

# VAST Security Station

A Quick-to-set-up A.I. Surveillance System



## Product Description

VIVOTEK's VAST Security Station (VSS) is an easy-to-use, all-around, AI-powered IP video surveillance software designed to help you manage tens of thousands of cameras with ease and focus on only what matters to you through VIVOTEK AI solutions. With two variants VSS Standard and VSS Professional, you can choose what's best for your organization and scale up the whole system anytime.

## Diverse Feature Support



Deep Search



Alarm/  
Notification

**TCP**

TCP message



Data Magnet



Digital  
Watermark



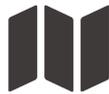
Video Export  
Encryption



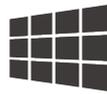
Video Recording  
Encryption



GIS/GPS



E-map



Matrix

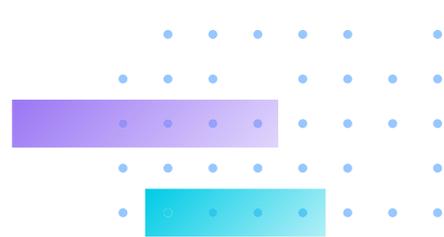


CMS/Substation  
Failover

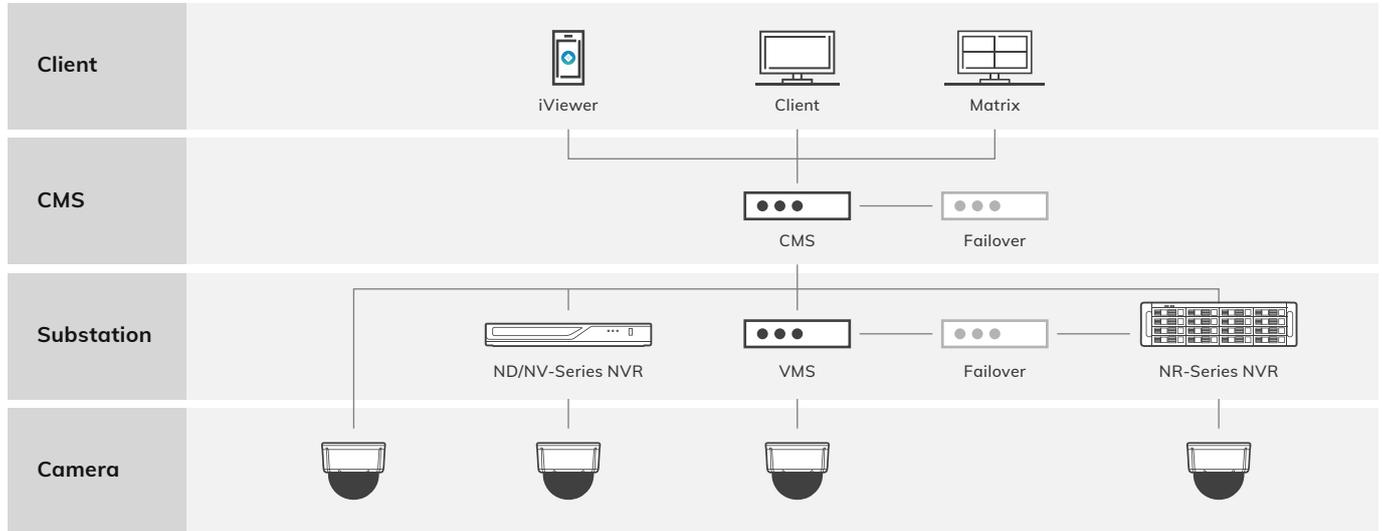


Dashboard





## VSS Architecture Overview

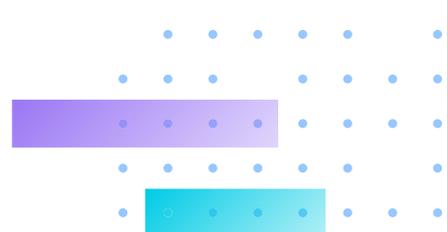


## Specification

Product Edition	VSS Lite	VSS Std	VSS Pro
	VSS Lite	VSS Standard	VSS Professional
Product Overview	Free entry-level VMS for basic surveillance needs	Cost-effective solution for small and mid-size business	Designed for mid-size to large-scale projects requiring central management and 24/7 operations
Software Version	1.1		
<b>System</b>			
<b>Deployment</b>			
Maximum Number of Cameras Per Server <sup>1</sup>	32	128	320
Maximum Number of Clients Per Server	200 <sup>2</sup>		
Maximum Number of Simultaneous Video Streaming Output Per Server	2,048 <sup>3</sup>		
Maximum Number of Substations Per System	0	32 <sup>4</sup> (ND/NV series NVR)	700 (ND/NV series NVR, VSS Pro NR series NVR, VSS Professional Station)
Maximum Number of Cameras Per System	32	128	22,400 <sup>5</sup>
<b>Licensing</b>			
Complimentary Camera License	32 (VIVOTEK cameras only)	8	0
<b>Platform</b>			
Server	Windows	Windows 11, 10 (64-bit); Windows Server 2022, 2019, 2016, 2012 (Server Core installation type is not supported)	
	Virtual Machine	-	-
Client	Windows 11, 10 (64-bit); Windows Server 2022, 2019, 2016, 2012 (Server Core installation type is not supported); macOS 12, 13		
Mobile APP	iViewer (iOS/Android)		

1. Please refer to the system requirements when designing your surveillance deployments.  
 2. The maximum number of clients per server is based on each client being able to connect to 1 live view of camera. However, this number may vary depending on system workload and network bandwidth.  
