DSS Pro

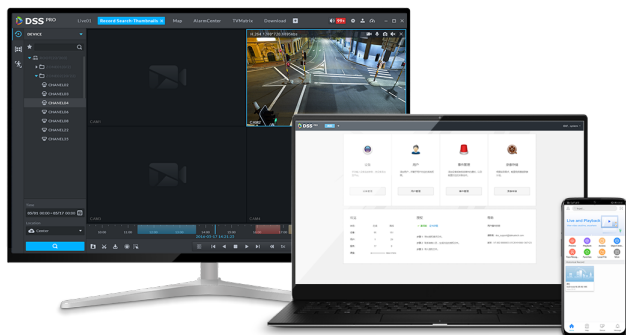## Comprehensive and Expandable Dahua VMS

Introduction

DSS Pro, comprehensive and expandable Dahua VMS, is a flexible, scalable, reliable and powerful central management system. With client-server architecture, DSS Pro provides central management, information sharing, convenient connection, and multi-service cooperation. It can provide basic functions such as user permission management, device management, alarm management, central storage, video wall and map, access control features such as personnel management, video intercom, attendance, and access control and AI functions such as face recognition, ANPR, people counting and object detection. It also integrates add-ons such as business intelligence and traffic. DSS Pro can be applied to many security surveillance solutions.

Key Components

Service

- Central Management Service (CMS)
- Device Management Service(DMS)
- Storage Service (SS)
- Media Transmission Service (MTS)
- Auto Register Service (ARS)
- Alarm Dispatch Service(ADS)
- Picture Transfer Service (PTS)
- Object Storage Service (OSS)

Client

- Windows and Mac PC Client
- DSS Mobile 2
- DSS Mobile for VDP

Running Environments

Operating System

- OS for Server:
  - Win7-32bit/Win7-64bit/Win10-64bit/Windows server 2008/Windows Server 2012/Windows Server 2016/ Windows Server 2019.
- OS for Windows Control Client:
  - Win7-32bit/Win7-64bit/Win10-64bit/Windows server 2008/Windows Server 2012/Windows Server 2016/ Windows Server 2019.
- OS for Mac Control Client:
  - MacOS 10.13.4 and above.
- OS for DSS Mobile Client:
  - IOS: IOS9.0 and above.
  - Android: Android 4.4 and above.

Hardware

- Hardware for Server

Recommended

CPU	Intel Xeon Silver 4114@ 2.2GHz 10 Core Processor
Memory	16GB
System Disk	1TB, 500G free for DSS
Ethernet Port	4 Ports@1000Mbps

Minimum

CPU	E3-1220 v5@3.00GHz 3.00GHz 4core
Memory	8GB
System Disk	1TB, 500G free for DSS
Ethernet Port	2 Ports@1000Mbps

- Hardware for Control Client

Recommended

CPU	Intel Core i5, 64 bits 4 Core Processor
Memory	8GB
Graphics Card	NVIDIA® GeForce®GT 730
Hard Drive Capacity	200G free for DSS Control Client
Ethernet Port	1000Mbps

DSS Pro

Minimum

CPU	Intel Core i3, 64 bits 4 Core Processor
Memory	4GB
Graphics Card	Intel® HD Graphics 4400
Hard Drive Capacity	100G free for DSS Control Client
Ethernet Port	1000Mbps

• Hardware for Mobile Client

iPhone	iPhone5S and above
Android	Resolution: 1280X720 and above RAM: 3GB and above

Browser Version
- Internet Explorer: 9 and above.
- Chrome: 52 and above.
- Firefox: 51 and above.

Virtual Machine
- VMware ESXi 6.0(Windows Server 2012/Windows 10 64bit).

Features

Easy Expansion
- Easy performance upgrade via distributed hardware extension.
- Easy multi-site management through cascading.
- Easy function upgrade via add-ons.

High Reliability
- Back up and restore database.
- Supports hot standby for master server.

High Compatibility
- Dahua's devices included: Network camera, network speed dome, decoder, NVR, DVR, ANPR, access control device, VDP, alarm controller, etc.
- Connects third-party devices via standard ONVIF protocol.
- DSS Pro SDK for third-party platform or mobile development.

Main Functions

System
- Support hot standby for master server.
- Support distributed deployment.
- Support LAN and WAN deployment.

1. DSS Pro Web Manager

•*Business Configuration*

Organization Management
- Achieve device group management via organization.

