Application Note: Video – ANV093

Using Edge Analytics with Brivo Eagle Eye Pro Series Cameras

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Target Audience

This Application Note is intended for Brivo Eagle Eye Video administrators responsible for configuring Smart Video Content Analytics (VCA) on the Brivo Eagle Eye Pro Series cameras. Working knowledge of Brivo Eagle Eye Video is required before configuring analytics settings.

Introduction

Brivo Eagle Eye Pro Series cameras feature integrated Smart VCA (Video Content Analytics) capabilities that leverage artificial intelligence and machine learning to analyze video footage in real-time. This advanced detection capability transforms passive recording into intelligent, proactive security monitoring.

This document provides comprehensive guidance for setting up and configuring Pro Series Smart VCA features, including:

- **Smart Motion Detection** - Intelligent motion analysis with environmental filtering
- **Target Detection** - People and vehicle classification
- **Line Crossing Detection** - Virtual boundary monitoring
- **Intrusion Detection** - Unauthorized area access alerts
- **Loitering Detection** - Time-based behavior analysis

By following this guide, administrators can leverage AI-based analytics to detect, classify, and track security events for actionable insights.

Key Features and Benefits

Pro Series Camera Analytics Overview

Pro Series cameras include five integrated Smart VCA analytics types designed to provide comprehensive security monitoring while minimizing false alarms and operational overhead.

Available Analytics Types

1. Smart Motion Detection

- Foundation for all Pro Series analytics
- Intelligent filtering of irrelevant motion
- Focuses on meaningful security events
- Reduces false alarms from environmental factors

2. Target Detection

- People detection and classification
- Vehicle detection and identification
- AI-powered object recognition
- Enhances the accuracy of all analytics

3. Line Crossing Detection

- Virtual boundary/trip-wire monitoring
- Directional detection capability
- Perimeter security enforcement
- Access control integration

4. Intrusion Detection

- Unauthorized area access monitoring
- Zone-based security alerts
- Configurable sensitivity and parameters
- Restricted area protection

5. Loitering Detection

- Time-based presence monitoring
- Suspicious behavior identification
- Configurable duration thresholds
- Early threat detection

Key Benefits

- **Reduced False Alarms**: AI-powered filtering eliminates alerts from shadows, lighting changes, and environmental factors
- **Focused Security Resources**: Respond only to genuine security events
- **Proactive Monitoring**: Detect potential threats before incidents occur
- **Operational Efficiency**: Automated detection reduces manual monitoring requirements
- **Storage Optimization**: Record only meaningful events, reducing bandwidth and storage costs
- **Faster Investigations**: Precise event detection simplifies video review

Smart Motion Detection

What is Smart Motion Detection?

Smart Motion Detection is the cornerstone of Pro Series analytics, providing the foundation for all other detection capabilities. This advanced feature dramatically improves surveillance efficiency by distinguishing between routine environmental motion and genuine security events.

Core Functionality

Smart Motion Detection uses artificial intelligence to:

1. **Filter Environmental Factors**
    - Moving shadows and reflections
    - Lighting changes (clouds, sunrise/sunset transitions)
    - Weather effects (rain, snow, wind-blown leaves)
    - Small animals and insects
    - Camera vibration or minor movements
2. **Focus on Meaningful Activity**
    - Human presence and movement
    - Vehicle activity
    - Object interactions of security interest
    - Behavior patterns requiring attention
3. **Optimize Operations**
    - Reduce unnecessary alerts by 80% or more
    - Lower bandwidth consumption through selective recording
    - Decrease storage requirements with event-based capture
    - Minimize alert fatigue for security personnel

Why Smart Motion Detection is Critical

Enhanced accuracy and efficiency in surveillance are achieved through Smart Motion Detection's ability to:

- **Minimize false alarms** caused by irrelevant motions
- **Enable focused response** by detecting meaningful activities (people or vehicles)
- **Reduce review effort** by identifying and recording only relevant events
- **Optimize storage and bandwidth** by recording critical events only
- **Enable instant notifications** for events of genuine interest
- **Simplify investigations** by focusing on high-priority events

This level of precision not only improves situational awareness but also enhances overall operational effectiveness, making it an indispensable tool for safeguarding critical areas and responding swiftly to potential risks.

