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# VIDEO OVER WIRELESS

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## SOLVING YOUR “ VIDEO OVER WIRELESS” CHALLENGES



**Video surveillance systems are designed to be wired**, but there are situations where wireless is essential. Video requirements challenge wireless networks more than any other application. In most cases, you see poor video performance, despite large corporate investments in excellent video systems. Redline’s Virtual Fiber™ is based on a software defined radio that has been enhanced to support the unique way in which video is transmitted over IP networks. The result is a wireless solution that enables your video system to perform the way it was designed to perform, ensuring the best return on your investment.

**Modify your wireless system, not your video surveillance system.** Most wireless systems cannot properly support video. As a result, wireless vendors typically provide a technical document explaining how to make modifications to cameras and servers in order to enhance the flow of video traffic over their wireless system. This usually results in reduced video system performance and the disabling of many valuable features.

### VIDEO OVER WIRELESS CHALLENGES

#### Data Flow Challenges

**Uplink capacity:** 95% of the data in a video surveillance network is uplink data — travelling from the remote radio up to the wireless base station. Since most wireless systems are designed for Internet service they support less than half capacity for uplink as downlink.

**Multicast of video:** Multicast is used in video when two or more sites wish to view the same video camera. Instead of sending multiple video streams, the system will simply multicast the camera’s stream.

**Low latency for PTZ & analytics:** Cameras with Pan-Tilt-Zoom (PTZ), and analytic capabilities require very low latency to perform well.

#### Redline Solutions

Redline can support full capacity uplink traffic flow.

Redline is one of the only wireless systems that supports multicast of video.

Redline has the industry’s lowest latency, even when scores of remotes are connected to a single base station.

## Data Packet Challenges

**I-Frame data showers:** Video compression algorithms such as MPEG-4 and H.264 use interframe prediction to reduce video stream file size. The first image taken, called the I-Frame, is a full size picture which is immediately sent over the wireless system in a data shower.

**P-Frame small packet data:** Once the video server has acknowledged the I-Frame, the camera divides the image into blocks, and only sends blocks where there are changes — like a car moving across a static background — only the moving car blocks would be sent. These blocks are referred to as P-Frames and they are very small packet data. P-Frames comprise the majority of video packet data and their small size means that the radio must process many hundreds of thousands of packets per second in order to keep up with the flow of the P-Frames.

**Metadata Quality of Service (QoS):** Metadata is the information that is sent separately between the camera and server which includes time, location, and other data used for analytics. Video cameras mark video streams of high importance with a QoS tag so it has priority in the network. However, no special priority is given to the metadata packets, and this often results in the loss of this data — since low priority packets are often dropped. Lost metadata can also disable many analytical features such as license plate and facial recognition, or color and movement detection. Video without metadata is not admissible in most courts, since there is no reference to exact camera, time, or location.

## Redline Solutions

Redline installed special data buffers in our radio hardware to cache these I-Frame data showers so that they run smoothly over the network.



Redline uses the industry's fastest data processors in order to resolve this issue.

A Redline radio can tunnel the metadata into its own high priority VLAN so that it is never dropped.

## THE REDLINE DIFFERENCE

Making adjustments to your video system because of your wireless network shortcomings downgrades its performance and is a waste of money invested. Redline's Virtual Fiber™ enables your video system to function as though it were wired. Base stations with the world's highest data throughput deliver enough capacity for today's network, with enough left over for tomorrow's expansion. Specialized wireless performance enhancements enable state-of-the-art video technologies and analytics that no other wireless system can support. Video over a Redline wireless network will give your business the visibility and functionality you expect and require.

### More video camera capacity

- Highest capacity wireless multipoint system anywhere.
- Supports full uplink traffic for more video capacity.
- Supports multicast to reduce redundant video streams and increase system efficiency.
- Industry's fastest processors support more simultaneous video streams.

### Better video performance

- Onboard memory can cache data showers so video flows smoothly without pixilation or video artifacts.
- Low latency wireless means quick response to PTZ, motion detectors and server-based analytics.
- Prioritized metadata QoS tags mean no more lost metadata.
- Software based solution so hardware does not have to be modified.