MTS AI
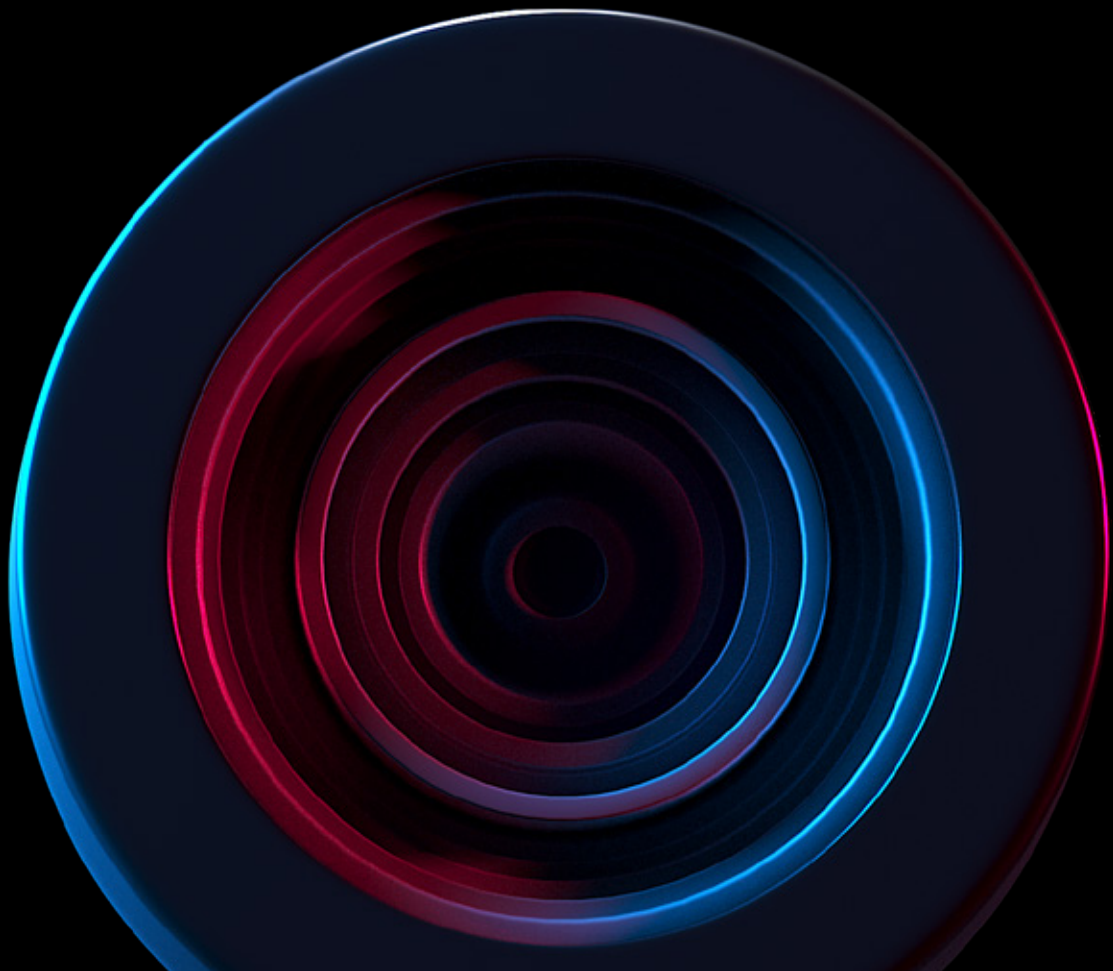
VSAAS PLATFORM
WHITE PAPER

An MTS AI tool for developing cloud-based
video surveillance and analytics services
for business applications

CONTENTS

1. ABOUT MTS AI'S VSAAS PLATFORM

VSaaS is a smart platform that you can use to create your own cloud-based video surveillance system and make it a part of your product or service. We offer big businesses a set of advanced video analytics tools to control business processes, promote security and control the customer experience.
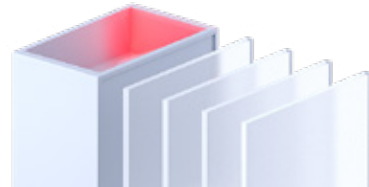
Key features of VSaaS Platform

Quick start

Easy and convenient integration with other systems helps you start your cloud-based video surveillance service in only 2 days

Scalability and cost-effectiveness

VSaaS Platform is a microservice architecture where each functional service can be connected and scaled independently from others
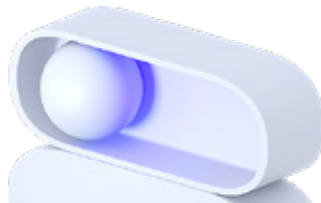
True Cloud