 3. The number of video streaming outputs a server can handle at the same time depends on the system workload and network bandwidth.  
 4. The number of substations per system is limited by the maximum number of cameras per system.  
 5. The maximum number of cameras per system is obtained by 320 cameras per server X 70 substations per system or 32 cameras per server X 700 substations per system.

# Specification



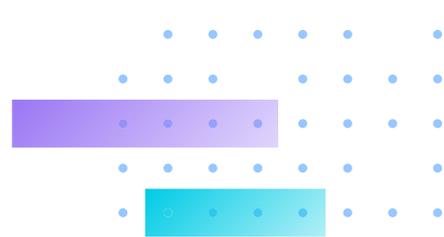
Language			
Language	Arabic, Czech, English, French, German, Italian, Japanese, Korean, Portuguese, Persian, Polish, Russian, Simplified Chinese, Spanish, Thai, Traditional Chinese, Turkish, Vietnamese		
General			
Video			
Video Format	MJPEG, MPEG4, H.264, H.265		
Video Resolution	Up to 12 Megapixels		
Audio			
Audio Format	G.711, G.726, AMR, MPEG-2 AAC-LC		
Audio Capability	Two-way audio		
Key Features			
Live View			
Maximum Number of Display Channels Per Monitor <sup>7</sup>	64		
Multicasting of Live Streams from Servers to Clients	•		
Display Layout Option	Equal	1x1, 2x2, 3x3, 4x4, 5x5, 6x6, 7x7, 8x8	
	Panorama	1P+6, 2P, 2P+3, 3P	
	Focus	1+12, 1+16, 1+3, 1+5, 1+7, 1+9, 2+8	
	Vertical	1V+6, 2V+2, 2V+3, 3V, 3V+4, 4V, 4V+4, 5V	
Custom Layout	•		
Camera Tour	•		
View Cell Source	Camera streaming, E-map, webpage		
Fisheye Display Mode	10, 1P, 1R, 1O3R, 4R, 2P, 4R Pro, 108R		
3 <sup>rd</sup> Party Fisheye Dewarping	•		
Multi-Sensor Display Mode	1P, 1R, 1P2R, 1P3R		
Display Watermark	•		
Recording			
Maximum Number of Recording Channels Per Recording Group <sup>6</sup>	32	128	320
Additional Recording Time for Event Recording	Pre-event recording time: 3 ~ 15 (sec.); Post-event recording time: 10 ~ 60 (sec.)		
Recording Stream Type	Unicast		
Recording Stream	Single		
Recording Mode	Continuous, customized schedule, event		
Activity Adaptive Streaming	•		
Recycle Options	By remaining storage space, by the set number of days		
Recording File Format	3GP		
Video Encryption			
Digital Watermark	•		
Exported Video Encryption	• (AES-256 CTR)		
Recording Encryption	-	-	• (AES-256 CTR)
Playback			
Maximum Number of Display Channels Per Monitor <sup>9</sup>	64		
Display Layout Option	Equal	1x1, 2x2, 3x3, 4x4, 5x5, 6x6, 7x7, 8x8	
	Panorama	1P+6, 2P, 2P+3, 3P	
	Focus	1+12, 1+16, 1+3, 1+5, 1+7, 1+9, 2+8	
	Vertical	1V+6, 2V+2, 2V+3, 3V, 3V+4, 4V, 4V+4, 5V	

