Since 1988

DSPPA

4K Visualized Distributed Integrated Management Platform

Product Introduction & Solution Design

Industry-leading Audiovisual Interactive Service Manufacturer

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01 Industry Demand Analysis

Background Overview

With the advancement of industrialization and urbanization in China, a large number of industries, population and wealth have gathered in cities, and risks have also been concentrated in cities, the harm and impact of emergencies have increased significantly, and emergency management informatization has become the consensus of national emergency management departments.

In 2008, the Ministry of Emergency Management issued the *Strategic Planning Framework for the Detailed Development of Emergency Management* (2018-2022); In February 2019, the Ministry of Emergency Management released the *2019 Implementation Guide for Local Emergency Management Informatization*.

The fine governance of megacities has become a topic of close attention for governments at all levels, and more and more government departments are actively engaged in the construction of emergency command and dispatch center systems.

Demand Analysis

With the rapid development of information technology, the audio and video related business applications are becoming more and more diversified, a large number of new audiovisual application services are urgently needed to enrich the command and control center, to achieve the interconnection of audio and video systems, the interactive sharing of information, which will facilitate the control center to use information technology and modern technology to build a digital, networked, intelligent and highly integrated platform to meet the needs of the emergency command center for clear, fast, efficient, flexible and intelligent response.

Interconnection

Remote command

Systems Integration

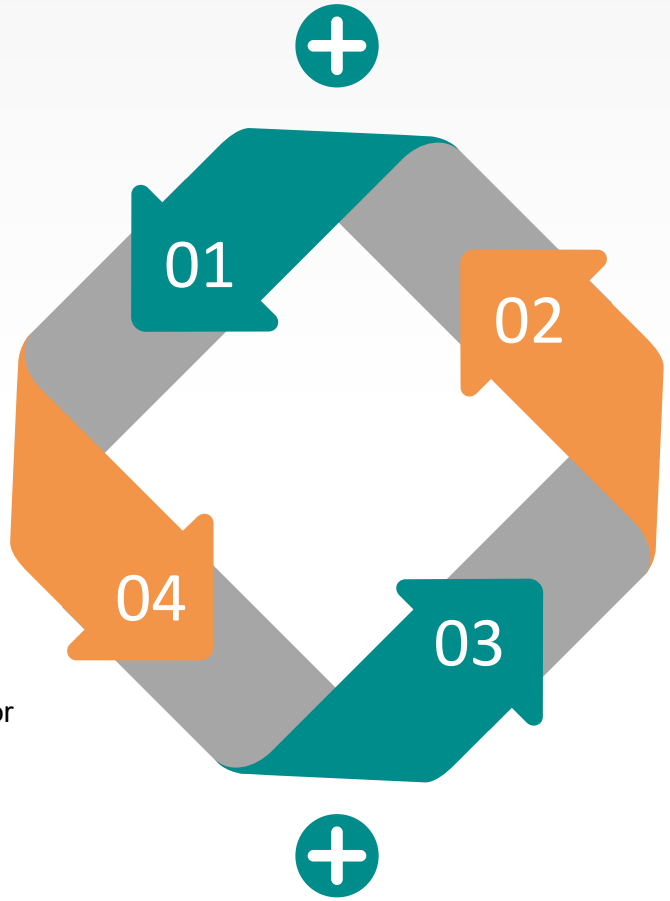
Demand Analysis

Visualized Command

When leaders at all levels conduct remote visualization command in the command center, they can retrieve all kinds of image resources in the actual command platform, image comprehensive management platform, GIS information service platform, social emergency linkage information platform and pre-arranged planning in real time.

Remote Video Conference

Leaders at all levels can make video connections with off-site experts in the command hall, decision room and conference room, and start a video conference to discuss the response strategy to major disasters in real time.



Conference Discussion & Recording

When leaders at all levels discuss major emergencies or confidential information events in the decision room of the command center, they need to use the paperless conference system, and all the document data are safe and confidential, while meeting the functions of sound reinforcement , voting, synchronous display, annotation, projection, etc.

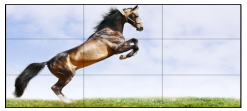
Centralized Management

It is required to use visualization for system management and maintenance, and the lighting, air conditioning, curtains, power supply and other equipment of the command center can be customized into a variety of scenario modes for storage and recall, flexible switching as needed, simple and convenient operation.

Drawbacks of Traditional Solutions

The traditional matrix splicing system only solves the preliminary audio and video problems, but it is still an "island of information", which is only applied in a single conference room or a single command center and cannot be extended to departments at all levels that need to participate.

Traditional Matrix



Screen Image Splicing

Traditional KVM Management

IPC Monitoring

Intelligent Central Control System

Recording & Broadcasting System

① The drawbacks of traditional audio and video systems: complex systems and stacks of devices.

② Single system function, difficult operation of multi-system and multi-interface operation platform.

