

TELEGRAM APPLICATION MANUAL

V8.1

Introduction to Telegram Integration

What is Telegram?

[Telegram](#) is a cloud-based messaging platform known for its speed, security, and powerful bot support. Unlike traditional messaging apps, Telegram allows users to interact with automated systems (called bots) that can receive and respond to commands, send alerts, and facilitate real-time communication with external systems.

Why Avlytics Uses Telegram

Avlytics integrates Telegram into its security platform to provide a **reliable, fast, and user-friendly communication channel** between users and their deployed devices. Telegram offers several advantages:

-  **Secure Messaging:** End-to-end encrypted communication
-  **Instant Alerts:** Real-time delivery of system notifications and device status
-  **Interactive Commands:** Easy-to-use command menus through Telegram Bots
-  **Cross-Platform Access:** Works on Android, iOS, Windows, macOS, and web browsers

How Avlytics Devices Connect to Telegram

Each Avlytics device is configured to communicate with Telegram via a **secure cloud connector** built into the Avlytics platform. Here's how it works:

1. Bot-Device Integration:

Each device is linked to a Telegram bot managed by Avlytics. This bot serves interface between the user and the hardware.

2. Group Setup:

Every device is associated with two Telegram groups (explained below).

These groups provide context - specific communication - one for user interaction, the other for critical alerts.

3. Command Relay and Automation:

When a user sends a command (like / **arm all**), Telegram delivers the message to the Avlytics bot. The bot then securely forwards the instruction to the relevant device over the Telegram cloud infrastructure.

4. Status & Notifications:

Devices are programmed to periodically send back their status or heartbeat messages via the same bot. these include live views, hardware stats, alerts, or test pings.

This integration removes the need for complex client-side apps and offers an **accessible, lightweight way for installers and clients to control and monitor** their systems from anywhere — even in bandwidth-limited environments.

Telegram Group Structure

■ 1. Info & Communication Group

This is the primary user-facing group and serves as the main interface between the client and the device.

Functions:

- Send commands to the device
- Recieve automatic test messages
- Access the live view and device status
- Interact with a menu-based control interface

The Info Group acts as a **heartbeat monitor** for your device — helping verify that it's online, responsive, and healthy.

Available Commands

Each command must be sent to the **Info & Communication Group**. Some commands will prompt you to make selections via an interactive menu.

/menu

Displays an interactive command menu for quick access to common functions

/arm all

Arms **all channels** on the device

/disarm all

Disarms **all channels** on the device.

/arm channel

Arms a **specific channel** on the device.

/disarm channel

Disarms a **specific channel** on the device

/arm partition

Arms all channels that belong to a specific **partition**.

/disarm partition

Disarms all channels in a selected **partition**.

 Partitions group multiple channels logically, allowing grouped control.

/live view

Prompts the user to select a channel. Once selected, the device responds with two links:

- **Link 1:** Direct public URL for that channel's live view
- **Link 2:** Internal web interface (GUI) link

 This second link requires VPN access to function

This allows both instant visual confirmation and deeper access to the device if needed

/status

Requests the device's current operational status. The device will respond with a full snapshot of its system and camera health.

Example Output:

-  Device Status
 - ◆ Device: intertrade795
 - ◆ Client: intertrade_PAULVV
 - ◆ Site: 808 DEMO
 - ◆ VPN IP: 172.29.194.8
 - ◆ Live Link: <http://172.29.194.8:8000/blog/Live>
 - ◆ Firmware: 7.35.2.0
 - ◆ Model: AVT
 - ◆ Install Date:

-  Hardware Usage
 -  CPU Usage: 7.72%
 -  Disk Space: 27%
 -  Memory Usage: 53.19%
 -  Temperature: 0°C
 -  Number of Channels: 4

-  Network Information
 -  Reboots: 1
 -  Reconnects: 0
 -  Errors: 1
 -  Software Version: V1.32

-  Camera FPS
 -  C1: 6 FPS
 -  C2: 6 FPS
 -  C3: 6 FPS
 -  C4: 6 FPS

Channel Armed Status

- channel1: armed
- channel2: armed
- channel3: armed
- channel4: armed

 Last Reported: 2025-06-10 12:21:05

This is especially useful for troubleshooting, system checks, or confirming device health.

