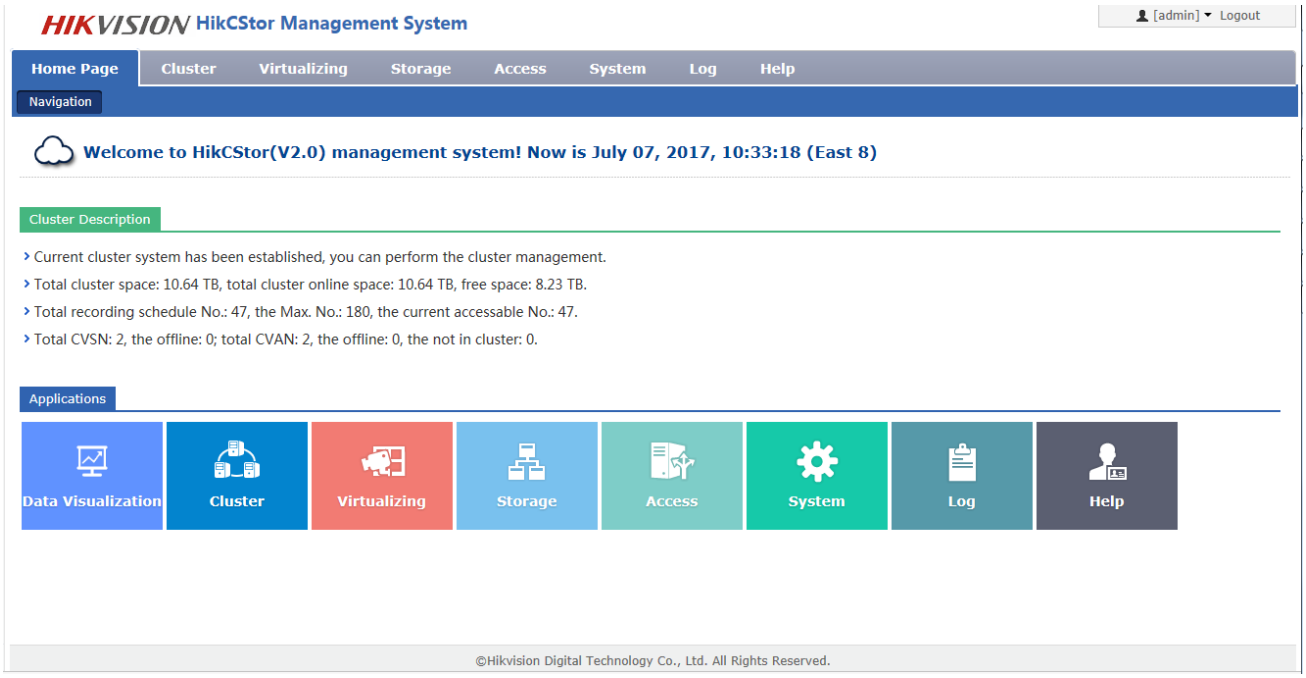
Hikvision Cluster Video Storage

Overview

Hikvision cluster video storage is a professional cluster storage system combined with application of intelligent security big data storage. By integrating cluster storage technology and intelligent application in security industry, the storage system offers large-scale data storage service with optimization based on security industry. Mixed storage of video and picture is available while the system can be deployed in complex settings flexibly, providing professional security data storage services with high performance, high security, high stability and high scalability.



Key Technologies

- **Stream data storage:** As video data is not structuralized, the storage mode for stream data is adopted to ensure integrity of data and provide efficient storage service for video data.
- **Cluster storage:** Load balance is employed for services in each node within a storage cluster to avoid stability risk caused by single/multiple point failures.
- **Virtualized storage:** Storage resources are virtualized and large-scale space can be flexibly adjusted and allocated as required. Full logical space management strategy can be used to utilize storage space efficiently.
- **Distributed storage:** The data storage of different kinds of services is distributed based on dispersal algorithms. Featured with highly concurrent data reading ability competence at system-level, distributed storage effectively reduces data loss risk and fully increases support for big data services.