Applications

Smart Motion Detection is ideal for:

- Perimeters with environmental challenges (trees, weather)
- Indoor spaces with variable lighting conditions
- High-traffic areas requiring focused alerts
- Locations with routine non-threatening activity
- Any scenario requiring reduced false alarm rates

Target Detection

Target Detection enhances Smart Motion Detection by adding AI-powered object classification capabilities. This feature enables Pro Series cameras to distinguish between people and vehicles, providing even more precise security monitoring.

People Detection

Purpose: Identify and track human presence and activity while filtering out all other motion.

Key Capabilities:

- AI-based human form recognition
- Neural network-trained detection model
- Distinguishes people from vehicles and animals
- Tracks individuals across the camera's field of view

Use Cases:

- Access control monitoring (detect unauthorized persons)
- Pedestrian-only zone surveillance
- Building entrance monitoring

- Areas where human presence indicates a security concern

Benefits:

- Eliminates false alarms from passing vehicles
- Filters out animal activity
- Focuses alerts exclusively on human presence
- Ideal for intrusion and loitering scenarios

Vehicle Detection

Purpose: Identify and track vehicles while filtering out pedestrian and environmental motion.

Key Capabilities:

- AI-based vehicle recognition
- Detects cars, trucks, vans, and motorcycles
- Distinguishes vehicles from people and other objects
- Tracks vehicle movement across monitoring zones

Use Cases:

- Parking lot monitoring and security
- Driveway and entrance surveillance
- Vehicle traffic analysis
- Unauthorized vehicle access detection

Benefits:

- Eliminates false alarms from pedestrians
- Filters environmental motion
- Focuses on vehicular security events
- Ideal for parking and perimeter monitoring

Combined Target Detection

When both People and Vehicle Detection are enabled simultaneously:

- Camera monitors for either people or vehicles
- Filters all other motion sources (animals, weather, shadows)
- Provides comprehensive object classification
- Maximizes flexibility while minimizing false alarms

AI-Powered Accuracy

Target Detection leverages Eagle Eye's deep learning AI engine, developed using:

- Extensive surveillance image databases
- Neural network-powered detection algorithms
- Pre-trained models for rapid object recognition
- Continuous learning for improved accuracy

This advanced AI approach provides:

- **Higher accuracy** with fewer false positives
- **Intelligent filtering** of irrelevant activity
- **Rapid configuration** through automated recognition
- **Consistent performance** across varying conditions

Analytics Limitations and Capabilities

Understanding the capabilities and limitations of Pro Series Smart VCA ensures optimal deployment and realistic performance expectations.

Analytics Per Camera

Maximum Detection Rules: Each Pro Series camera supports up to **8 simultaneous detection rules** across all analytics types.

Rule Distribution Examples:

- 2 Intrusion zones + 2 Line Crossing + 2 Loitering + 2 Smart Motion
- 4 Intrusion zones + 3 Line Crossing + 1 Loitering
- Any combination totaling 8 or fewer rules

Best Practice: Prioritize the most critical detection scenarios for each camera rather than maximizing the number of rules.

Bridge Resource Usage

Important: Pro Series Smart VCA analytics run entirely on the camera's integrated AI engine and **do not consume additional bridge resources**.

Benefits:

- No impact on bridge processing capacity
- Multiple cameras can run analytics simultaneously
- The bridge can support additional cameras beyond analytics-enabled units
- No performance degradation when enabling analytics

System Architecture:

- Analytics processing occurs on the camera chipset
- Only event metadata is transmitted to the bridge
- The bridge forwards events to Brivo Eagle Eye Video
- Video recording is triggered by camera-generated events

Detection Performance Factors

Optimal Conditions:

- Adequate lighting (minimum 1 lux for IR, 3 lux for color)
- Clear sight lines without obstructions
- Appropriate camera positioning and angle
- Stable network connectivity
- Proper camera focus and exposure settings

Environmental Considerations:

- Detection accuracy may vary in extreme weather
- Very low light conditions may affect color mode performance
- Heavy rain or snow can impact detection range
- Glare or direct sunlight may create challenging conditions

Object Size and Distance:

- Objects must be sufficiently large in frame for reliable detection
- Detection range varies by camera model and lens configuration
- Fixed cameras (2.8 mm): Optimal range 0–30 meters
- Varifocal cameras (2.8–2mm): Optimal range 0–50 meters (depending on zoom)

Limitations

Technical Limitations:

1. Maximum eight detection rules per camera (all analytics types combined)
2. Analytics require a minimum firmware version (consult camera documentation)
3. Detection zones must be within the camera's field of view
4. Line Crossing requires objects to cross the virtual line fully
5. Minimum loitering duration is typically 5 seconds