Heartbeat Notifications (Automated Test Messages)

These are **automated periodic messages** sent to the Info Group at intervals based on the **Test Interval configured for Channel 1**.

Example Message:

808 New: intertrade795 (version 7.35.2.0) channel4 (armed) - TEST

Interpretation:

- **Site:** 808 New
- **Device ID:** intertrade795
- **Firmware:** version 7.35.2.0
- **Channel:** channel4
- **Status:** armed
- **Type:** TEST message (heartbeat ping)

This lets you confirm that the device is still alive and communicating, even when no alerts are triggered.

Out of Specification Warning (Camera Configuration Error)

These Automated messages are critical health checks issued when the connected camera's video stream configuration exceeds system limits, prompting Avlytics to disconnect the stream to preserve device performance.



Example Message

AME@TheEdge: Pi 5 Testing intertrade1870, channel3 → out of spec



Interpretation:

Element	Meaning
System	AME@TheEdge – location name
Hardware	Pi 5 Testing – Site Name
Device ID	intertrade1870 – the Avlytics unique identifier
Channel	channel3 – the specific stream/channel being monitored
Status	out of spec – stream settings are outside allowable limits



Technical Explanation

Trigger:

This message occurs when a camera's Substream settings (particularly frame rate) exceed the defined specification.

Avlytics Spec Limit:

6 frames per second (FPS) is the maximum allowed for compliant operation

Cause:

Any camera sending a stream above 6 FPS on the substream will be flagged as "out of spec."

Action Taken:

The Avlytics device disconnects the non-compliant stream. This prevents CPU overload (which could hit 100%) and ensures system stability and performance.

Why It Matters

A disconnected stream means the affected camera is no longer protected by Avlytics.

This message is a critical alert, not a test or heartbeat.

Immediate attention is required to adjust the camera settings to bring them back into compliance.

Resolution Steps

1. Access the Camera System UI.
2. Navigate to the Substream settings.
3. Adjust the frame rate to 6 FPS or below.
4. Confirm changes and ensure the stream reconnects within the Avlytics system.

Camera Disconnection Alert

This message indicates that the Avlytics device has lost communication with a camera stream on the specified channel. This event is typically triggered by **network, credential, or configuration issues** affecting the RTSP connection to the camera.

Example Message

DEVICE LOST CONNECTION TO CAMERA ON channel32. Please check username, password and IP Address

Interpretation

Element	Meaning
Event	Lost Connection- the device can no longer access the camera stream
Channel	Channel132-the specific video stream that has gone offline
Cause Hint	Suggests verifying username,password, and IP adress

Possible Causes

1. Credential Errors

- Incorrect or changed **RTSP username/password** on the camera.
- Device configuration in Avlytics no longer matches the camera settings

2. IP Address Issues

- Camera's **IP address has changed** (e.g., via DHCP).
- Device is trying to connect to an **unreachable or invalid IP**.

3. Network Instability

- Physical disconnection or cable failure.
- Network switch, router, or firewall interruption.

4. Camera Reboot or Power Loss

- Camera may be offline due to restart, power failure, or firmware issues.

Recommended Troubleshooting Steps

1. Verify Credentials:

- Check the RTSP login details (username & password) configured on the camera.
- Ensure the same credentials are used in the Avlytics device's channel settings.

2. Confirm IP Address:

- Ping the IP from another device on the same network to confirm reachability.
- Check whether the camera's IP address has changed due to DHCP renewal.

3. Inspect Network Hardware:

- Check Ethernet cables, PoE switches, and routers between the device and camera.
- Look for outages, port failures, or cable damage.

