to adjust the camera settings. If using a layout or camera view to see preview images, click the down arrow in the top right of the camera's preview to open the **Actions** menu (see Fig. 9: Camera Action menu). Select the appropriate recording and resolution settings. You may have to enter the ONVIF username and password for MOVE or ONVIF cameras (see optional settings below in Fig. 8: Camera settings).

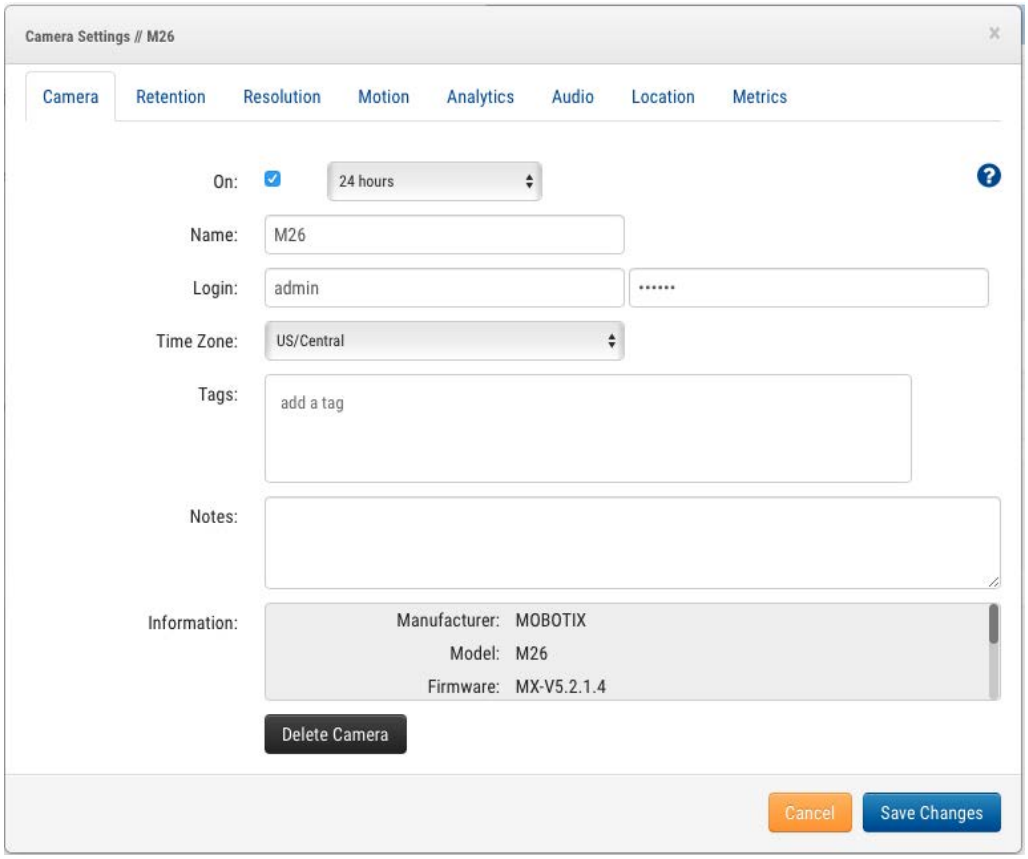


Fig. 8: Camera settings

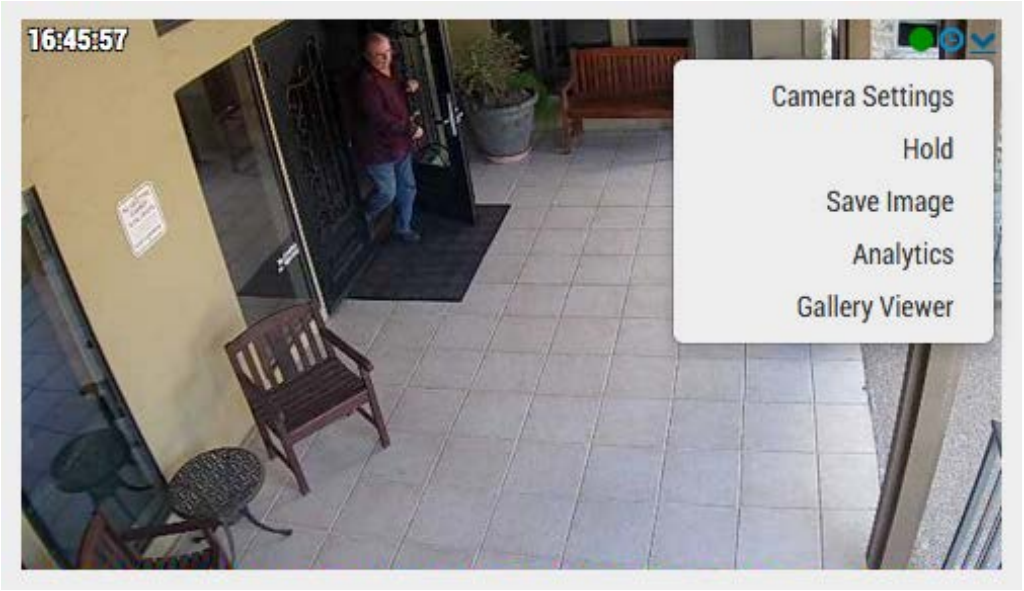


Fig. 9: Camera Action menu

Additional Bridge and Camera Settings

The settings mentioned above work for most situations. However, there are times when additional settings need to be made.

Camera Web Passwords

It is strongly recommended that you change the default passwords on your cameras using their web interface.

NOTE! When changing user names/passwords of cameras, always use the **same user name and password** for both, the **web interface** and **ONVIF access**!

Update the MOBOTIX Cloud camera settings with the correct password when you change the web password.

Camera ONVIF Passwords

MOBOTIX cameras (and other cameras too) have separate accounts for ONVIF and the web interface. A new ONVIF user must be created in the camera's web interface. The ONVIF username and password will need to be updated in camera settings.

Bridge Static IP Address

To configure the MOBOTIX Cloud Bridge with a static IP address, you will need to connect a monitor and keyboard to the bridge. You can login to the admin interface with user **admin** and the password is the last five digits of the Bridge's serial number. In the admin interface, choose **Configure Network**, then **WAN** and fill in all of the fields to set the static IP address.

Camera Static IP Addresses

You can configure the cameras with static IP addresses. There are no changes needed in the MOBOTIX Cloud VMS. Simply make sure the IP addresses you use do not conflict with each other or other devices on the network. Note that you must set the static address for the cameras using the camera web interface. If using the CamLAN, addresses `10.143.0.2 – 99` are available to use as static addresses. The MOBOTIX Cloud Bridge begins serving DHCP addresses at `10.143.0.100`.

Cameras on Bridge WAN Port

The MOBOTIX Cloud Bridge will scan the WAN and CamLAN ports for cameras. Cameras found on either network port will appear as **Available Cameras**. The MOBOTIX Cloud Bridge uses multicast to discover ONVIF cameras and multicast should be enabled on any connected switches.

3

Configuration

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Introduction

The MOBOTIX Cloud Bridge

The MOBOTIX Cloud Bridge is a critical component to making the MOBOTIX Cloud VMS operate. It is the connection between the cameras and other input devices and the MOBOTIX Cloud data center. Without the bridge, no data can get to the cloud, and no data or video can be seen by the user. The functions performed by the bridge are many. We will not go into the details here, however, it is important to understand that the bridge receives all the video (and audio) from the cameras. It also configures and controls IP cameras via the camera's ONVIF interface.

The Hardware

The bridge includes storage, which is intended as a buffer for when the Internet goes down or when bandwidth is not available for other reasons. All video is accessed via the MOBOTIX Cloud VMS to provide for a consistent user interface and better user experience. The user operates the system the same regardless of where the video has been stored. The user experience is the same, so long as minimum upload bandwidth is available. For a bridge, we recommend a minimum of 2 Mbps upload above the preview transmit.

Some models of the bridge have a video output connector and support **Local Display**. The current live video can be displayed on a monitor attached to the bridge via this video connector. This is useful in many situations where a manager wants a continuous live view, or an overhead display is desired to show that surveillance is in use. Local Display, like all items in the MOBOTIX Cloud VMS, is managed and configured from the cloud.

Bridge Failure

The bridge is hardware that is located on the customer's premise. It is a basic computer similar to a PC or the insides of an NVR or DVR and is therefore susceptible to hardware failure. The MOBOTIX Cloud data center is a fully redundant and distributed system, so it is insulated from single hardware failures. The bridge however, can fail. These failures can be due to power supply failure, someone pulling the power plug, hard disk failure, or general electronics failure. When the bridge fails, video recording will typically stop. In the case of the bridge, video that has not been transmitted to the MOBOTIX Cloud data center yet may be lost. The bridge will need to be replaced. Because all the configuration information for the bridge is stored in the cloud, the replacement of

the bridge is quick and painless. The MOBOTIX Cloud data center will push all the configuration information for the bridge and all the cameras to the new device. The only work needed by the technician or the customer is to physically replace the bridge.

Bridge Security and Maintenance

The bridge only communicates with the MOBOTIX Cloud data center. They do not require any inbound open ports or firewall inbound openings.

The MOBOTIX Cloud bridges are remotely managed and maintained by MOBOTIX. No software updates, no firmware patches, no security updates are needed by reseller or customer. This type of maintenance is done automatically by the MOBOTIX Cloud VMS and makes for a more secure and more reliable environment.

Cameras for the MOBOTIX Cloud

The MOBOTIX Cloud VMS uses the ONVIF standard to communicate with digital IP cameras. Unfortunately, this does not mean that the system works with all cameras that claim to be ONVIF-compliant. It turns out that ONVIF is only a small part of the complexity of communicating with digital IP cameras. The list of supported cameras is located on the MOBOTIX website in the **Support** section.

If purchasing new cameras, we recommend purchasing a camera that is on the list on our website. If you have existing digital IP cameras that claim to be ONVIF-compliant, we can often make them work. Please contact the MOBOTIX Support for some guidance and timelines.

The MOBOTIX Cloud VMS can also support cameras that are manually configured and output RTSP streams. This is an advanced feature, so please contact our support team for details on how to configure this for your specific situation.

Using More Than One VMS

Some MOBOTIX Cloud VMS customers have attempted to utilize the multi-stream capabilities of cameras to feed two different video management systems. We strongly advise against this. There is too much complexity and crossover in the communications with the cameras to do this reliably. A camera should only communicate with the MOBOTIX Cloud VMS.

Camera Quality and Camera Failures

Today’s digital IP cameras are very complex. They contain a tremendous amount of software and hardware. The software almost always has security issues and serious bugs. It is common for these cameras to crash and hang. The MOBOTIX Cloud VMS will automatically do everything it can to reset and restart cameras that crash or fail like this. However, cheaper cameras tend to crash and fail more often because the testing processes applied to them by the manufacturer are less stringent. If you

want a reliable system, we recommend choosing MOBOTIX cameras.

The Web User Interface

The web user interface for MOBOTIX Cloud VMS is available at the following URL: www.mobotixcloud.com/login.html

If you do not have an account that has been setup by a reseller, you should create a new account. Follow the instructions and verify your email address to create the new account. Once you have your account, you can add bridges and cameras.

Bridges and cameras must be added to your account before you can record video using the MOBOTIX Cloud VMS. Layouts are used to display the cameras, and to group them according to the needs of the user.

Bridges

When a bridge is first used, it must be connected to your MOBOTIX Cloud account before you can record video, add cameras, or perform any other functions.

Adding a Bridge

From the Dashboard, click the **Add bridge** button in the lower right corner to add the bridge to your account. You will need the **Attach ID**, which is packaged with the bridge.

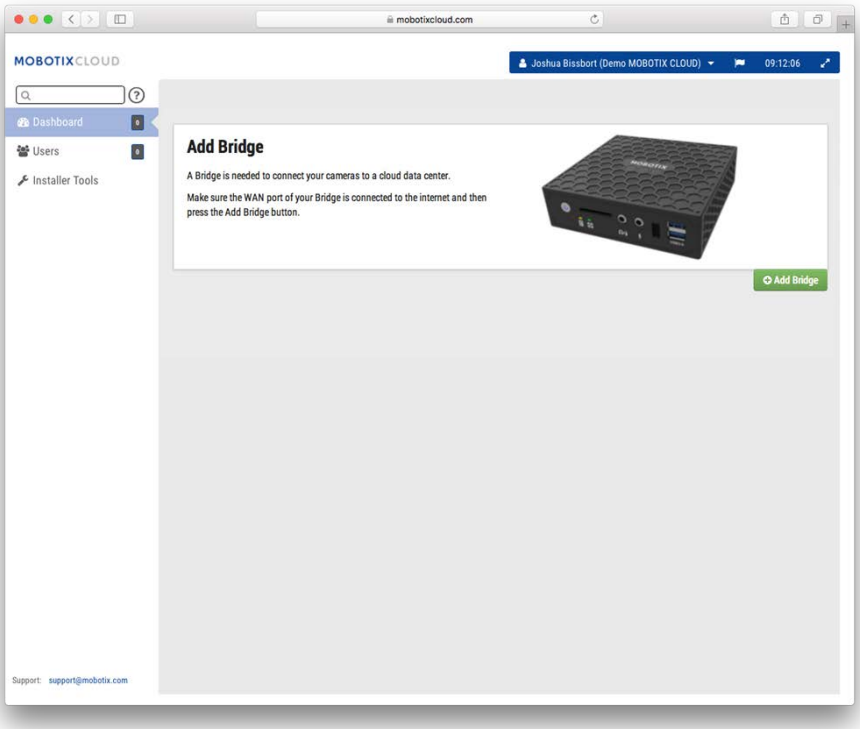


Fig. 10: Adding a bridge to MOBOTIX Cloud

Attaching a Bridge

You will be asked for the **Attach ID** and a name for the bridge. The attach ID can be typed with or without the dashes; the bridge name is for your convenience. We recommend using a bridge name that describes its location. Once the bridge is added and attached to your account, you will be able to add cameras and start the recording process.

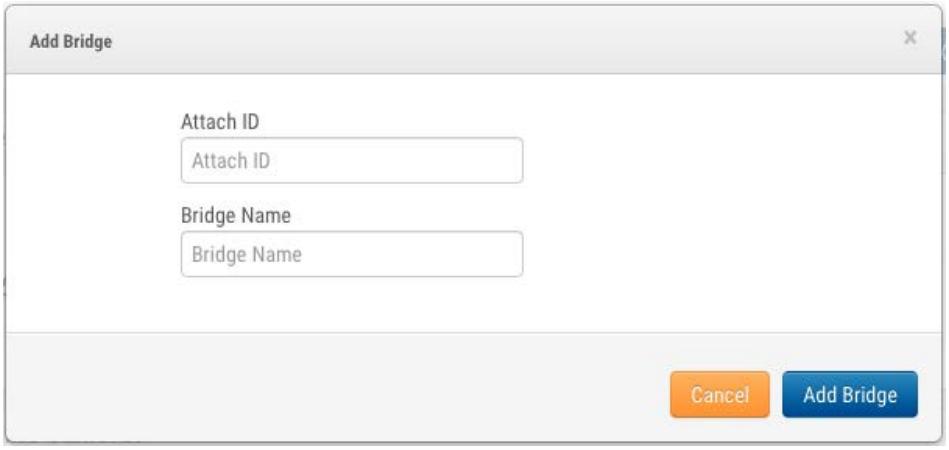


Fig. 11: Attaching a bridge to MOBOTIX Cloud by entering the Attach ID

Cameras

Once a bridge has been attached to an account, it will begin to scan the network for compatible cameras. It will scan on both the WAN and CamLAN sides of the network. We recommend only connecting cameras to the CamLAN side.

Adding Cameras

When cameras are found, they will appear in the **Available Cameras** section. See Fig. 12: Adding cameras to MOBOTIX Cloud below.

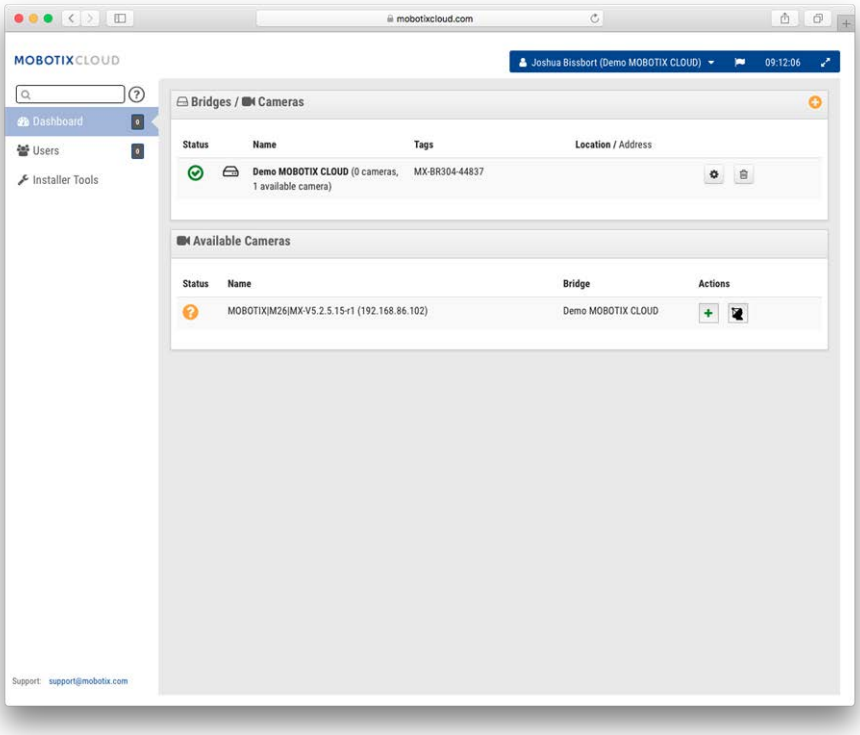


Fig. 12: Adding cameras to MOBOTIX Cloud

Allow up to five minutes for new camera discovery. Some cameras, such as Samsung, will only make an ONVIF announcement upon their startup. If the bridge is started *after* such a camera, it will need to be power-cycled to be discovered.

You can add an available camera by clicking on the **Plus** button to the right of the camera's name. When adding a new camera, the camera will be configured, and a preview image of the camera will appear. Sometimes, the camera may take up to one minute or longer for the preview image to appear because some cameras are very slow to configure and setup. You can now edit the camera settings or close this dialog box.

The preview image appears so that you can aim the camera. We recommend that you edit the settings of the camera and enter a descriptive name.

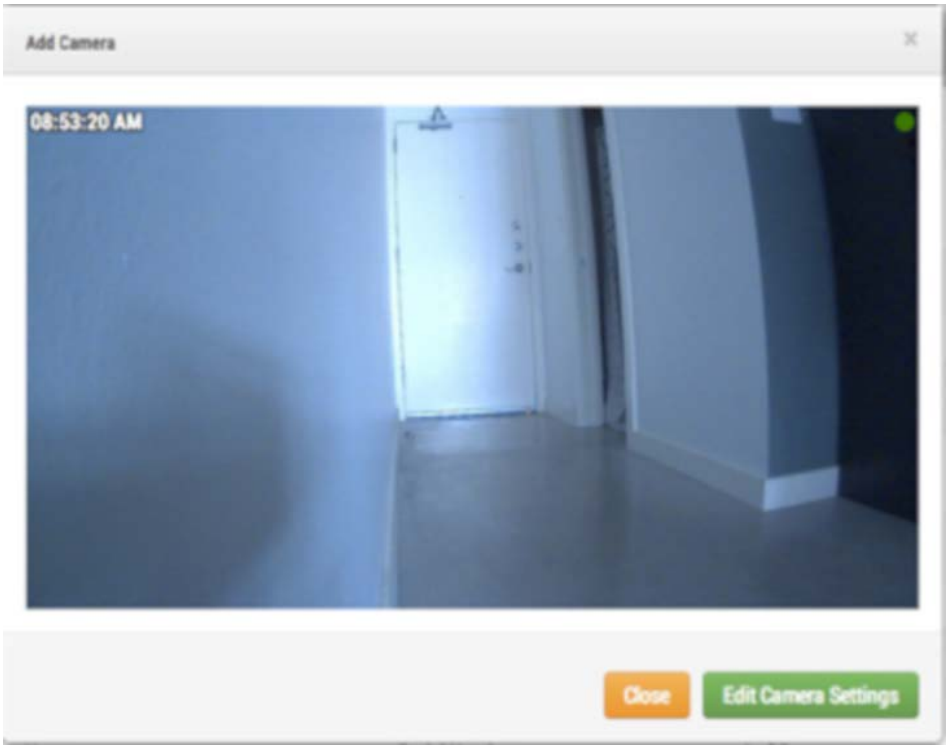


Fig. 13: New camera preview image

Layouts

A layout is a configurable screen that allows you to customize the display size and positions of cameras preview video. Layouts remain the same across the web interface and the mobile devices. You can control, which layouts users get access to.

Creating a Layout

Choose **Layouts** from the navigation menu on the left. You can create your first layout by clicking the **Create a Layout** button in the bottom right corner.

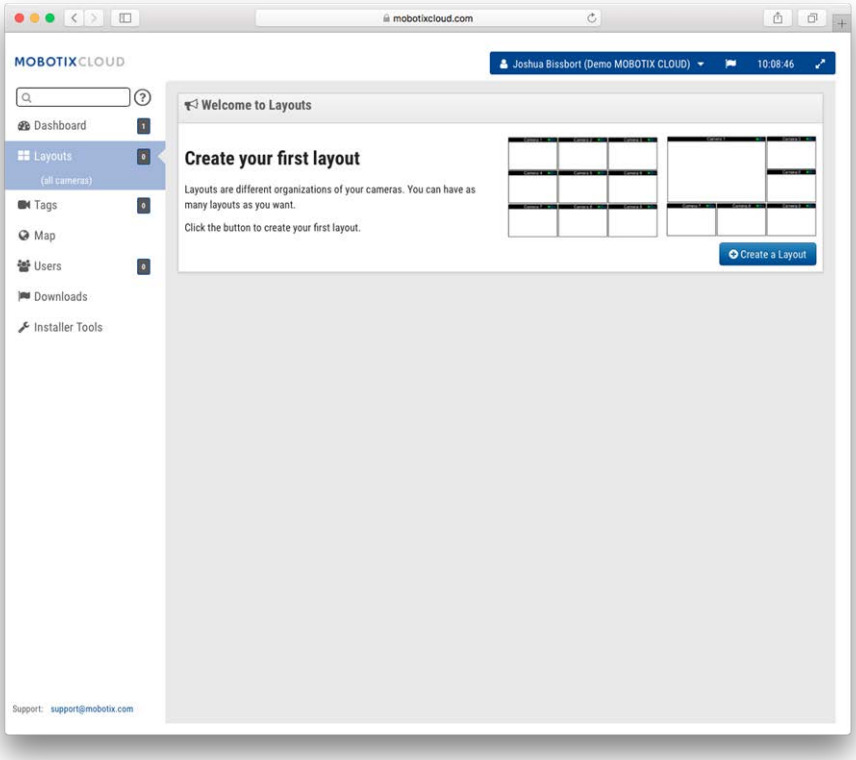


Fig. 14: Creating a layout

Adding Cameras to a Layout

When creating a layout (after the first one has been created), select **Layouts** on the main menu on the left. Click the name of the current layout as shown in Layouts menu, p. 31 in order to see the drop-down menu for layouts.

Fig. 15: Layouts menu

Select **New Layout** from the menu and a new layout will appear under **Layouts**. You will automatically be prompted to **Add Cameras** as shown in Fig. 16: Adding cameras to a layout.

To add cameras to an existing layout, click on the layout, and then from the **Layouts** menu, select the **Add Cameras** button. A new dialog allows selecting from the available cameras. Use the **Filter** box to enter filter criteria (name and tags) and the results will be displayed accordingly.

