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Video Streaming Overview

Updated 16 August 2026

What Video Streaming Does

Video streaming delivers real time video from connected cameras and devices to operators in GCXONE.

It supports multiple protocols and deployment modes to ensure reliable performance across different network environments.

Why It Matters

Operators depend on fast and stable video to respond to alarms and monitor sites. Incorrect streaming configuration leads to delays, buffering, or connection failures. Proper setup ensures that every operator sees exactly what they need, when they need it.

How It Works

GCXONE supports two streaming modes depending on the environment:

Cloud Streaming — Video is routed through the GCXONE cloud infrastructure. Accessible from anywhere with an internet connection. Encrypted, secure, and optimized for remote access.

Local Mode (P2P) — Direct connection between the operator workstation and the device. Minimal latency, reduced WAN bandwidth, and improved audio quality via local SDKs. Requires installation of the Local Mode service on the operator workstation. Automatically falls back to cloud streaming if unavailable.

Key Capabilities

Multi-Protocol Support

- RTSP — Axis, Axxon, Hanwha, Hikvision
- TCP JPEG or Raw — Milestone
- HLS — Camect and compatible devices
- Manufacturer SDKs — Milestone, Hikvision HikProConnect, Dahua DoLynk

Adaptive Streaming

GCXONE automatically selects the optimal stream resolution based on the size of the viewing window.

This reduces CPU, GPU, and bandwidth usage without manual configuration.

Quality options

- Auto — Recommended, adjusts automatically
- High — Maximum quality for full screen viewing
- Medium — Balanced for multi camera views
- Low — Optimized for limited bandwidth

Device Compatibility

Full support — Cloud and Local Mode: Adpro, Axis, Axxon, Dahua, Hikvision, Milestone.

Cloud-only support: Hanwha.

No live support: Reconeyez PIR cameras and Ajax PIR cameras (event-based only).

Real-World Use Cases

- An operator at a remote location streams live video via Cloud Streaming — encrypted and accessible from any browser without additional setup.
- An on-site workstation uses Local Mode for P2P streaming — minimal latency and improved audio quality without routing through the cloud.

- A multi-camera grid view uses Auto quality — GCXONE automatically reduces resolution per tile to preserve bandwidth without manual adjustments.

Best Practices

- Use Auto quality by default — it reduces bandwidth and CPU usage without sacrificing visibility.
- Use Local Mode whenever possible for on-site environments — lower latency and better audio quality.
- Use secondary streams for multi-camera grid views to reduce bandwidth usage.
- Avoid unnecessarily high bitrate settings — they cause buffering without visible quality improvement.
- Enable Auto Streaming for alarm workflows to ensure live feeds open instantly when alarms trigger.
- Maintain a stable and performant network — packet loss causes stuttering and connection drops.
- Perform regular functionality checks to catch streaming issues before they affect operations.

Additional Details

1. Network Requirements

- Ensure devices are reachable from GCXONE
- Open required ports: RTSP 554 and HTTP HTTPS 80 and 443
- Configure firewall rules to allow communication between devices and the platform

2. Device Setup

- Enable required streaming protocols on the device
- Configure user permissions for video access
- Apply manufacturer specific settings according to documentation

3. Optimization Tips

- Use secondary streams for multi camera grid views

- Enable auto quality to reduce bandwidth usage
- Avoid unnecessarily high bitrate settings
- Use Local Mode for on site environments to reduce latency
- Enable auto streaming for alarm workflows

4. Common Issues

- Incorrect RTSP URL or credentials
- Ports not open or firewall blocking traffic
- Device not reachable or wrong IP address
- Local Mode not installed or not active
- Bitrate too high causing buffering
- Browser limitations in cloud streaming

5. Network and Bandwidth

- Recommended bandwidth per camera approx 2 to 4 Mbps depending on quality
- High latency can delay live view
- Packet loss causes stuttering or connection drops

6. Audio Notes

- Audio behavior depends on the selected mode
- Local Mode significantly improves audio quality
- Not all devices support two way audio
- Audio can be blocked by firewall or missing ports

7. Security and Access

- Cloud streaming is encrypted

- Access is restricted to authorized users
- Use of secure credentials is recommended

8. Verification Checklist

After configuration, confirm the following:

- Live video loads without delay
- Streams start within a few seconds
- Video quality remains stable without resolution drops
- No buffering or connection drops during extended viewing

The operator account must have Live View or Operator permissions on the device. Required network ports must be open and whitelisted: RTSP 554 and HTTP 80 and 443.

For Local Mode features such as P2P streaming, encrypted streams, and local audio, the Genesis Local Mode component must be installed on the operator workstation.

9. Stream Error & Pagination

Stream error notifications are fully compatible with pagination controls. When a local or cloud stream fails:

- The error message appears to inform the operator.
- Pagination controls remain fully accessible.
- Users can switch pages without obstruction.