4. Power and Camera Health:

- Ensure the camera has power and is functioning normally.
- Check camera logs or GUI if accessible.

5. Restart the Channel:

- In the Avlytics dashboard, try restarting or refreshing channel32 once corrections are made.

Why This Matters

- A disconnected channel means that **no video analysis or protection is active** for that stream.
- If unresolved, this could result in **missed detections or gaps in security coverage**.
- **Prompt investigation is critical** to restore full system functionality.

Maintenance Event: Stream Timeout

This message is generated when the Avlytics device is no longer able to receive the video stream from a configured channel. This is classified as a **maintenance-type alert**, indicating a loss of communication with the DVR or camera system caused by configuration changes.

Example Message

Maintenance Event – channel15 Code: 3 Message: stream_timeout
EventID: 84d3aa49-475d-41a0-9bb8-6a6a5ee9090e

Interpretation

Element	Meaning
Event Type	Maintenance Event - critical operational alert
Channel	channel15- the video stream that failed
Code	Code:3-internal identifier for stream timeout
Message	stream_timeout - device failed to pull the RTSP stream
Event ID	Unique identifier for tracking/debugging the specific incident

Likely Causes

Camera or DVR Credentials Changed

- Username or password on the DVR or camera may have been altered.

IP Address Change

- Static IP may have been switched to DHCP, or IP changed without updating Avlytics.

RTSP Port or URL Modified

- Stream URL/path may have changed due to firmware update or manual configuration.

Camera/DVR Offline

- The source device might be shut down, disconnected, or powered off.



Recommended Actions

1. Verify Login Details

- Check the username and password stored in the Avlytics configuration against the current credentials on the DVR or camera.

2. Check IP Settings

- Ensure that the IP address in the system matches the one currently used by the camera or DVR.
- Confirm whether DHCP caused an unexpected IP reassignment.

3. Restart the Stream

- After correcting credentials or IP, restart or reapply the channel configuration.

4. Use the Event ID for Debugging

- Provide the Event ID when contacting support for traceability in system logs.
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Why It Matters

- When a stream timeout occurs, video processing halts for that channel, potentially leaving that area unmonitored.
 - This is an immediate threat alert and requires timely resolution to maintain full system protection.
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Troubleshooting & Diagnostic Guide

Introduction

At Avlytics, the decision to use **Telegram** as the core platform for device communication allows us to interact with field devices in real time — without the need for specialized software or a computer.

When troubleshooting or debugging an issue, **your first and most important tool is the Telegram Info Group** linked to the device. This group provides a direct communication channel to the device, offering command execution and real-time diagnostic feedback, all from your smartphone.

Why It Matters

-  **No laptop required:** All diagnostics can be performed via a standard mobile phone.
-  **Instant feedback loop:** Device responses help isolate issues without delay.
-  **Network-aware troubleshooting:** Response time and message behavior give clues about connectivity and system health.

First Steps in Troubleshooting

1. Check for Heartbeat Messages

Confirm whether **periodic test messages** (heartbeat pings) are coming through as expected. If they're missing or delayed, it could indicate connectivity issues.

2. Send a **/test** Command

Issue the **/test** command in the Info Group.

-  If the device replies instantly with **Test message received**, the device is **online and connected to the internet**.
-  If the response is delayed or missing, this strongly suggests **site-level network issues** or intermittent connectivity.

3. Issue the **/status** Command

Use this to obtain a full operational snapshot. You'll see CPU usage, VPN IP, disk space, camera status, and more. This data helps pinpoint configuration errors, system overloads, or environmental conditions.

Info Group Messages

The **Info & Communication Group** not only accepts user commands, but also serves as the primary output channel for device-generated messages. Understanding these messages is critical for fast, accurate issue resolution.