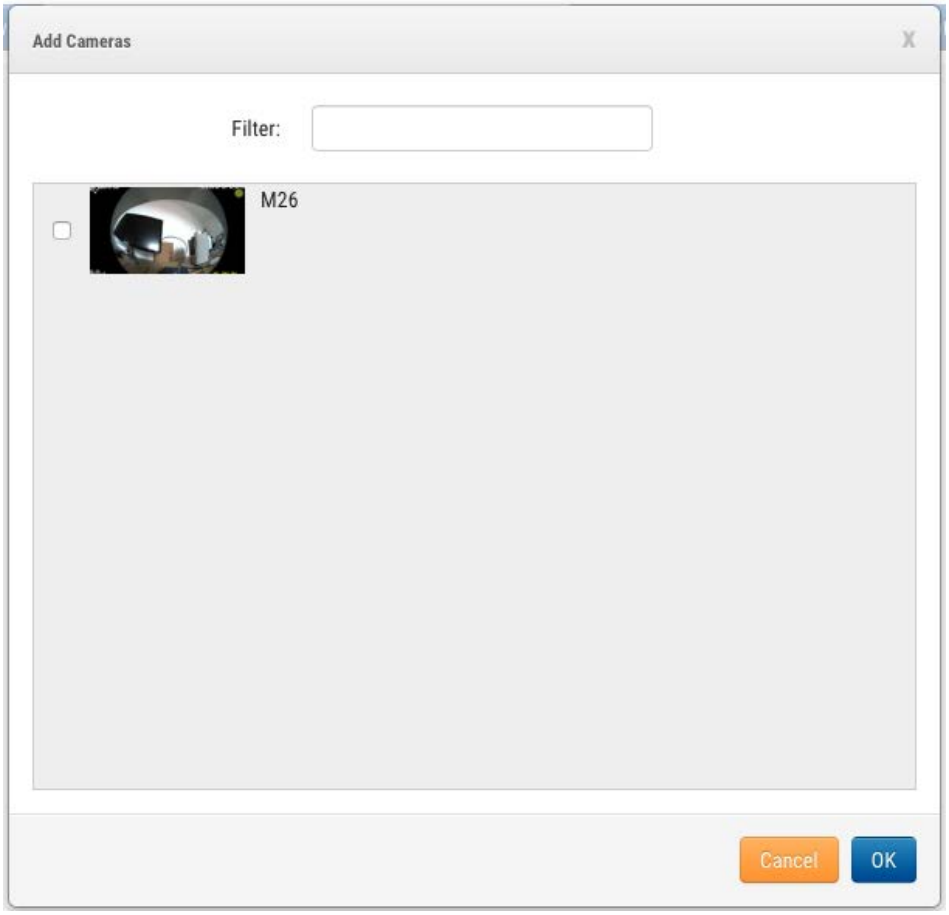


Fig. 16: Adding cameras to a layout

Editing Layout Settings

From the **Layouts** menu, select **Settings**. You can rename the layout, choose aspect ratios for the cameras, along with the maximum number of cameras per row and the option to show the camera name above each preview window.

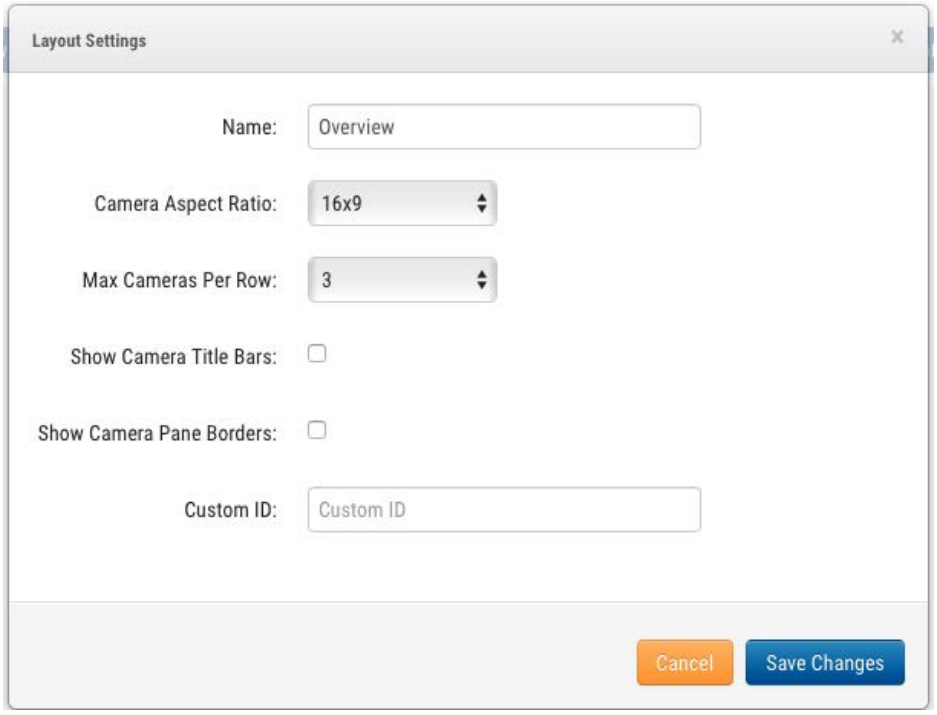


Fig. 17: Layout settings

Deleting Layouts

You may delete a layout by selecting the **Delete Layout** option from the **Layouts** menu. You will be prompted to confirm this before the layout is deleted.

Camera Settings

Configuring Cameras

You can configure common settings across all added cameras. Such settings include retention, resolution, bandwidth, bit rate, motion settings and alerts. Specific options will change based on the camera.

Camera

ON: If this checkbox is checked, the camera will be on and record during the specified hours. If the checkbox is not checked, the camera will be off all the time and will not record anything.

24 Hours/Work Hours/Non-Work Hours/Custom Hours: If the **ON** checkbox is checked, the camera will only operate and record during the selected hours:

- **24 Hours**: The camera will operate and record all the time.
- **Work Hours**: The camera will only operate during work hours. The work hours can be changed in the **Account Settings**.
- **Non-Work Hours**: The camera will only operate outside of work hours. The work hours can be changed in the **Account Settings**.
- **Custom Hours**: You can define a special schedule in which the camera shall operate.

Name: You can give the camera any name you would like. This name will be shown in the **Dashboard**, **Alerts**, and the **Layout** displays. We recommend using descriptive names.

Login: The username and password used to access the camera. For MOBOTIX MOVE cameras, this is the username and password for ONVIF access.
If you have stored the username and password in **Account > Camera Settings** (this list of passwords), you will not need to enter the passwords again here. This is useful if you have many cameras and you are using the same password on all of them.

> **NOTE!** When changing user names/passwords of cameras, always use the **same user name and password** for both, the **web interface** and **ONVIF access**!

Time Zone: Set this to the time zone where the camera is located.

Tags: Tags are used to group cameras. You can have as many tags as you want. Cameras with the same tag will appear under the **Cameras** display.

Notes: This is an area for the installer or owner to store information about this camera. Recommended, if the configuration of the camera is complex. You can enter anything of interest in this field.

Information: Displays the make, model, firmware, and other information about the camera. Key item displayed is the *local IP address* that can be useful during the installation process.

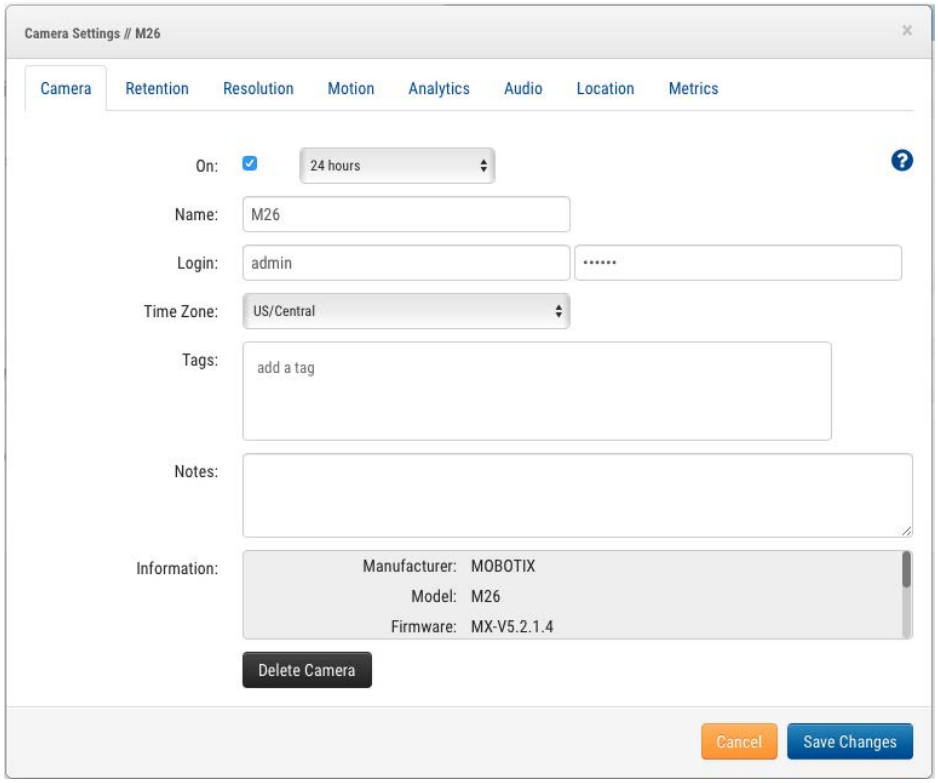


Fig. 18: Camera settings

Retention

Cloud Retention: Sets the number of days that recorded video will be kept in the cloud. Note that changing this value may affect billing.

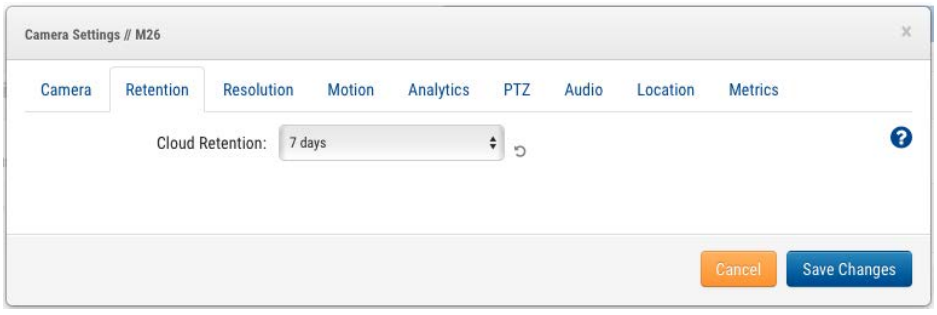


Fig. 19: Camera Retention Settings

Resolution

The MOBOTIX Cloud VMS utilizes two streams of video. The first is **Preview Video** and the second is **Full Video**. Normally, preview video is recorded continuously, and full video is recorded only on motion (events).

Preview Video

Resolution: Sets the resolution of the preview video that will be recorded. We recommend CIF resolution.

NOTE! The resolution set here will override the settings in the camera's browser-based user interface. This is intended behavior!

Quality: Controls the amount of compression on the preview video. **Low Quality** will use the least bandwidth.

Update Rate: Sets the frames per second for the preview video. We recommend 1 frame per second.

Transmit Mode: Controls when the preview video is sent to the cloud data center:

- **Always**: The preview video is immediately sent to the cloud (recommended setting).
- **Event**: The preview video is sent to the cloud when motion or other events occur.
- **Background**: The preview video is only sent when bandwidth is available on the schedule for the bridge.
- **On Demand**: The preview video is only sent to the cloud when someone is watching it.

Max Bandwidth: Set the maximum bandwidth for the bridge to use when sending the preview video to the cloud. The bridge will not exceed this bandwidth for transmission. A low value will cause the previews to appear slowly when viewing them in a layout.

NOTE! You should not set the total of your preview video maximum bandwidths to more than 50 % of your total available bandwidth.

Full Video Recording

Resolution: Resolution that will be used for H.264 recording with full frame rate.

Quality: Controls the compression rate on the H.264 recording. Recommend values are **Low** or **Medium**.

Bit Rate: Controls the compression rate of the video recording. The setting depends greatly on the camera. We recommend leaving this at its default value.

Transmit Mode: Controls when the full video is sent to the cloud data center:

- **Always**: The video is immediately sent to the cloud. This mode requires the largest upload bandwidth (using this setting is not recommended).

- **Event**: The video is sent to the cloud when motion or other events occur. Sufficient bandwidth must be available to use this mode.
- **Background**: The video is only sent when bandwidth is available on the schedule for the bridge (recommended setting).
- **On Demand**: The video is only sent to the cloud when someone is watching it or requesting it.

Record When: Specifies when full video is to be recorded. Normally, the bridge only records video if it detects motion, but you can also select to do full recording all the time. Keep in mind that the preview video is always recorded.

- **Always**: Requires at least double the amount of upload bandwidth.
- **EVENT**: This setting makes the most efficient use of bandwidth and also helps to quicker find interesting video clips (recommended setting).

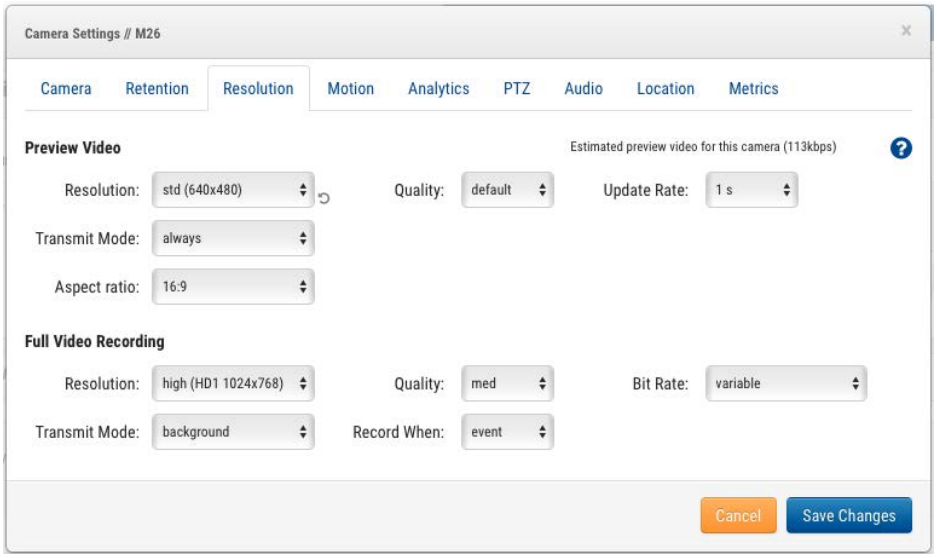


Fig. 20: Camera resolution settings

Motion Detection

The MOBOTIX Cloud VMS includes an integrated motion detection system. This system can be adjusted in many ways and can have as many different regions as you need.

Master Motion Sensitivity: This is the default level of motion sensitivity that is applied to the entire image. If you have created a region on the image, the region's motion sensitivity can override the **Master Motion Sensitivity** for that region.

Master Motion Object Size: The motion detection system looks for objects moving through the image. The size selection can be *small*, *medium*, or *large*. Large objects will be approximately 10 % of the full image size. Small objects will take up about 1 % of the full image.

NOTE! You can see the results of changes to these settings by clicking on **Apply**. The red motion boxes that appear do not reflect object size. To see if the object size is triggering recording, look for the green circle that indicates **Recording** in the upper right corner of the video.

Regions/Alerts: You can create an unlimited number of regions and alerts. To do so, press the **New Region** button.

Name: The name of the region you are going to edit or create.

Disable Motion: Checking this box will disable all motion detection in the region. This is used to block out trees or extraneous areas from causing unnecessary recording.

Motion Override: The **Master Motion Sensitivity** and the **Master Motion Object Size** settings can be overridden for the region. The values specified for the region will be used instead of the master values for any objects that are in the region.

Alert: Check this box to activate alerts for any motion detected in the region. Alerts can have a specified period when they are active. For example, you could have motion alerts only when the office is closed or at night.

Alert When: This sets the time to trigger the alert for this region. The default is **24 hours**, but choices are **Work hours**, **Non-Work hours**, and **Custom**.

Re-arm: This is where the alert can be set to re-arm and ready to be triggered again.

- **Immediate**: The alert is re-armed immediately. This creates the highest number of alerts.
- **After x minutes**: The alert will not be re-armed for the number of minutes entered. For example, selecting **After** and `15` will cause the alert to wait 15 minutes before another alert is triggered, no matter whether motion is detected in the region or not.
- **After quiet for x minutes**: The alert will not be re-armed until there is no motion detected in the region for the number of minutes entered. For example, selecting **After quiet for** and `5` will cause the alert to re-arm only after five consecutive minutes without motion in the region. This helps to limit the number of alerts.
- **Max Per Hour**: This will limit the number of alerts to the number entered in a 60-minute period regardless of how many times motion is detected in the region. This helps to limit the number of alerts.

Alert Who: This indicates the users of the system that should receive the alert for this region.

Alert Mode: The VMS has an alert mode, which is specified in the **Account Settings**. Alerts will only be created when the corresponding alert mode is active. This is generally used for applications where you would like one set of alerts normally, but another set of alerts at a different time. For example, you might want certain alerts active during normal business days and have different alerts for holidays.

Alert Level: The level of the alert can be specified here. The you can specify that they only want to receive alerts that are **HIGH**, **LOW**, or **Both**. This allows limiting the alerts that users will receive.

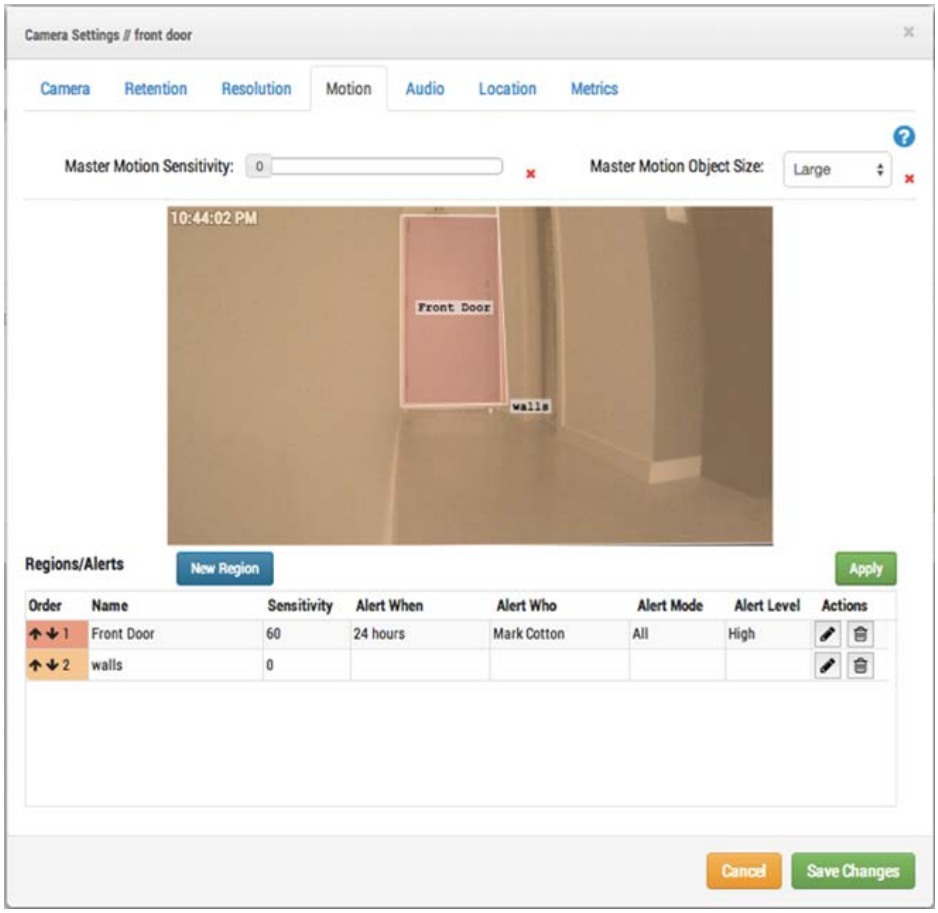


Fig. 21: Motion detection settings

Audio

Audio Enabled: Enables audio recording if the camera has audio capabilities.

Copy Audio To: Enables audio to be copied from one camera to other cameras attached to the same bridge. Select the cameras from the drop-down list and click **Save Changes**. The audio from this camera will be copied to the cameras selected during full video recording.

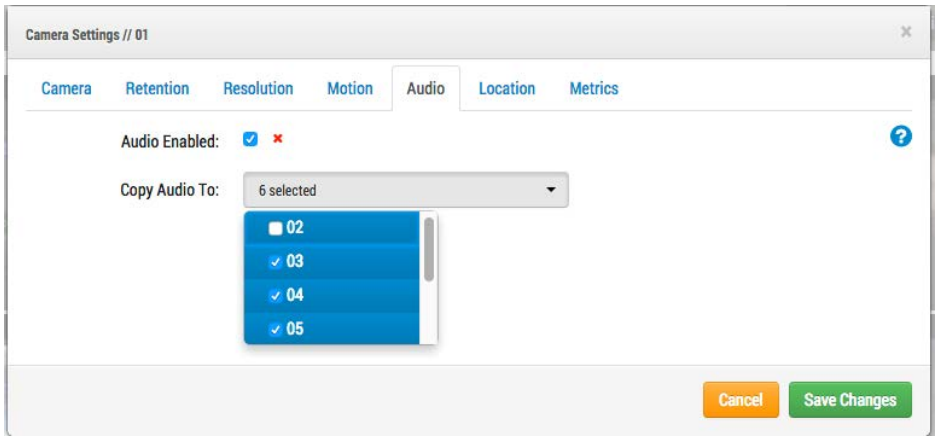


Fig. 22: Audio recording settings

Location

The address and latitude/longitude information are used when placing the camera on the map. You only need to enter this information if you are going to utilize the map. The data here can be edited graphically using the **Map** interface. It can also be entered using our mobile application if you are located at the camera.

Street Address: Address where the camera is located.

Latitude/Longitude: The coordinates of the camera.

Azimuth: The direction into which the camera is looking.

Range: The approximate distance the camera can *see*.

Floor: If in a building, the floor the camera is located on. You may change floors for the camera on a map by changing the number here.

To delete a camera from the map, delete all entered text on this tab and save the changes.

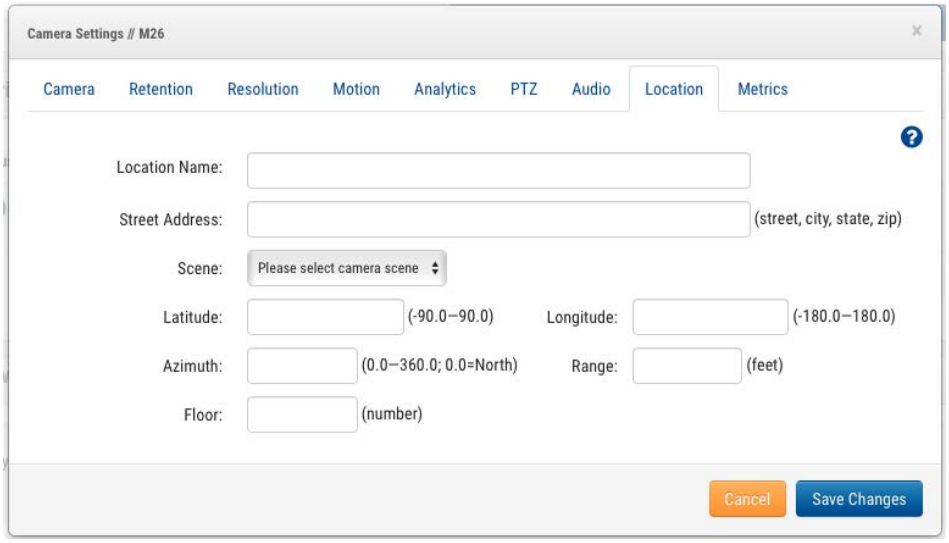


Fig. 23: Camera location information

Metrics

Bandwidth: A graph of how much data has been transmitted to the cloud data center for this camera.

Packet Loss: A graph of packet loss between the camera and the bridge. If this graph shows red, it means that your network may have problems. Check the cabling and resolve the packet loss problem between the camera and the bridge for reliable operation.