Operational Considerations:

1. Complex scenes with multiple overlapping objects may reduce accuracy
2. Extreme camera angles (near horizontal) may affect detection
3. Very fast-moving objects may not trigger properly
4. Partial object visibility (occlusions) can impact classification
5. Reflective surfaces may occasionally cause false detections

Network Requirements:

- A stable network connection is required for event transmission
- Minimum bandwidth: 2 Mbps per camera (varies by resolution and activity)
- Network interruptions may delay event notification

Enabling Analytics within Brivo Eagle Eye Video

Before configuring specific detection rules on Pro Series cameras, analytics must be enabled in Brivo Eagle Eye Video to process and display camera-generated events.

Prerequisites

Camera Requirements:

- Pro Series camera added to Brivo Eagle Eye Video
- Camera online and streaming video
- The latest firmware must be installed on the camera
- Stable network connectivity

User Requirements:

- Administrator or authorized user access to Brivo Eagle Eye Video
- Camera configuration permissions
- Access to the Analytics settings tab

Step 1: Access Camera Analytics Settings

1. Log in to Brivo Eagle Eye Video
2. Navigate to the Dashboard
3. Select the Pro Series camera to configure
4. Hover over the camera name, then click the gear icon next to it to access the camera settings.
5. Click the **Analytics** tab

Step 2: Enable Analytics Event Processing

In the Analytics settings, you will see detection types you can enable. These correspond to the Smart VCA capabilities configured on the camera itself.

Available Analytics Types:

Camera Analytics	Brivo Eagle Eye Video Setting	Description

Smart Motion Detection	Motion Detection	Intelligent motion with environmental filtering
Target Detection - People	Person Detection	AI-powered human detection and tracking
Target Detection - Vehicle	Vehicle Detection	AI-powered vehicle detection and classification
Intrusion Detection	Object Intrusion	Unauthorized area access alerts
Line Crossing Detection	Object Line Crossing	Virtual boundary crossing detection
Loitering Detection	Loiter Detection	Time-based presence monitoring

Step 3: Configure Detection Settings

For each analytics type you wish to use:

1. Locate the analytics type in the settings panel
2. Change status from 'Disabled' to 'Camera'
    - This tells Brivo Eagle Eye Video to process events generated by the camera
    - Events will appear in the History Browser
    - Alerts and Automations can be configured
3. Repeat for each analytics type you plan to configure on the camera

Important: Enabling analytics in Brivo Eagle Eye Video does **not** automatically configure detection zones or rules on the camera. It simply tells the system to process events as they are generated by the camera.

Step 4: Save the Brivo Eagle Eye Video Configuration

1. Click **Save Changes** at the bottom of the Analytics tab
2. Wait for confirmation that settings have been saved
3. Brivo Eagle Eye Video is now ready to receive and process analytics events from the camera

What Happens After Enabling Analytics

Once analytics are enabled in Brivo Eagle Eye Video:

- Camera-generated events will appear in the **History Browser**
- Events can be filtered by analytics type

- Automations and Rules can be created for alert notifications
- Video clips associated with events can be reviewed
- **Event metadata** (object types, timestamps) will be displayed

Conclusion

Brivo Eagle Eye Pro Series cameras represent the optimal balance of professional performance, intelligent simplification, and long-term value. By offering exactly six carefully engineered cameras, the Pro Series eliminates the complexity of traditional camera selection while delivering enterprise-grade capabilities that professional security installations demand.
With 5MP sensor size, advanced video analytics, robust construction, and industry-leading warranty coverage, Pro Series cameras provide the confidence and performance that security professionals need – without the confusion and complexity they don't.

Key Advantages:

- Simplified selection accelerates deployment decisions.
- Professional performance meets demanding security requirements.
- Built-in analytics deliver intelligence without additional costs.
- 10-year warranty provides unmatched long-term protection.
- Consistent quality ensures predictable results across installations.

For professional security installations that require reliable performance and intelligent design, Eagle Eye's Pro Series Cameras deliver precisely what you need: nothing more, nothing less.

Additional Resources

- Pro Series Cameras Datasheets: Available at een.com/docs/camera-datasheets
- Quick Start Guides: Available at https://lp.brivo.com/install
- Technical Support: Contact Brivo's technical support team at support@brivo.com
- Product Demonstrations: Request evaluation units through your Brivo representative or sales@brivo.com
- Integration Documentation: Brivo Eagle Eye integration guides and API documentation