Device Management
- Device initialization: Initialize Dahua's device.
- Add devices via auto search, IP, Domain, IP segment, auto register(for 3G, 4G, DHCP device).
- Manage Dahua's devices such as network camera, network speed dome, NVR, DVR, access control, video intercom, alarm controller, decoder, etc.
- Add third-party devices via ONVIF protocol.
- Modify Dahua device's IP address.
- Modify the added Dahua devices' password.
- Import intercom devices.
- Bind the associated camera: It's very convenient for alarm configuration to configure link the bound cameras, and you can bind POS channel and camera for POS transaction.

Role and User Management
- Manage the user's permission by role(device permission, control permissions).
- User can be assigned with the roles to obtain the corresponding permissions.
- User can be restricted by the MAC and expiry data
- Setting PTZ permission for user.
- User can be locked.
- Support importing domain user and assigning roles to the user.

Event Management
- Alarm type: Device, video channel, audio detection, alarm input, IVS alarm, thermal, vehicle blacklist, traffic violation, access control, face arming, emergency, entrance alarm, radar detection.
- Alarm Scheme: All day template, weekday template, weekend template and custom template
- Alarm Priority: Low, medium, high.
- Linkage: record, snapshot, live video, alarm output, PTZ, video wall, E-mail, door, user.

Storage
- Support edge storage and central storage
- Central storage: Extend storage via iSCSI
- Server disk configuration for picture storage involving face detection and recognition, alarms, and target detection.
- Create record plan by time template: All day template, weekday template, weekend template and custom template.

- Backup the video from the edge storage, like EVS, NVR, DVR, etc. by schedule.
- Back up the video from MDVR by Wi-Fi.
- Disk quota: Group the disk, and cameras can be allocated to different disk groups.

Map

- Google online map, Google offline map, raster map
- Up to 8-level submap.
- Configure the hot spots(camera, alarm input, access control channel) and sub maps on the map.

Video Wall

- Display/hide the screen ID.
- Support screens combination.
- Bind the decoding channel with the corresponding screen.

Face Database

- Face library management.
- Add face one by one.
- Import faces in batches.
- Set person type.
- Send face database to face recognition devices, and configure the similarity.

Vehicle Blacklist

- Vehicle blacklist management.
- Set start time and end time for vehicle blacklist.
- Vehicle blacklist arming and disarming.
- Import and export vehicle blacklist.

Average Speed

- Location configuration.
- Region configuration(start location, end location, length, minimum speed, max speed).

Store Management

- Import store layout picture, support multi-floor layout configuration.
- Configure people counting camera and people counting zone.
- Configure the store location to get weather information.

Video Intercom

- Residence configuration: Set whether to enable Building No. and Unit No.
- Issue VTH contact list to VTO.
- Set VTH private password for unlocking VTO.
- View, delete and freeze users of DSS Mobile for VDP.

•System Maintenance

Backup and Restore

- Automatically back up system database (daily, week,

month).
- Manually back up system database.
- Restore system database from server or local file.

System Dashboard

- Overview and detail system information.
- Running status: CPU, storage, bandwidth.
- Service, device and user online information, device health report.
- Event Information Statistics: total events and processed.
- Source Information: Video channel, alarm channel.

Log

- System, admin, client log.
- Search and export log.

System Configuration

- Configuring the data storage duration of logs, alarms, POS, heatmap, face recognition, vehicle records, and people counting data.
- Time synchronization: Timed synchronization and device connection synchronization.
- Email server configuration.
- Active directory configuration.
- Support importing HTTPS certificate.

Service Management

- Delete the slave server.
- Enable and disable slave server.
- Manually or automatically assign devices to different servers to balance the server load.

Cascading Management

- Add subordinate site for cascading.
- Superior level can view the live video and video record of subordinate site.

2. DSS Pro Control Client

• Basic Video Management Features

Live View

- Display device tree, show/hide offline device.
- Display the device IP address or device name on the device tree.
- View real-time video.
- Common layout (1,4,6,8,9,13,16,20,25,36,64) and customized layout.
- PTZ control.
- Electric focus.
- Manual recording(store on PC or central storage).
- Snapshot.
- Instant playback.
- Digital zoom.