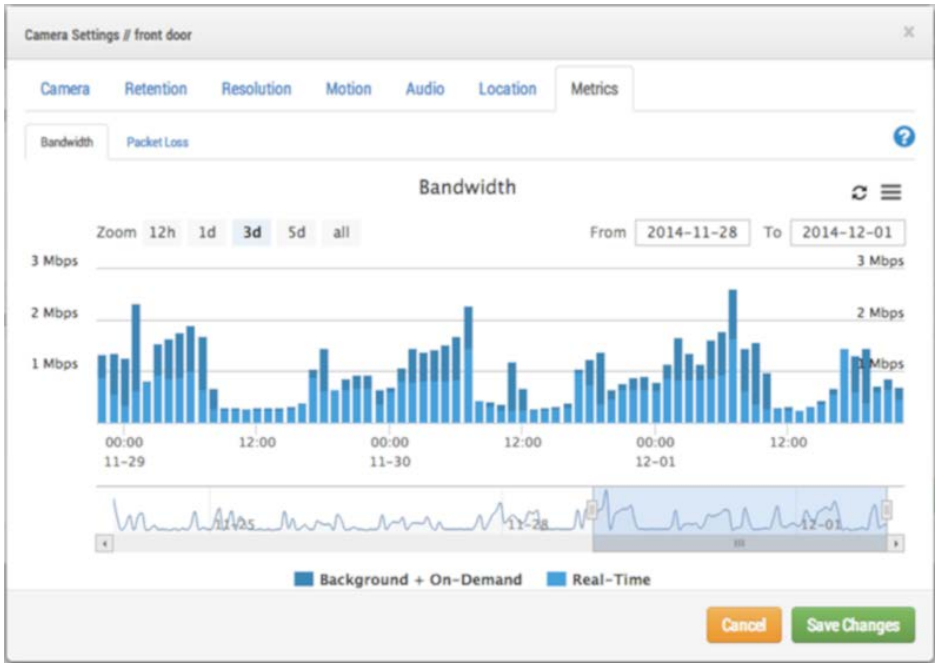


Fig. 24: Camera bandwidth utilization

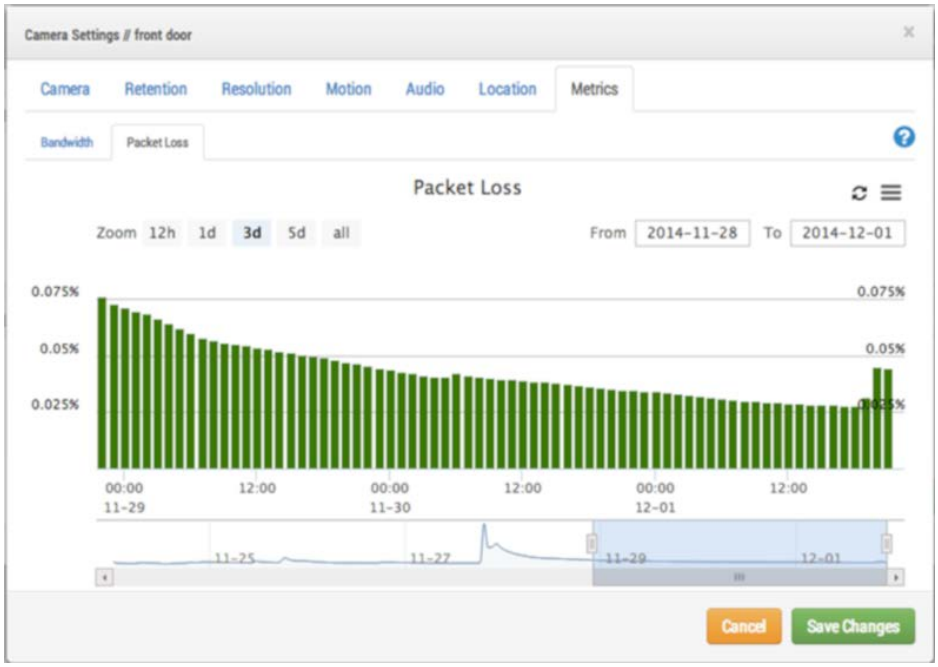


Fig. 25: Camera packet loss

Bridge Settings

Configuring the Bridge

Similar to Camera Settings, you can access the **Bridge Settings** by clicking the **Gear** icon under **Actions** for a bridge.

General Settings

Bridge

You may configure the name of the bridge, the time zone and the default bandwidth. The bridge name is a convenience feature to help identify the bridge. The time zone of the bridge is also used on all cameras connected to the bridge. The **Default Transmit Bandwidth** enables the user to decide how much bandwidth should be used to upload recorded video. The default setting is *Auto* and will use 30 % of available measured upload bandwidth. The camera transmit default setting of **Background** will use the settings here for **Default Transmit Bandwidth** and **Scheduled Transmit Bandwidth**. The latter option allows for alternative settings based on a schedule.

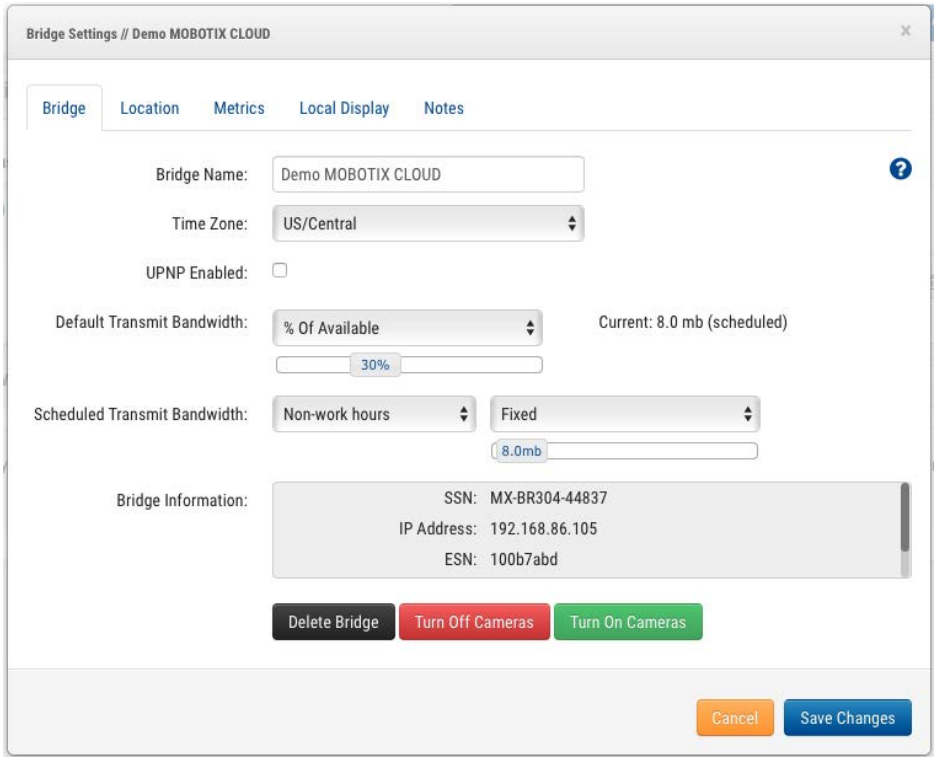


Fig. 26: Bridge settings

Location

If you provide location information, the bridge can set a location on the **Map** page to help you locate your cameras. The bridge will look up the latitude and longitude if you only provide the street address, city, state, and zip code.

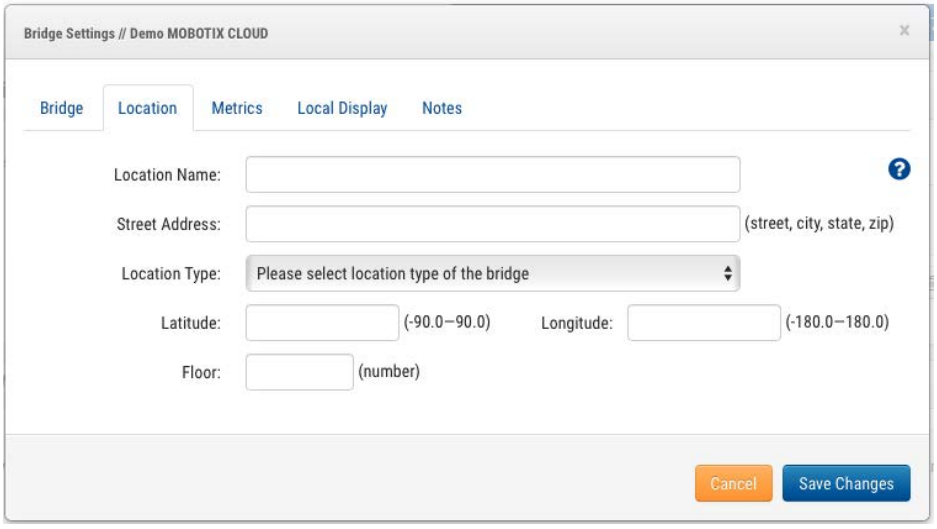


Fig. 27: Bridge location information

Metrics Settings

Our bridge tracks and analyzes information locally. These graphs help the installer understand what is going on with the system and how it can be optimized.

Bandwidth

This graph shows the average bandwidth used during the previous hours and days. This is a stacked graph that shows the total bandwidth along with the percentage used for real-time vs. background:

- *Real-time bandwidth* is used by the preview images, live streaming videos and system meta-data.
- *Background bandwidth* is used by uploading historic videos that have been saved locally to the bridge.

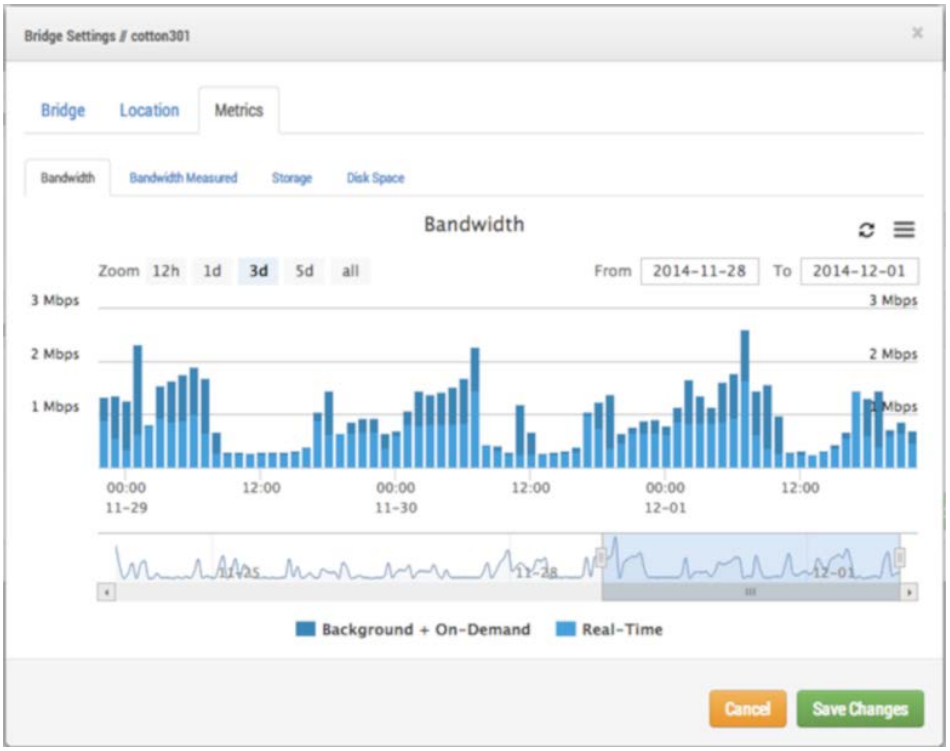


Fig. 28: Bridge bandwidth utilization

Bandwidth Measured

This graph shows the average upload bandwidth speed between the bridge and the cloud. The data is collected as actual video is being sent to the cloud and it is a very good representation of the available bandwidth. Fluctuations in bandwidth are also shown and this information helps when diagnosing problems. The **Bandwidth Measured** is used to adjust the **Auto** setting of **Background Transmit** on the bridge.

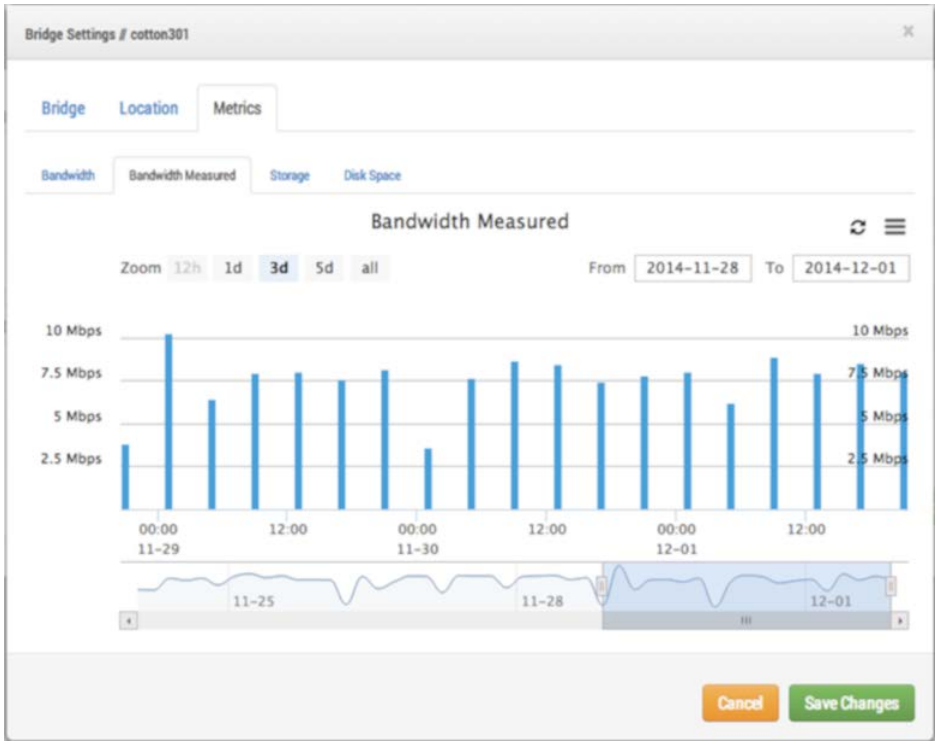


Fig. 29: Bridge bandwidth measurement

Storage

This graph shows the total amount of data changed for a given hour. Values that are negative indicate that more video was uploaded than stored locally. A pattern should emerge after several days, showing a sustainable amount of data uploaded vs. recorded.

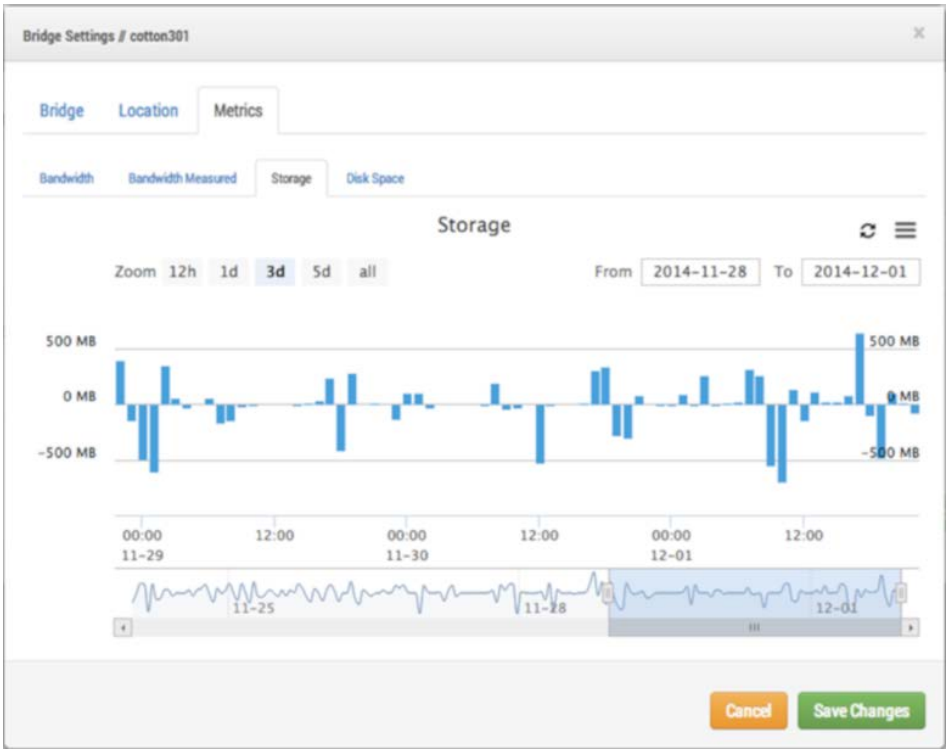


Fig. 30: Bridge storage activity

Disk Space

This shows the total available space on the attached storage. The useable data is limited to 80 % of the total capacity to prevent fragmentation and allow additional headroom if settings change.

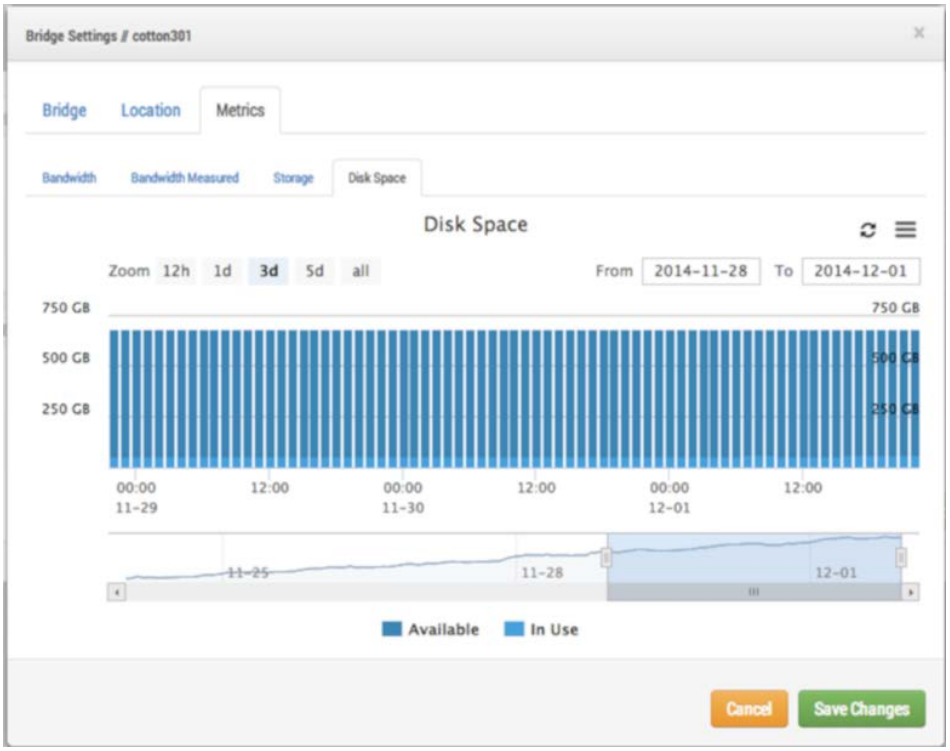


Fig. 31: Bridge disk utilization

Local Display

If the bridge supports **Local Display**, this tab will appear in the bridge settings. Enabling local display will show the selected layout on the video output of the bridge's HDMI or Display Port connectors. Select the layouts you wish to use, check **Local Display on Monitor**, and press **Save Changes**.

Each camera's preview size and quality in the camera settings determines the size and quality of the preview shown on the local display.

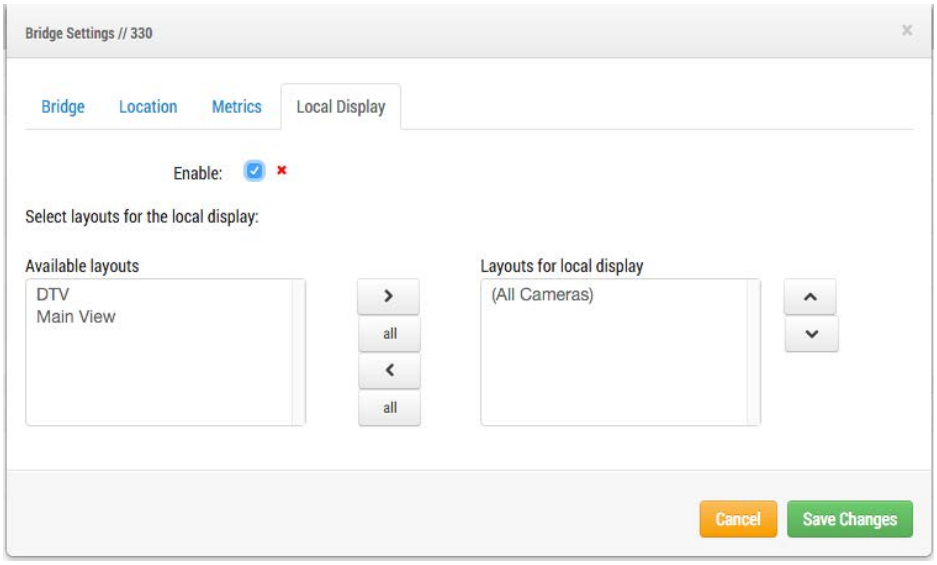


Fig. 32: Bridge local display settings

User Management

Managing Users

User management appears for those with **Admin** or **User Admin** permissions.

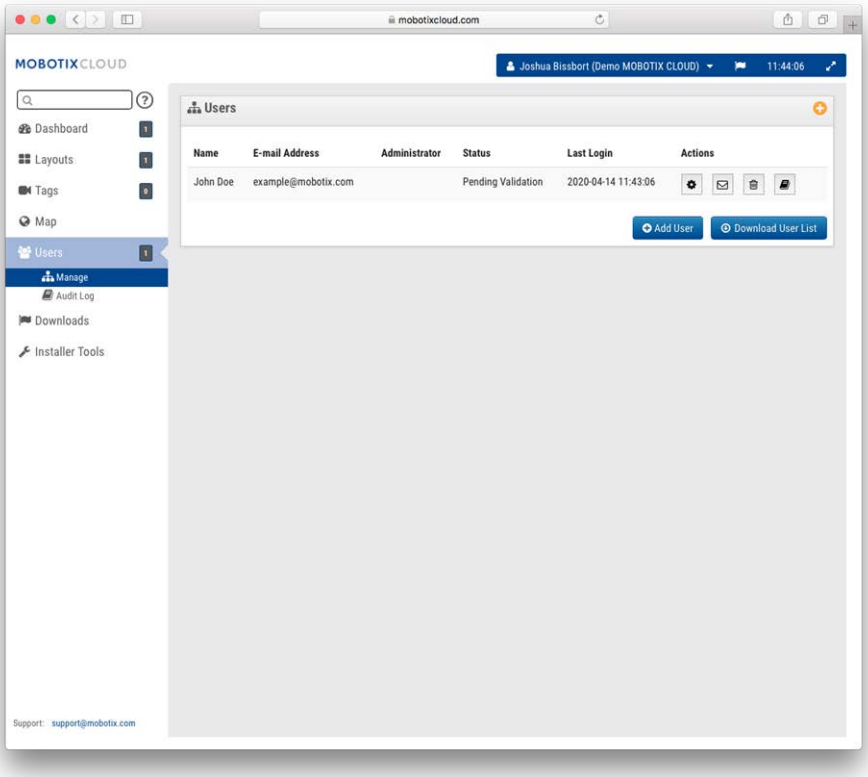


Fig. 33: User management

Adding Users

Adding users requires a unique email address along with their first and last name. Once users have been added, they will receive an email with a link. They need to click this link to validate their email address and choose a password. The email link is only valid for 72 hours and can be resent if needed.

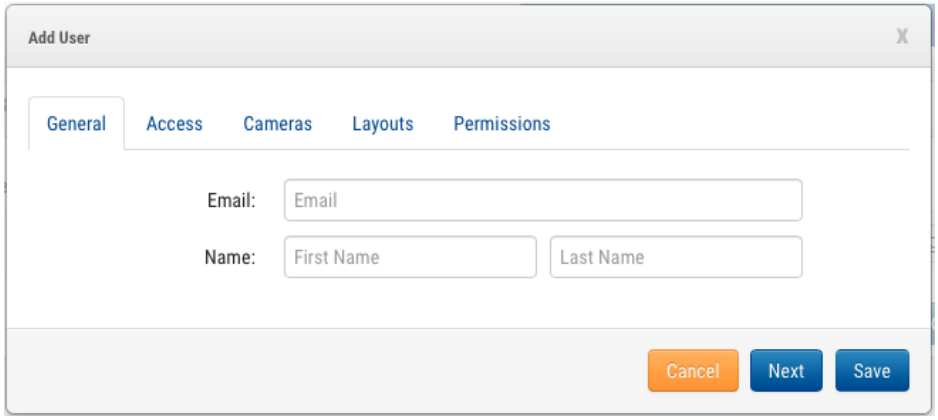


Fig. 34: Adding a user

Deleting Users

You may remove users by clicking on the trashcan icon. A dialog will ask you to confirm this action. Once users are deleted, their account cannot be recovered. They need to be re-created as a new user if they need access again.

