

## HikCentral Master Lite UHK

HikCentral Master Lite UHK is an AI Cloud-based and edge domain-oriented intelligent platform for application management. It focuses on sensing the collection, storage, processing, and intelligent application of data, integrating the Internet of Things (IoT), AI, data and other capabilities to collect, store, and analyze data across time and space in the edge domain scenario. The platform provides the following capabilities:

- Unified management, collection, and on-demand push of IoT resources.
- Video-based general intelligent application and data application.
- Intelligent analysis based on videos.
- Data application and analysis based on IoT data.

## Key Features

### Video Applications

- Presets, Tours, PTZ operations along with 3D zoom
- Camera Groups Support
- Efficient and User Friendly Device Management
- User Management Module
- E-Map Module to map camera locations
- Supports displaying the live video and playback footage of cameras; live view is provided through View and auto-switch.
- Supports displaying cameras and checkpoint resources on the map, performing map-related operations such as dragging, zooming, and aggregating resources, and performing operations on multiple cameras at the same time, including viewing live videos, playing back footages, and adding to favorites. Supports searching and filtering resources by keywords, capability set tags, and organization trees, and displaying search results on the map.
- The real-time dashboard supports double-clicking a camera to start viewing its live video; up to 4 cameras can be viewed at the same time. Supports displaying structured data generated by real-time video analysis in a visualized way, including face captures, human body captures, and vehicle captures. Supports receiving and displaying all face arming alarms and vehicle arming alarms in real time.
- Alarms for blacklisted/cloned vehicles shall be available in real-time.
- Supports functions such as offline video management, analysis, and quick arming comparison; comparisons can be made based on face picture and vehicle arming tasks to find out the arming target in offline videos.

- Adding 3rd party cameras already installed
- Adding 3rd party NVRs/DVRs on ONVIF protocol for accessing Live, Playback and Download functions remotely through VMS
- ANPR system shall provide comprehensive solution to manage devices (ANPR cameras etc)
- All types of user and operation logs shall be saved.
- Devices status and alerts for online/offline shall be available.
- VMS dashboard shall be available providing key information at a glance (such as online/offline devices, server health, analytics data, network consumption/status etc.)

## **Person Applications**

- Supports searching captured face pictures and human body pictures according to face picture features and human body features respectively.
- Supports searching face pictures and human body pictures that reach the minimum similarity threshold.
- Supports searching list library based on information such as photos with the target person, ID No., and date of birth range to confirm the personal information of the target person.
- Supports archiving the captured face pictures by target person, and searching face picture records of the target person based on information such as photos with the target person, ID No., and date of birth range.

## Vehicle Applications

- Supports searching data view of vehicles by license plate No., time, and space, and displaying information of key vehicles, including vehicle basic information, vehicle arming information, arming alarm information, vehicle capture information, and traffic violation information.
- Supports real-time tracking target vehicles by license plate No., displaying historical routes of the current day on the map, and displaying real-time vehicle location information. Supports reporting vehicle violation events in real time, recognizing key locations passed and dwelling areas of the vehicle, and predicting the next target location of the vehicle.
- Supports searching historical routes of vehicles by license plate No., time, and checkpoint range, and adjusting the playback speed of vehicle routes.
- Supports searching vehicles by license plate No. (precise or fuzzy), time, checkpoint range, passing vehicle type, license plate type, vehicle type, vehicle color, total number of vehicles displayed, and passing time sorting type to display the search result of vehicle information.
- Supports searching vehicles by drawing a track on the map and setting a time period.
- Supports viewing intelligent vehicle lighting bars on the map. Supports viewing a single intelligent vehicle lighting bar's tracks on the current day and in real time. Supports watching live videos streamed from linked cameras.

## Violation Applications

- Supports searching for violations by checkpoint, license plate No., violation start time, violation end time, vehicle color, vehicle type, violation behavior, and verification status.
- Supports violation verification and violation data processing, including generating, reviewing, and discarding (deleting) violation notices.
- Supports violation review for processing to-be-reviewed violation data.