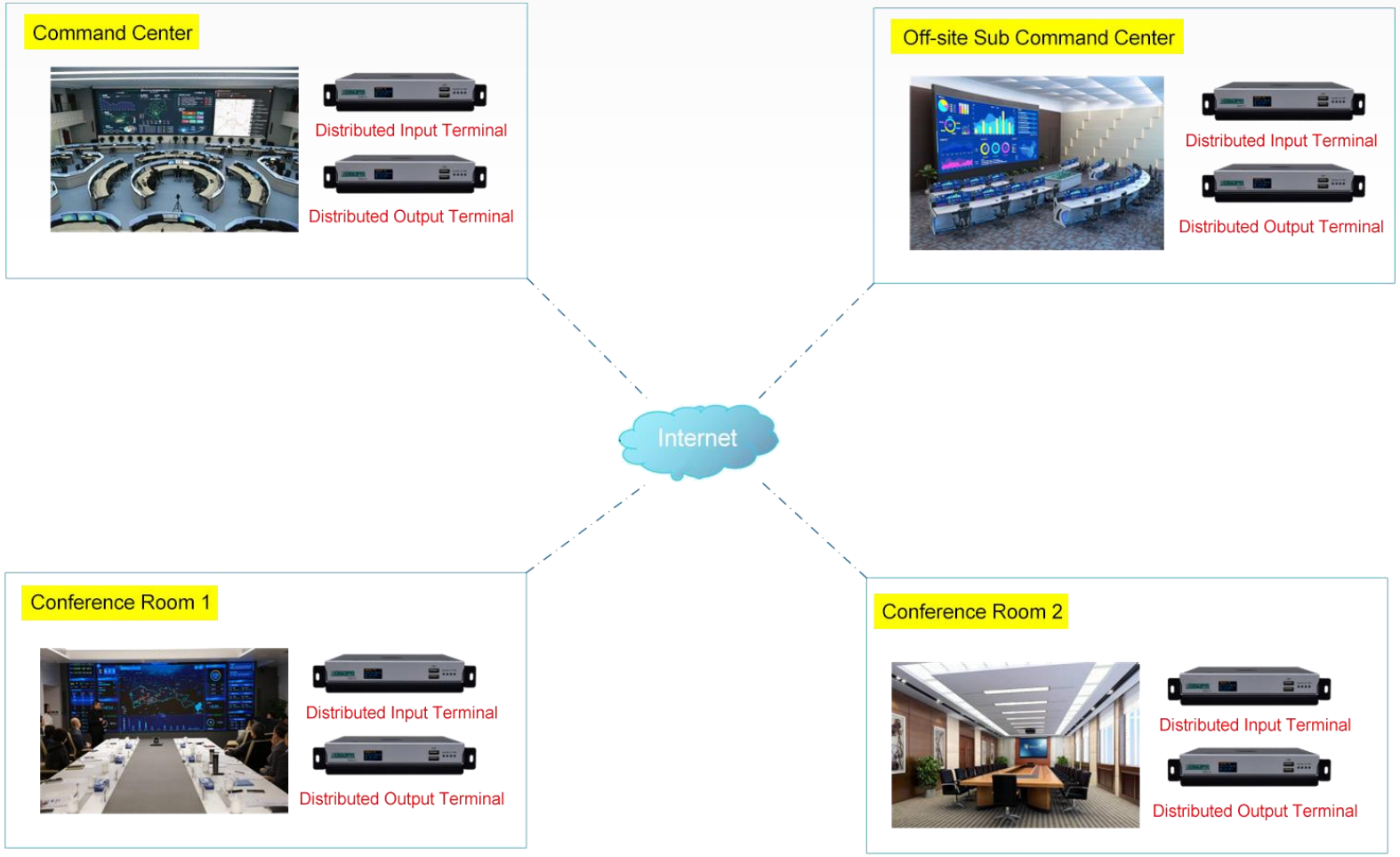
③ Only for simple signal display, difficult to link with business systems.

④ The expansion of traditional solutions is troublesome, and it is difficult to realize multi-party visual information sharing.

02 System Product Introduction

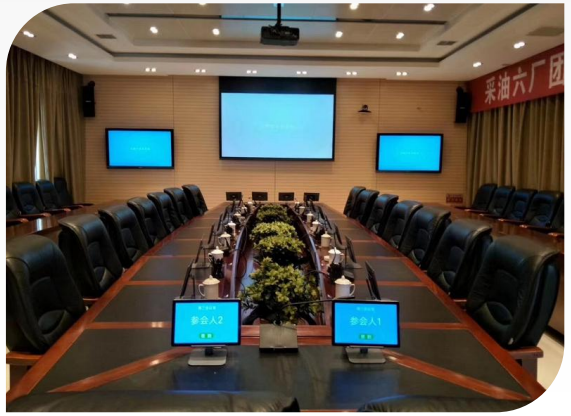
What is 4K distributed

Based on IP non-centralized design and embedded architecture, 4K distributed matrix system successfully provides the command center with a modern, networked, interconnected intelligent management platform integrating video splicing processing, video conference processing, audio processing, network transmission, environmental control, KVM collaboration, visualized control and other functions.



System Introduction

With the accelerated pace of information technology, departments at all levels are paying more and more attention to "conference", "scheduling" and "command and control". It is a difficult case on how to integrate the relevant signal acquisition and transmission technology, audio and video coding technology, graphics signal conversion technology, multi-screen image processing technology, network technology and intelligent control technology into one, how to provide users with a high physical resolution, high definition, high intelligent control and high stability of the graphics information processing system.



- **DSPPA 4K visualized distributed integrated management platform takes industry customer needs as the background:**

1. To achieve high-quality transmission, splicing, multi-screen, intelligent control technology and other integration into one.
2. To meet the user's composite requirements for the system's "security, stability, scalability, interconnection and mutual control, visualization and convenient operation"
3. With distributed architecture deployment, the system can still operate normally when a product fails suddenly.
4. Adopt new video coding and decoding technology and visual lossless transmission method.
5. Realize regional signal high-definition acquisition, ultra-low latency, high-definition restoration, environmental control, interconnection and other functions.
6. Users can control and dispatch the signal sources of different areas in real time only by computer or tablet PC.

Application Scenario

Command Center

Real-time display of dynamic information, remote command issuing, conference communication

Conference Center

Conference communication, dispatch, and time screen transmission, recording and broadcasting

Large Monitoring Center

IP camera can directly display the real-time image and retrieve any signal at any time on the screen