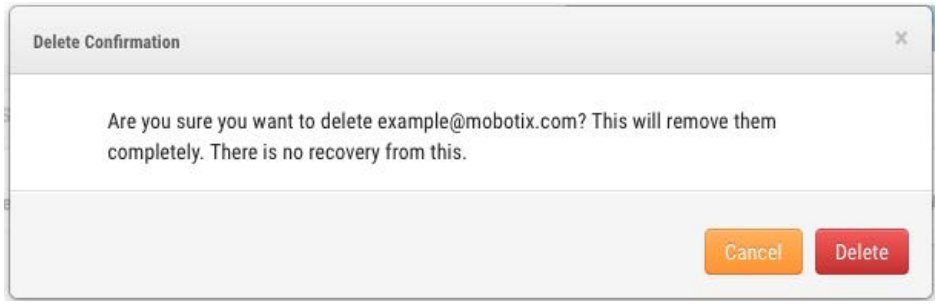


Fig. 35: Deleting a user

User Access

User access can be controlled using this screen. Disabled users will no longer be able to log into the MOBOTIX Cloud VMS. You can also set the time period of the day that you can log in and the actions that you can take.

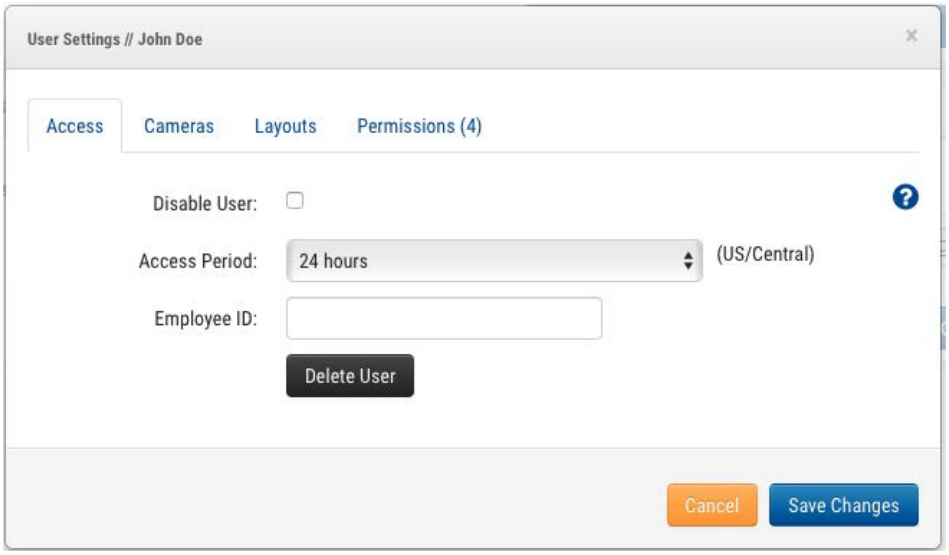


Fig. 36: User access

User Actions

- **Administrator**: Highest permission possible for a user. All permissions are enabled, including viewing permissions.
- **Edit Account Settings**: View and edit all account settings. (Control, Days, Security, Camera, Alerts, Notifications, Privacy, Sharing, and Responders).
- **Edit Layouts**: Edit any layouts. (Any user can create/edit/delete their own layouts. User layouts are always visible to admin users.)
- **Edit Cameras No Billing**: Edit all camera settings except **Retention** and **Full Video Resolution**. No permission to add/delete cameras or bridges. **View Previews** and **Metrics** are automatically enabled with this permission.
- **Turn Cameras On And Off**: Ability to turn cameras on and off. If this is the only camera permission granted all others are hidden.
- **Edit Motion Areas**: **Motion** tab visible and editable under camera settings. **View Previews** and **View Recorded Video** is enabled automatically with this permission.
- **Change Cameras**: Allows editing all camera settings but does not allow adding or deleting cameras. **View Previews** and **Metrics** are enabled automatically with this permission.
- **Edit Users (sub-account)**: Management of non-admin users in a sub-account. Ability to add, delete, and modify users. Ability to grant access to cameras and layouts.
- **Edit Admin Users (sub-account)**: Management of all users in a sub-account. Ability to add, delete, and modify all users including admins (only available to master users).
- **Edit All and Add**: This refers to devices only: ability to add/edit/delete bridges and cameras. **View Previews** and **Metrics** are enabled automatically with this permission.

- **Edit Master Users**: Management of master users who are not admin users. Ability to add, delete, and modify master users. Ability to grant access to sub-accounts. No user permissions are granted in sub-accounts (only available to master users).
- **Edit Sharing**: View and edit sharing and **First Responder** under **Account Settings** (this setting is not needed if **Edit Account Settings** is selected).
- **PTZ Live**: Control pan, tilt, zoom, and recall stations while viewing preview or live video of PTZ cameras. **View Previews** is enabled automatically with this permission.
- **Edit PTZ Stations**: **PTZ** tab visible and editable under camera settings. Set PTZ mode and add/edit/delete stations. **View Previews** is enabled automatically with this permission.
- **View Live Video**: View full-resolution video live from cameras. **View Previews** is enabled automatically with this permission.
- **View Recorded Video**: View history browser and historic video from cameras. **View Previews** is enabled automatically with this permission.
- **X Download Video**: Download preview and full-resolution video. **View Previews** is enabled automatically with this permission.
- **View Previews**: View preview images from cameras.

Per-User Settings

Cameras

It is possible to restrict access to cameras on a per-user basis. This is accomplished in the **User Settings** dialog on the **Cameras** tab shown below. To hide cameras from a user, drag them from the **Access** to the **No Access** side.

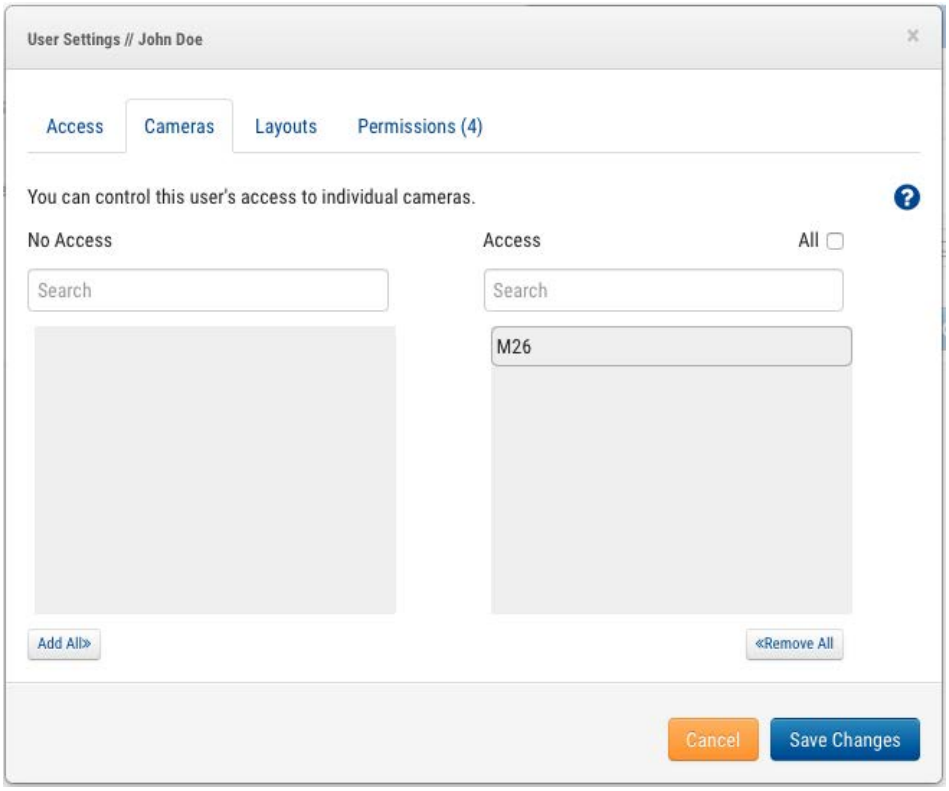


Fig. 37: Restricted cameras

Layouts

In addition to restricting access on a per-camera basis you can also restrict or grant access to cameras based on layouts. This screen allows you to indicate which layouts a user can access.

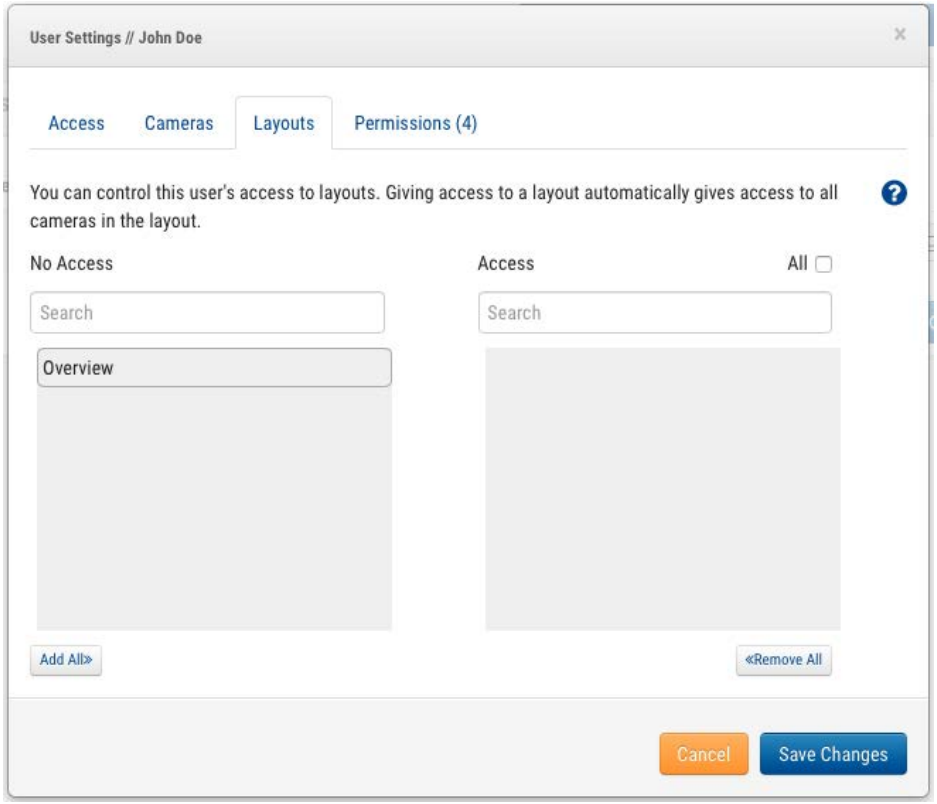


Fig. 38: Restricted layouts

History Browser

Overview

The **History Browser** provides methods for you to review video recordings from your cameras. The top of the screen shows the current video image. This is normally a preview video. The lower part of the screen is a timeline control with navigation buttons.

Timeline Control: The timeline can be clicked and dragged left or right. The image displayed will change to correspond to the pink cursor on the Timeline. The time shown will also change to show you the exact time the cursor is located. The blue areas shown on the timeline indicate that the system has recorded Full Video during those periods. Blank areas indicate that only Preview video is available. You can drag and scroll on the time area to move over hours or minutes. You can also drag and scroll the date area to scroll to a specific day.

Zooming the Timeline: You can change the zoom level on the timeline by selecting the **8 Hr**, **2 Hr**, **10 Min** or **1 Min** buttons. This will change the amount of time shown in the timeline.

Navigation Buttons: There are six navigation buttons:

- The >| and |< buttons will move the image one preview image forwards or backwards. The arrows on a keyboard will also move one image forwards or backwards. Hold the button down to keep moving. This will normally move the image one second forwards or backwards.
- The >> and << buttons will move the image from one key image to the next forward or backward. When the system is recording full video (normally due to motion detection), it will select key images in the video. These key images are normally in the middle of the video and allow you to see an important part of a motion event. For example, if you are trying to watch a door, the key images will typically give you an image of each person that walks through the door.
- The >>| and |<< buttons will move the image from one video segment to the next. A video segment can have more than one key image so this will typically move you faster through the timeline.

Selecting a Region of Time: If you want to either download or play a specific section of time, select the time period using [Shift]+click and [Shift]+click again in the timeline. The selected region will be shown in yellow. Pressing the **Download** or **Play** buttons will download or play the selected region, respectively.

Downloading a Video: Pressing the **Download** button will download an MP4 version of the video. Note that this sometimes takes a long time to create, process and download the video. If there is no

selected area, it will download the current video segment under the cursor. If it will take more than 15 seconds to retrieve the video, a new dialog will appear. You can enter a description of the video. This description appears in the name and notification.

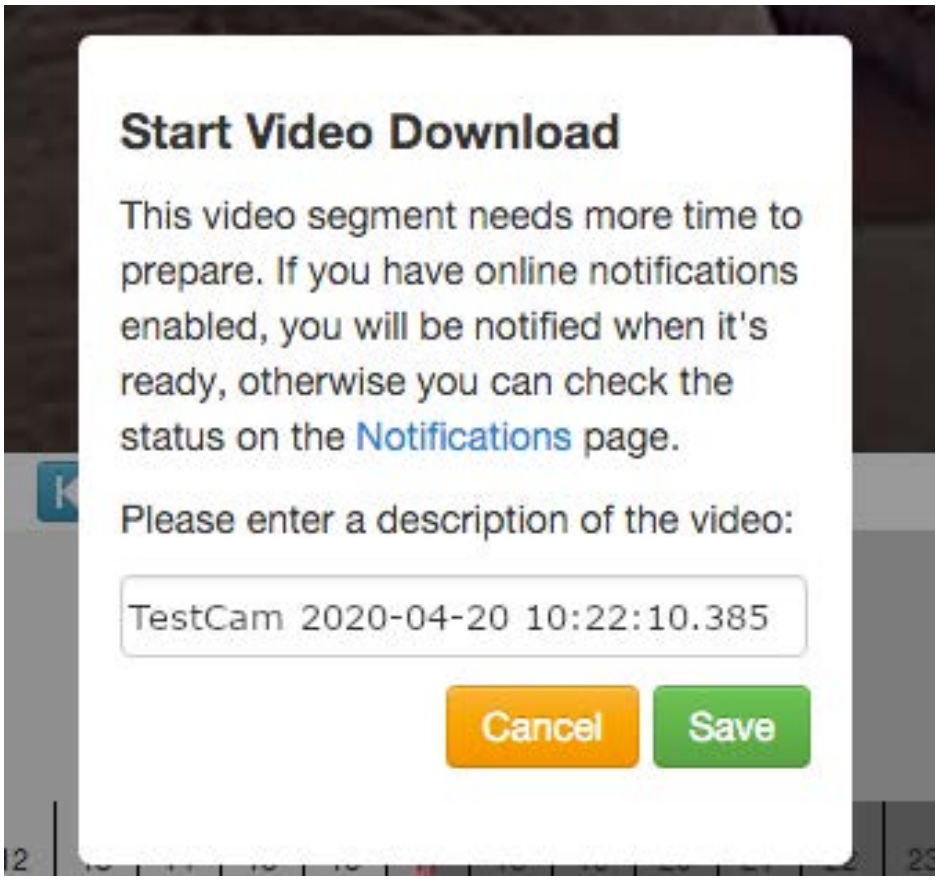


Fig. 39: Start video download

The **Notifications** page will show an entry for the video and will also indicate when the video is ready to download. The online notification indicator will also appear in the upper right when the video is ready for downloading.

Fig. 40: Online notification indicator

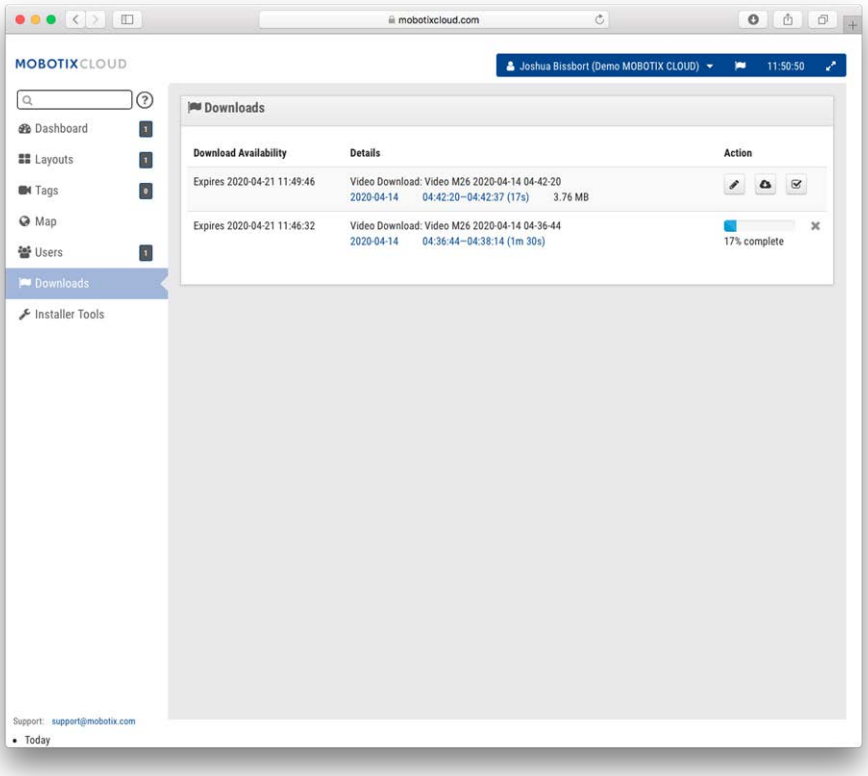


Fig. 41: Notifications page

Press the **Cloud** icon to download the prepared video.

Play a Video: Pressing the **Play** button will play the full video segment under the cursor or the selected region.

Zooming the Image: You can zoom the video image when looking at preview or full video. Press the magnifying glass to do so.

Now Mode: The **Now** button will move the cursor to the current time. It will continually update the timeline with data and attempt to keep the cursor at the latest image.

Finding Historic (Recorded) Videos

The **History Browser** allows you to drag the timeline and play full video segments. Full video is indicated by dark blue and motion by light blue.

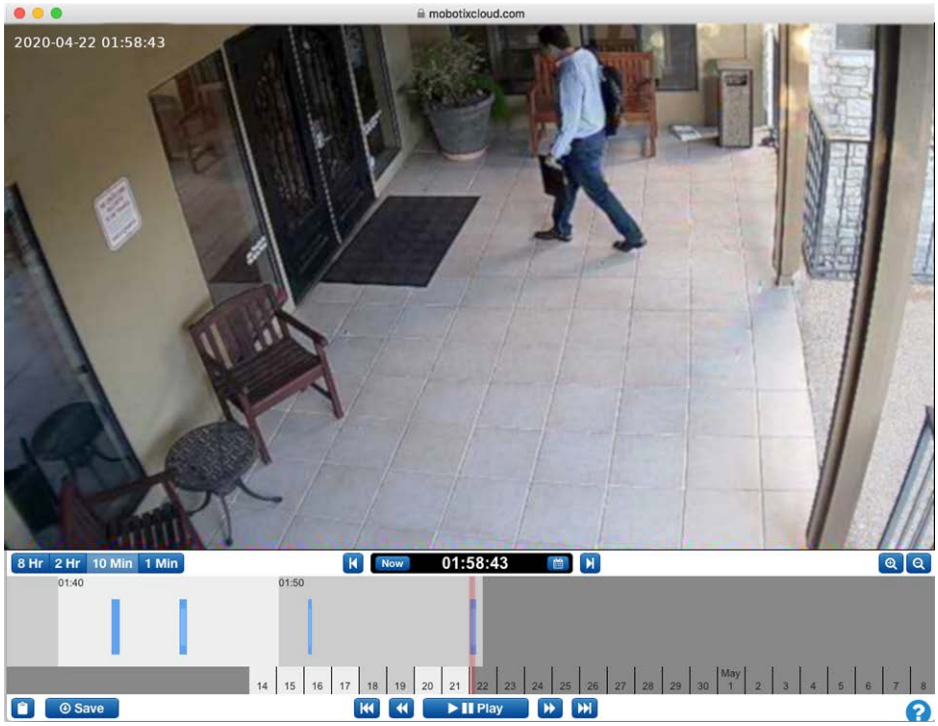


Fig. 42: The History Browser

Selecting Portions of Video

The History Browser allows you to select a section of video using [Shift]+click for the beginning and [Shift]+click for the end of your selection. The selected region will appear in yellow. You can download or play the selected portion of the video.

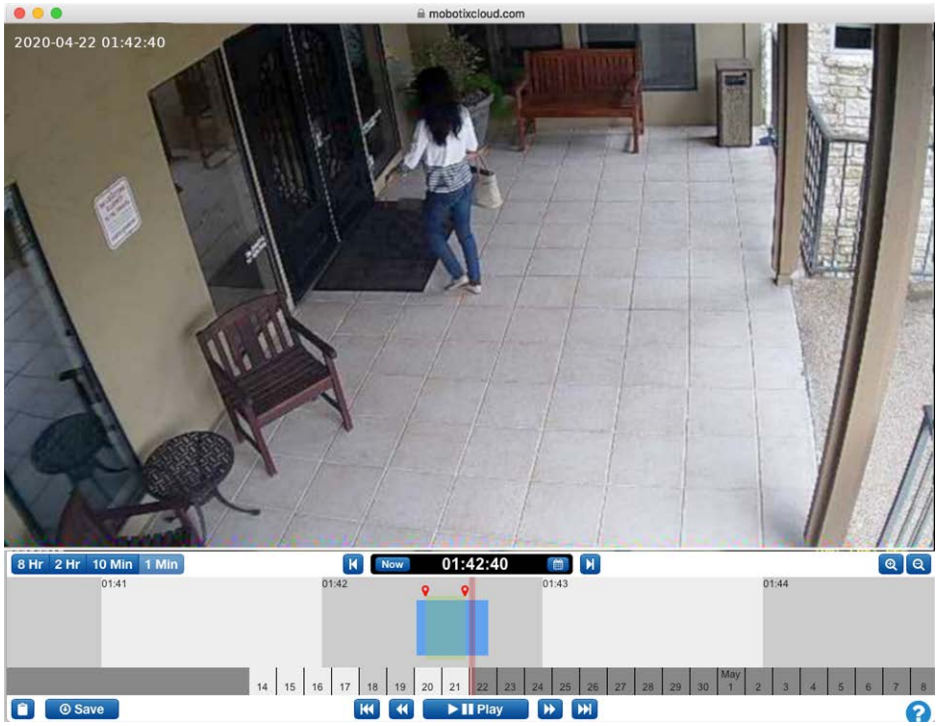


Fig. 43: Selecting a portion of video to download or play

Gallery Viewer

The History Browser includes a function to provide a gallery view. The Gallery Viewer is accessed by pressing the ZOOM OUT button on the display. When zooming out, the browser will show nine images each from a different time.

There are three modes of operation for the Gallery Viewer. The mode is selected from the drop-down shown next to the zoom buttons:

- The *time-based* mode shows an image at a fixed time variation. Note the black vertical bars added to the history browser time display. These bars indicate when the images above are selected from. The center image is at the red cursor.
- The *motion event* mode will select the key frame from each motion event.
- The *recorded video* mode selects the first key frame from each recorded video segment.