The video stream is processed and stored in the cloud infrastructure; the cloud storage can be represented by any S3-compatible service, such as ABC S3, Seagate Lyve, Backblaze, Minio, etc.
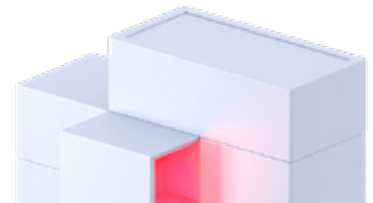
Customization

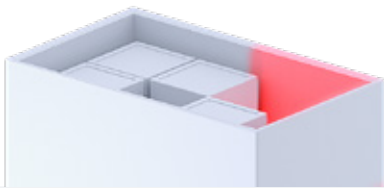Ready-made interfaces and system customization upon request

Modular design

Adjustable platform components and flexible licensing

Open platform

Open REST API and SDK for iOS/Android mobile applications and React-based web applications helps you expand the capability of your own product or integrate solutions of third-party vendors into the platform.

Security

Processing and analysis of incoming events in the SOC system, WAF firewall, all external network protocols are encrypted via TLS:

WSS – secure web socket;
RTMPS – secure real-time messaging protocol;
WebRTC – real time internet connection;
HTTPS – secure hypertext transfer protocol.

Flexibility

ONVIF standard enables connection of any camera type to the platform with no technical restrictions.

Multi-format streaming capability allows any video player to play back the video from the cameras.

WebRTC standard enables low-latency remote control of camera position and zoom, as well as receipt and transmission of audio messages through the cameras.

HLS protocol permits stable audio and video transmission for the best user experience via any network.

RTMP and RTSP standard protocols ensure interaction with VA and AI engines.

AI analytics

Together with VisionLabs, we have built an analytics system that allows you to:

- detect moving objects and sounds and identify instances of line crossing and breach of surveillance zones;

- recognize human faces and emotions;

- identify socio-demographic characteristics of people and vehicle parameters;

- count visitors;

- configure reporting rules and automatic reaction scenarios.

VisionLabs recognition algorithms regularly rank in NIST top-3 list for descriptor retrieval speed and recognition results. The Liveness validation algorithm has been a three-times winner in the Liveness competition at the CVPR 2019-2021 Conference workshop.
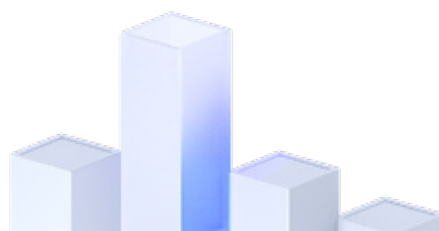
2. SCOPE OF APPLICATION

Launch a video surveillance service from scratch, expand the capabilities of your products and use a video analytics system to control business processes in retail, manufacturing, real estate and other industries.

Platform applications

Security

Detection of perimeter intrusions, abnormal phenomena and suspicious items, prevention of theft and conflict

Process control

Monitoring of the checkout area, control of compliance with regulations and use of personal protective equipment