Combat Room, Command Center

Command and dispatch, remote guidance, emergency operations

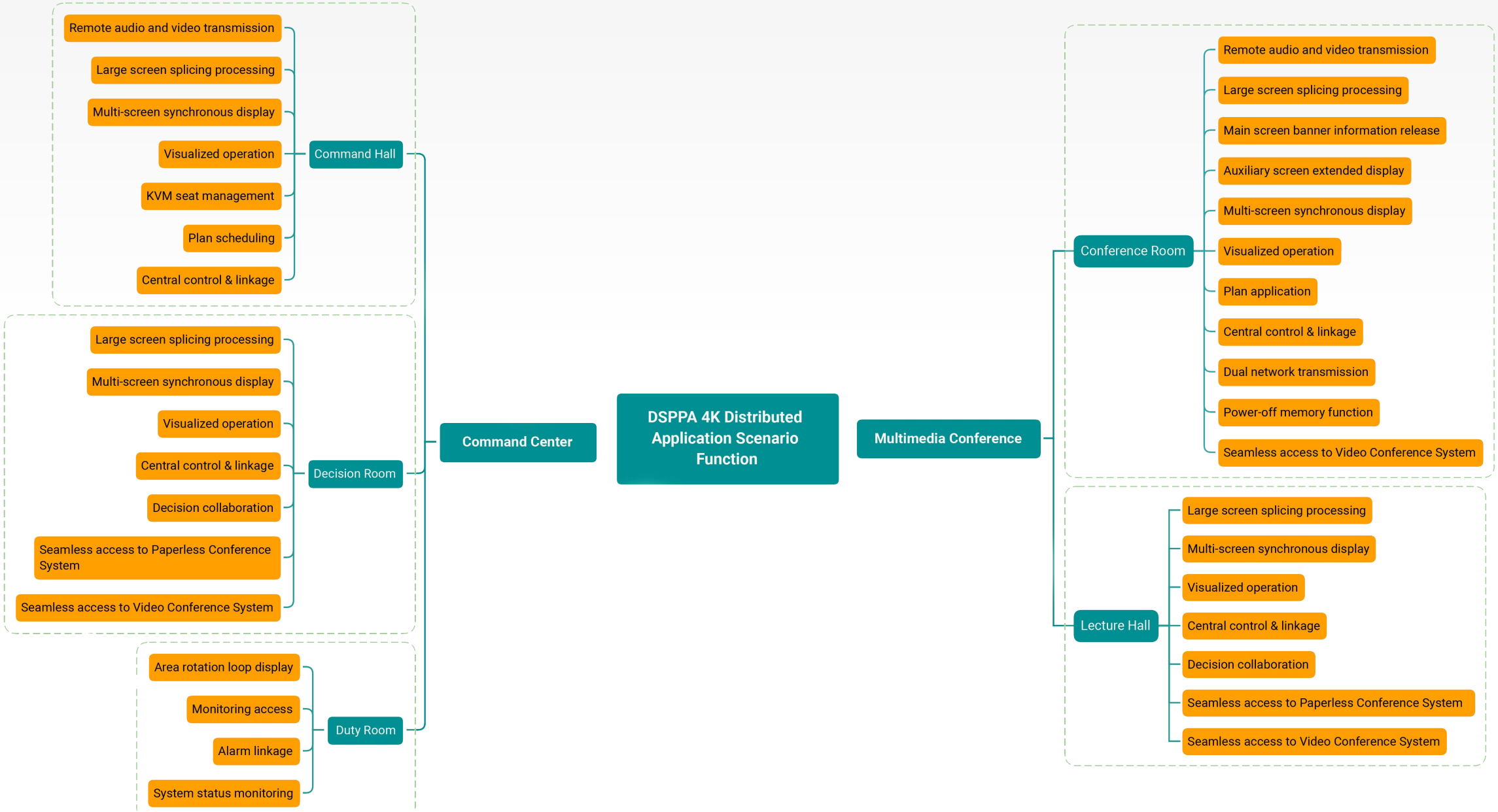
Commercial Big Data Center

E-commerce field, big data analysis, real-time display of dynamic information

Fire Command Center

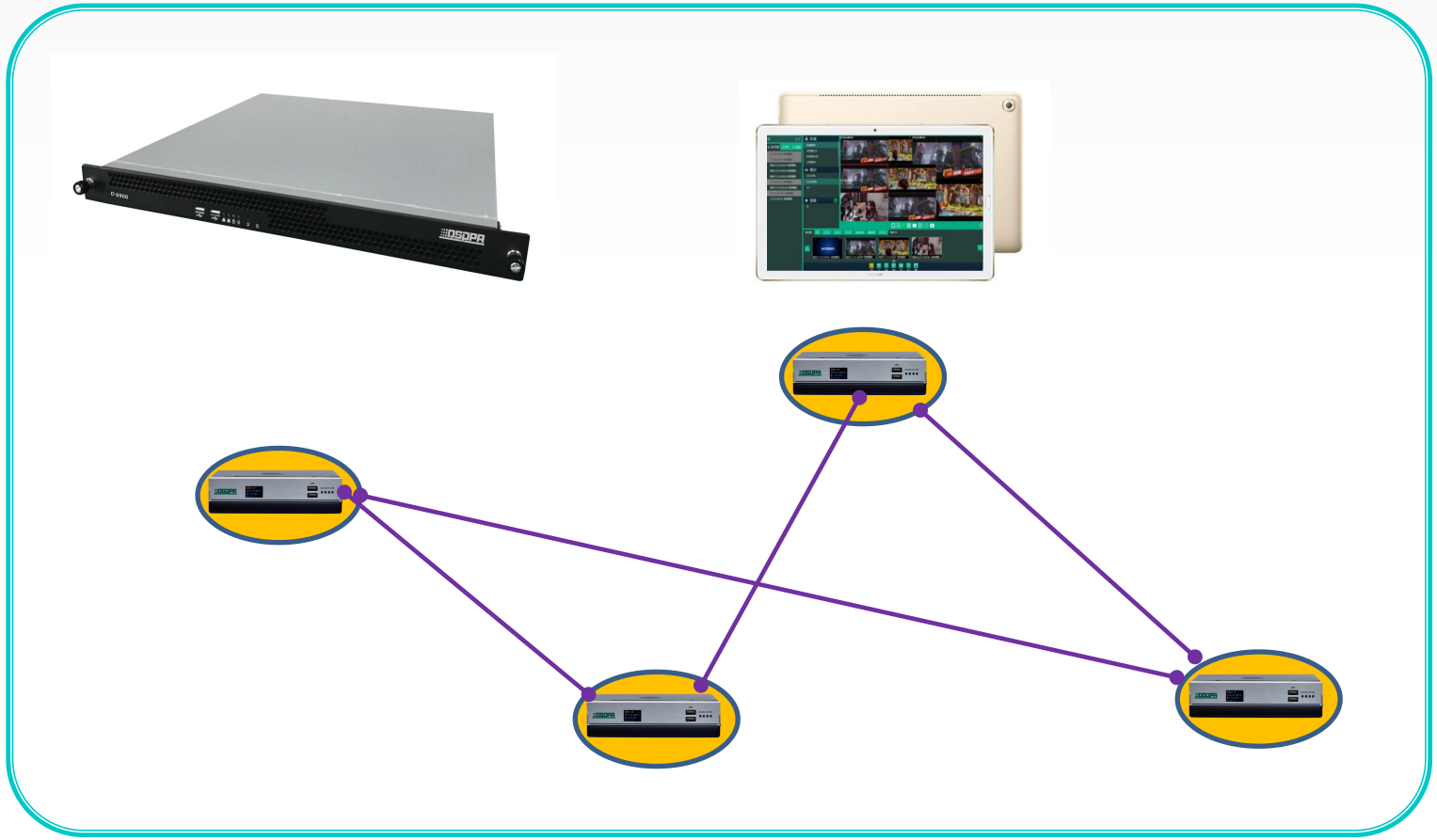
Fire alarm, real-time display of fire situation, remote command of the fire scene

Application Scenario Function



Stability of Platform

With DSPPA 4K distributed architecture, it will not affect the overall system when there is any hardware failure, and is efficient and stable.