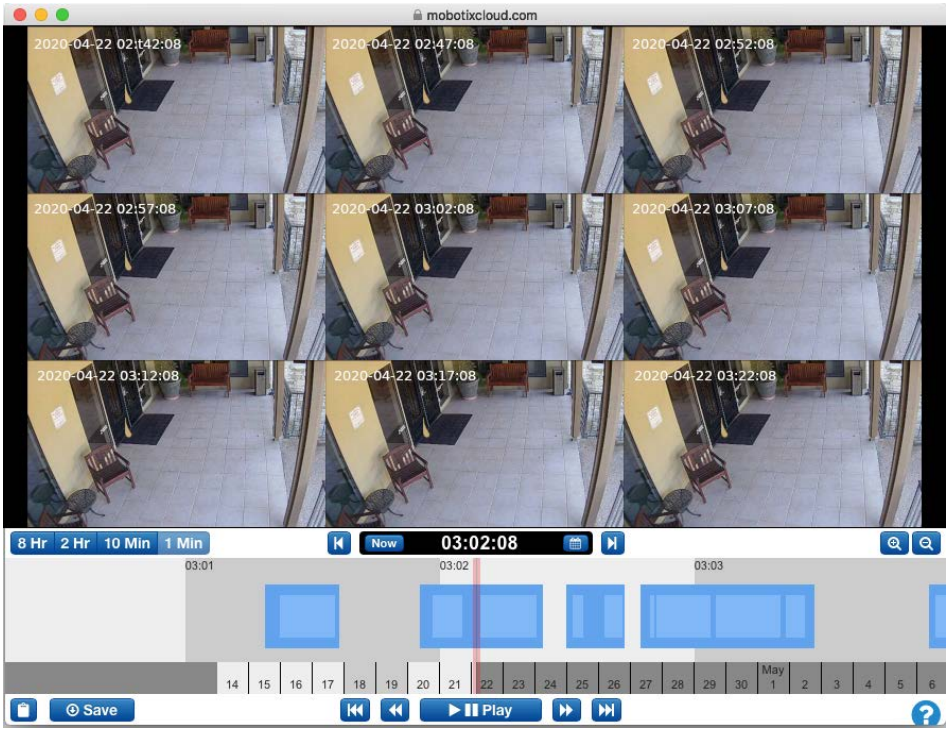


Fig. 44: The Gallery Viewer

Downloading Video Clips

MOBOTIX Cloud makes downloading your videos very easy. You can download the high-resolution version as it comes directly from the camera. We coalesce smaller clips that overlap together into a single clip for your convenience. In cases of high motion, it may be desirable to download only a part of the available video.

For example, we have a busy room, but we only want to download a section. We are only interested in the section where the person in shorts and a black hoodie is in the room.

Fig. 45: History Browser with no video selected

After playing the video we see that he comes into the room at `03:33:47.682 PM` and leaves the room at `03:37:18.424 PM`. By holding [Shift], we can click and drop a start pin. We can drop the end pin the same way. The area between the pins is highlighted (you can remove the highlighted area by clicking anywhere inside the highlighted area).

Fig. 46: Selecting video for download

The **Play** and **Download** buttons are now limited to the highlighted area. You can download the clip by clicking on the **Download** button. The bridge converts the video to MP4 for the best compatibility across platforms.

Using the History Browser

Zoom Level

The **History Browser** zoom level can be **8 Hr**, **2 Hr**, **10 Min**, or **1 Min** as shown in Fig. 47: History Browser zoom level. The darker gray and lighter colors each indicate whatever time span is selected by the zoom. The dates at the bottom also show weekdays in lighter color and weekends in darker gray. The darkest gray is future.

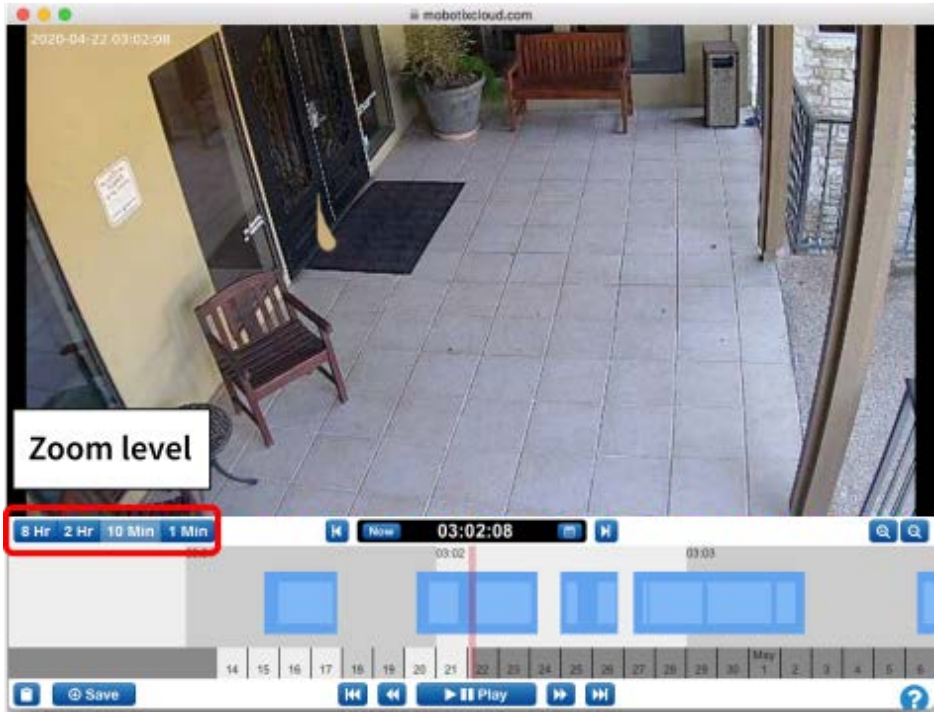


Fig. 47: History Browser zoom level

Scrolling

Scrolling in the History Browser is done by clicking in the middle of the timeline and holding down the left mouse button while moving it left and right.

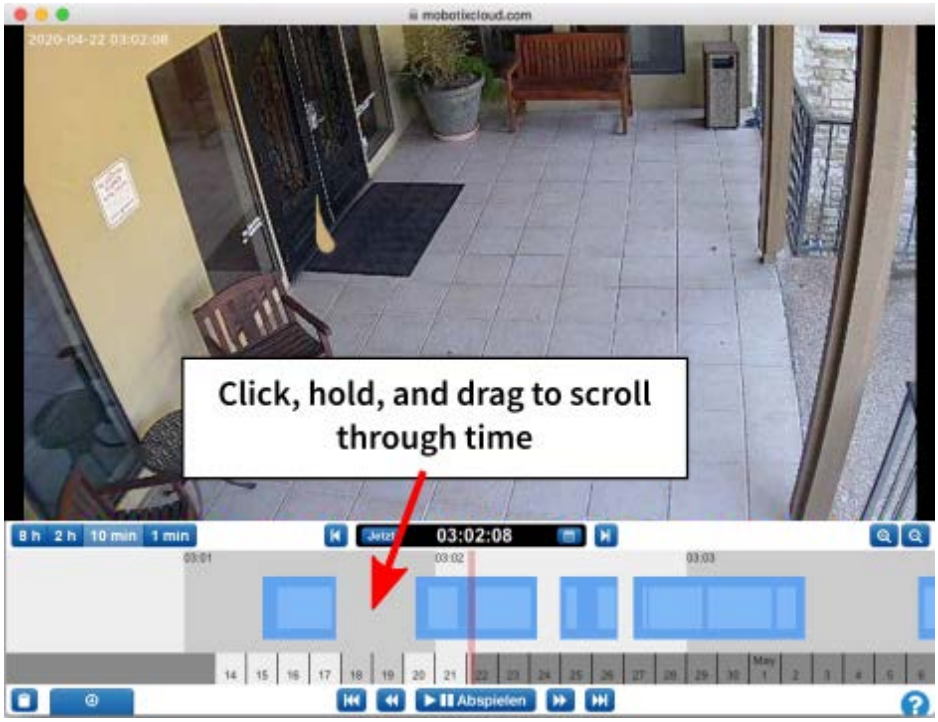


Fig. 48: History Browser scrolling by time

You may also scroll through dates by clicking, holding and dragging on the dates at the bottom of the history browser. See Fig. 49: History Browser scrolling by dates.

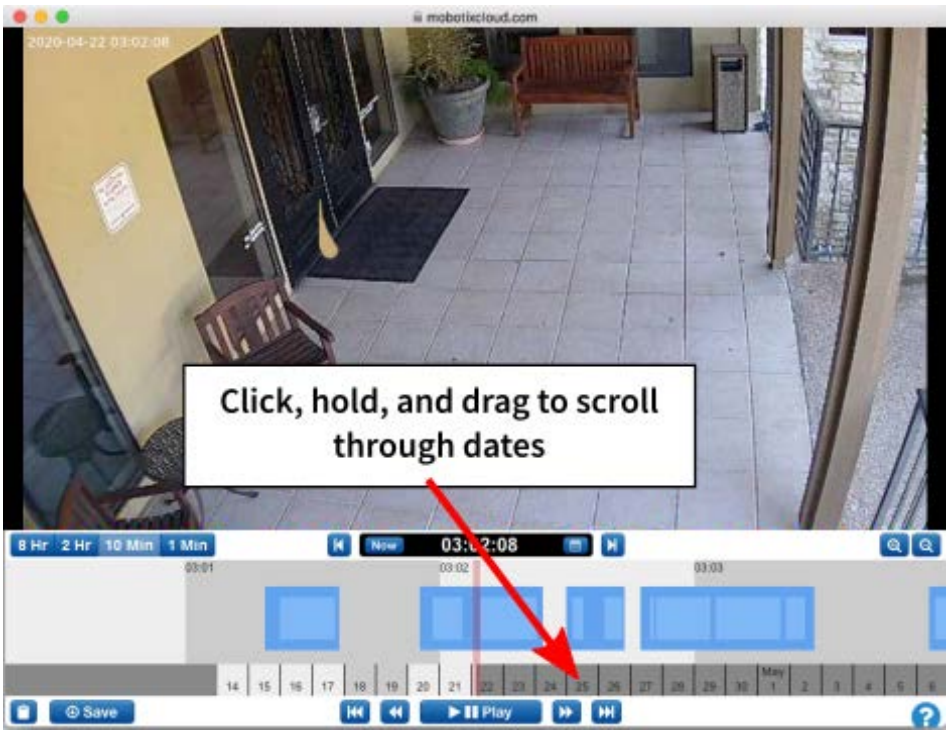


Fig. 49: History Browser scrolling by dates

Popup Calendar

Click on the **Calendar** icon near the time indicator to select a date and to view historic video as shown in Fig. 50: History Browser calendar.

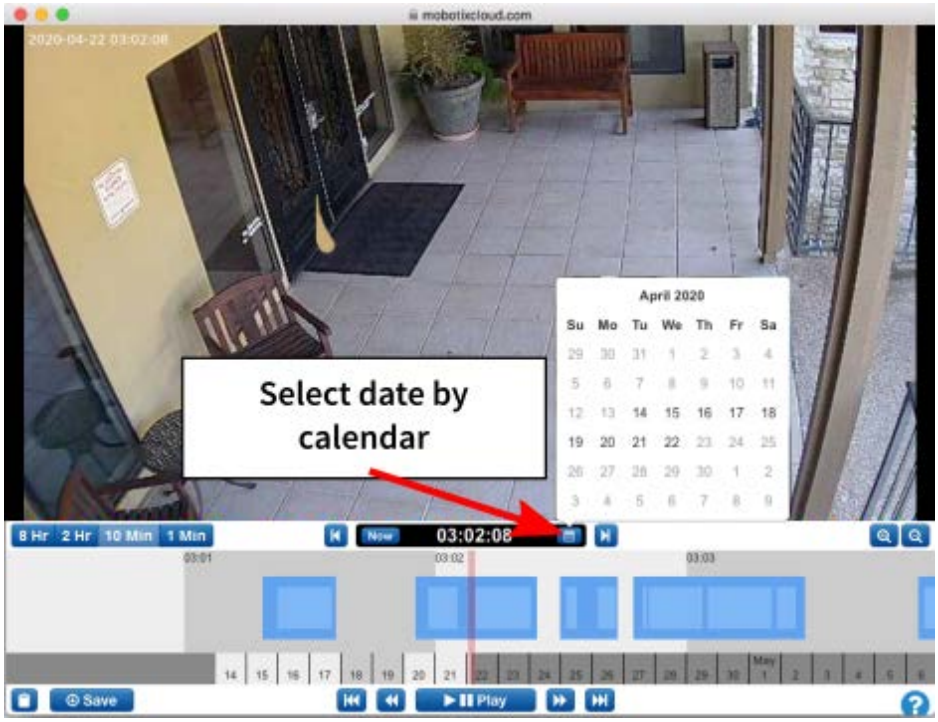


Fig. 50: History Browser calendar

Popup Time Selector

To jump directly to a specific hour, minute, and second in the History Browser, click directly on the time display to access the popup as shown in Fig. 51: History Browser time selector.

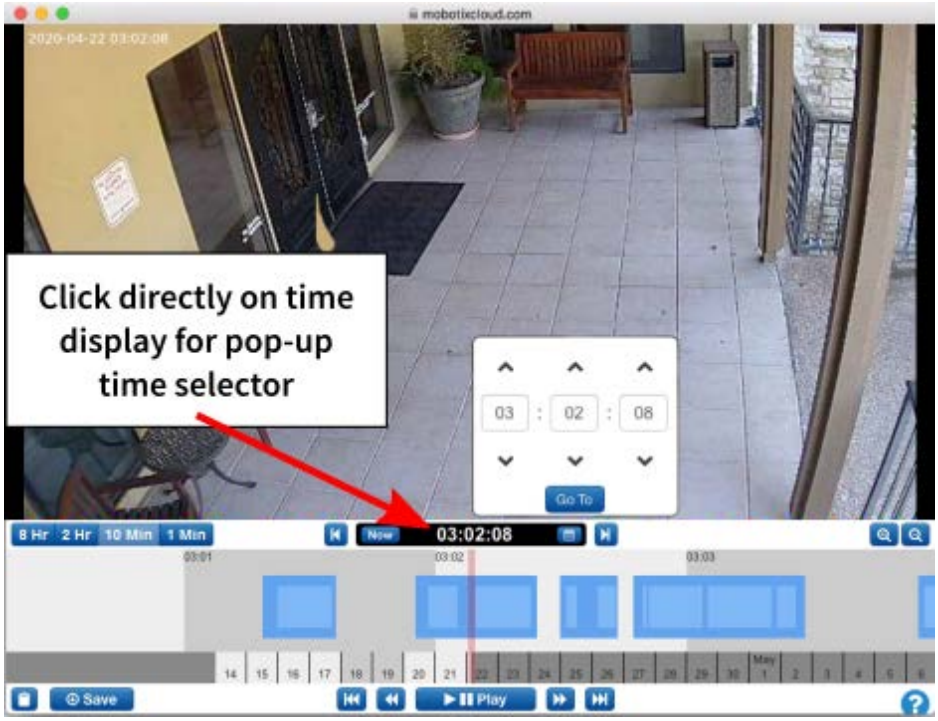


Fig. 51: History Browser time selector

Previous and Next Frame

Fig. 52: History Browser Previous and Next frame illustrates the buttons for one frame at a time forward and backward. The arrow keys on the keyboard will also perform the same actions. Press and hold to get continued advance of frames.

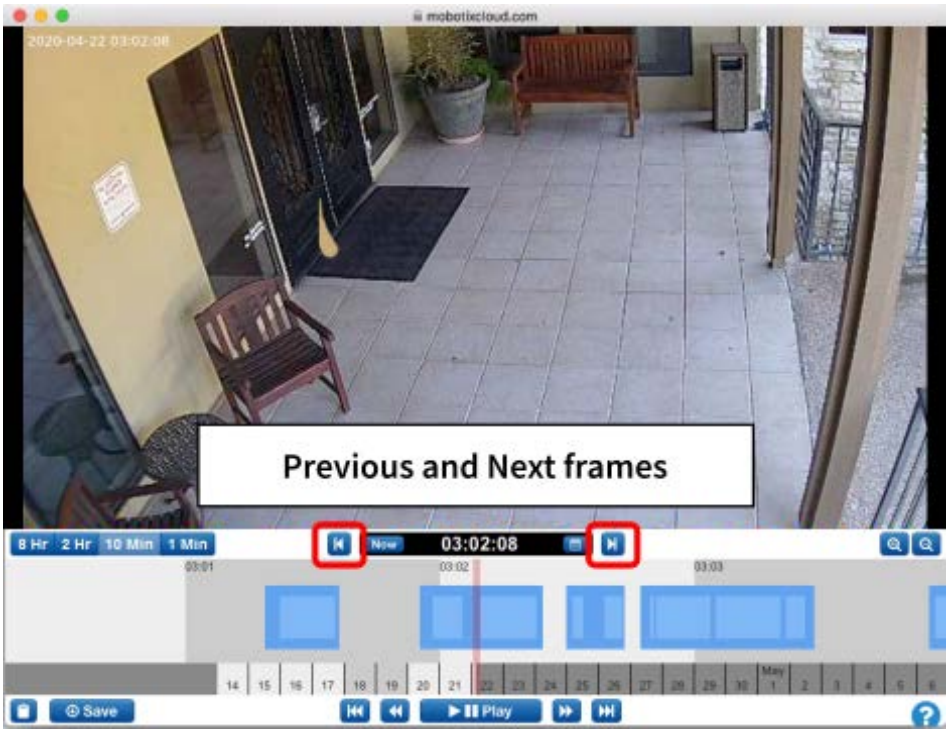


Fig. 52: History Browser Previous and Next frame

Previous and Next Video

The **Previous Video** and **Next Video** buttons are shown in History Browser Previous and Next video, p. 65. The History Browser is advanced to the start of the next or previous dark blue area marked as full video recording.

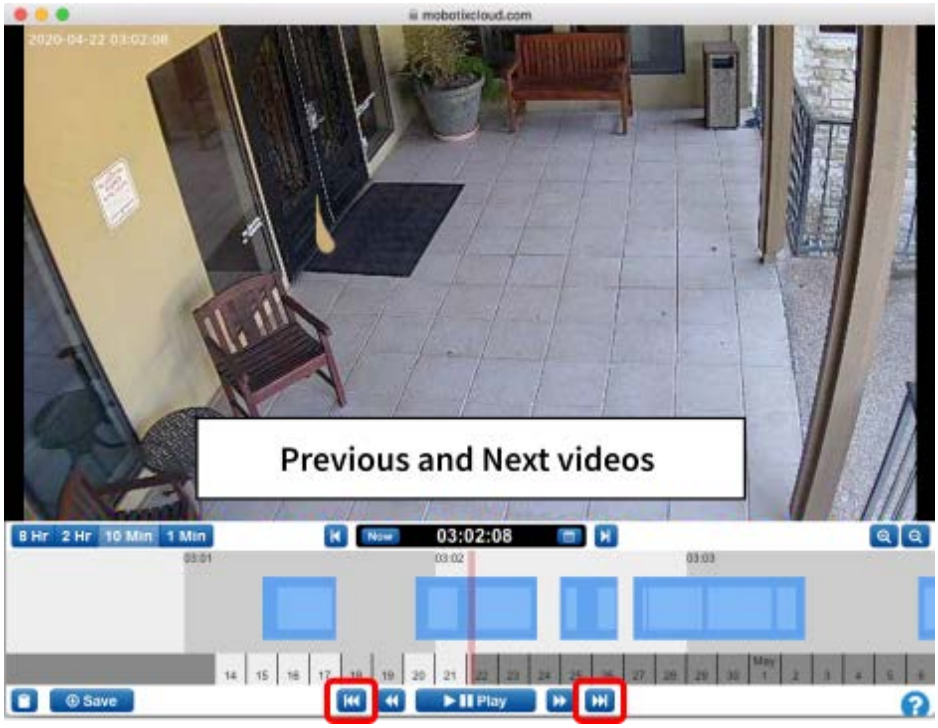


Fig. 53: History Browser Previous and Next video

Previous and Next Key Image

Previous Key Image and **Next Key Image** buttons are shown in Fig. 54: History Browser Previous and Next key image. The MOBOTIX Cloud system tracks objects on the screen. When an object is as large as it ever gets and as close to the center of the screen as it gets, it is marked as a *key image*. Key images can be very useful for a shot of a hallway or isolated door entryway. They are also used when sending alerts. Pressing either button and holding down will advance to the next or previous key images successively.

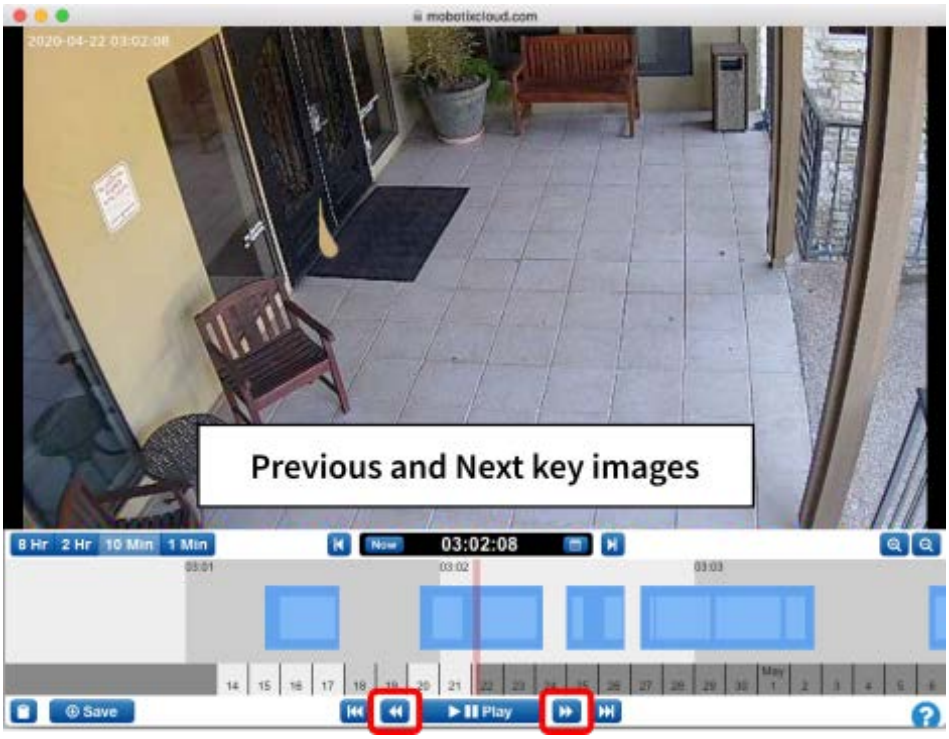


Fig. 54: History Browser Previous and Next key image

Marking an Area

Fig. 55: History Browser Mark an area illustrates how to mark an area for playback or download, whether it is a part of a recorded area or across several areas. [Shift]+click at the start point and again at the end point to select the area. It will appear highlighted in yellow. Click anywhere in the history browser timeline to deselect the area.

Fig. 55: History Browser Mark an area

Playback and Download

With an area marked, the video can be played in the browser. If the user has permissions to **download video** then the **Download** button will appear. Pressing this button will start the download process. If it takes more than 15 seconds for the video to be retrieved, a new dialog window will open, and you will be notified when the video is ready for downloading.

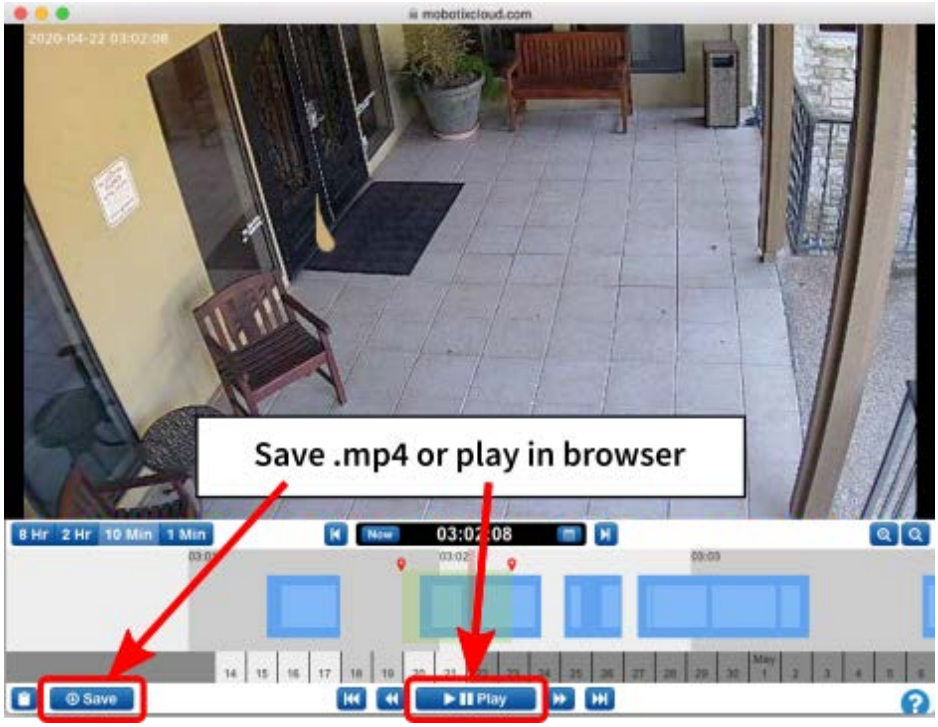


Fig. 56: History Browser Download and Play

Zooming

Click on the **Zoom in** button at the lower right to enlarge the preview of full video of the History Browser. Zooming out past the original image size will open the **Gallery Viewer**.