- Fisheye dewarping.
- Fisheye and speed dome smart tracking.
- Smart tracking for panoramic camera.
- Bullet camera and speed dome smart tracking.
- Audio talk.
- Set alarm window.
- Turn on/off the audio in live view.
- Turn on/off the IVS display in live view.
- Region of interest: Divide one window into 4 or 6 parts, one for whole image, others for the detail.
- Display map in Live View.
- Save the current live view as a view.
- Up to 4 Live View tabs.
- Support adding channel to favorite.
- Video tour by device, Org, Favorite, View.
- Quickly switch to playback.
- Support NKB1000 to control camera on Live View.
- POS transaction overlay.
- Set POS overlay style.
- Adjust the video image.
- Adjust the display mode(full screen and original).
- Live video quick positioning on Map.
- Basic device setting: Camera properties, video, audio.

Playback

- Replay from the front-end devices or central storage.
- Video filter: normal, motion, alarm.
- Sync play.
- Reverse playback of central record.
- Digital zoom.
- Slow and fast forward (up to 64X and 1/64X).
- Playback frame-by-frame.
- Lock or mark the important record for central storage.
- Download the video, supports avi, dav, mp4, asf.
- Turn on/off the IVS display in playback.
- Decode the video to video wall.
- Fisheye dewarping.
- Adjust the video image.
- Snapshot.
- Quickly switch to live view.
- Adjust the display mode(full screen and original).
- Common layout (1/4/6/8/9/13/16/20/25/36) and custom layout.
- Support thumbnail search.
- Support smart search.
- Support search record of POS data.

Download Center

- Download record from central storage or device, supports avi, dav, mp4, asf.
- Download record by timeline, files or tags.

- Support multi-task download.

Event

- Real-time and history alarm info.
- Alarm details: Live video, record and pictures from related camera, alarm source location on the map.
- Acknowledge the alarm.
- Arming control for alarm source.
- Forward the alarm to relevant user.
- Manually send alarm email to relevant person.
- Handle alarms and fill out the handling comments.
- Search alarm by alarm source, alarm time, status, handle user, priority.
- Search alarm and export the alarm list.

Video Wall

- Create different video wall tasks .
- View the real-time video.
- Decode the real-time video to wall.
- Manually/automatically decode to wall.
- Manage the video wall split.
- Change the stream type of video channel.
- Turning on/off audio.
- Adding box, turning on/off screen and getting the video stream to control client.
- Tour the video channel in one screen.
- Schedule plan: Setting the running task on timeline.
- Tour plan: looping different tasks, and each task has duration time.
- Supports NKB1000 to control video wall.

Map

- View the live video and playback on the map.
- Support the area or length calculating for GIS map.
- Support visible range and initial angle(only available for part PTZ model).
- Alarm source turns red and flickers on the map when alarm occurs.
- Access control devices supports remote door opening and closing.

• Access Control Features

Personnel Management

- Add, edit and delete the person and department .
- Upload face pictures by selecting files or taking pictures.
- Import personnel information in batches.
- Issue the card, fingerprint via USB reader or devices.
- Authorize by door group.
- Authorize video intercom devices.
- Card, password, fingerprint and face authentications.
- Guest, VIP, Normal and Blacklist person management.
- Extract person info(ID, Card, fingerprint, IR face) from

· device.
· Support setting super passwords for access control devices.
· Support holiday management.

Access Control
· Door status and door events monitoring.
· View related videos.
· One-key to lock/unlock the doors.
· Global operation of opening or closing doors.
· Support access control channel configuration.
· Advanced door rules, such as anti-passback, first card unlock, inter-door lock, multiple card unlock, remote verification.
· Log info and extract record from device.
· Support searching device log.

Video Intercom
· Video intercom between VDP based on SIP protocol.
· Video intercom between VDP with command center.
· Release the text information to VTH.
· Video intercom log.
· Call management: Supports configuring device groups, management groups, and relationship groups to enable specific groups to call each other.

Attendance
· Set access control devices as attendance stations.
· Attendance time period and holiday management.
· Attendance shift management and arrangement.
· Attendance report management, including attendance record report, abnormality report, card-swiping report.
· Support exporting attendance reports.

Visitor Management
· Support visit registration and appointment registration.
· Support issuing access permission by card or face recognition.
· Support card-swiping record queries.
· Support visitor record queries.

Vehicle Entrance
· Overview of entrance and exit information: Number of parking spaces and remaining parking spaces, traffic statistics, parking turnover, parking utilization rates.
· View real-time license plate recognition.
· Edit parking-lot, includes total and available spaces, parking name etc.
· Support configuration of barrier control rules, and support configuration of barrier control rules for zero-space-left cases.
· Support searching for vehicle records, on-site vehicles,

and ANPR details.
· Manage owners, vehicles and cards.
· Bind LED screen with ITC or spot detector device.
· Open the barriers via VTO with cards or remotely.
· Force existing vehicles to leave.
· Search and export the vehicle records.
· Support daily, weekly, monthly, and annual statistics of vehicle entrance.