- Any interconnection between HD input and output terminals can be realized without forwarding through the central distributed host, and higher system transmission stability.
- Each high-definition input and output terminal can automatically restore the configuration or read the policy setting information after power-off and restart, without worrying about data loss.

System Features

The ultra-high performance audio and video processing platform supports 4K ultra-high definition (3840*2160, while backward compatible), using H.264/H.265 encoding and decoding mode, bringing ultra-high definition experience. Ultra-low latency, visual lossless, real-time synchronization with the large screen.

H.265

H.264

H.265

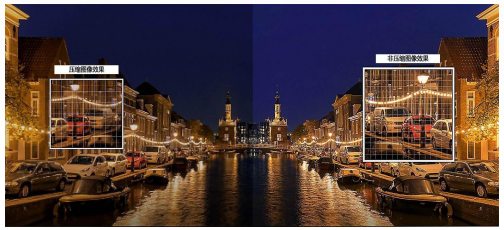
- Full support for H.265 protocol
- All input boxes, output boxes, and servers support H.265 video encoding and decoding protocol
- Compared with H.264, H.265 provides more different tools to reduce bit rate, transmission bandwidth and storage space, and system stability

Ultra-low Latency

Input Output

- Rapid operation experience, real-time processing of video frame by frame, instant operation response, and second-level layout switching
- Using the world's top image processing platform, fast synchronization window opening strategy, high synchronization playback strategy and abnormal packet loss and frame loss strategy
- Cross-screen playback synchronization <33ms, latency <80-150ms

Visual Lossless



- With visual lossless compression technology, the image is more realistic and the sound quality is more natural, as if you are on the scene.

Access to HD Surveillance

It supports input retrieval and distribution of IP cameras of all brands: arbitrary streaming and forwarding, acquisition of video files, adjustment of playback progress, PTZ control, and push to each plane, etc.

- IP camera signal directly uploaded to the screen
- Integrated access to nearly 100 kinds of mainstream IP cameras
- Support standard ONVIF protocol
- New models can be added quickly
- No need for external H.264, H.265 decoder or other decoding equipment
- Support media stream signal docking with the monitoring platform server

Seamless cross-regional scheduling

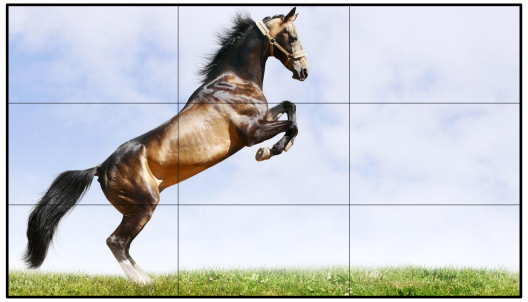
Effectively solve the problem of seamless cross-regional linkage of local signals, enabling cross-scenario, cross-department, cross-regional conference systems or sub-control centers to be interconnected and controlled, realize cross-regional interconnection and mutual control, and improve command and control efficiency.

Take control of the overall situation in your hand

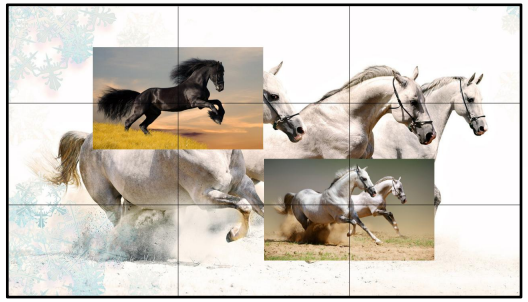
- Multi-conference room audio and video intercommunication solution.
- Build professional sound reinforcement and display screens in the control center to centrally display signals and realize signal control.
- The HD input terminal and HD output terminal signals of each conference room can be interconnected.
- Can be applied to audio and video conference interaction within the LAN.

Screen Splicing & Image Splitting

It supports screen splicing, splitting and fusion display of multiple videos, and the image window can realize zoom in and out, cross-screen, roaming, overlay, picture-in-picture, and picture-out-picture functions.