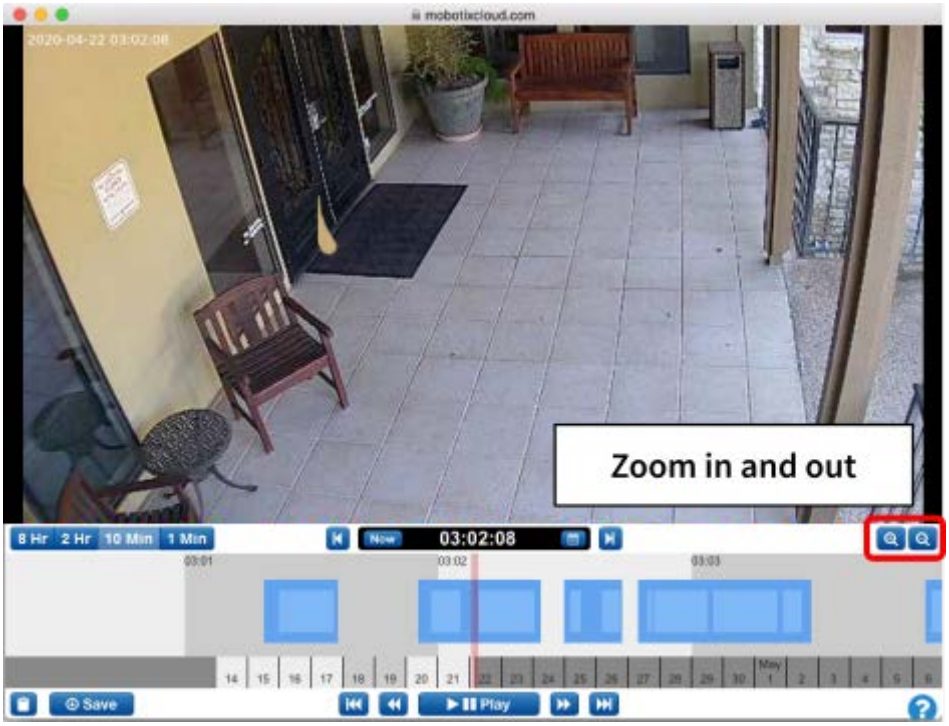


Fig. 57: History Browser zoom

Using the Gallery Viewer

The **Gallery Viewer** is opened automatically when zooming out of the **History Browser**. You can also open it from the **Action** menu from a live preview of a camera and from **Map** view (see Fig. 9: Camera Action menu).

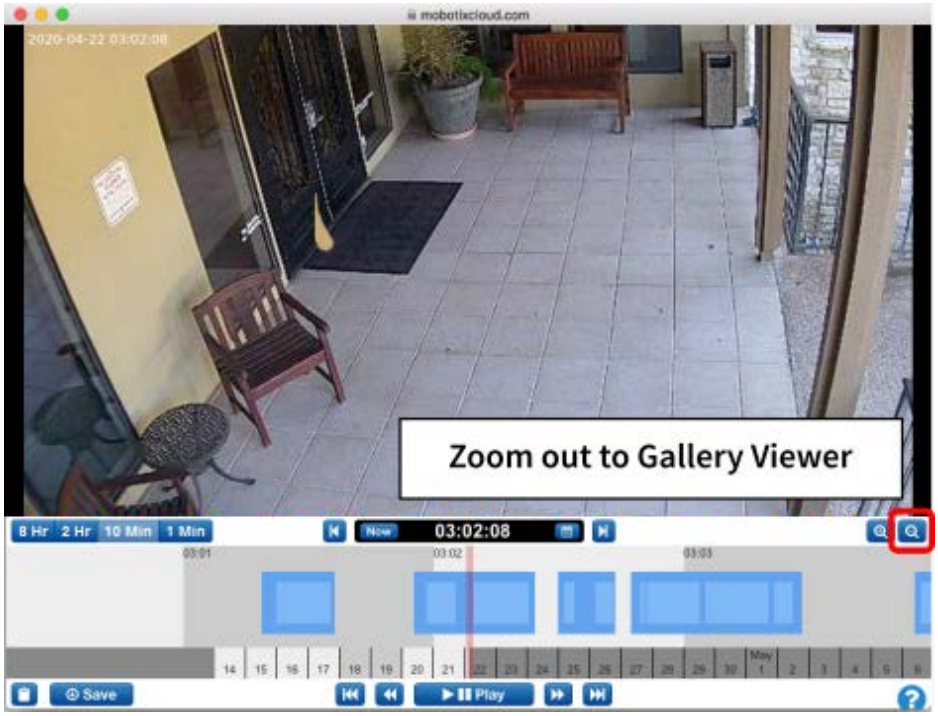


Fig. 58: History Browser zoom out to Gallery Viewer

The Gallery Viewer shows a series of images in a 3x3, a 4x4 or a 5x5 view. Markers appear at the top of the timeline to represent the frames that appear in the gallery viewer.

Fig. 59: Gallery Viewer 3 x 3 display

Fig. 60: Gallery Viewer choose display shows the drop-down menu that allows using *time*, *key images*, or *videos* for viewing. The time span between images depends on the current zoom level:

- **8 Hr** zoom will show one frame every four hours.
- **2 Hr** zoom will show one frame every hour.
- **10 Min** zoom will show one frame every five minutes.
- **1 Min** zoom will show one frame every 30 seconds.

Choosing **Key Images** will show only the key images. Choosing **Videos** will show the first key image in a recorded video segment. Click on a single image to center it and to refresh the other images around it. Scrolling of the timeline will also refresh the images. Double-click an image to show it full screen and take the history browser to that point in time.

Fig. 60: Gallery Viewer choose display

Motion Alerts and Regions of Interest

Exclusion Zones

Often there is repetitive motion in a scene that you want to ignore. A great example of this is a TV or a swaying tree. Having constant motion makes it difficult to quickly find the item you are looking for.

In this scene, there is a TV in view of the cameras that will appear as constant motion. As you can see from the blue streak across the timeline, it is difficult to find when people walked through the area. We want to mask out the TV from triggering motion.

Fig. 61: Field of view without motion tuning

Creating the Exclusion Zone

We can mask out a motion area by going to the **Camera Settings > Motion** tab.

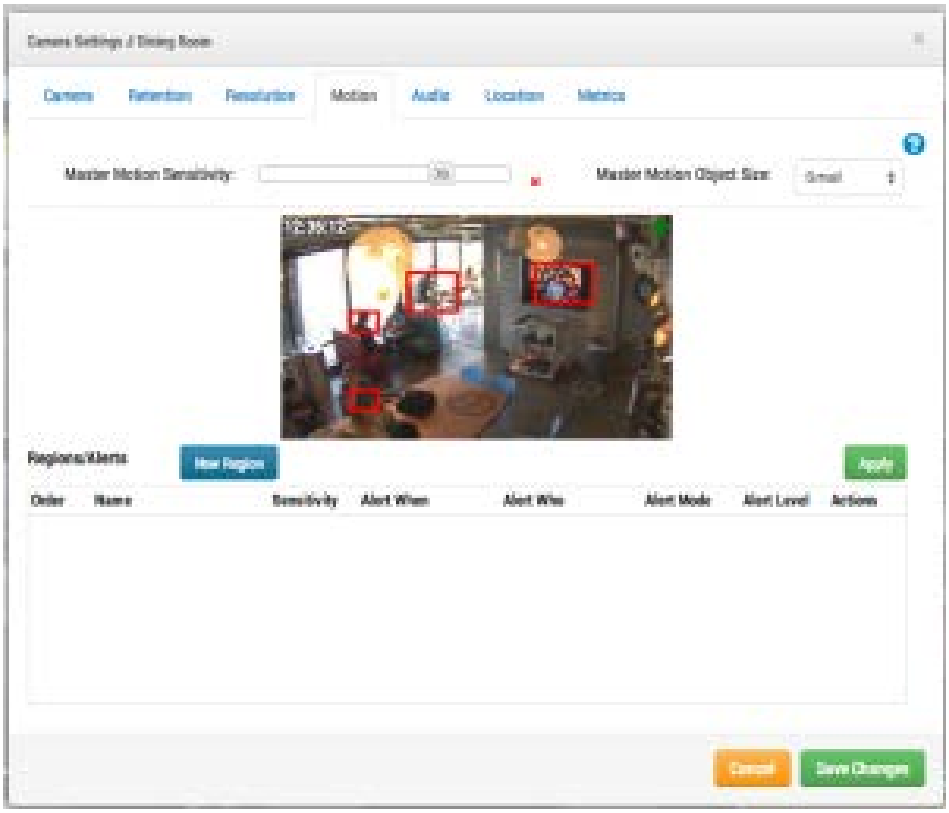


Fig. 62: Motion detection settings

The red boxes show where motion is currently detected. As you can see, the TV is triggering motion. We can remove that by creating a new region and dragging a box around the TV. We will name the region and enable the **Disable Motion** checkbox. When finished, hit **Apply**. The **Motion** tab should now have a named region over the TV in the preview image.

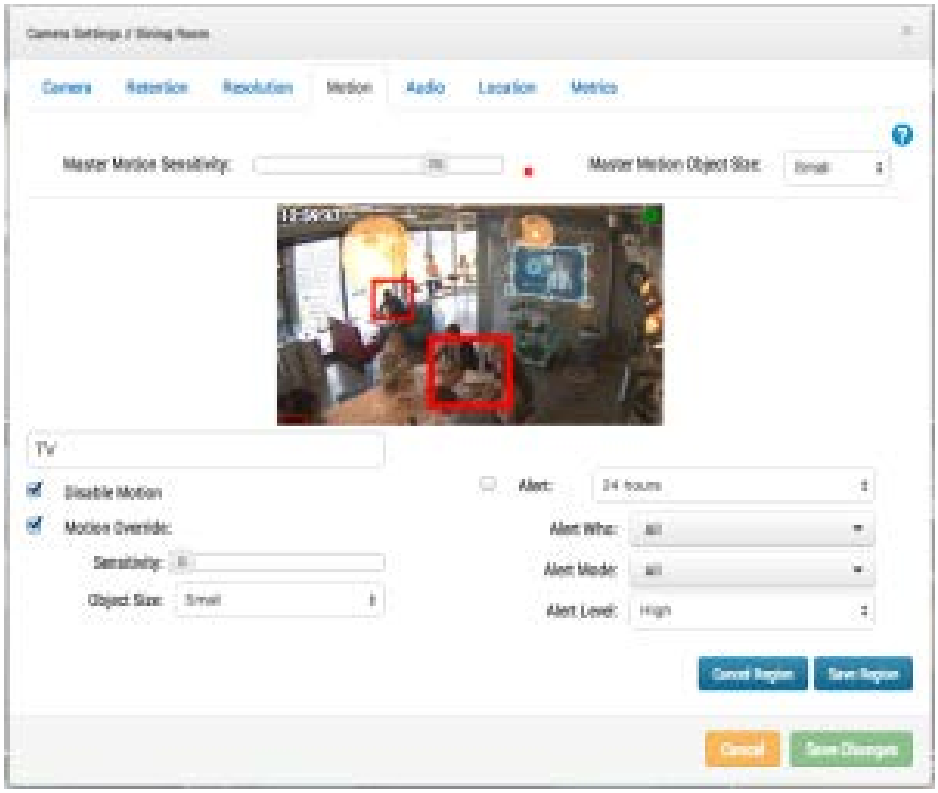


Fig. 63: Motion detection exclusion zone settings

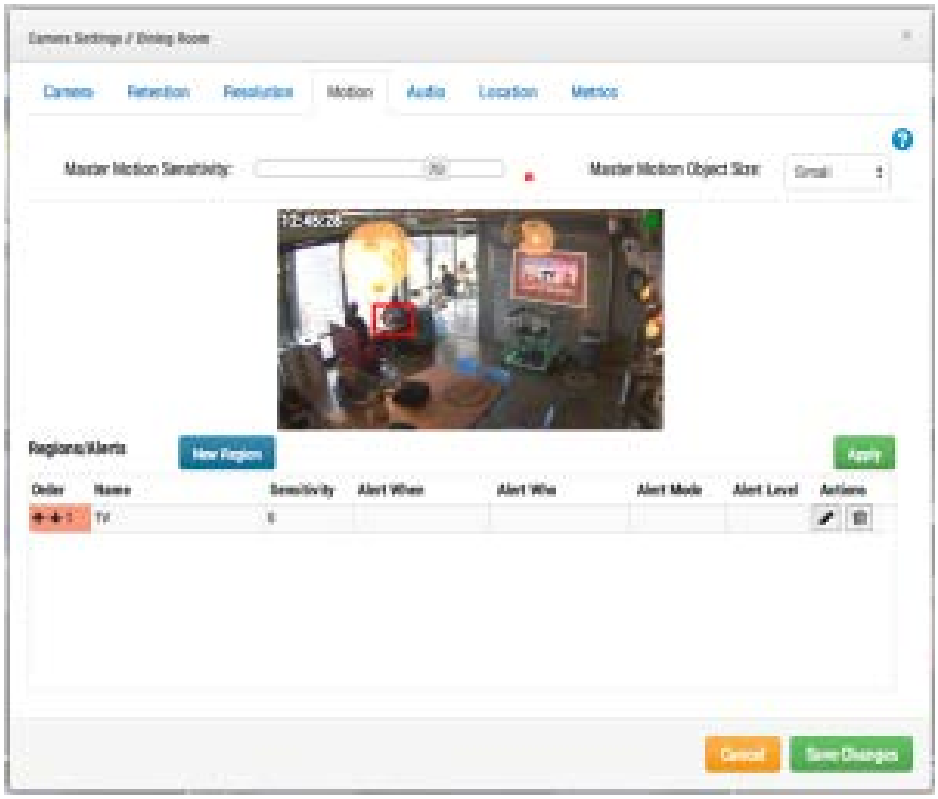


Fig. 64: Exclusion zone in place

This is an example of the timeline with the TV masked out. It is significantly easier to find motion events.

Fig. 65: History Browser tuned for motion detection

Creating Notifications

This example illustrates setting up email notifications on a door. We want to get an email notification whenever someone enters or leaves. The initial image is shown below.

Fig. 66: Camera view

Open **Camera Settings > Motion** tab. Create a new region, place it over the door and walkway to the door and name it **Entry-Exit**.

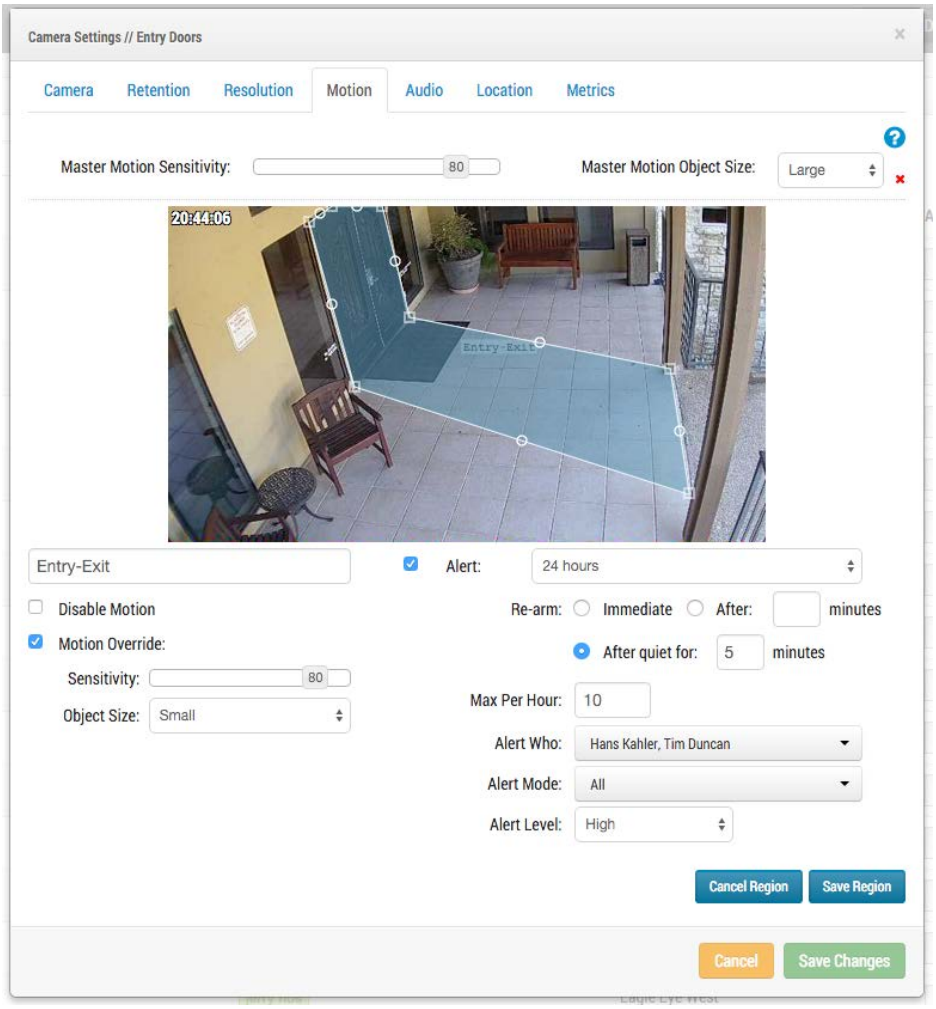


Fig. 67: Motion settings

Check the **Alert** checkbox. Select the time range in which you would like this alert to be active.

Fig. 68: Alert When

Select the users you want to alert.

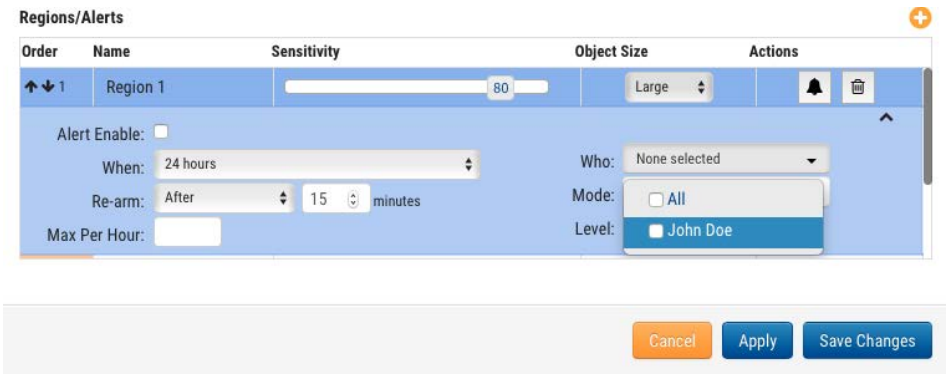


Fig. 69: Alert Who

Lastly, specify if this should be considered a *High* or *Low* alert. Every user can choose in their profile if they would like to be notified on *Low* and/or *High* alerts.

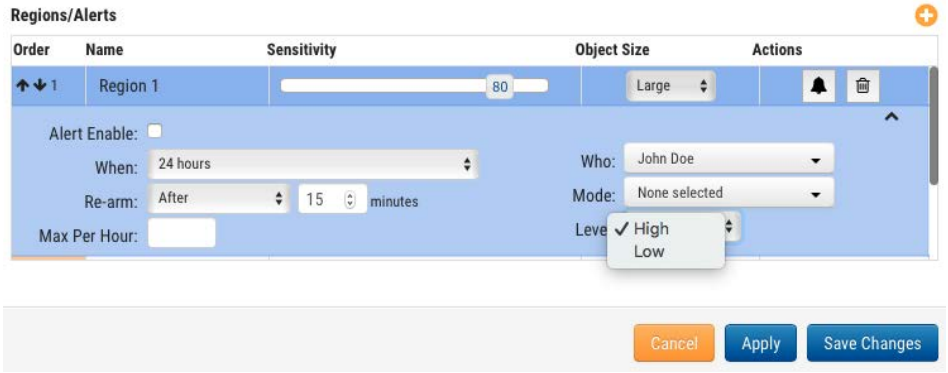


Fig. 70: Alert level

After saving the region and pressing **Apply**, the motion zone is highlighted on top of the preview image and the summary is listed.

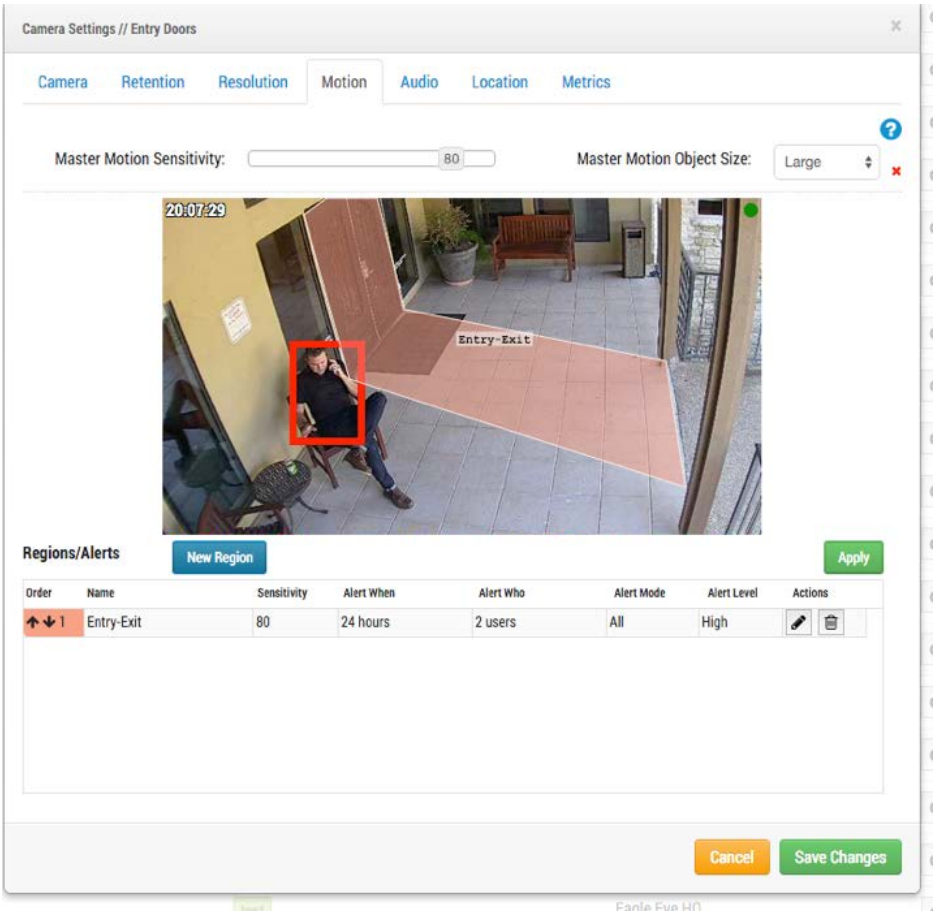


Fig. 71: Alert summary

Finally, this is an example of an email notification.

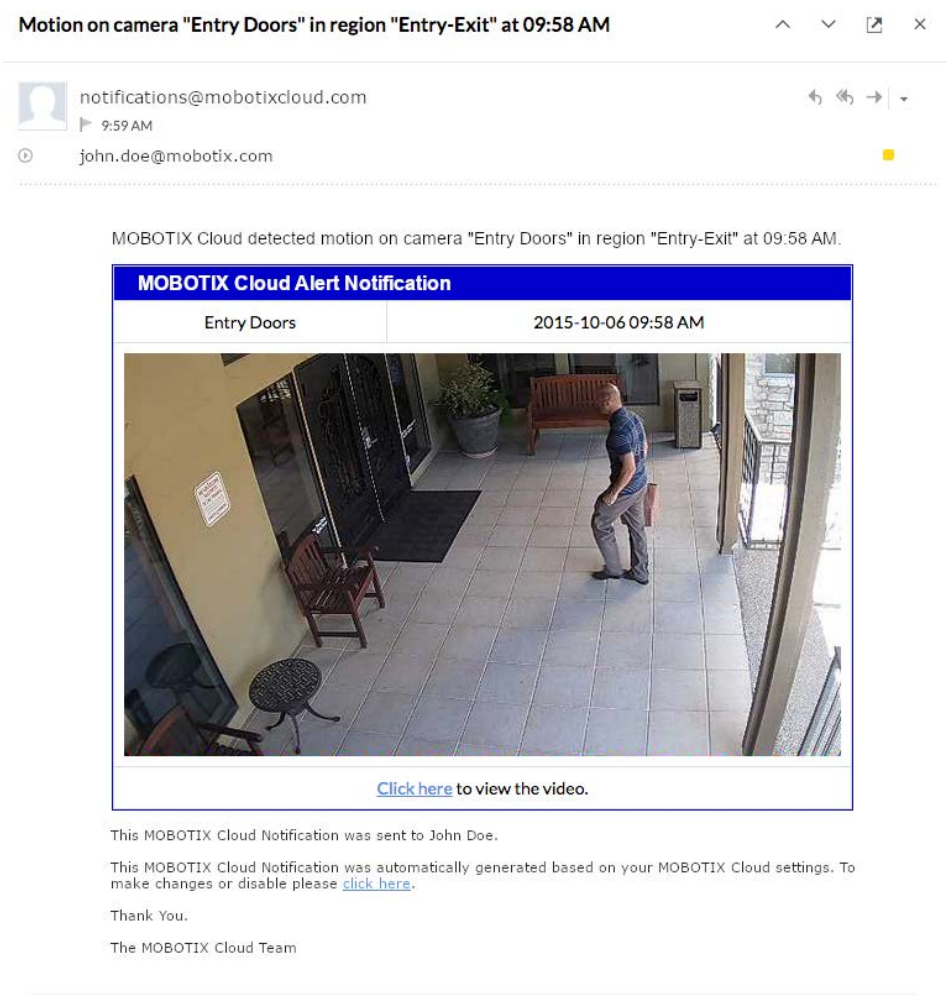


Fig. 72: Email alert example

Notice that click the link in the email to be taken to that moment and begin playback in the History Browser. If you are not logged in, you will be prompted to login. There is also a link that takes you to the notification settings for your user.

