



SCW

SECURITY CAMERA WAREHOUSE

Storage Space, Hard Drives, and Playback Space

Technical Guide - 8/21/18

Understanding Bitrate

Bitrate determines the amount of bandwidth and storage space use by a camera. Different resolutions, frame rates, and cameras use different bitrates. Generally, the higher the resolution or frames per second (FPS) the larger the bitrate.

Here's the list of recommended mainstream recording bitrates for our cameras.

H.264

720p @ 30FPS - 2.5Mbps

1080p @ 30FPS - 5Mbps

3MP @ 20FPS - 5Mbps

3MP @ 30FPS - 7.5Mbps

4MP @ 20FPS - 7.5Mbps

1080p @ 60FPS - 8.5Mbps

4K @ 30FPS - 10Mbps

H.265 (Admiral Series)

720p @ 30FPS - 1.5Mbps

1080p @ 30FPS - 2.5Mbps

4MP @ 25FPS - 3.5Mbps

4K @ 30FPS - 5Mbps

As you can see the higher the resolution the larger the bitrate, however frame rate has an equal part in bitrate. For example, notice how 1080p at 30FPS uses about 4Mbps while 3MP at 20FPS also uses 4Mbps. 3MP is 33% higher resolution than 1080p but it does it at 33% less frames per second, evening out the bitrate.

Increasing Playback Space

If you are not satisfied by the amount of playback space (days available to few previously recorded footage) there are a few ways to reduce the amount of space used on the hard drive to maximize the available space.

Additional Hard Drives

Adding an additional hard drive to your recorder is the best way to gain additional storage without reducing quality or changing preferred recording schemes. As of June 2016, most units can handle 6TB hard drive in a single drive. Most of the larger units will have multiple hard drive slots.

If your unit has an empty hard drive slot you can increase the amount of by adding another one. Most units can mix and match hard drive sizes, the only exception being units with a RAID like the Super or Executive level NVRs. For example if you currently have a 16 channel unit with a single 2TB drive you can add a 6TB if desired to bring the total storage up to 8TB.

Hard drives are easy to install and require very little setup after installation. If necessary, SCW can also install hard drives into your unit if you'd like to send the recorder back to us. For info on how to install hard drives - check out the guide here

<http://www.security-camera-warehouse.com/downloads/manuals/hd-guide.pdf>

Motion Recording

Motion recording will only save recordings when the camera detects motion. Depending on the amount of activity per camera, this can significantly cut down the amount of storage used.

For example an h.264 1080p camera at 30FPS at typical settings will use about around 45GB (gigabytes) a day on the hard drive at 24/7 recording. If you had motion recording on and you had ~30% activity you'd reduce it down to 13-14GB a day. The amount of savings with motion recording will vary depending on how busy the view of the camera is, as well as motion sensitivity settings.d

Unless required by law or policy, we highly recommend using motion recording for the hard drive space and ease of searching events.

Admiral/Imperial - H.265

Another important advancement is h.265 which nearly doubles the playback space without having to reduce image quality. H.265 is only available on the Admiral / Imperial line series.

To ensure H.265 is enabled check the encoding perimeters under Menu-Camera-Encoding on the local interface and Setup-Camera-Encoding on the web interface. Ensure "Video Compression" is set to h.265 for the mainstream.

Mainstream and Mainstream Event

In some industries only constant recording is permitted by law or policy. In cases like this you can still use the motion function help save hard drive space.

Most of our recorders have a feature known as mainstream event. Mainstream event allows you to bump up the quality when the camera detects motion. This will allow you to set the mainstream (when it's not detecting motion) down to lower levels of quality and keep high quality when motion is detected.

For example, you can set the main stream (no motion) to 512Kbps or lower and the mainstream event (motion) to 4Mbps (normal high quality). Let's use the previous example of 70% non activity and 30% activity. The 70% at 512Kbps would use about 4GB per day, the 30% at 4Mbps would use 13GB. Giving you about 21GB use on the day, using 53% less space than what's necessary for constant recording.

Cutting Frames Per Second

In situations where playback space is critical or large amounts are required by law. Cutting frames per second is another way to reduce the amount of storage used.

As mentioned above, in most cases cutting the frames can reduce the bitrate by the same amount. For example, a 1080p 30FPS camera typically uses about 4Mbps of bitrate, reducing that to 15FPS would allow it to be set to 2Mbps and half the amount of data used. Going from 45GB used per day for a 1080p 30FPS camera down to about 23GB.

You can also use this in conjunction with motion recording and mainstream event in order to further reduce storage use. On the previous example of 21GB for mainstream event, reducing the FPS to 15 on the motion would be about 11GB of space.

Conclusion

For individual recommendations please contact our helpful staff at 866-414-2553 - we'll be able to recommend storage amounts and solutions for almost any requirement.