6. The limitations of macOS client: (1) Only supports 3GP as exported video format 3GP; (2) AD login cannot be set up in macOS client; (3) Only supports the joystick AJ-001; (4) Only supports one-way audio; (5) Does not support standalone player; (6) Does not support third-party fisheye dewarping.

7. The maximum number of monitors depends on the capability of your system.

8. Please refer to system requirements when designing your surveillance deployments.

9. The maximum number of monitors depends on the decoding capability of your system.



# Specification

Custom Layout	•			
Playback Mode	Asynchronous, synchronous			
Playback Control	1/64X ~ 64X speed control, next/previous frame, pause, play, rewind, stop			
Playback Timeline	Event timeline interval display, scale adjustment			
Display Watermark	•			
<b>Search</b>				
Bookmark Search	•			
Calendar Search	•			
Event Search	•			
Thumbnail Search	•			
Log Search	•			
Data Magnet Search	-	•	•	
Alarm Search	-	•	•	
Smart Search	-	•	•	
Deep Search <sup>10</sup>	Object Search	-	(People, vehicle)	(People, vehicle)
	Attribute Search	-	(People: gender, age, clothing color, accessories; Vehicle: type, color)	(People: gender, age, clothing color, accessories; Vehicle: type, color)
	Scene Search	-	(Line crossing, intrusion, loitering)	(Line crossing, intrusion, loitering)
	Re-Search <sup>11</sup>	-	-	(Search by similar appearance)
<b>Export</b>				
Exported Snapshot Format	JPEG, PNG			
Exported Video Format	3GP			
Exported Video Mask	-	-	•	
<b>VIVOTEK Standalone Player</b>				
Layout	Single, multiple			
Custom Layout	According to playback export layout configuration			
Supported Video Format	3GP, MP4			
Playlist Control	Drag and drop, play and delete selected or all videos			
Playback Mode	Asynchronous, synchronous			
Playback Control	1/64X ~ 64X speed control, next/previous frame, pause, play, rewind, stop			
Playback Timeline	Event timeline interval display, scale adjustment			
Snapshot	JPEG, PNG			
Exported Video Format	3GP			

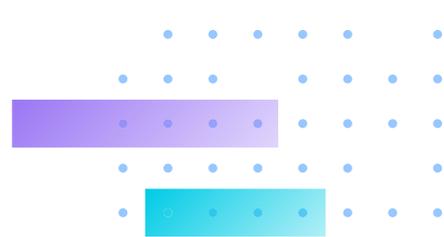
10. Please note that (1) The number of cameras a server can search is limited by your system capability; (2) The supported Deep Search features may vary depending on the specifications of camera models and ND/NV series NVRs. Please refer to <https://www.vivotek.com/ai-driven/deep-search-system-requirement>; (3) An object can generate approximately 0.25 MB of data. For mid-to-high activity scenes, such as parking lots, with about 10 objects per minutes, the data capacity can take up approximately 150 MB of storage space per hour per camera.

11 Please note that (1) The CPU and disk performance will influence the search speed; (2) a broader search time frame and more selected cameras require a longer search time and may reach a 90-second timeout.