Bandwidth Considerations

Balancing the Bandwidth

Balancing the amount of bandwidth available with the number of cameras and desired retention time with acceptable video quality is key to a successful application of the MOBOTIX Cloud VMS. The goal is for a bridge to be able to upload all video from cameras to the MOBOTIX Cloud data center within a day. Learning to use the **Bridge Settings > Metrics** dialog will help to setup and adjust the system in such a way to have a good user experience and happy customer. Here is an example of good metrics with plenty of bandwidth:

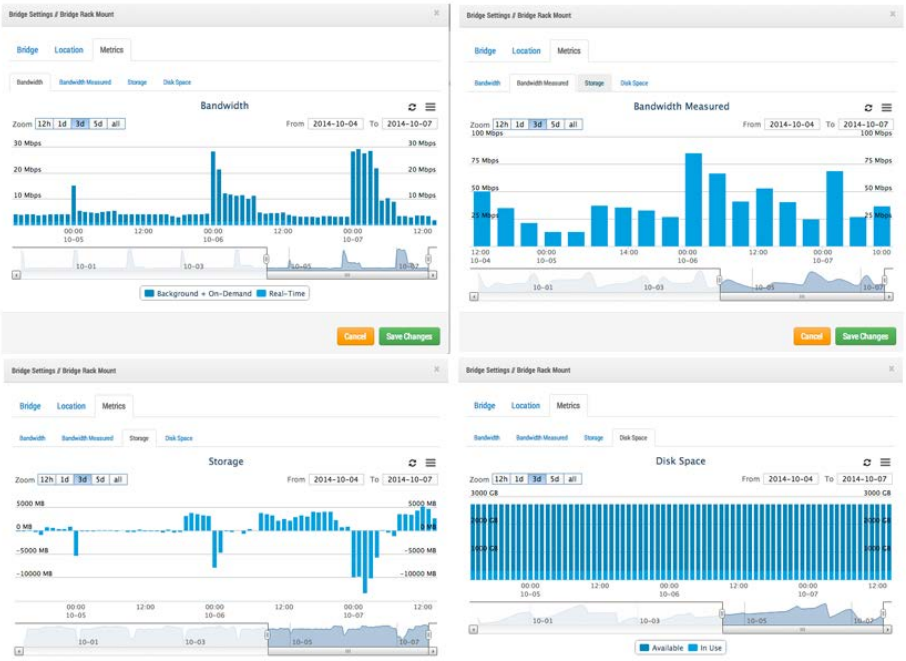


Fig. 73: Bandwidth example 1

In the above example, the **Bandwidth** tab shows how much bandwidth the bridge is using over time. The **Bandwidth Measured** tab shows the available upload network bandwidth to the bridge also over time. Note the **Storage** tab – it has both positive and negative. If there is enough bandwidth, there should be more negative than positive. Positive shows the buffering of video on the bridge. Negative shows the transmission of video to the cloud. The **Disk Space** tab shows very low amount of disk space being used – which is also good as the video that was buffered is already transmitted to the cloud.

Here is an example of a bridge that has low available bandwidth, but it has been set to be able to utilize enough bandwidth during nighttime hours to successfully transmit the video to the cloud:

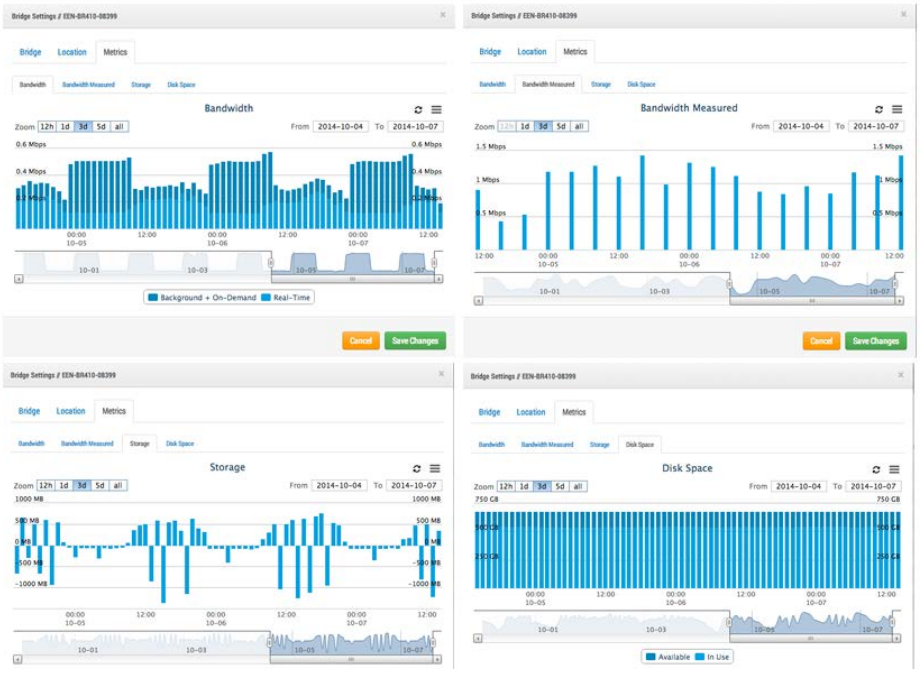


Fig. 74: Bandwidth example 2

Notice that the cycle is predictable and repetitious.

In some cases, the bandwidth may change at a customer location. Here is an example of the bandwidth going down and the video storage building up over the last few days because there is more video being added to the bridge than can be transmitted. The only solution is to either give more Internet bandwidth or adjust the video quality down. If it continues at this rate without intervention, then video will be purged and lost before it can be uploaded.

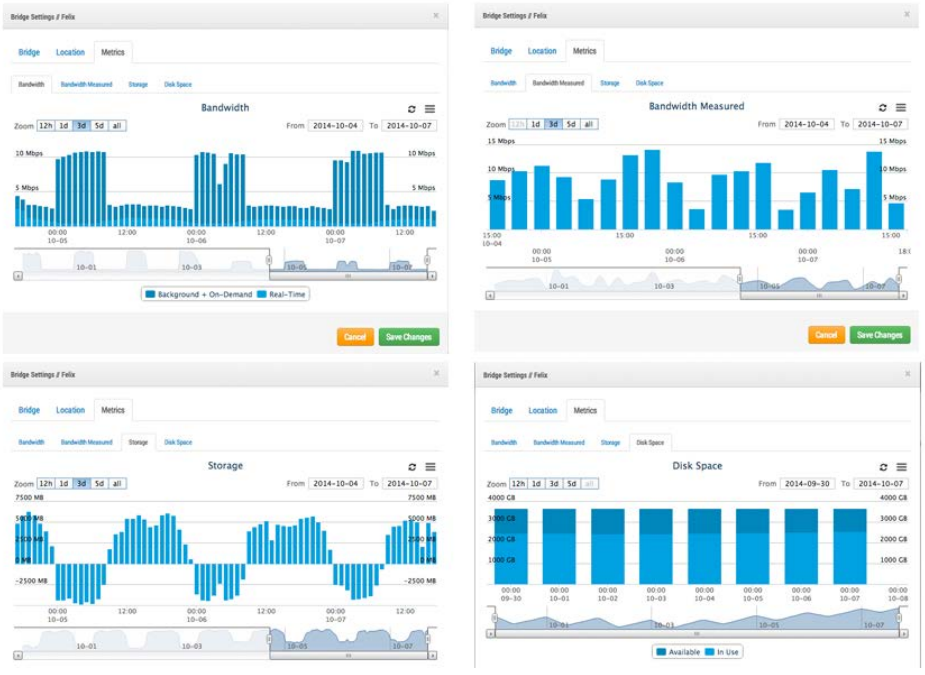


Fig. 75: Bandwidth example 3

Notice the **Disk Space** tab where the disk space usage has increased slowly over the past few days. You can see that the bandwidth has been not been as high, so the video has slowly been building on the bridge and has not been fully transmitted to the cloud. This is a situation where something must be adjusted, or video will be purged off the bridge before it is uploaded.

We have provided many different tools to try and optimize bandwidth usage. If the system is installed for a business that keeps regular daily hours, then one such way is to set the business hours up via the user's account settings:

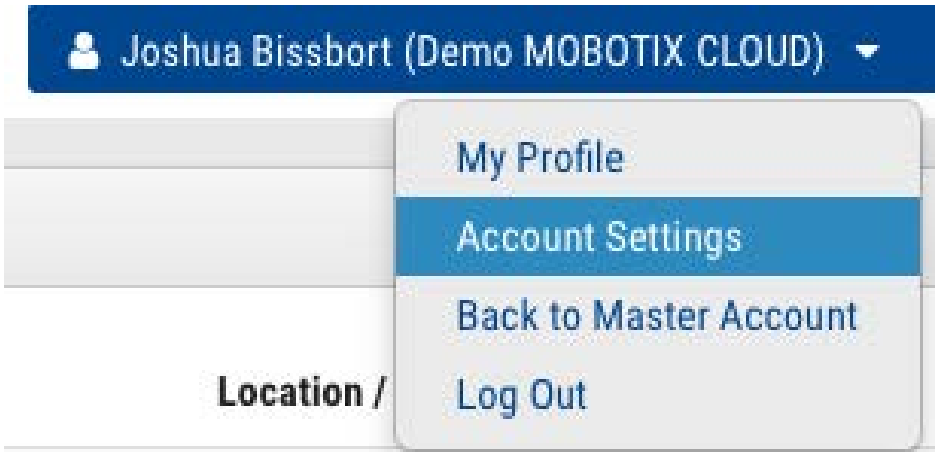


Fig. 76: User account settings

Open the **Days** tab next:

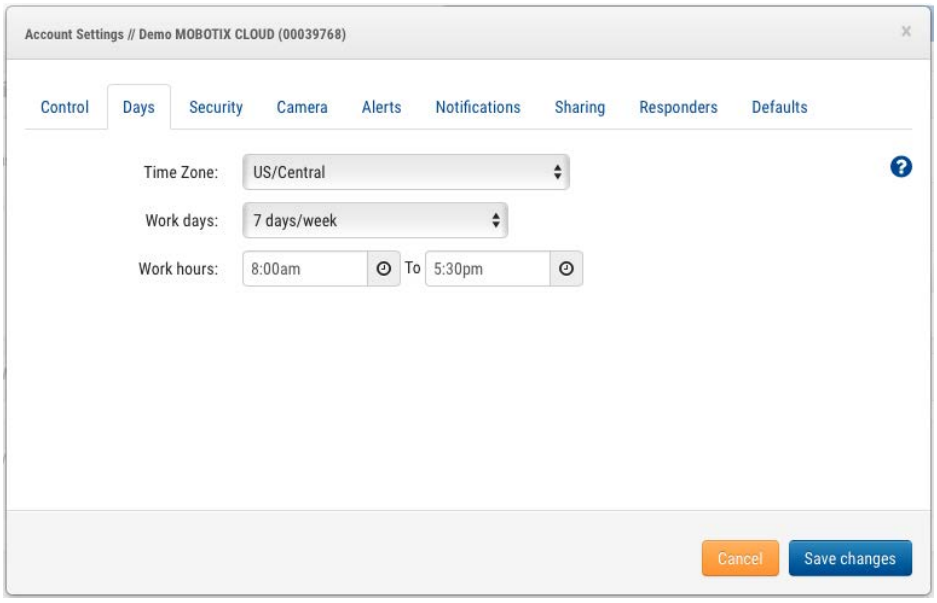


Fig. 77: Account settings for days

Here you can set the **Work hours** of the business. In this example, it is set from 8:00am to 5:30pm. By doing this, you will be able to maximize the available bandwidth outside of business hours. To do this, go to the bridge settings and change the **Scheduled Transmit Bandwidth** to **Non-work hours** as shown in this example:

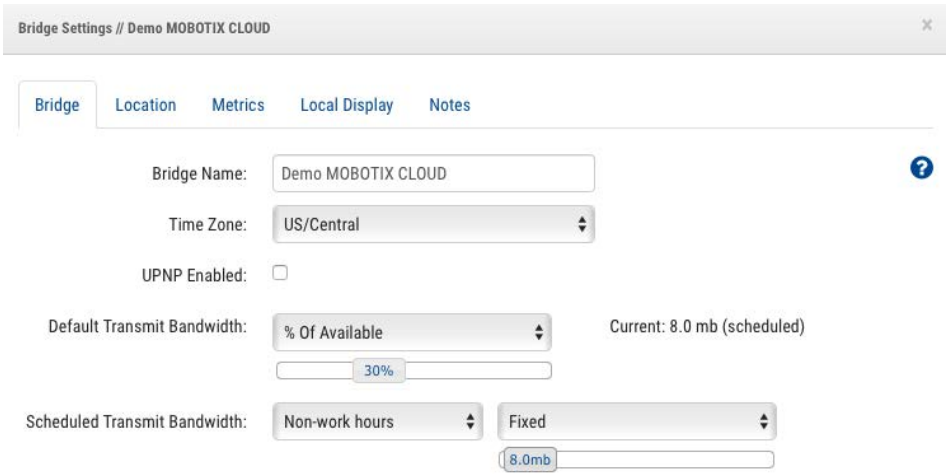


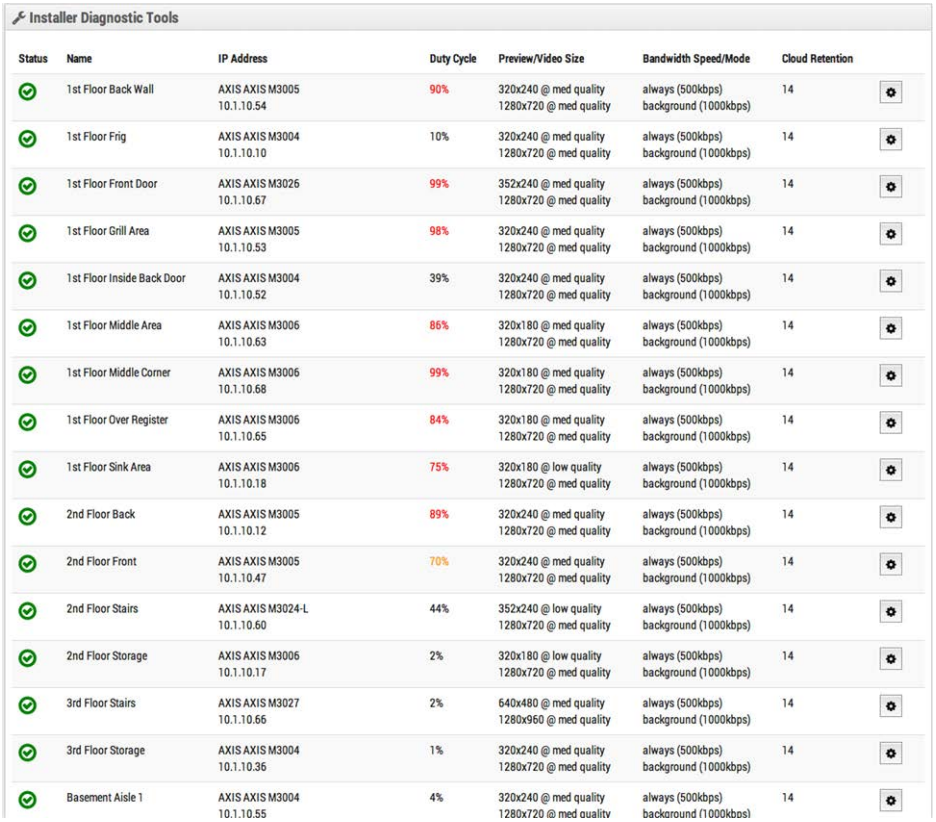
Fig. 78: Bridge settings

The bandwidth can also be adjusted to the maximum rate available based on the local Internet connection. So, in this example, during work hours, the maximum transmit rate is 100 kbps, but outside of work hours the transmit rate is 6 Mbps.

Setting preview to very low resolution can also help with bandwidth. It is good to train the customer to view the low-resolution previews in order to decide what they would like to see of the high-resolution video. Our system is unique in that we can have the preview stream set to **Always** or **On demand**. Always means that the preview images are always sent to the cloud. Thus, the bandwidth must be available for each camera. If the cameras are set to 100 kbps preview, and you have four cameras, then you would need 400 kbps bandwidth to transmit just the preview images. Our suggestion is to have 400 kbps of bandwidth per camera, so a four-camera system that has 1600 kbps of bandwidth upload should work quite well.

This of course depends on what we call the *duty cycle* of the camera. The duty cycle is the percentage of time from 0 % to 100 % that motion triggers recording. So, a camera with a duty cycle of 50 % means that the high-resolution video is buffered on the bridge half of the time. There needs to be enough bandwidth available to transmit that video in the background, or outside of work hours within 2–3 days.

We have found that in very low bandwidth installations, it is good to allow the system to run for a few days to gather metrics and then adjust the settings. It is also good to check in on the status of customer systems from time to time. One good way to do this is using the installer tools to see the settings and duty cycle of the installed cameras. Note in the following example that you can see, which cameras are the highest duty cycle (which means what percentage of time the camera is recording events).



Installer Diagnostic Tools

Status	Name	IP Address	Duty Cycle	Preview/Video Size	Bandwidth Speed/Mode	Cloud Retention	
	1st Floor Back Wall	AXIS AXIS M3005 10.1.10.54	90%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Frig	AXIS AXIS M3004 10.1.10.10	10%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Front Door	AXIS AXIS M3026 10.1.10.67	99%	352x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Grill Area	AXIS AXIS M3005 10.1.10.53	98%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Inside Back Door	AXIS AXIS M3004 10.1.10.52	39%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Middle Area	AXIS AXIS M3006 10.1.10.63	86%	320x180 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Middle Corner	AXIS AXIS M3006 10.1.10.68	99%	320x180 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Over Register	AXIS AXIS M3006 10.1.10.65	84%	320x180 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	1st Floor Sink Area	AXIS AXIS M3006 10.1.10.18	75%	320x180 @ low quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	2nd Floor Back	AXIS AXIS M3005 10.1.10.12	89%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	2nd Floor Front	AXIS AXIS M3005 10.1.10.47	70%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	2nd Floor Stairs	AXIS AXIS M3024-L 10.1.10.60	44%	352x240 @ low quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	2nd Floor Storage	AXIS AXIS M3006 10.1.10.17	2%	320x180 @ low quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	3rd Floor Stairs	AXIS AXIS M3027 10.1.10.66	2%	640x480 @ med quality 1280x960 @ med quality	always (500kbps) background (1000kbps)	14	
	3rd Floor Storage	AXIS AXIS M3004 10.1.10.36	1%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	
	Basement Aisle 1	AXIS AXIS M3004 10.1.10.55	4%	320x240 @ med quality 1280x720 @ med quality	always (500kbps) background (1000kbps)	14	

Fig. 79: Installer diagnostic tools

Out of 16 cameras, the average is 50 % duty cycle overall. Most of the bridge installations fall into an average duty cycle of 40–50 %. Outdoor cameras have significantly higher duty cycles. Higher duty cycles are no problem as long as there is adequate bandwidth.

Bandwidth Usage and Recommendations

We recommend 100 kbps per camera for a real-time preview stream. You can adjust the quality by raising or lowering the settings but those are safe averages. We load-balance and pool requests so that multiple people watching the same live stream view it through our cloud and only a single live stream between the bridge and our cloud are required. This allows getting more cameras on the same bandwidth. In addition, full-resolution video streams can be watched live or through our history browser. Our bandwidth management gets the most out of available bandwidth.

Example 1

We have a low-bandwidth customer who has successfully deployed eight HD cameras on our system on a 1.5 Mbps connection. We use 0.8 Mbps for our low-resolution preview video. The quality of the cameras is set to *Low* and 500 kbps for full video. The customer can watch a live (or historic) HD video stream of any camera. The preview stream and background upload slows down while the full HD streaming is taking place. Once the customer finishes, the preview stream speeds back up. A

lower duty cycle as well as lower quality and bit rate for full video make this possible for the customer.

Example 2

We replaced a camera installation at a daycare center. They were providing low-resolution video to parents so they could check on their children. Using their previous system, they were only able to support ~20 simultaneous viewers. Using our platform, all 80+ parents can see the preview stream at the same time. The preview stream only uses 0.8 Mbps to upload to our cloud and our cloud serves all the parents.

Technical Explanation

When talking about bandwidth, we segment it into three groups:

- Real-time bandwidth
- Background bandwidth
- On-demand bandwidth

Real-time bandwidth is what the bridge and cameras use to send and receive metadata and preview images. By default, we set it to 50 kbps and recommend adjusting to 100 kbps or until image updates are smooth.

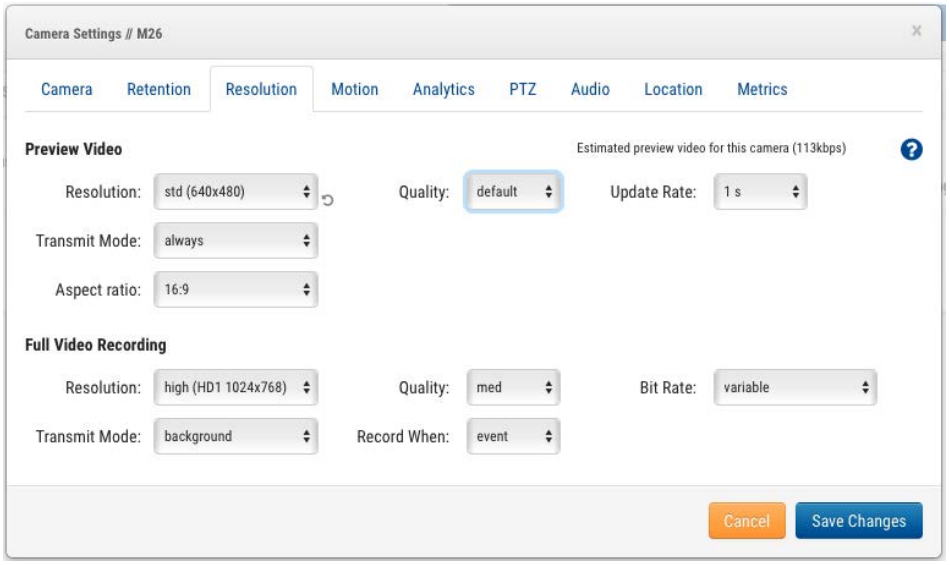


Fig. 80: Camera settings resolution

Background bandwidth is how we refer to background video uploading. When video is saved to the bridge, it goes into a queue and is scheduled to be uploaded. The metadata travels ahead to the cloud. As bandwidth allows, the video is uploaded in the background and removed from the bridge. The bridge allows for bandwidth limits to be scheduled to avoid interfering with other network traffic.