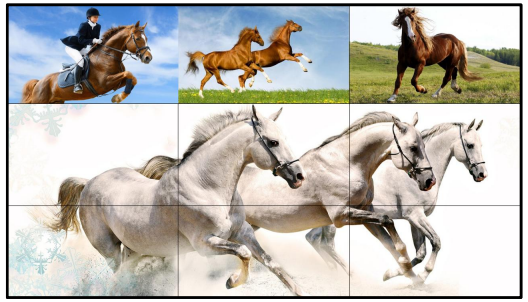


Full-screen Display



Overlay, Roaming

Picture-in-picture



Combination Display

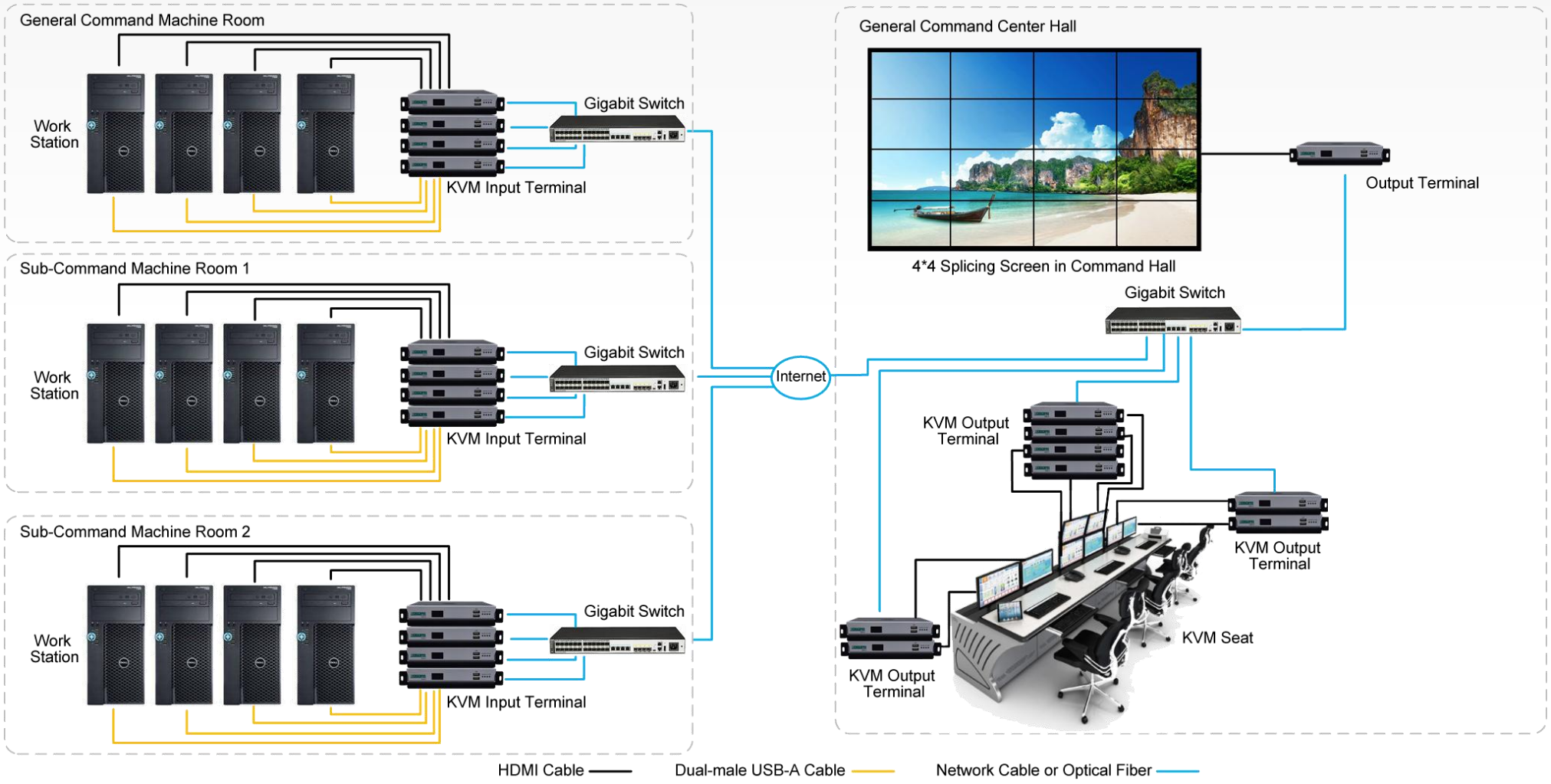
- Realize the display of various video signals in any area on the splicing screen.
- Support screen splicing, and zoom in & out.
- Support image overlay.
- Support cross-screen and roaming.
- Support screen splitting and windowing, with eight 1080P images, two 4K images for a single screen.
- Support visualized operation.

Distributed KVM Seat Managemnt

The KVM system module is compatible with all platform operations, and can use shortcut keys, OSD menus, and even cross-screen remote office collaboration with the mouse; the KVM Seat OSD supports WYSIWYG operation of multi-channel signal preview.

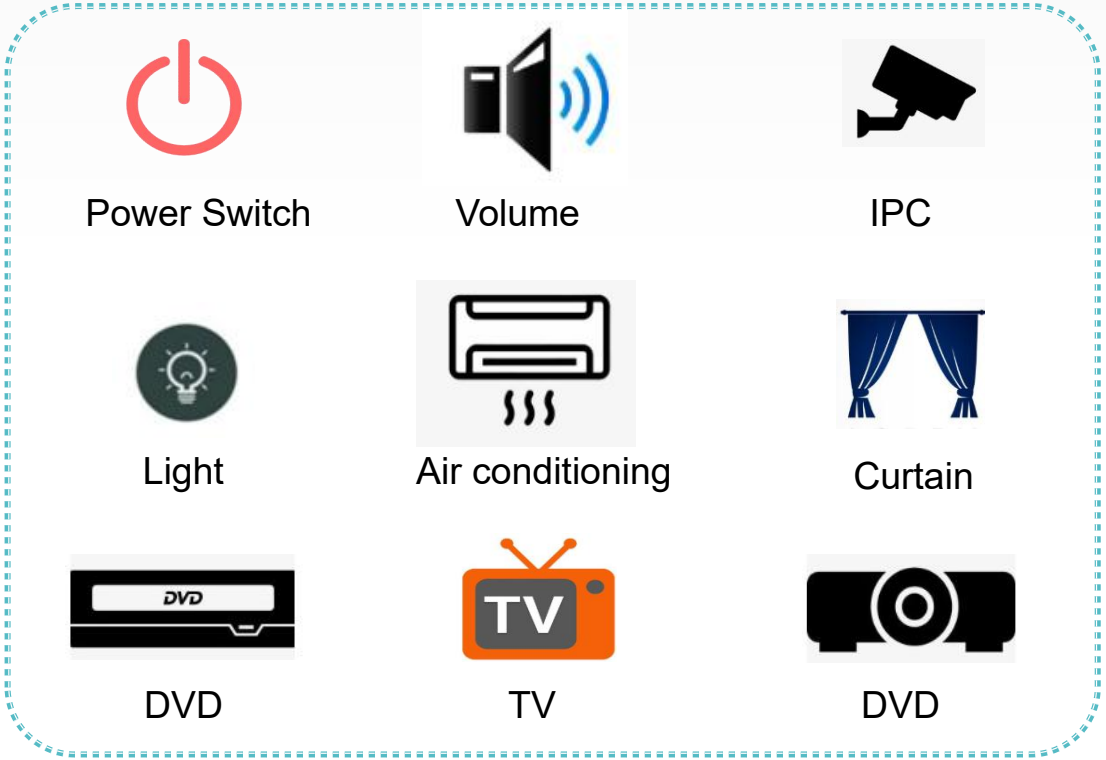
- Separation of human and machine, remote control of the server room host.
- Centralized management and signal control of the host, reducing command center noise.
- One person operates multiple machines and multiple screens, a single KVM seat connected to control multiple hosts at the same time, key and mouse roaming, greatly improving the manageability and efficiency of the system.
- Realize office collaboration and push large screen display.

KVM Seat Management Application



Environmentally Central Control

It ntegrates an efficient environmental management module, which can control lighting, air conditioning, curtains, volume, pan-tilt, power switch, etc., and get real-time feedback through IPC backhaul.