Here's a breakdown of the key messages and what they mean:

Test Message Received

Context: Triggered after sending `/test`

What It Means:

- The device is connected to Telegram
- Internet and backend infrastructure are functioning properly

Action:

- No issue. System is responsive.
-

No Response to `/test`

Context: You send `/test` but nothing returns

What It Likely Means:

- The device is offline
- The internet connection is unstable or down

Action:

- Check power, cabling, and internet access on-site
- Use alternate tools (like direct ping or router check) if needed

Heartbeat TEST Message

Example:

808 New: intertrade795 (version 7.35.2.0) channel4 (armed) - TEST

What It Means:

- Device is online and operational
- Sent at intervals based on Channel 1's test configuration

Action:

- Confirm timing matches expected test interval
- Use as baseline for determining if the device has recently gone offline

Errors in Status Output

Context: Errors reported in `/status` (e.g., `Errors: 1`)

What It Means:

- A non-critical error has occurred (e.g., minor disconnection or resource warning)

Action:

- Monitor if error count increases over time
- Check `Reboots`, `Reconnects`, and CPU/disk values
- If error rate climbs, escalate to support for log review

Understanding the Status Response

When you send the `/status` command in the Telegram Info Group, the device responds with a structured snapshot of its current state. This includes system identification, resource usage, network health, software info, and operational indicators for each camera.

Below is a detailed explanation of each section and field:

Device Identification

These values help you confirm which device you're communicating with and which site or client it belongs to.

◆ **Device:** `intertrade795`

The **unique identifier** (hostname) for the device on the Avlytics network. Useful when managing multiple devices.

◆ **Client:** `intertrade_PAULVV`

Represents the **client assignment or account name** for this device.

◆ **Site:** `808 DEMO`

Logical or physical **location label**. This helps field techs identify which site the device is deployed at.

◆ **VPN IP:** `172.29.194.8`

The device's current **internal IP address** over the Avlytics VPN. Needed for accessing the GUI via the second live view link.

◆ **Live Link:** `http://172.29.194.8:8000/blog/Live`

A direct link to the device's **web interface**, used for accessing live view or diagnostics (VPN connection required).

◆ **Firmware:** `7.35.2.0`

The currently installed **firmware version**. Relevant for checking compatibility or diagnosing bugs.

◆ **Model:** `AVT`

Identifies the **hardware class** (e.g., AVT804/8, AVT808, etc.). Use this to confirm the expected performance specs.

◆ **Install Date:** (empty in this case)

Intended to show the original **installation or activation date** for tracking warranty/support lifecycles.



Hardware Usage

These values reflect the real-time resource consumption of the device.



CPU Usage: 14.5614%

Indicates current **processor load**. Below 40% is healthy. Persistent spikes above 80% may suggest channel overload or misconfiguration.



Disk Space: 27%

Percentage of disk space currently used. Should ideally stay below 80% for optimal performance and recording reliability.



Memory Usage: 60.72%

Reflects current RAM usage. High memory usage (>90%) may indicate excessive load or memory leaks.



Temperature: 0°C

Sensor readout for internal temperature.

⚠ A reading of 0°C could indicate a sensor fault or missing value — in normal operation, this should reflect real temperature (e.g., 35–65°C depending on load/environment).



Number of Channels: 4

Shows how many **video analysis channels** are active or configured on this device.

Avlytics Device – Network Monitoring Overview

The Avlytics device includes an integrated network monitoring script designed to continuously verify local and external connectivity. This system helps ensure reliable communication with cloud services and quick diagnostics of network-related issues

Monitoring Frequency

- The device performs network checks **once every minute**.
 - It tests:
 - **Internet connectivity**
 - **Gateway reachability** (usually the router or local network exit point)
-

Error Detection and Logging

- If the device detects network anomalies — such as failed **ping** or **TCP port checks** — these are counted as **non-critical errors**.
 - These events appear under the **Errors** section.
 - A **rising error count** over time may indicate intermittent or worsening network reliability and should be monitored via the [/status](#) endpoint.
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Reconnects

- **Reconnects** reflect the number of times the device has **lost connection to the backend or VPN** and then **successfully re-established** it.
- A **high number of reconnects** can signal:
 - Poor signal strength (especially on mobile networks)
 - Low bandwidth or congestion
 - Firewall-related issues (e.g., blocked outbound ports)
- Regular reconnects typically point to **underlying network instability**.

