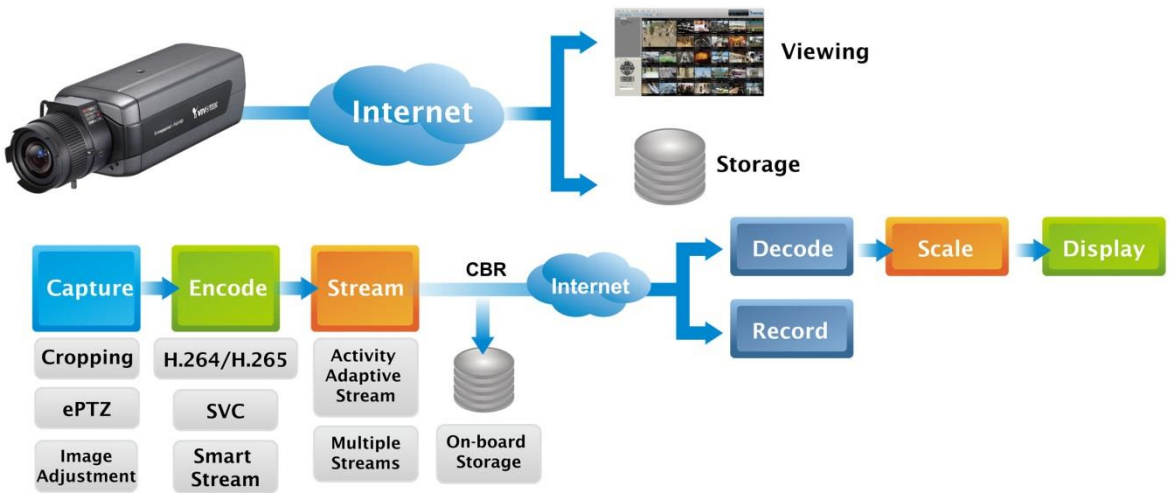
New VBR

VIVOTEK brings together the best of constant and variable bit rate video encoding



Bandwidth Solutions

Network bandwidth is one of the most challenging factors to manage in a surveillance system, as it is generally difficult to scale, even as higher-resolution IP cameras transmit ever greater amounts of data across the network. Thus, the desire for improved image quality in surveillance video must be balanced against the additional network bandwidth that will be consumed. VIVOTEK has developed a variety of solutions to help customers get the best image quality possible while conserving network bandwidth-these include cropping, on-camera storage, and Activity Adaptive Stream technology.

CBR vs. VBR

One of the most powerful approaches for conserving network bandwidth is by enforcing a fixed bit rate on encoded video-so-called constant bit rate (CBR) encoding. With CBR encoding, the amount of network bandwidth required for transmitting video data is predictable, making it easier for system administrators to manage resources and plan upgrades. The downside of CBR encoding is that when the visual complexity of a view increases-for example, when a person of interest appears, or when the amount of traffic rises at a monitored intersection-either or both image quality and frame rate must be reduced in order to maintain the bit rate under the target. Unfortunately, an increase in visual complexity typically signals an event of potential importance, meaning that at just the time when superior quality video would be more useful, quality is degraded.

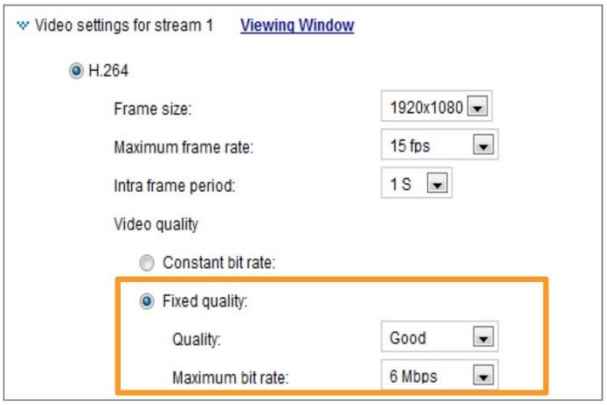
Variable bit rate (VBR) encoding, on the other hand, allows administrators to set a predefined level of image quality to be maintained, regardless of the complexity of scene. This is often desirable in surveillance applications in which there is a need for higher image quality when movement is present in the view. A side effect is, however, that network bandwidth consumption will increase when there is a high level of activity and will decrease when there is less activity. Since the bit rate may vary, the network infrastructure must provide sufficient available bandwidth to accommodate the maximum bit rate, making resource management potentially difficult.

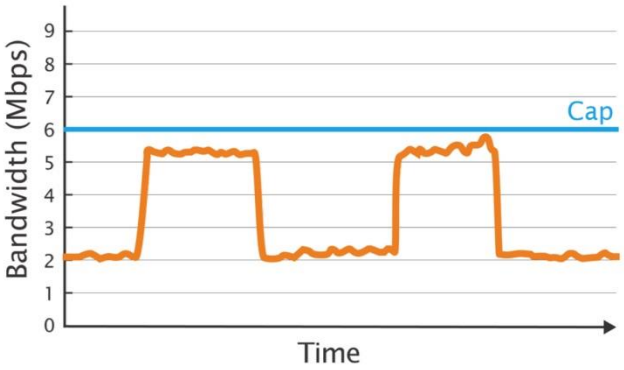
VIVOTEK's New VBR with Cap

To provide customers with the advantages of both CBR and VBR encoding while minimizing their disadvantages, VIVOTEK has developed a new version of its VBR encoding technology. In effect, this new encoding technology functions like VBR with caps—that is, administrators set an upper bound on allowable bit rates, but the bit rate is free to vary otherwise to accommodate changes in view complexity. Because the bit rate of the encoded video, and thus the network bandwidth required for transmission, is guaranteed not to exceed the preset limit, it is easier to manage network resources.

Example:

Under fixed quality (VBR) setting, the bit rate of the stream fluctuates with image complexity but stay under 6 Mbps, so as to help installers plan bandwidth and storage system.





Benefits

VIVOTEK's new VBR with cap is ideal for applications where the visual complexity of the monitored location varies over time, such as road traffic, retail environments and train station lobbies. To ensure that sufficient image quality is always available, the cap can be set higher, or set lower to conserve network bandwidth. The result is better utilization of the high-resolution capabilities of the camera, while making network bandwidth consumption more predictable, aiding in the installation, administration, and operation of the surveillance system as a whole.

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