## Segment Speed Detection Applications

- Supports searching for segment vehicle speed by start capture time, end capture time, segment name, speeding ratio, license plate No., and vehicle speed range. Supports displaying the search results in descending/ascending order of end capture time, average speed, and speeding ratio.
- Supports searching the configuration information of the segment speed by the segment name. Supports adding, deleting, and editing segment speed detection information. Supports setting speed ratio and forwarding (canceling) alarms.

## Traffic Control Applications

- Supports configuring traffic control rules for vehicles with odd/even license plate No. and specific license plate color. Supports configuring holiday templates of rules, and enabling or disabling rules.
- Supports vehicle violation data of traffic control. Supports searching, verifying, reviewing, counting violations of traffic control.

## Road Network Applications

- Supports drawing road segments, and supports generating road segments automatically by accessing OSM road network data.

- Supports monitoring road congestion status, traffic flow, and vehicle speed. Supports receiving congestion events reported from radar-assisted traffic camera in real time.
- Supports playing back historical congestion status of the road segment according to day. Supports speed playing and viewing statistics data.

## **Traffic Data Applications**

- Supports searching and exporting traffic events information. Supports video playback for filtering false alarms of traffic events. Supports verifying a single traffic event or filtering it as a false alarm.
- Supports searching traffic flow statistics according to 8 statistics modes: lane speed, time headway, space headway, space occupancy rate, time occupancy rate, small-sized vehicle, medium-sized vehicle, and large-sized vehicle. Supports displaying the search results in a line or a bar chart by day, month, and year.
- Supports displaying real-time traffic events on the map for allowing the user to handle traffic events in time. Supports playing back the latest traffic events for allowing the user to handle traffic events.
- Supports counting the traffic event statistics by event status, checkpoint, time, and type. Supports displaying the statistics by day, month, and year.

## **Arming Alarm Applications**

- Supports arming vehicles. Supports arming a single license plate or arming a vehicle list library. Supports searching, editing, disarming, re-arming, deleting, and verifying vehicle arming tasks.
- Supports arming the triggered person and arming the face picture list library. Supports searching, editing, disarming, rearming, deleting, and verifying face picture arming tasks.
- Supports recognizing vehicle arming alarm events by vehicle arming tasks. Supports searching for vehicle arming alarm records. Supports exporting the alarm records. Supports redirecting to the page of vehicle panoramic view when the user views the vehicle alarm records. Supports displaying details of alarm triggering vehicle by the alarm license plate No.
- Supports recognizing arming alarm events of face pictures by face picture arming tasks. Supports searching for arming alarm records of face pictures. Supports exporting the alarm records. Supports searching for alarm triggering persons by pictures and verifying identity when the user views the face picture alarm records.
- Supports configuring frequently appeared person alarm configuration. Supports generating the records of frequently appeared person when a person appears more than the configured time in the specific area during the specific time.

## **Device Alarm Search**

- Supports configuring device alarm, searching for alarm records, and viewing details of device alarm records.

## **Abnormal Event Detection Applications**

- Supports configuring front-end and back-end VCA tasks. Support configuring user linkage, capture linkage, email linkage, recording linkage, PTZ linkage, video linkage, I/O linkage, and display video on video wall.
- Supports searching by event type, event camera, event level, event status, handling status, analysis type, and report time. Supports displaying alarm details.
- Supports statistics analysis, including back-end VCA capability analysis, back-end VCA task analysis, capability ranking statistics, total events, and event time period trend chart.

## Emergency Alarm Applications

- Supports receiving emergency alarms, locating on map, and handling alarms. Supports live view, auto-switch, two-way audio of alarm devices. Supports enabling alarm light or sounder, and viewing linked videos. Supports manually creating emergency alarms.
- Supports searching event records by event type, event time, event source, alarm event handling status, and creator. Supports displaying event details.
- Support displaying Top 10 event sources, counting number of events by day/month/year, and counting event by time.