Reboots

- If the device fails to ping the gateway 5 times in a row, it assumes a critical network failure.
 - In such cases, it will automatically reboot to attempt recovery.
 - Each reboot is recorded in the Reboots counter.
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Software Version (V####)

- Indicates the version of the internal backend/control software currently running on the device.
 - This is separate from the firmware version, and is updated independently.
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Camera Frame Rates

Displays the current **frame-per-second (FPS)** value processed for each camera feed.

C1–C4: 6 FPS each

Indicates that each channel is actively analyzing its assigned RTSP stream at **6 frames per second**, which is standard for most AVT devices

If any camera shows **0 FPS**:

- Check if the camera is offline or misconfigured
- Look for connectivity or stream compatibility issues

Channel Armed Status

Current **arming state** of each channel.

channel1–4: armed

These are all actively monitoring for motion, intrusion, or event triggers.

 Armed = Active

 Disarmed = Inactive (maintenance or bypass)

This view helps confirm if expected areas are being actively watched

Last Reported

Timestamp: 2025-06-10 12:49:14.745828

Indicates the exact moment the status was generated. Useful for determining data freshness or identifying time drift in heartbeat reports.

Summary of Red Flags

Field	Watch For	Possible Issue
CPU > 80%	Overloaded system	Too many channels, misconfigured DVR or NVR
Memory > 90%	Memory exhaustion	Software inefficiency or data leaks
Disk Space > 85%	Storage pressure	Risk of recording failure or log overflows
Temperature = 0°C	Faulty sensor	Check for firmware or hardware anomalies
Reconnects > 5/day	Network instability	Weak internet, VPN drops, or reboots
Errors > 0 (increasing)	Repeated failures or warnings	Needs further inspection

Device Setup Using the **/setup** Command

The **/setup** command enables on-site technicians to configure DVR/NVR channels directly through Telegram, using an interactive step-by-step interface. This approach streamlines deployments by eliminating the need for external setup tools or desktop software.

Overview

Issuing the **/setup** command in the Info Group launches a guided session with configuration prompts. The technician will be able to assign channels, input credentials, and complete setup entirely through Telegram chat interactions.

Step-by-Step Setup Instructions

1. Start Setup

Send **/setup** in the Telegram Info Group. The bot will respond:

“Which channel would you like to setup?”

Tap to select from available options (e.g., **Ch1**, **Ch2**, etc.).

2. Select Brand

Choose the DVR/NVR manufacturer from the listed options. Supported brands include:

- Hikvision
 - Dahua
 - Provision
 - Axis
 - Live.sdp
 - Avtech IP Camera
 - Tiandy
 - Uniview
 - Uniview IP Camera
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3. Enter IP Address

Type the DVR/NVR IP address using the format:

/192.168.0.101

It **must begin with a slash (/)**.

4. Enter RTSP Port

Specify the RTSP port used by the device (typically /554):

/554

5. Enter DVR Username

Provide the username using the same slash format:

/admin

6. Enter DVR Password

Input the password with a leading slash:

/yourpassword

Special characters are automatically URL-encoded as per

/home/pi/url_encoding.json.

7. Enter DVR Channel Number

Provide the channel number on the DVR to assign (e.g., /1).

Finalization

Once all the inputs are submitted, the bot will:

- Generate the RTSP stream URL
 - Save the config to /home/pi/configs/channel_<channel>.json
 - Register the configuration with the backend (Consul)
 - Confirm completion with a success message
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To Cancel Setup

At any point, send /cancel to discard the session and start over.

Final Deployment Step

Once all required channels are configured:

- Access the Avlytics HUB Platform
- Define detection regions and adjust schedules as needed

If you're not yet in the Info Group for the site, contact the Avlytics support team to be added.

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