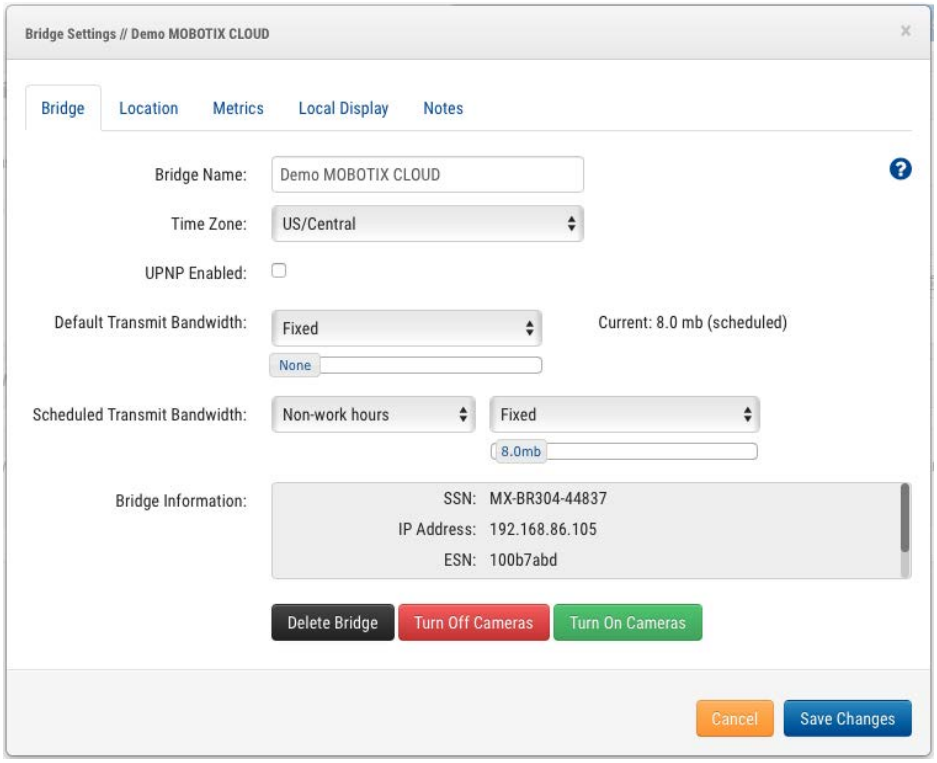


Fig. 81: Bridge settings without background bandwidth

You can see that the bridge has been set to not use any background bandwidth during working hours and to use 4 Mbps during non-work hours. Here is what the corresponding metrics look like and they confirm those settings.

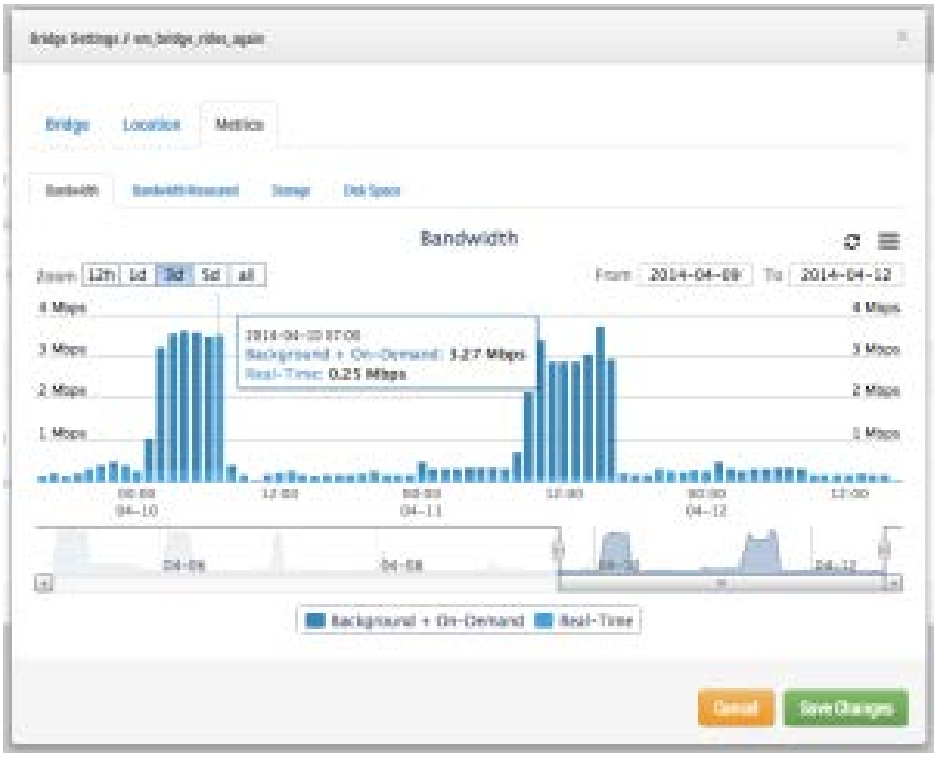


Fig. 82: Bandwidth metrics for bridge settings

On-demand bandwidth is the highest priority and will utilize all the bandwidth of real-time and background settings. When something is requested from the bridge that has not been uploaded yet, it will be immediately pulled from the bridge and sent to the client. This is the case for live video. Our cloud will also transcode the video into other formats depending on the client's request. Live streaming has a couple seconds latency. Video conversion adds additional latency for live viewing. Our goal is to keep live streaming within 2–3 seconds and live stream with video conversion within 8–10 seconds.

Maps

Using Maps

Cameras can be added to Google Maps so that they can be overlaid on the map at their physical location. The range of view of the camera can also be indicated on the map. Clicking a camera on the map brings up the preview video of the camera. Once the preview is visible, the same controls are available as viewing cameras from the **Layouts** or **Cameras** page.

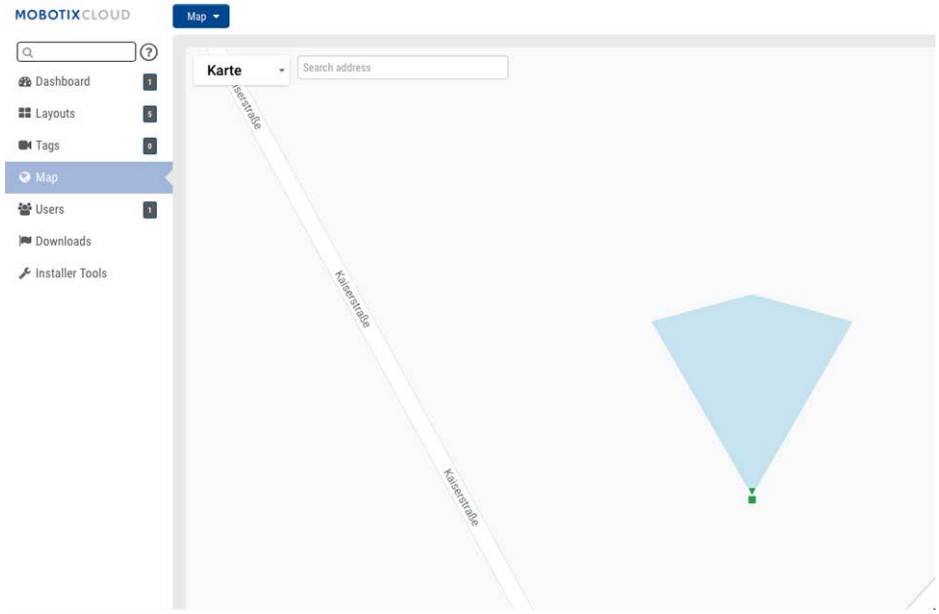


Fig. 83: Map example Camera Preview

Multiple floors can be setup with separate views or viewed all at once. The drop-down menu in the upper right corner of the map allows selecting a specific floor or **All Floors**.

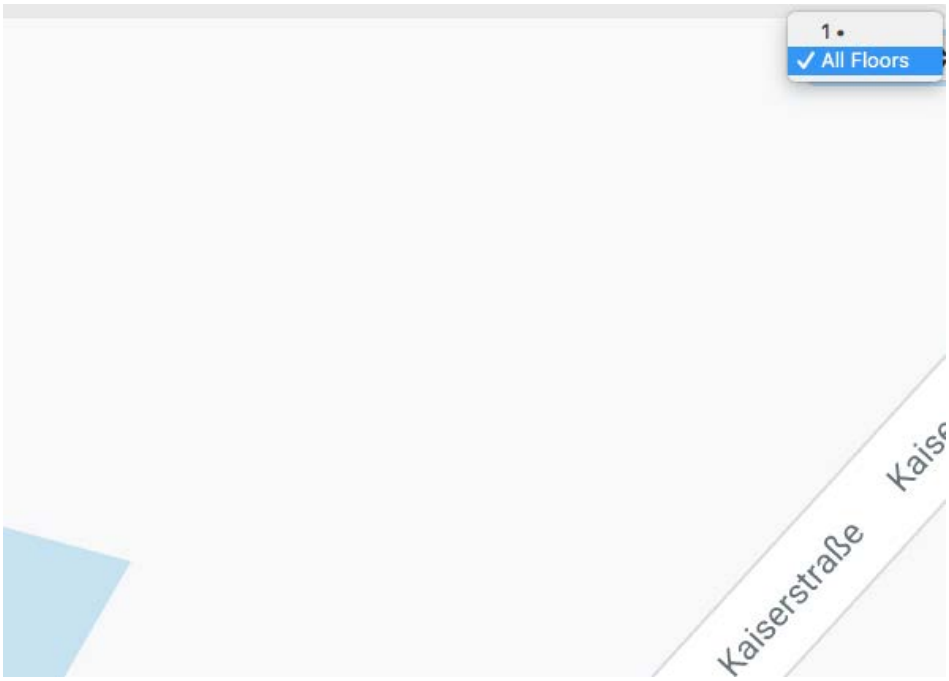


Fig. 84: Map example floors

There are two ways to add cameras to the map. One is to specify the address of a camera (**Camera Settings > Location** tab).

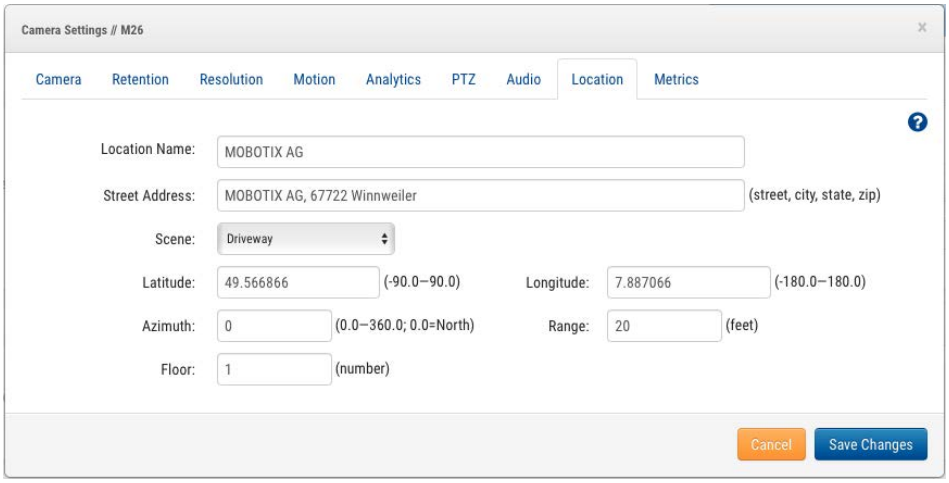


Fig. 85: Camera location settings

Entering a street address will add it to the map and automatically fill in the latitude and longitude. By default, the cameras are added to the 1st floor. Changing the number will move the camera to that floor. You can set floors from -10 to 100.

The easiest way to add cameras is to go to the Map, click the **Map** drop-down button at the top left and select **Edit**.

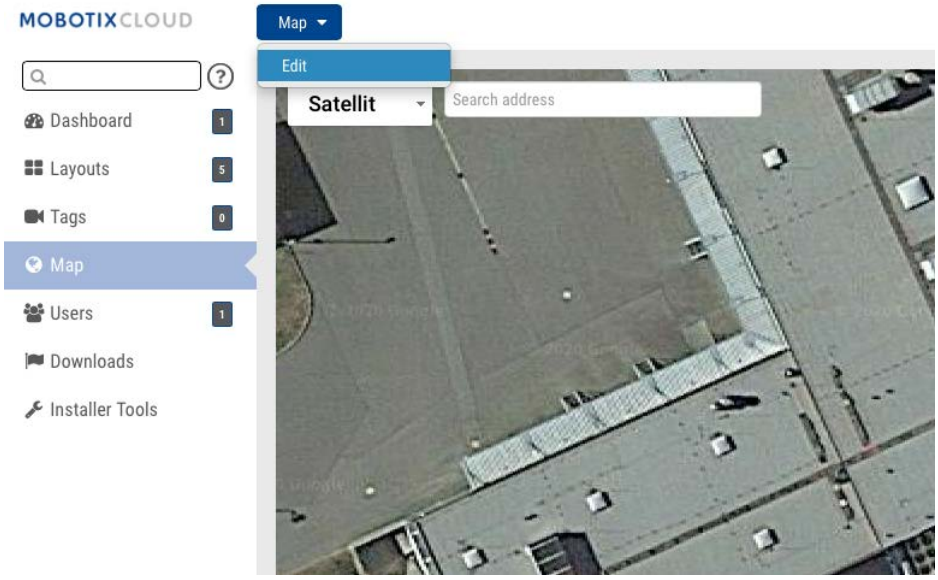


Fig. 86: Map edit

This will add a red outline to the map indicating you are in **Edit** mode. A new set of buttons will appear at the top right of the map.

Fig. 87: Map Edit settings

The next step is to enter the address of the location. This will zoom the map to the address location. Because this is an embedded Google Map, all the Google Map functionality is available, such as pan and zoom using a mouse or touch pad.

Next, use the **Add Camera** drop-down, which will present a list of the available cameras. Select the camera and it will be added to the map.

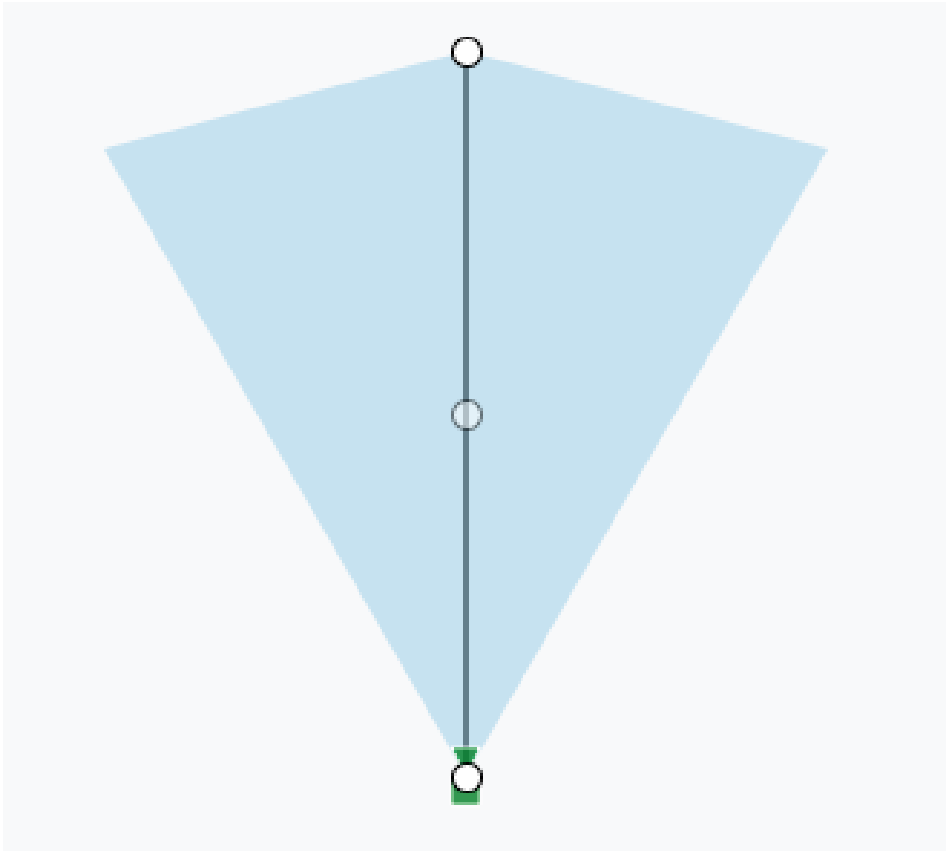


Fig. 88: Camera on map

To move the camera, click and drag the circle directly on the camera. To change the direction and range of the camera, click and drag the circle farthest away from the camera.

Add additional cameras and floors, then click the green **Save** button. Your changes will be saved.

When cameras are added to the map, data is automatically populated in the **Camera Settings > Location** tab.

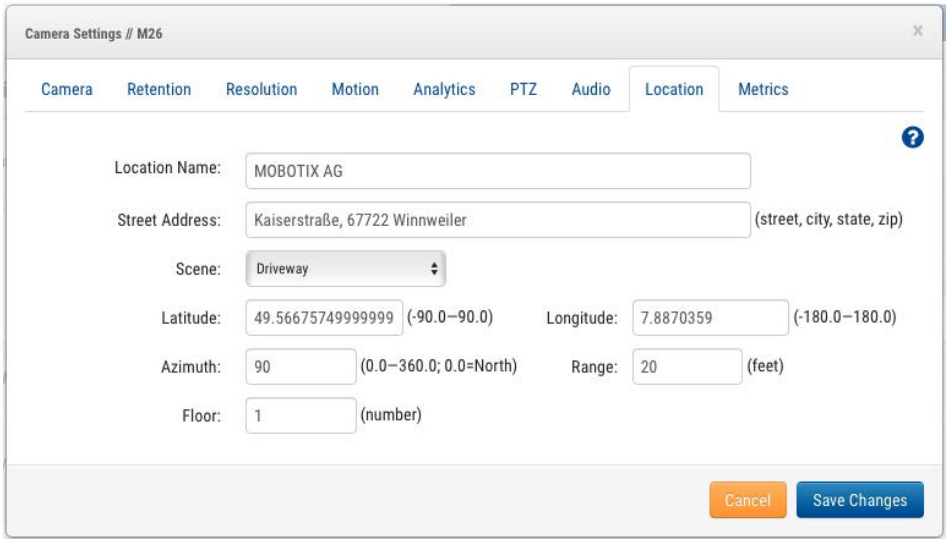


Fig. 89: Camera location settings filled in by map placement

Additional changes can be made such as moving the camera between floors in the camera settings.

To remove a camera from the map, delete the street address, latitude, and longitude in **Camera Settings > Location**.

System Alerts and Notifications

Using System Alerts and Notifications

System alerts and notifications can be sent to any user that is an ADMIN. Enabling system notifications is a two-step process. The reseller must enable system notifications for your account, and you must also enable them as an admin user. When logged into the MOBOTIX Cloud system, open the user profile by clicking your name in the upper right corner. Select **My Profile** and go to the **Notifications** tab.

Fig. 90: User My Profile

Check **System** for **Notify on Alerts** as shown in Fig. 91: My Profile notifications.

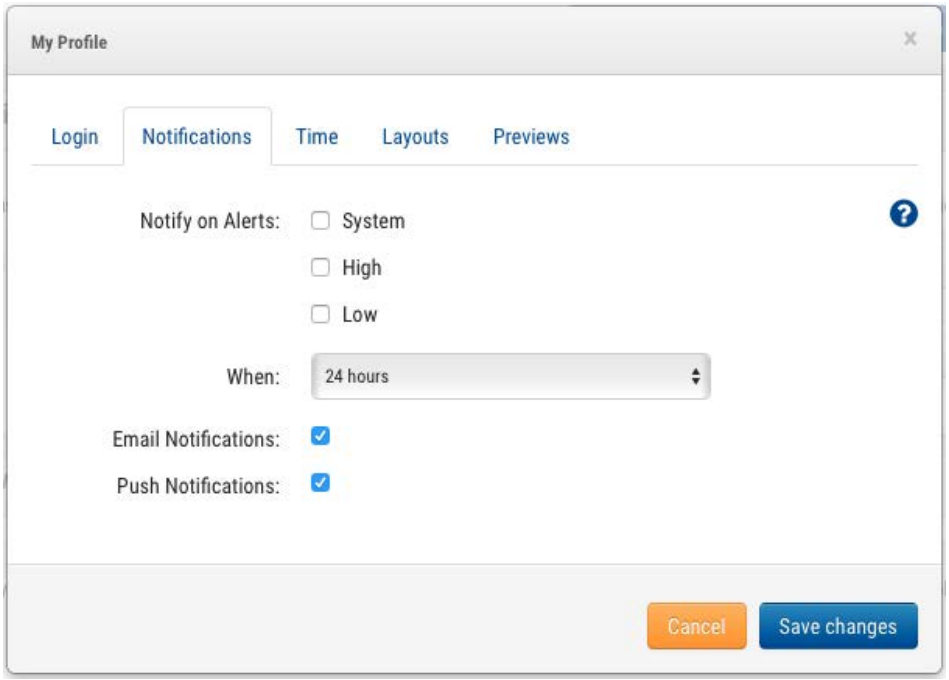


Fig. 91: My Profile notifications

You may also select High and/or Low alerts for motion alerts. Select **When** to receive and the method you want to use. You may choose push notifications, email, or both. The MOBOTIX Cloud VMS system will send email alerts when cameras go offline and come back online.

Timeline Colors

When **System Notifications** are enabled, additional colors are turned on in the history browser as shown in Fig. 92: Timeline colors. This is very helpful for troubleshooting the system.

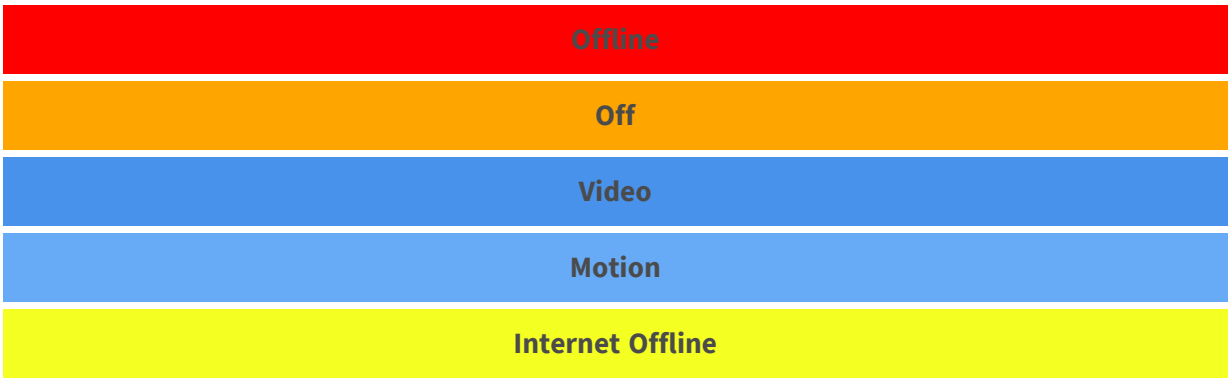


Fig. 92: Timeline colors

4

Technical Specifications

MOBOTIX Cloud Bridge Hardware

Order Code	Mx-S-BRIDGEA-DT-15	
Max. Number of Cameras	Image Size / Resolution	IP cameras/ S channels
	1MP (720p	15
	2MP (1080p)	10
	3MP	8
	4MP	6
	5MP	5
	8MP (4K-UHD)	3
	with Cloud Analytics:	5
Interfaces	■ 2x Gigabit Ethernet (WAN, CamLAN) ■ 1x HDMI ■ 1x Display Port (DP) ■ 1x USB 2.0 ■ 2x USB 3.0 (front) ■ 2x USB 3.0 (rear) ■ 1x SD Card Slot (HC, XC) ■ 1x Microphone 3.5 mm ■ 1x Headset 3.5 mm ■ 1x IR Remote Control (for future usage)	
Encryption	■ TLS Version 1.2 ■ AES 256 (proprietary algorithm) ■ HTTPS	
Power Supply	External Power Supply	
Power Requirements	100–240 V AC, typ. 10 Watt	
Cooling Fans	None	
Dimensions (W x H x D)	127 x 45 x 127 mm/5 x 1.75 x 5 in	
Hard Disk	1x 2,5“ SATA 1 TB (included)	

Net Storage	800 GB (for 2 days on-premise buffering)
Temperature Range	0 to 35 °C/32 to 95 °F
Humidity Range	0 to 70 % relative humidity
Certifications	CE, FCC, RCM, REACH, RoHS
Detailed Technical Documentation	**www.mobotix.com > Support > Download Center > Marketing & Documentation > Manuals**

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