## Signal Control Applications

- Supports managing traffic signal controllers of intersections. Supports configuring their channelization maps and patterns. Supports logging in to the Traffic Signal Controller page without entering the password for configuring advanced parameters.
- Supports enabling time synchronization for traffic signal controllers. Supports configuring the retention periods of control logs of the signal control module and logs of traffic signal controllers.
- Supports signal control applications. Supports viewing the current control modes (fixed-time control, coordinated green wave control, full-actuated control, isolated adaptive control, etc.) of different traffic signal controllers on the map.
- Supports static green wave applications. Supports adding a static green wave by linking multiple traffic signal controllers on the map. Supports configuring the execution plans and fixed signal-timing patterns (e.g., cycles and offsets) for static green waves, which are applicable to intersections with small traffic flows. Supports configuring parameters of green wave patterns according to the actual traffic flows of different intersections.
- Supports special task route applications. Supports accurate signal control of key vehicles to ensure they cross the intersections prior to other vehicles. Supports configuring and viewing special task routes in the platform so that users can execute the special tasks conveniently.
- Supports group control applications. Supports grouping different intersections as needed. Supports customizing names for the groups, locking the traffic flow, controlling the traffic signal controllers, etc.
- Supports multi-intersection monitoring applications. Supports monitoring multiple intersections in real time, including their current running phases, cycles, control patterns, and control modes.
- Supports intersection monitoring applications, including device operations monitoring, alarm log search, control log search, control log statistics, stepping record search, historical status search, historical status statistics, and pattern backup record search. By monitoring the running status of traffic signal controllers and viewing corresponding fault/alarm/log information, the platform can help better control the overall situations of the intersections.
- Supports viewing green wave faults and historical fault search. Supports viewing details and causes of the green wave faults in the form of a fault tree. Supports locating the faults quickly in the fault tree where faults are classified in details.
- Supports searching running patterns of traffic signal controllers. When there are anomalies of traffic signal controllers, you can check the causes and troubleshoot them timely.
- Supports signal control analysis. Based on the data collected from traffic flow cameras and radar-assisted target detection cameras, supports viewing intersection and road segment data in different time and space dimensions, so the information can be used for studying and judging the rationality of the signal control patterns of intersections and road segments, and further optimizing signal control configuration.

## Mobile Enforcement Applications

- Supports searching for and viewing evidence files stored in the dock stations, and other operations including viewing records of evidence being viewed/downloaded, downloading evidence, marking evidence, archiving evidence, and deleting evidence, etc.
- Supports creating enforcement events, viewing created events, editing event details, linking/unlinking file with events, and ending events.
- Supports searching for a person or a device's historical tracks, and enforcement device alarm records including SOS alarm records and fence alarm records.
- Supports viewing the status information of enforcement devices by page, the storage usage of the current center storage, and the numbers of different files.
- Supports viewing the mobile enforcement statistics on the current day. Supports displaying statistics by week, month, or year, including duty attendance distribution, event trend, SOS alarm trend, and distribution of event types.
- Supports viewing the real-time locations of enforcement personnel, portable speed domes, and cameras on the map. Supports operations including starting live view, playback, and two-way audio. Supports viewing the attendance information on the current day and the real-time information of SOS alarms and E-map fence alarms. Supports handling alarms.
- Supports setting different icons for body cameras from different departments. Supports starting recording videos on the body camera remotely. Supports managing face pictures for logging in to the dockstation.
- Supports taking body cameras away from dock stations via AD domain account authentication. Supports batch upgrading body cameras via dock stations.

## AR Applications

- Supports managing AR scenes and custom tags.
- Supports showing live view of video and tags on scene. Supports capturing, recording, 3D positioning, manual tracking, panorama switch, PTZ control, and setting sequence No. of scene.
- Supports scene management, such as scene auto-switch.
- Supports managing and displaying tags. Supports tag operations, including dragging and dropping video window, quick closing details window, and filtering and searching tags. Supports calibrating tag position, displaying overlay tags, marking general devices, and editing tag style. Supports displaying, counting, and syncing tags. Support managing movable tags, checkpoint tags, and video tags.
- Supports scene switch, video display (scene and tag), FoV area, and linkage alarm.
- Supports scene FoV, scene switch, and scene positioning.
- Supports playback of scene videos, syncing playback, and controlling playback.
- Supports configuring auto-switch plan, and displaying live view of auto-switch.

## Statistics Center

- Supports processing the vehicle statistics by time period (day, week, month, year), checkpoint, area, and lane.
- Supports counting the captured face pictures in the face list library by time range.

## Video Maintenance Applications

- Supports displaying an overview of device running status, including total number of cameras, total camera online

rate, video image normal rate, recording normal rate, and so on in the selected area.