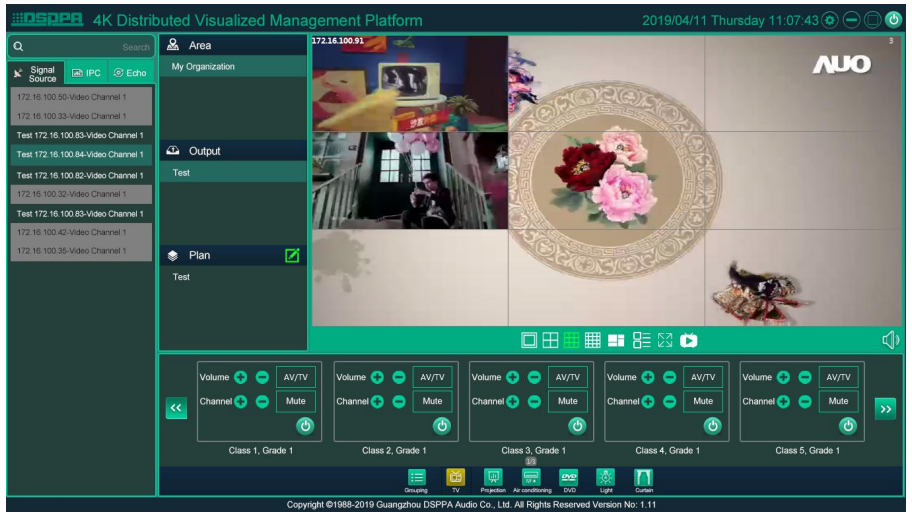


Unified Management Solution for Multi-Conference Room Environment

- Unified control of display and splicing solutions for conference rooms through the background control platform.
- Unified control of all meeting room environments, such as lighting, air conditioning, curtains, signal switching, volume level, camera presets, etc .
- The distributed integrated management platform integrates splicing and central control functions, and supports one-click scene call/switching signals through mobile software and PC management software.
- The management and control platform visualizes the operation and feedback the operation results in real time.
- Visualizd operation, real-time feedback operation results.

Visualized Operaion & System Status Management

It supports mobile phones, tablet computers, PCs and all-in-ones. The platform can monitor all signal sources, display devices, peripheral devices, and operating environments in real time for more flexible and convenient visualized control.

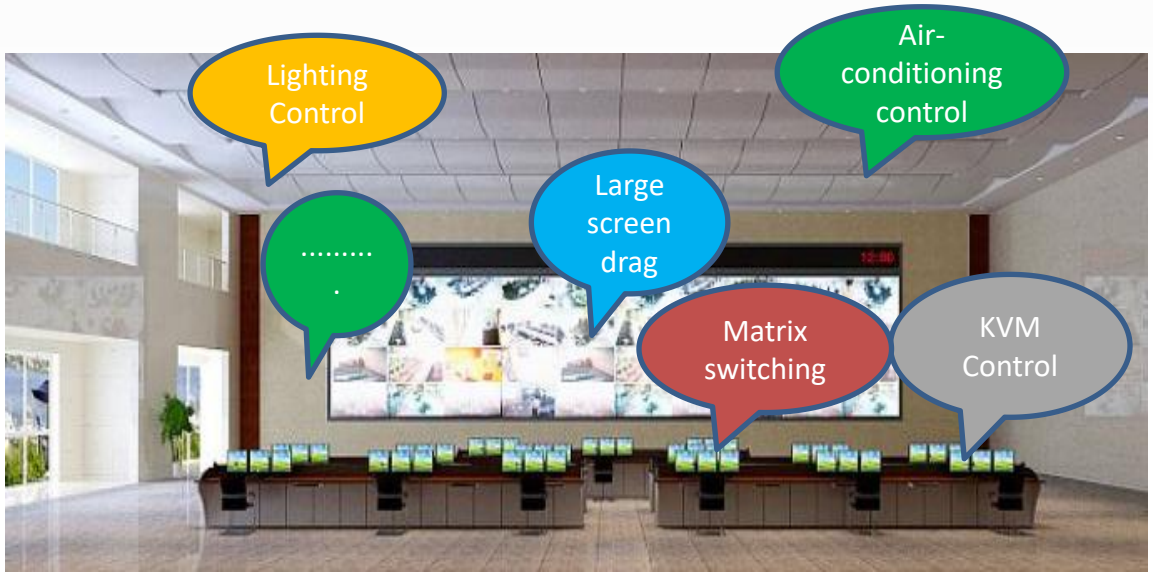


Visualized Control ~ What you see is what you get (WYSIWYG)

- Support "What you see is what you get" visualized operation of the splicing system via a tablet or touch computer.
- Real-time preview and echo of all video source screens on a large screen.
- Touch and drag operation for video source switching.
- Real-time interaction on the same screen.
- Support window roaming and overlaying, dragging, pulling, zoom in and out, and autonomous adhesive screen border.

Permission Management & Scenario Linkage

Different administrative permission can be set for each system device: high-definition input / output terminal, distributed central control host and others based on the user role. For example, if the permission of the department conference room is set for a user seperately, he cannot operate the display of other conference rooms.



- Administrators have all permissions to users and can control users and servers.
- Multiple permissions to full control, background editing, and view only and access denied.
- The main command platform can assign permissions to groups of seats.
- The operator's self-defined target host has quick access and permissions, and can be moved according to the user's login seat to ensure responsibility of the people.

DSPPA Distributed Product Series

DSPPA Distributed Input Terminals

01

Distributed Input Terminal D6911E

- 1080P capture
- 1 channel video loop out

02

Distributed Input Terminal D6911EC

- 1080P capture
- 1 channel video loop out
- Built-in Central Control
- Built-in KVM

03

Distributed Input Terminal D6913

- 4K capture
- 1 channel video loop out

04

Distributed Input Terminal D6913C

- 4K capture
- 1 channel video loop out
- Built-in Central Control
- Built-in KVM

05

Distributed Input Terminal D6913S

- 4K capture
- 1 channel video loop out
- Network port &Optical fiber port dual backup

06

Distributed Input Terminal D6913D

- 4K capture
- 1 channel video loop out
- Built-in Central Control
- Built-in KVM
- Network port &Optical fiber port dual backup

07

Distributed Input Terminal D6913P

- 4K capture
- 1 channel video loop out
- Built-in Central Control
- Built-in KVM
- Powered by power adapter & POE

DSPPA Distributed Product Series

DSPPA Distributed Output Terminals

01

Distributed Output Terminal D6914

- Max. 4K Output
- A single terminal supports 16 1080P
- 4 4K image quality
- 2 HDMI Outputs (1 4K, 1 1080P)

