Administrator's Guide for

No-Idle Zone in Deep Learning NVR

Based on
Synology Surveillance Station 8.2.7
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Introduction

Overview

With its powerful AI Image Analysis, Synology Deep Video Analytics can instantly calculate millions of object attributes, filter out environmental interferences, and deliver accurate detection results. Backed with Smart Tag technology and a comprehensive management interface, it allows users to take control of events with ease and efficiency.

Among the supported algorithms, No-Idle Zone specializes in detecting objects that linger in restricted areas, such as railroad crossings, intersections, or emergency exits. To accommodate different scenarios and security levels, you can determine what types of objects to track and customize your own trigger times.

For you to achieve optimal precision, this guide aims to introduce the key factors of setting up No-Idle Zone tasks. Please follow the listed points as closely as possible.

Quick Start

Camera Selection

• Select multi-stream cameras with 1280x720@20 FPS
• Select IR supported cameras if possible
• Use wired connections for stable streaming

Camera Mounting

• Position cameras 2.5 to 4 meters above the ground
• Angle cameras less than 60 degrees against the wall
• Point cameras directly at the target areas and do not tilt the screen
• Make sure the surroundings can provide lighting with over 300 lux

Software Configuration

• Set up inclusive or exclusive detection zones
• Set up multiple zones with separate parameter settings
• Choose to detect people, vehicles, or both
• Set the minimum time duration to trigger an event
• Fine-tune settings with the Parameter Adjuster to fit actual detection scenes

Accuracy Enhancement

• Remove possible interferences
• Avoid obstructions caused by height differences in the surroundings
• Use multiple cameras to cover wide areas

For more details, please refer to the following chapters.
Mount Cameras

This chapter introduces how to mount cameras and arrange proper lighting to collect clear footages for high detection accuracy.

Select and Position Cameras

Camera models, installation, and configurations directly influence the quality of recordings.

The following are some general guidelines:

• Select cameras that support multi-stream with 1280x720@20 FPS or above for flexible stream qualities.
• Select wall-mount cameras that can be angled smaller than 60 degrees against the wall and at least 2.5 to 4 meters above the ground.
• Do not use panoramic or fisheye cameras. The distortion of images may affect detection.
• Do not tilt cameras. Tilted images may cause detection errors.
• Point cameras as directly to the detection zone as possible. The target objects need to be displayed clearly on both sides of the detection fence.
• Keep the camera signal as stable as possible. Wired connections are highly recommended.
• Keep the lenses clean so that dust, insects, or other stains do not block the sight.
• Firmly fix cameras for clear images.

Prepare Suitable Lighting

Good lighting is crucial. If the surroundings are too dark, details might be lost; if there is excessive illumination, images may blur.

When setting up your cameras, please mind the following:

• Provide sufficient lighting, preferably with a light level over 300 lux, or use cameras with IR support. Features of moving objects are hard to recognize in dark images.
• Add waterproof covers to outdoor cameras to avoid direct sunlight on the lens. Direct light may leave streaks in the images or cause overexposure, affecting the picture quality.
Configure Software Settings

Once your cameras are mounted successfully, software configurations must be set up for DVA to suit your needs fittingly. This chapter covers the crucial settings.

Select a Stream Profile

For optimal detection accuracy, select a resolution of at least 1280x720@20FPS.

Define the Detection Zone

DVA provides two zone types: Inclusive and Exclusive. Both are highly compatible with various scenarios, allowing you to cover the areas that truly matter.

Simply drag the nodes to adjust the position of the detection zone. You can left-click on the zone border to add nodes or right-click on the nodes to delete them.

Triggering Mechanism

No-Idle Zone detection tracks the overlapping areas between objects and detection zones. If an object enters a zone and the overlapping area exceeds the threshold (see the figures below), the object will be recognized as lingering; if the object continues to linger for over the set time duration, an event will be triggered.

No-Idle Zone supports specified detection for people, vehicles, or both:

- **People**: Events will be triggered when 10% of a person's height enters the detection zone and stays longer than the set time.

- **Transportation**: Events will be triggered when 10% of a vehicle enters the detection zone and stays longer than the set time.
Ignore Day-Night Mode Events

When day passes to night, cameras switch from using natural daylight to using IR to record videos. Sharp image changes during these times likely cause incorrect detections. To avoid this, you need to select a suitable filtering method.

On DVA models, filtering by Deep Video Analytics is fully automated and eliminates the sharp image changes of mode-switching through intelligent image analysis technology. Filtering by a specified time, on the other hand, works best when combined with the day-night mode scheduling of cameras themselves. Please keep the settings consistent so that you can accurately filter out events at the exact times.

Note:
- Day-Night Mode Integration can only be used if your camera supports this function.
After adjusting software parameter settings, there are still some factors that may affect detection accuracy. This chapter lists some possible causes and solutions.

**Clear Surroundings**

The simpler the surroundings are, the more easily can object features be analyzed and provide accurate reports.

The following are some general guidelines:

- Remove obstructions like potted plants or columns from the detection zone so that objects will not be blocked and miss detection.

- When the areas your camera footages cover are rather wide, small objects in the distance may not be detected correctly. Please adjust the camera positions or add new cameras to accommodate the farther corners.

- Use cameras with higher FPS. The higher the frame rates are, the more stable the analysis will be.

**Note Possible Interferences**

Even with thorough planning of the camera installation, there are still chances of miscalculation.

Please note the points below:

- Weather sometimes affects the accuracy of outdoor cameras. Rain and snow, changes of shadows, or differences between day and night are all possible influences.

- Objects with similar appearances to the real objects, such as cardboard cut-outs or mirror reflections, might be mistaken.
Utilize Advanced Features

Besides detailed configuration options, DVA also offers labeling features for easy file management and a Parameter Adjuster that helps fine-tune parameters.

Integrate with Motion Detection

Intrusion Detection can be integrated with Surveillance Station’s motion detection so that cameras’ recording, notifications, action rules, and other settings can also be triggered when an intrusion event is detected.

Make Use of Smart Tags

DVA is capable of automatically tagging events according to the objects that appear in the images, such as people, animals, and vehicles. This gives administrators overall knowledge of the video content even without manual processing.

Label and Comment

Labels and descriptions can be added to DVA detection results.

Optimize Parameter Settings

The Parameter Adjuster allows you to use previous camera recordings or DVA detection results to fine-tune task parameters. This helps fit your actual usage scenarios.

To quickly locate major events, you can also search for recordings using these tags.

Select a clip from the Video Source panel and drag the nodes to adjust the detection zones. Basic settings and parameters in the left panel can be edited as well.