- Supports displaying device health data through online detection, video quality diagnosis, recording check, encoding device check, decoding device check, and storage device check.
- Supports displaying alarm data found during device status check, including device and camera offline, video quality exception, and recording exception; supports alarm search and alarm handling.
- Supports displaying the current resource health status in a visualized way and providing multi-type statistics charts including area maintenance statistics, camera image quality statistics, camera video integrity statistics, high-performance camera statistics, camera online status statistics, camera recording storage qualification statistics, and offline duration statistics.

## System Requirements

For high stability and good performance, the following system requirements must be met.

Feature	Description
OS for Server	AlmaLinux OS 9.0, HikOS-Enterprise-E 1.1.0, and Red Hat Enterprise Linux 9.0 (x86_64)
OS for Control Client	Microsoft® Windows 10 (64-bit)
Browser Version	Chrome 89 and later (recommended)

## Software Specifications

The following table shows the maximum performance of the HikCentral Master Lite UHK server.

Component	Feature	Max. Performance
Basic Functions	User	15000 users.
	Department	500 departments.
	Role	500 roles.
	Area	200 areas under 5 levels, and 40 subareas can be added under each level.
	Device Access	3000 Hikvision video devices (added via SDK or ISUP).
Video	Live View	Concurrent live view of up to 200 mainstream channels (resolution: 1,920 x 1,080 pixels, bit rate: 2 Mbps).
	Playback	Concurrent playback of 50 mainstream channels (resolution: 1,920 x 1,080 pixels, bit rate: 2 Mbps).
Capture	Captured Face Pictures, Human Bodies, Vehicles, Etc. (IAC Storage via Platform)	50 pictures (Max.)/secs, picture size: 400 KB.
	Captured Face Pictures, Human Bodies, Vehicles, Etc. via IAC Direct Storage (Main Stream Solution)	200 pictures (Max.)/secs.
Vehicle	Lane	500 lanes.
	PG Database Capacity (for Vehicle Information Storage)	500 million passing vehicles.
	Traffic Control Rules	100 rules (Max.)
	Road Segments for Road Network	20 road segments (Max.)
Alarm	Face Picture Blocklist Alarm	One alarm notification every 10 minutes, 3 million alarm notifications stored in the largest blocklist library (fusion server feature).
	Vehicle Blocklist Alarm	One alarm notification every 10 minutes, one million alarms stored in the largest blocklist library.
	Traffic Violation Data	10,000 pieces/day.
	Traffic Event Detection	10 events (Max.)/secs.
	Quick Alarm via Panic Alarm Station	Concurrent alarms via 16 panic alarm stations.
Signal Control	Traffic Signal Controllers	512 (Max.)



		200 (Max. by a single server)
	Static Green Waves	64 (Max.)
	Special Task Routes	32 (Max.)

The following table shows the maximum performance for the mobile enforcement application only.

Component	Feature	A Single High-Availability Server	Two Standard-Availability Servers
<b>Basic Functions</b>	User	3000	15000
	Department	150	500
	Role	150	500
	Area	300 areas under 5 levels, recommended 150 resources under each level	1000 areas under 5 levels, recommended 150 resources under each level
	Dock Station (via Hikvision ISAPI)	150 (5 per department)	1500 (10 per department)
	Body Camera (via Hikvision ISUP5.0)	2000 (50 per department)	10,000 (100 per department)
<b>Evidence Files</b>	Evidence File Storage	30,000,000 per year	200,000,000 per year
	Evidence File Upload	100,000 per day	500,000 per day
<b>Enforcement Events</b>	Enforcement Event Storage	500,000 per year	1,000,000 per year
<b>GPS</b>	GPS Data Storage	150 per second	300 per second

## Hardware Specifications

The following table shows the recommended hardware configuration.

<b>Processor</b>	Intel® Xeon™ Silver 4309Y×2
<b>Memory</b>	64G RDIMM
<b>Storage</b>	2TB 7.2K SATA×2(RAID_1)+2TB 7.2K SATA×2(RAID_1)
<b>RAID</b>	RAID Controller with RAID 1
<b>NIC</b>	1GbE × 6

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