• Add-ons

Face Recognition
· Automatically capture faces in the camera field of view.
· Extract face attribute information from captured face.
· Real-time face comparison.
· Quickly register face to face library.
· Searching face via face attribute.
· Searching face via uploading a face image.
· Searching comparison records.
· Generate the track for the specific face.
· Generate daily, weekly, monthly attribute report based on the gender and age.

Object Detection
· Real-time snapshots captured by the cameras, including information about human, motorized vehicles, and non-motor vehicles.
· Extract attribute information from snapshots.
· Search for the targets in the snapshot database quickly by setting up criteria.
· Generate daily, weekly, monthly attribute report based on human, motorized vehicles, and non-motor vehicles.

Flow Analysis
· People counting: Provides daily, weekly, monthly, yearly reports.
· Heatmap.
· Export the people counting and heatmap data.
· Dwell time reports.

Business Intelligence
· Provide daily, weekly and monthly report.
· Entrance analysis: Total customer flow, entrance customer flow, flow by temperature cluster, flow by weather cluster.
· Customer demographic: Flow by age, customer gender by weather, customer flow by attributes, customer radar chart, customer expression, customer sankey.

Thermal
· Support monocular thermal imaging devices and binocular thermal imaging devices.

- Support taking temperature values from video frame points.
- Support acquiring timed heatmap.
- Support box selection, circle selection, and linear analysis on heatmap.
- Support temperature curve analysis on heatmap.
- Support saving, importing, and re-analyzing heatmap.

ANPR

- Real-time license plate recognition.
- Vehicle record.
- Generate vehicle trajectory based on license plate and time info.
- Search for arming record.

Traffic

- Violation search by time, vehicle number, and traffic violation information type.
- Support daily, weekly, monthly, and annual traffic flow statistics of flow cameras.
- Support querying for data of passing-by vehicles by section, time period, plate number, plate color, average speed, and type.

Radar-PTZ Smart Tracking

- Support detection region management, including drawing alarm area and shielding area.
- Configure tracking modes, supporting tour mode, time priority and location priority.
- When the radar detection zone is intruded, the associated PTZ camera will track the target automatically.
- Radar turns red and flickers on the map when alarm occurs.

Alarm Controller

- Support custom alarm types.
- Update the status of the alarm host.
- Global arming, disarming; arming or disarming specific zones or subsystems.
- Zone status control among Bypass, Isolate and Normal.
- Cancel alarms.

• *Control Client Information and Configuration*

Control Client Information

- Show status of network, CPU, and memory usage.
- User information.
- Support auto-discovery of online DSS services.
- Support modifying passwords.
- Support client lockout.

Control Client Configuration

- Basic settings: Language, theme, resolution, time

synchronization, automatic login, auto-start on power on, whether to restore the last live view, adaptive intercom parameters, and device nodes display.
- Video settings: Default window split, split number threshold for switching to sub stream, playback modes, custom video buffer time, instant playback duration, GPU decoding, closing video after a specified time of silence, and switching to main stream on full screen.
- Video playback: Default window split, device recording stream type, and extracting-frame HD playback.
- Snapshot settings: Snapshot format, saving path, naming rules, continuous snapshot interval, and number of continuous snapshots.
- Recording: Saving path, naming rules, and recording file size
- Alarm: Alarm sound, loop play, map flash warning, playing associated video.
- Video wall: Stream type, tour interval, split number threshold for switching to sub stream, and switching to main stream on full screen.
- View shortcuts of PC keyboard and NKB.

3. DSS Pro Mobile Client

History Record

- Show recently viewed channels; you can open live video or playback via history records.
- Display up to 20 latest history records

Live View

- Open more than one channel at the same time, up to 16 channels.
- Three stream types: HD(high definition), SD(standard definition), FL(Fluency).
- Support PTZ control.
- Support horizontal screen play.
- One-key switch to playback.
- Snapshot, local record, audio talk.
- Supports fisheye dewarping.

Playback

- Play back device record and center record(Up to 8X and 1/8X).
- The calendar shows whether there is a video on that day.
- Support snapshot.
- Manually start recording for local storage.
- Support 1X, 2X, 3X, 4X, 1/2X, 1/4X, 1/8X playback.

Face Recognition

- Support searching the face database or snapshot records for target faces by uploading a face picture.
- Support face database management.

Target Detection

· Search for targets classified by people, vehicle and non-motor vehicle.

