

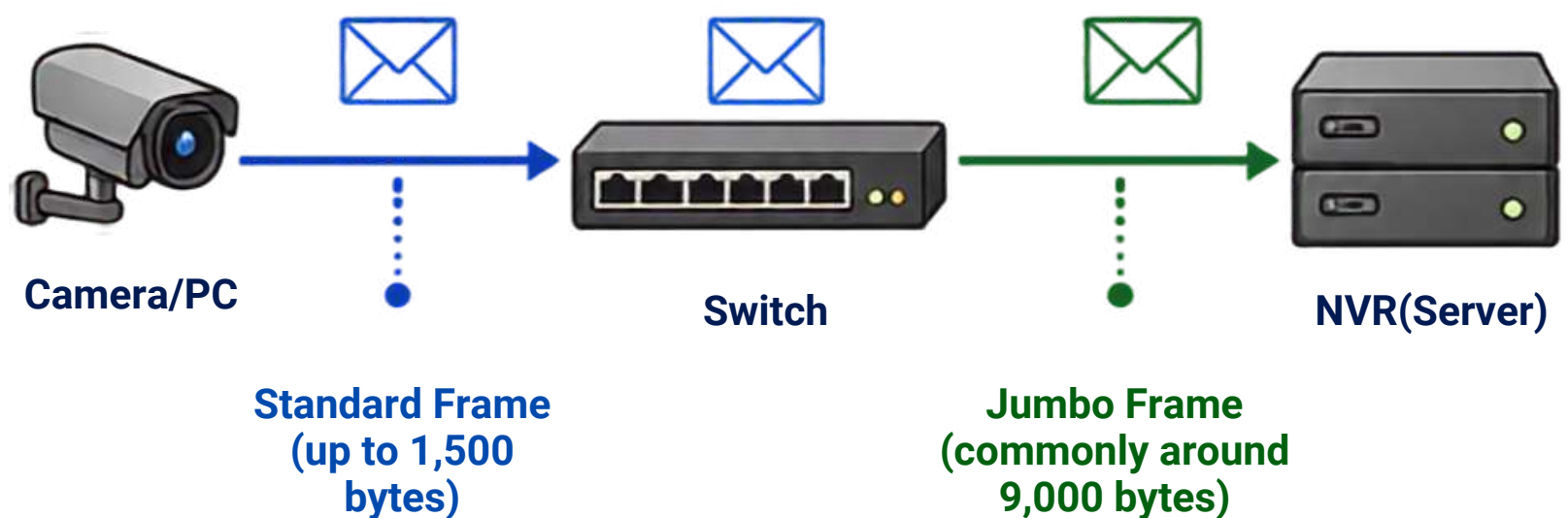
What Are Jumbo Frames?

In Ethernet networking, data moves in units called frames.

A standard Ethernet network normally uses a **1,500-byte MTU**.

A Jumbo Frame carries more data-commonly around **9,000 bytes**.

Larger frames can improve efficiency, but only if every device in the path supports the selected size.



Jumbo Frames are a convention, not one universal standard. Supported limits vary by device.

Why Larger Frames Can Be More Efficient

Think of frames as delivery vehicles on a highway.

Standard Frames = Many Small Trucks

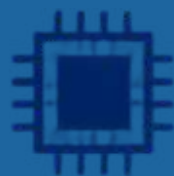


More trips, more processing, more overhead

Jumbo Frames = Fewer Big Trucks



Fewer trips, less overhead, more efficiency



**Less CPU
Processing**



**Lower
Overhead**



**Fewer
Interrupts**



**Better Throughput
for Large Flows**



**Jumbo Framing only when the entire
transmission path supports them.**

Jumbo Frames Need an End-to-End Path

- Jumbo Frames work only when every device in the path supports the same or larger MTU.
- In a security video network, the path may include a camera, extender, switch, and recorder.
- One smaller limit can cause drops, delays, or performance problems.



The smallest MTU in the path becomes the bottleneck.