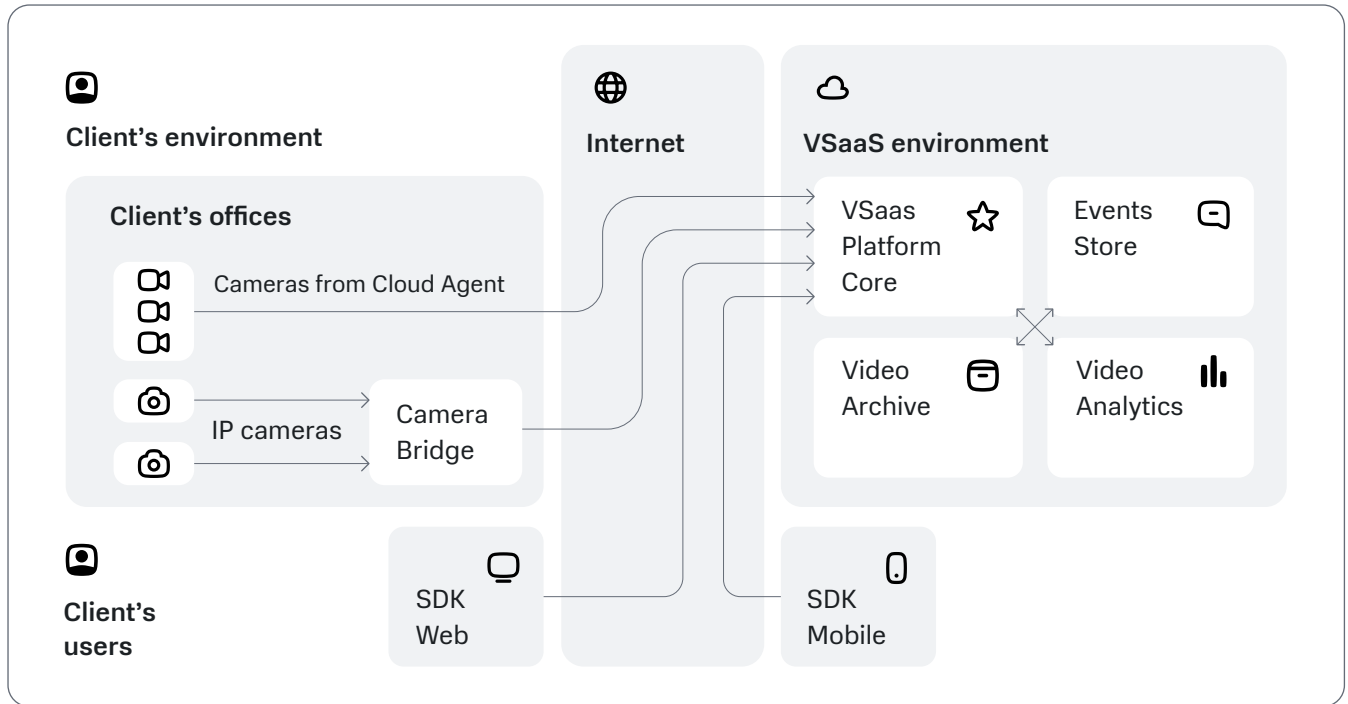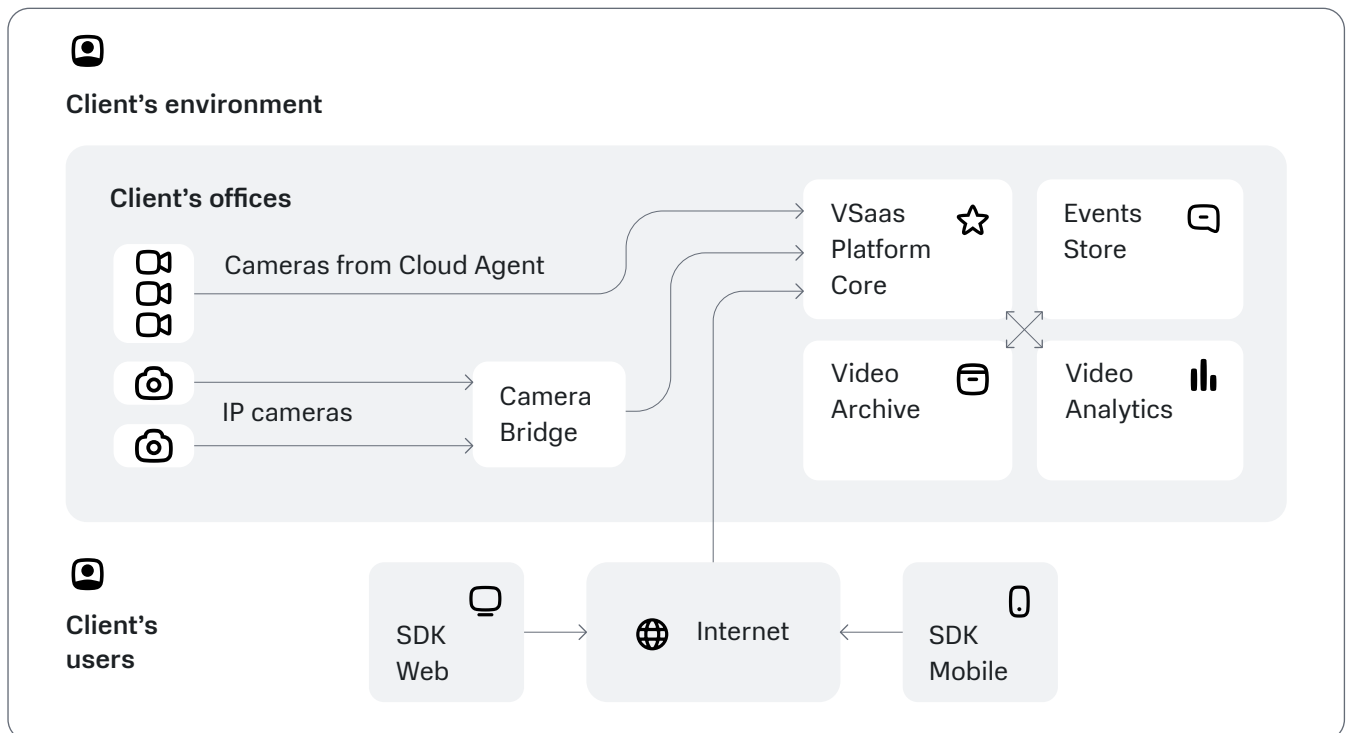**Marketing and user experience**

Visitors count, route, queue and traffic analysis, recognition of demographic features and emotions

3. SOLUTION ARCHITECTURE AND PLATFORM COMPONENTS

Deployment in cloud infrastructure

Hybrid deployment

Platform components:

VSaaS Platform Core is the primary cloud-based component. It is used to connect the cameras, route video streams, manage the video archive, control the cameras, and connect the web interface and mobile applications. It can be deployed at the customer's data center.