Alarm Center

· Alarm subscription.
· Query for alarm messages by category.
· Claim and handle alarm messages.
· History alarm message query.

Map

· Support Google map and raster map.
· Display the video channel on the map.
· View live and recorded videos.

Favorite

· Quickly view video of channel added to the favorite.

Files Management

· View local pictures and videos.

Performance Specification

	Intel Xeon Silver 4114-2.2GHz 10core Memory 16G

Org, User and Role

Organization	10 hierarchies, 999 organizations per hierarchy
Role(User Permission)	100
User	200 online users and 2500 total users
User for VDP Mobile APP	500 online users and 5000 total users

Total Device

Total device	2000 devices

Video Device and Channel

Total Video Device and Channel	1000 devices, 2000 channels
Auto-Register	500 devices, 2000 channels
ONVIF	200 devices, 800 channels
ANPR Device	64 channels(6 pairs for entrance and exit)
Face Recognition Channel	100 channels
Object Detection Channel	20 channels
Heatmap Channel	64 channels
People Counting Channel	100 channels
Thermal Channel	20 channels
POS Channel	100 POS channels (20 POS data per second)

ACS Device

Access Control	200 IP 1024 doors

VDP	1024 IP(Unit VTO no more than 64)

Alarm Device

Alarm Controller	50 IP 500 channels

Media Transmission Server

Video Input per Server	600 Mbps
Video Output per Server	600 Mbps

Playback, Storage and Download

Playback Bandwidth per Server	100 Mbps
Maximum Capacity per Storage Server	200TB
Maximum Storage Device Number per Server	5
Download Task	5
Maximum Record Plan	100

Alarm

Alarm Rules	200

Map

Hierarchy	8 Hierarchies
Submap	32 per hierarchy
Map size of raster map	14.7MB
Spots per Map(Camera Alarm Input and etc.)	Up to 300(GIS and Raster)

Face Recognition

Face Library	50
Persons per face library	5000
Import face image per time	1000

ANPR

Vehicle blacklist	**100**
Section Number	100

Data Info

Alarm Records	**5,000,000***
Captured Face Pictures Record	**5,000,000***
License Plate Recognition Record	**5,000,000***
Violation Record	**5,000,000***
Average Speed Record	**5,000,000***
People Counting Records	**5,000,000***
Heatmap Records	**5,000,000***
Attendance Records	**5,000,000***
Video Intercom Records	**5,000,000***
Log	**5,000,000***

DSS Pro

Personnel Management

Person	50,000
Card	50,000
Face	50,000
Fingerprint	80,000

Event

Total Event	300/s**
Event without Pic	
Alarm without Pic	300/s**
Alarm Controller Event	50/s**
Access Control Event	20/s**
Event with Pic(for ANPR)	
ANPR	15/s(entrance and exit 12/3s)**
Event with Pic(for others)	
Alarm with Pic	50/s**
Face Capture	150/s**
Object Detection	50/s**

Distributed System

Server Number

Number of slave server	Up to 20

Device and Channel

Total Device

Total device	5000 devices

Video Device and Channel

Total video device and channel	5000 devices, 20000 channels
Auto-Register	1000 devices, 4000 channels
ONVIF	500 devices, 2000channels
ANPR device	320 channels
Face Recogniton Channel	500 channels
Object Detecton Channel	100 channels
Heatmap Channel	320 channels
Heatmap Channel	500 channels
Thermal Channel	100 channels
ONVIF	500 devices, 2000channels
POS Channel	500 Channel (100 POS data per Second)

ACS Device

Access Control	600 IP 3072 doors

Event

Total Event	600/s**
Event without Pic	
Alarm without Pic	600/s**
Access Control Event	120/s**
Event without Pic(for ANPR)	
ANPR	150/s(entrance and exit 120/3s)**
Event with Pic(for others)	
Alarm with Pic	150/s**
Face Capture	350/s**
Object Detection	100/s**

Cascade System

Cascade Number

Number of cascade level	3
Number of cascade server	20

Device and Channel

Total device and video channel for cascading	5000 devices, 20000 channels
Auto-Register	1000 devices, 4000 channels
ONVIF	500 devices, 2000channels

* The record number depends on the disk capacity, the maximum record quantity is 5,000,000
**The sum of each type events can not exceed the total number of events. One piece of access controller event is equivalent to three general alarms without pictures; One piece of alarm controller event is equivalent to a general alarm without picture; One piece of alarm with picture or one target detection is equivalent to three face detection events.