# Specification

Alarm Management					
Maximum Alarm Period		-	30 (sec.)	30 (sec.)	
Schedule Type		-	Continuous, schedule	Continuous, schedule	
Alarm Trigger Type	Camera Event	General	-	Audio detection, camera DI/DO, camera disconnected, IR (Infrared), motion detection, PIR (Passive infrared), PPTZ (Panoramic PTZ), recording error, SD card life expectancy detection, shock detection, stop recording, tampering detection, temperature, video loss (Video server only)	
		Video Content Analysis	-	Intrusion detection, loitering detection, line crossing detection, unattended object detection, missing object detection, face detection, crowd detection, running detection, parking violation detection, restricted zone detection, smart tracking, zone detection	
		Trend Micro IoT Security	-	Brute force attack, cyberattack, quarantine	
	System Event	ND series NVR	-	Storage failure, storage full, network disconnected, fan status, brute force attack, cyberattack, quarantine	
		NV series NVR	-	Storage failure, storage full, network disconnected, abnormal g-sensor motion, speeding, GPS disconnected	
		NR series NVR and VSS Professional Station	-	-	Storage failure, storage full, network disconnected
		Counting Report	-	Number of remaining people <sup>12</sup>	
	External Device Event		-	Data Magnet, I/O box DI/DO, TCP message, virtual trigger	
Alarm Action		-	Add bookmark, go to camera presets, go to e-map, play audio file with network audio device, set DO status, start to record video, send email with snapshot 11, send HTTP requests (GET/POST method), send live streaming, send mobile notification, sound the alarm		
Alarm Result Display		-	By list, by thumbnail	By list, by thumbnail	
Alarm Search Filter		-	Time, trigger type, status, name, trigger source	Time, trigger type, status, name, trigger source	
Alarm Status		-	New, in progress, false alarm, close	New, in progress, false alarm, close	
Alarm Result Export		-	3GP, CVS	3GP, CVS	
Additional Time for Exported Alarm Clip		-	Pre-triggered: 1 ~ 10 (min.); Post-triggered: 1~60 (min.)	Pre-triggered: 1 ~ 10 (min.); Post-triggered: 1~60 (min.)	
PTZ					
PTZ Control Mode	Pan and Tilt Control	Mouse drag and move, click to move	Mouse drag and move, click to move, joystick	Mouse drag and move, click to move, joystick	
	Zoom Control	Button, mouse wheels	Button, mouse wheels, joystick	Button, mouse wheels, joystick	
PTZ Operation		Home, preset, patrol, auto pan, auto focus, manual focus, focus speed, zoom speed, tracking			
Tracking Mode		Smart Tracking Advanced, auto tracking			
E-map					

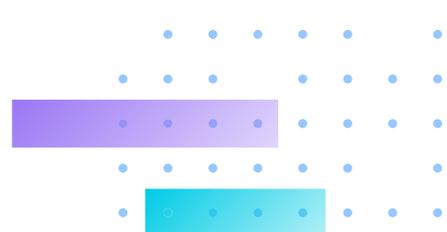
12. This feature requires appropriate configuration on the counting camera and Counting Report.



# Specification

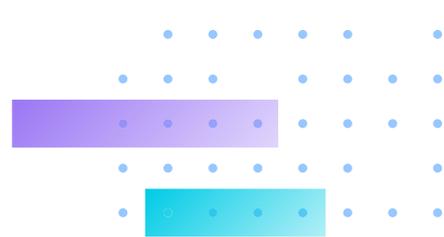
Supported Image Format	-	BMP, GIF, JPG, PNG, SVG	BMP, GIF, JPG, PNG, SVG	
Supported Items	-	Camera, DI/DO (Camera, NVR), regional map	Camera, DI/DO (Camera, NVR), regional map	
Map Control	-	Tilt angle adjustment, zoom in/out	Tilt angle adjustment, zoom in/out	
Map Elements Control	-	Add and remove items (Camera, DI/DO, regional map), click icon for live view/ playback/ PTZ control, FOV direction adjustment, icon/ FOV color, icon/ FOV type	Add and remove items (Camera, DI/DO, regional map), click icon for live view/ playback/ PTZ control, FOV direction adjustment, icon/ FOV color, icon/ FOV type	
Alarm Notification	-	Video prompt	Video prompt	
<b>Video Content Analysis</b>				
Counting Report	-	•	•	
<b>Backup</b>				
External Network Storage	NAS (SMB/CIFS), iSCSI			
Backup Settings	Select cameras, schedule, upload limit			
<b>Video Wall</b>				
Matrix	-	-	•	
<b>User Management</b>				
Maximum Number of User Accounts Per Server	4,096			
User Account Management	Basic user account, Windows Active Directory user account			
User Role	Administrator	•		
	Customizable	•		
	User Pre-defined	-	-	•
User Permission Management	Accessible devices, configuration, operation			
<b>Failover</b>				
Server Type	CMS	-	-	1+1 redundancy
	Substation	-	-	N x M redundancy
<b>System Monitoring</b>				
System Monitoring Dashboard	Server Status	CPU, memory, network, storage		
	System Error List	•		
Diagnostic Service	•			
Log Management	•			