Video Archive is a subsystem for storing videos, clips and shots from cameras, and other voluminous data. We offer the S3 cloud storage, but you can also use other solutions that suit customer requirements.

Cloud Agent is optional software built into the camera that expands its functionality and connects it to the cloud storage for further handling of data.

Camera Bridge is a module used to connect IP cameras via RTSP/ONVIF.

Events Store is an event-reaction subsystem that stores all events from cameras and provides logic for user reactions and notifications.

Video Analytics is a subsystem that allows you to incorporate video analytics algorithms to be used within the platform. The subsystem optimizes the load on computing resources, thus ensuring parallel employment of cloud computing. You may use the subsystem to connect both MTS AI's analytical algorithms and third-party solutions.

SDK for Web-Interface is a system that enables interaction with users via the web-interface; it is installed in the customer's perimeter and ensures user-friendly management of the platform.

SDK for Mobile Platforms is a package of iOS/Android user applications that help manage the platform.

4. AUXILIARY SERVICES AND CUSTOMIZATION

Auxiliary services

Cloud Agent for IP Cameras – software installed into a standard IP camera to turn it into a plug-and-play camera connected to the cloud for streaming, recording and further analysis of video data.

Cloud Agent permits collecting data in simple formats compatible with HTML5, such as MP4 and JPEG. The software is supported by major brands of IP cameras: AXIS, Bosch, Panasonic, Sony, Uniview, Vivotek, Hanwha, Dahua, Hikvision and Truen.

Camera Bridge – a software cloud gateway or network video recorder that connects cameras to the cloud and can record video locally.

The module can be deployed in a hybrid format: as a cloud service and as Camera Bridge server. The server records data locally and broadcasts it to the cloud, while the cloud service records video and allows you to control the recorders.

The Camera Bridge cloud service is available as a download package for x86 and ARM platforms. The server is available as a Linux docker container and can also run on ARM platforms: Raspberry PI, NVIDIA Jetson, etc.

Ready-made application interfaces:

- iOS
- Android
- Web

Customization options

Customize the VSaaS Platform for your company's requirements.
You can use the Platform to:

- customize mobile and web applications,
- configure the video analytics system to the desired parameters,
- deploy the solution in your corporate cloud infrastructure.

MTS AI team can develop the Cloud Agent module for cameras and provide business process automation recommendations based on your requests. Technical support team will help you design and integrate the software and answer any questions you may have.

5. RECOMMENDED DEPLOYMENT CONFIGURATIONS

Deployment in cloud infrastructure

Number of cameras (users)	CPU – Intel Xeon Gold 6240 2.6 GHz	RAM	HDD
5000 (500)	116	404 Gb RAM	5 340 Gb HDD
10 000 (1 000)	220	767 Gb RAM	12 920 Gb HDD
50 000 (5 000)	1072	3 732 Gb RAM	17 040 Gb HDD
100 000 (10 000)	2137	7 436 Gb RAM	23 220 Gb HDD

Hybrid deployment

To enable the hybrid scenario for the platform, MTS AI provides the VSaaS VMS service as a download package for x86 and ARM platforms and Linus docker container.

Examples of server hardware requirements:

- 20 x 2 Mbps channels — 4 GB RAM, Atom
- 20 x 2 Mbps channels — 4 GB RAM, Raspberry PI 4
- 50 x 2 Mbps channels — 8 GB RAM, i3

The server can run on ARM platforms, such as Raspberry PI, NVIDIA Jetson and others.

6. FLEXIBLE LICENSING

Reference-based pricing

1. Fixed annual fee for software license.

2. Variable fee depending on the use of licensed components.

Licensed module	Pricing package
Network requests to the platform (REST API)	10 thousand requests
Cloud-based streaming video analytics (individual detectors – face, gender and age recognition, recognition of car brands and license plates, recognition of personal protective gear, etc.)	10,000 unique IDs with 500 RTF (real time factor)
Cloud-based file video analytics (individual detectors – face, gender and age recognition, recognition of car brands and license plates, recognition of personal protective gear, etc.)	10,000 unique IDs with 12+ hour delay for each 100 hours of video
Simultaneous incoming video streams from cameras	3 thsd
Simultaneous online video playbacks	3 thsd
Cloud-based video storage (video archive)	10 TB

Channel-based pricing

Pricing configuration based on channels with different levels of data storage is possible

Contacts

To find the solutions or components that best suit your needs,
contact your manager at **sales@mts.ai**
or leave a request on the MTS AI website.