02

Distributed Output Terminal D6914C

- Max. 4K Output
- A single terminal supports 16 1080P
- 4 4K image quality
- 2 HDMI Outputs (1 4K, 1 1080P)
- Built-in Central Control
- Built-in KVM

03

Distributed Output Terminal D6914S

- Max. 4K Output
- A single terminal supports 16 1080P
- 4 4K image quality
- 2 HDMI Outputs (1 4K, 1 1080P)
- Network port &Optical fiber port dual backup

04

Distributed Output Terminal D6914D

- Max. 4K Output
- A single terminal supports 16 1080P
- 4 4K image quality
- Built-in Central Control
- Built-in KVM
- Network port &Optical fiber port dual backup

05

Distributed Output Terminal D6914P

- Max. 4K Output
- A single terminal supports 16 1080P
- 4 4K image quality
- Built-in Central Control
- Built-in KVM
- Powered by power adapter & POE

06

Distributed Output Terminal D6950-D6957

- Built-in splicing processing
- Support up to 2048x1024
- Support multi-way audio port backup
- Support 4, 8, 12, 16, 20, 24, 28, 32 output optional

07

Distributed Echo Terminal D6905, D6905S

- Support 64-channel echo
- Up to 4K quality
- Supports single and dual networks

DSPPA Distributed Product Series

DSPPA Distributed Products Series

01

Distributed Host D6900

- Integrated Management
- Permission Management
- Monitoring Docking*
- Recording (Conference Recording & Broadcasting)
- O & M management

02

Distributed Camera Integrated Management Software D6903

- Access to IPC monitoring
- Support onvif protocol
- Support 1080P, 2K resolution
- This software is deployed on D6900 platform

03

Distributed System Integrated Management Platform Software D6901

- PC management & Operation
- Visualized Audio & Video Switching
- Window management, splicing, arbitrary zoom, picture-in-picture, screen roaming and other functions
- Preplan Application
- Intelligent Control
- Background Management

04

Distributed System Mobile Control Software D6902A D6902I

- Mobile Tablet Operation
- Visualized Audio & Video Switching
- Screen window arbitrary zoom, picture-in-picture, screen roaming and other functions
- Preplan Application
- Intelligent Control

05

Distributed Electricity Control Interface Machine D6906D

- Support 4-way strong electronic control
- Each channel supports a maximum of 20A
- Support weak electronic control: 2 RS232, 1 RS485, 2 IO control, 2 infrared control

06

Distributed Power Module (Include mounting bracket) D6904

- Support 10-way centralized power supply
- A device supports up to 8 terminals.

Select Products Based on Needs

① Video conferencing, paperless conference system, computer signal access to the distributed management platform

Distributed Input Terminal
D6911E/D6913/D6913C

② TV access to distributed management platform for video scheduling display

Distributed Output Terminal
D6914/D6914C

③ Control the business work station through the distributed management platform

Distributed Input Terminal
D6911EC/D6913C

④ Realize the separation of man-machine and multi-machine control by one person for seat management

Distributed Output Terminal
D6914C

⑤ LED or LCD large screens already have splicing processors

Distributed Output Terminal
D6914/D6914C

⑥ LED or LCD screens need to be spliced by the distributed management platform

Distributed Output Splicing Terminal
D6950 (4-32)

Distributed Echo Terminal
D6905

⑦ Need to control the light, air-conditioning, curtains, large screen power switch, etc

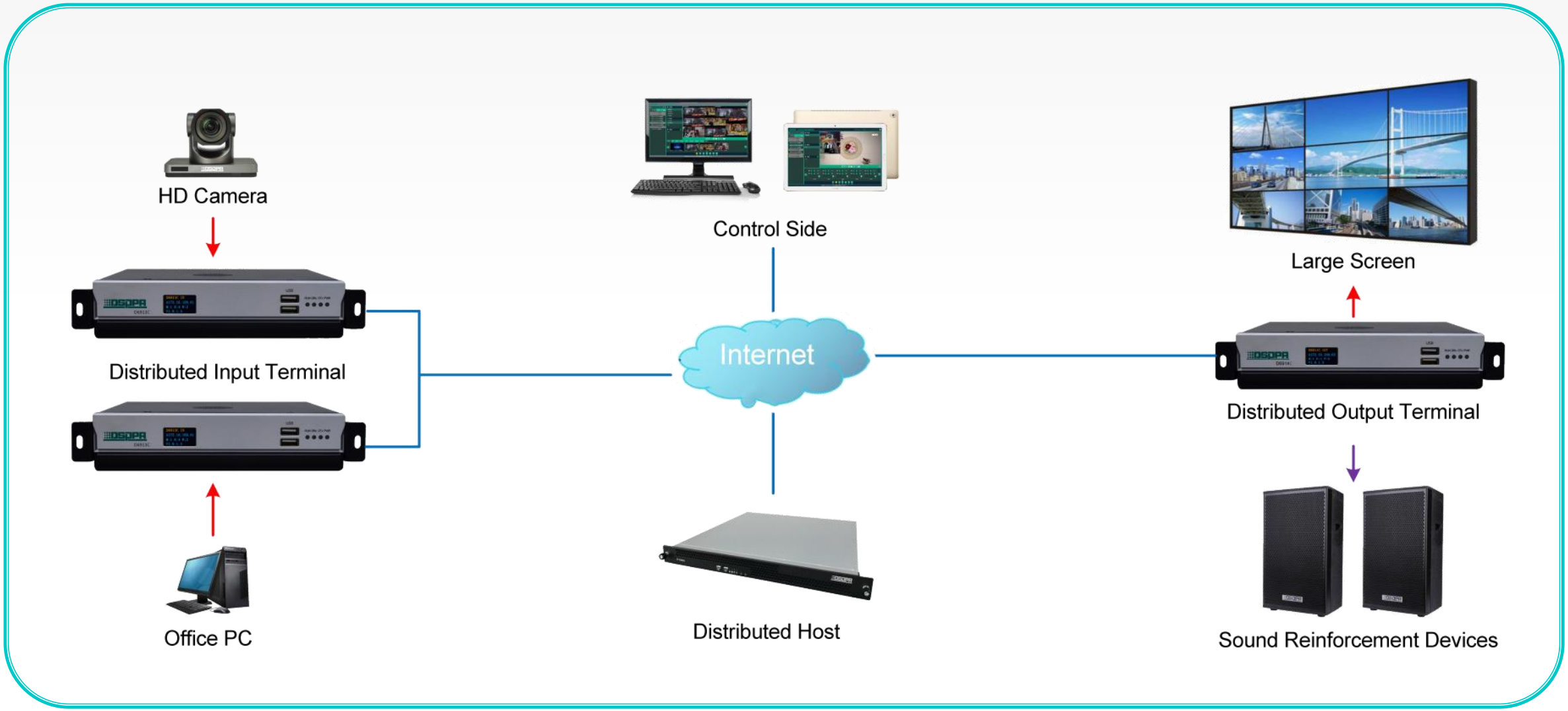
Distributed Electricity Control
Interface Machine D6906D