# Specification



Integration and Compatibility				
<b>3<sup>rd</sup> Party Integration</b>				
Data Magnet	Data Source Type	-	3 <sup>rd</sup> party data source, access control, POS, VIVOTEK License Plate Recognition	3 <sup>rd</sup> party data source, access control, POS, VIVOTEK License Plate Recognition
	Data Display on View Cell	-	•	•
	Search Result Display	-	By list, by chart	By list, by chart
	Search Result Exported File Format	-	CSV, PNG	CSV, PNG
TCP Message	-	•	•	
Network Audio Solution	-		Trigger recorded announcements; Speak live directly; Broadcast (By group, by schedule)	Trigger recorded announcements; Speak live directly; Broadcast (By group, by schedule)
Transportation Solution	-	-		GIS Maps (Google Map, Open Street Map (OSM)); User-defined maps; Vehicle GPS tracking; Tracks playback
<b>Device Compatibility</b>				
Camera <sup>13</sup>			VIVOTEK 9000 series	
Substation	-		VIVOTEK ND/NV 9000 series NVR	VIVOTEK ND/NV 9000 series NVR, VSS Pro NR series NVR, VSS Professional Station
Joystick	-		VIVOTEK Joystick AJ001, AJ002	VIVOTEK Joystick AJ001, AJ002
Network Audio Device	-		VIVOTEK AU-001, AU-002, AU-003, AU-004	VIVOTEK AU-001, AU-002, AU-003, AU-004
Wiegand Converter	-		VIVOTEK AO-20W	VIVOTEK AO-20W
I/O Box	-		Advantech ADAM-6000 series; Chiyu CYT-133SC; MOXA ioLogik E1210, E1211, E1212, E1214	Advantech ADAM-6000 series; Chiyu CYT-133SC; MOXA ioLogik E1210, E1211, E1212, E1214
Access Control	-		Chiyu CSS-R11 (Expanded by CSS-A11); SOYAL AR-837 series; ZKTeco SpeedFace-V4L	Chiyu CSS-R11 (Expanded by CSS-A11); SOYAL AR-837 series; ZKTeco SpeedFace-V4L
POS	-		ARCH	ARCH
<b>Camera Integration</b>				
Video Source			VIVOTEK	VIVOTEK, ONVIF, RTSP
VIVOTEK Camera	Settings	Basic	Camera name, streaming protocol (TCP, UDP, HTTP, HTTPS)	
		Video	Video codec, resolution, maximum frame rate, intra frame period, video quality, target bit rate, policy (Frame rate priority, image quality priority), Smart Stream	
		Image	Color mode, mount type (Fisheye lens only), power line frequency, timestamp, video title, video orientation	
ONVIF Camera	Profile		-	Profile S
	Video		-	H.265, H.264, MPEG4, MJPEG
	Audio	Format	-	G.711, G.726, MPEG-2 AAC-LC
		Capability	-	One-way audio
Control		-	PTZ control (Up, down, left, right, zoom in/out)	PTZ control (Up, down, left, right, zoom in/out)

13. For supported camera models, please refer to [https://www.vivotek.com/device\\_pack#supported\\_models](https://www.vivotek.com/device_pack#supported_models)



## Specification

ONVIF Camera	Discovery	-	•	•
	Event	-	Motion, camera DI/DO, video lost (Video server only)	Motion, camera DI/DO, video lost (Video server only)
<b>NVR Integration</b>				
Add NVR	Auto Scan	-	•	•
	Manual	-	•	•
	From VIVOCLOUD	-	-	•
Camera Settings <sup>14</sup>		-	•	•