Features

- **Highly flexible space management**

Virtualization of storage resources and space allocation as required, increasing usage of storage space;

Scale-out of a single system, enabling linear growth of system performance and capacity;

Distributed storage of video data stream, dynamic space adjustment, improving usage of system capacity.

- **Quick search of mass data**

High-speed index management and comprehensive optimization of search and filter of mass data, increasing search speed;

Pre-analysis and index of video data, enabling applications like I frame playback;

Intelligent data index and navigation, achieving smart video data search and expanding smart application.

- **Continuous and reliable data service**

24/7 distributed storage, high speed download and playback of HD and high bit rate videos;

Real-time dynamic load balance for video data storage service, increasing device usage and reducing pressure;

Application of RAID, ensuring reliability of data service with HDD redundancy.

- **Highly scalable application support**

Application-oriented development and design, offering direct storage plan for video and picture storage as well as scalability for multiple application functions;

Stream data structure design, building up disk arrays for direct storage of video stream and picture data.

- **Real-time accurate maintenance management**

Full-scale monitoring of software and hardware within the cluster system, triggering alarms upon failure;

Collection of software and hardware operation data in real time with high accuracy.

Functions

Based on the features of security industry, the Hikvision cluster storage system integrates cluster storage with storage-related security applications in a creative way, fully utilizing the features of cluster storage while optimizing service functions, increasing structural capability of the security system, and achieving professional cluster storage function for security services.

The functions of Hikvision cluster video storage include: video storage, picture storage, system management, maintenance management. In addition of providing cluster storage management and maintenance functions, the system emphasizes on focus of the combination of video and picture storage in security industry, and offers interfaces for professional functions such as video/picture direct storage, data lock, overwriting, and picture compression, so as to achieve security-based professional cluster storage applications.

The main functions of Hikvision cluster video storage system are listed below:

Video Storage	
Video recording	Record video data by schedule, including scheduled recording, manual recording and event recording.
Video search	Search video data by camera No., recording type, time period and lock status, etc.
Playback	Play back videos by camera No., time period and recoding type.
	Progress bar navigation by camera No. and time period.
	Playback by specified key frame (I frame).
	Fast forward, slow forward and reverse playback for specified video.
Download	Download video by camera No. and time period.
	Resume video downloading after network disconnection recovered.
Lock	Lock specified videos and prevent them from being overwritten.
ANR	Automatically retrieve videos temporarily saved in the edge storage of cameras after network disconnection recovered.
Overwrite	Overwrite video data by specified time period and space limit.

Picture Storage	
Storage	Picture cluster storage via server forwarding.
	Picture direct cluster storage from cameras via RESTful protocol.
Download	Download picture by specified time period.
	Download picture by specified URL.
Compression	Picture compress by file size, percentage, and width and height.
Lock	Lock specified pictures and prevent them from being overwritten.
Overwrite	Overwrite picture data by specified time period and space limit.
Maintenance	
System information	Retrieve system information including version, CPU, memory, NIC and HDD, etc.
System failure alarm	Push alarms of system failures, e.g. CPU and memory usage exceeded limit, to the maintenance platform.
Storage device alarm	Push alarms of device failures and disconnection to the maintenance platform.
Standard protocol compatibility	Compatible with standard SNMP protocol.
System Management	
Clustering management	Clustering of system nodes and load balance to avoid single point failures.
Virtualization management	Integrated management of virtualized storage resources.
Distributed storage management	Smooth slicing of camera data and distributed storage to system nodes.
Online expansion	Online expansion of system nodes without interruption of system services.