Possible signs of packet loss or MTU mismatch

Even if your local network is ready, the path might include devices you don't control.

1 Blocky Video



2 Frozen Video



3 Black / Missing Image



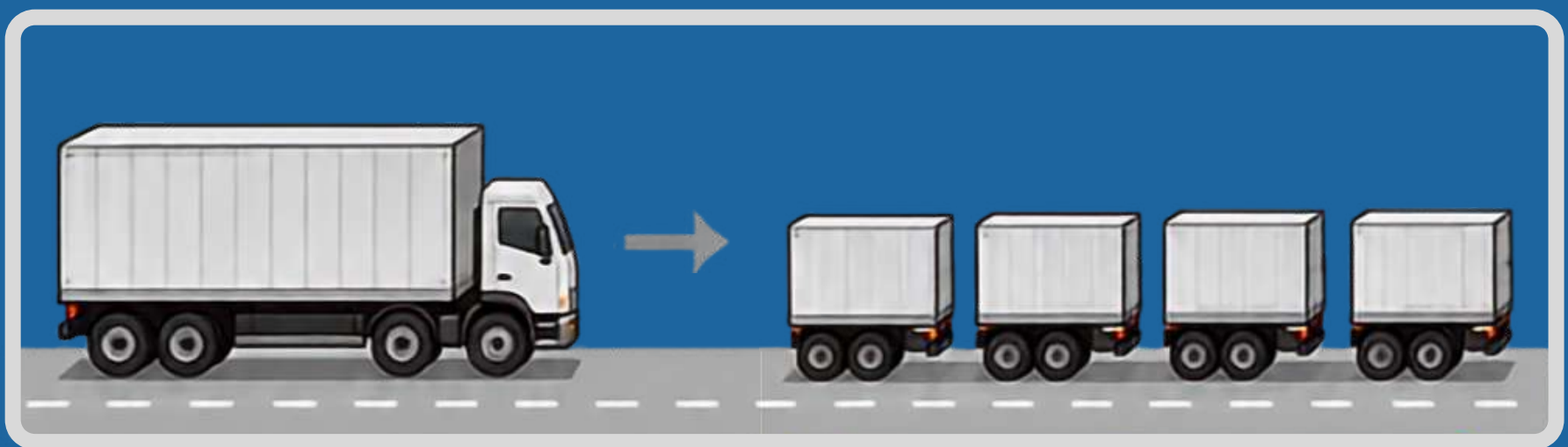
4 Intermittent Video



These symptoms may indicate an MTU problem-but other network issues can create similar results.

Why Fragmentation Is Not a Good Solution

When a packet is too large, it may be broken into smaller pieces. That creates extra work and more chances for loss.



- More processing
- More overhead
- More chances for loss
- If one piece is lost, the full packet may be unusable



Fragmentation should not be relied on as the fix for Jumbo Frame problems.

Check Every Network Device

Do not assume every inline device will pass Jumbo Frames. Confirm the actual maximum frame size for each device in the path.



Ethernet Extender



Media Converter



Wireless Bridge



**Managed /
Unmanaged Switch**



Repeater



Recorder / Server NIC



Camera / NIC



If the datasheet is unclear, ask the manufacturer to confirm support at the intended port speed.



Fast Test for an Installed Camera System

1

Check the camera MTU

Record the current setting.



2

Temporarily select MTU 1500

Apply the change and restart if required.



3

Retest the video

Test during high activity or with multiple streams.



4

If the problem stops

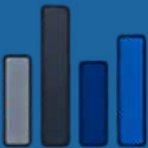
Verify every device in the path before restoring Jumbo Frames.



Start at the camera.

Change one setting at a time and document the results.

Design It Correctly from the Start

-  Confirm the camera MTU
-  Check every data-transmission device
-  Verify support at the actual port speed
-  Use one compatible MTU end to end
-  Test with real video traffic
-  Monitor dropped packets and interface errors



Good design prevents problems.

Jumbo Frames improve efficiency only when the entire transmission path supports them.

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