14. This feature is only compatible with ND 9000 Series NVRs with firmware version 4.3 or above.

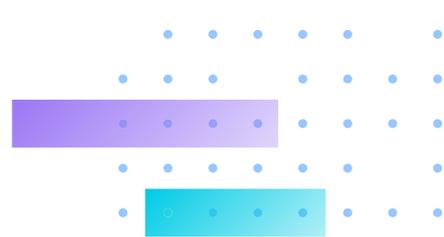
## License Overview

Single Server			
System Architecture		VSS Standard	VSS Professional
Cameras under Single VSS Server	≤ 8 CH	Free-of-charge	VSS Pro Camera License
	9-128 CH	VSS Std Camera License	
	> 128 CH	Not supported (Requires upgrading to Professional edition*)	
Multi-Server			
System Architecture		VSS Standard	VSS Professional
Cameras under CMS Server	≤ 8 CH	Free-of-charge	VSS Pro Camera License
	9-128 CH	VSS Std Camera License	
	> 128 CH	Not supported (Requires upgrading to Professional edition*)	
Cameras under ND/NV Series Substations	≤ 128 CH	Free-of-charge	VSS Embedded NVR Camera License (Requires on CMS server)
	> 128 CH	Not supported (Requires upgrading to Professional edition*)	
Cameras under VSS Substations	≥ 1 CH	Not supported (Requires upgrading to Professional edition*)	VSS Pro Camera License (Requires on each substation)

\*Please upgrade VSS Standard to VSS Professional by purchasing VSS Std-to-Pro upgrade licenses.

## System Requirements

VSS VMS Server (Recording Only)				
Operating System	Windows 11, 10 (64-bit) Windows Server 2022, 2019, 2016, 2012 (Server Core installation type is not supported)			
Server	Up to 64-CH	Up to 128-CH	Up to 256-CH	Up to 320-CH
CPU	8th Generation Intel® Core™ i3 Processors desktop version or above*		8th Generation Intel® Core™ i7 Processors desktop version or above*	
RAM	8 GB or above		16 GB or above**	
Total Storage Throughput***	288 Mbps	576 Mbps	1152 Mbps	1440 Mbps***
Network Interface	Ethernet, 1 Gbps or above**		Ethernet, 2.5 Gbps or above**	



<b>VSS CMS Server (Central Management Only)</b>	
Operating System	Windows 11, 10 (64-bit) Windows Server 2022, 2019, 2016, 2012 (Server Core installation type is not supported)
CPU	8th Generation Intel® Core™ i7 Processors desktop version or above*
RAM	16 GB or above**
Network Interface	Ethernet, 2.5 Gbps or above****

**[Note]** The camera settings in the above table are tested by H.264, 1080P, CBR, and 4 Mbps for each channel; the actual situation depends on the users' system status.

\* It is recommended to keep the CPU usage below 80% in normal operating conditions to prevent excessive system load and potential abnormalities in certain situations.

\*\* Please use a dual-channel memory configuration.

\*\*\* The total storage throughput refers to 4KB random write throughput. The combined maximum bitrate of cameras cannot exceed the total storage throughput.

\*\*\*\* Please consider the throughput of viewing, recording, and server network bandwidth when designing your surveillance deployments.

<b>VSS Client &amp; Matrix (Display Only)</b>				
Operating System	Windows 11, 10 (64-bit) Windows Server 2022, 2019, 2016, 2012 (Server Core installation type is not supported)* macOS 12, 13			
Client Display Channels	H.264, 720P, 2Mbps for each channel**	8-CH	16-CH	32-CH
	H.264, 1080P, 4Mbps for each channel***	6-CH	10-CH	18-CH
	H.265, 1080P, 4Mbps for each channel	3-CH	5-CH	9-CH
CPU	8th Generation Intel® Core™ i3 Processors desktop version	8th Generation Intel® Core™ i5 Processors desktop version	8th Generation Intel® Core™ i7 Processors desktop version	
RAM****	8GB or above	8GB or above	16GB or above	
Graphic Card*****	Support Direct3D Acceleration with 1GB Video RAM			
Network Interface	Ethernet, 1Gbps or above			

\*Independent graphics card is necessary when using Windows Server OS.

\*\* Display requirements of 3MP fisheye camera equal to 720P camera.

\*\*\* Display requirements of 5MP fisheye camera equal to 1080P camera.

\*\*\*\* Please use a dual-channel memory configuration.

\*\*\*\*\* Please update to the latest GPU driver.

If you plan to install both VSS Server & Client on the same PC, please consider the combined loading when evaluating system requirements.