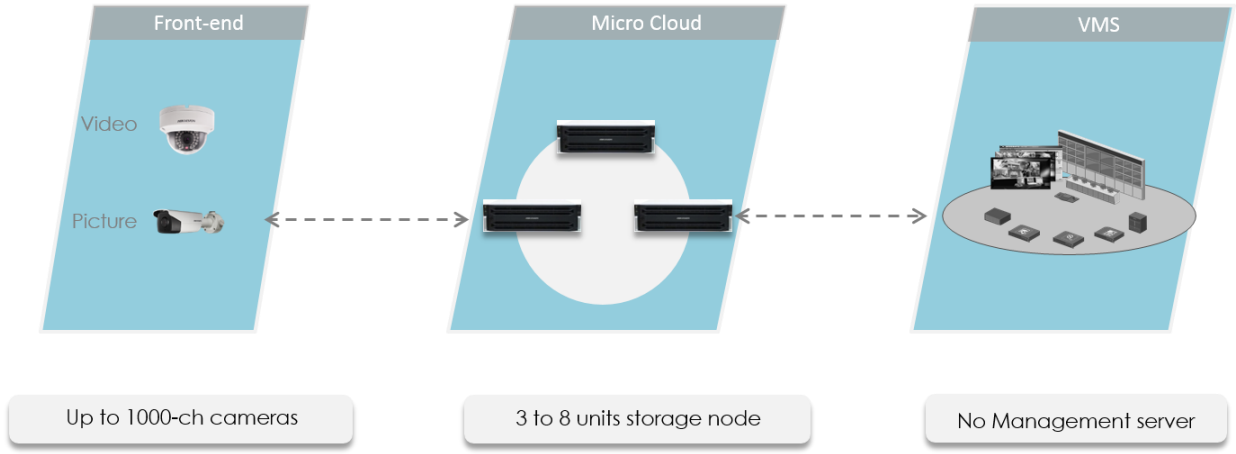
Solutions

Cluster video storage – Micro video cluster solution

Micro video cluster serves as a lightweight solution of Hikvision cluster video storage system. It does not require any management server, while providing small-scale cluster storage services through clustering management and virtualization of only 3 to 8 storage devices. This storage solution can be used for video and picture storage of less than 1,000 cameras, which effectively reduces cost.

Highlight: No metadata server, flexible deployment and low cost.

Application: Small-scale security storage, local storage and expanded storage at different levels.

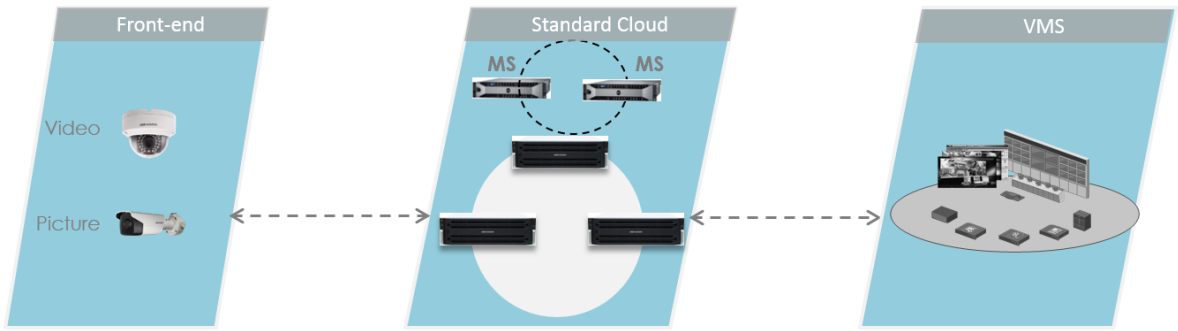


Cluster video storage – Standard cluster solution

The standard cluster solution uses a “full” clustering structure that consists of management servers and storage devices. The management servers are responsible for managing hardware resources and scheduling services, while storage nodes process data reading and writing. This solution caters to the requirements of mass data storage and concurrent data processing in medium to large-sized projects and provides video and picture-based data storage services with high performance, high stability and high scalability.

Highlight: Mature solution, widely applicable and dynamic system expansion.

Application: Medium to large sized concurrent storage, centralized storage and space allocation upon requirements.



Support to ONVIF and RTSP

Up to 10000-ch cameras

HA Mode & Cluster Mode