⑧ Visualzied management & operation, support mobile control

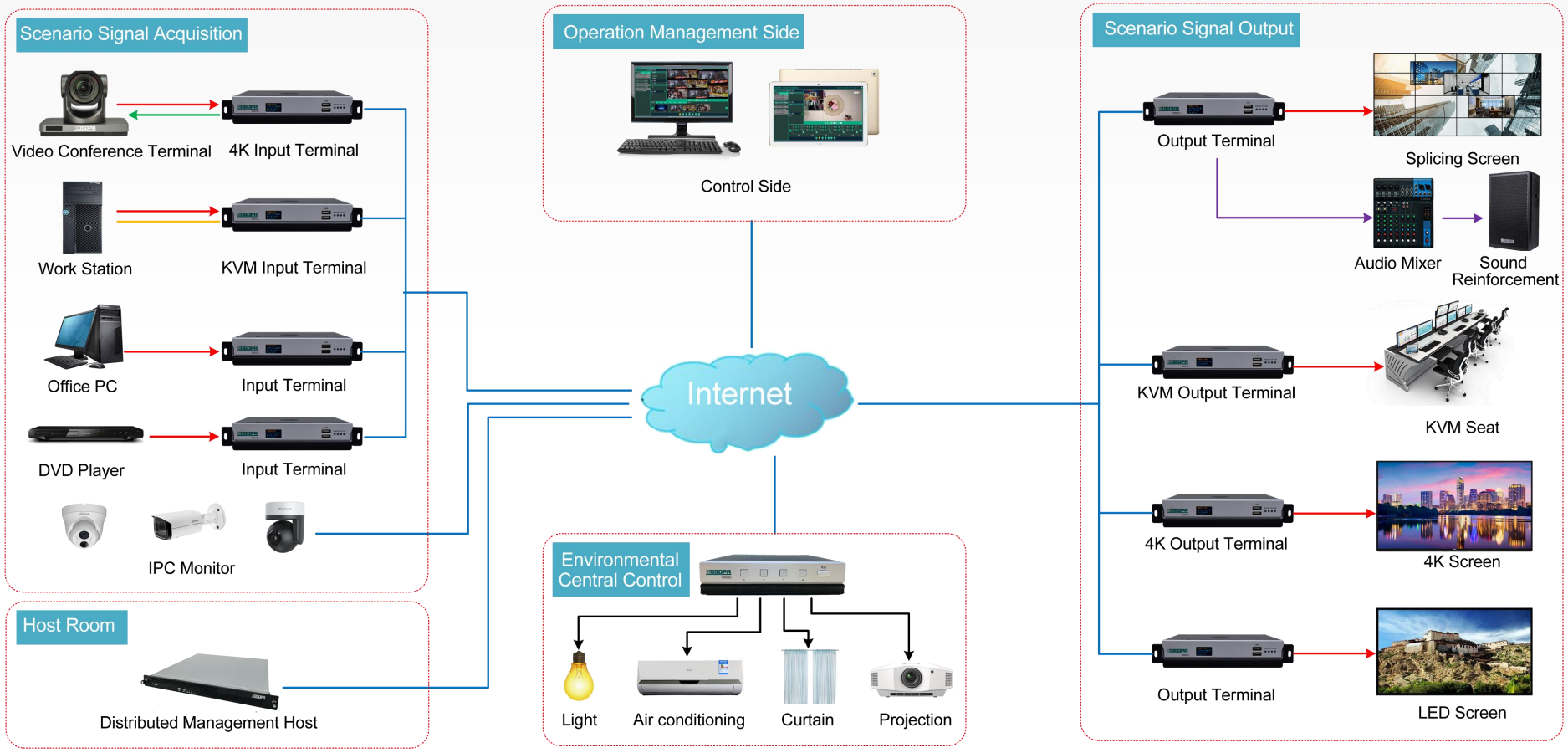
Distributed Management
Software D6901

Distributed Mobile Control
Software D6902A/I

Distributed System Topological Diagram (Simplified Version)

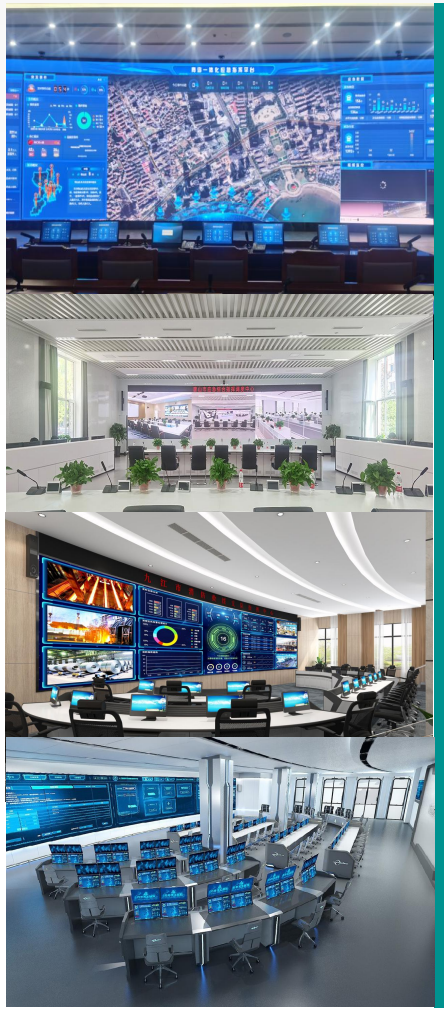


Distributed System Topological Diagram (Integrated Version)



HDMI Cable — Dual-male USB-A Cable — Audio Cable — Power Cable — Network Cable or Optical Fiber — RS232/485 Control Cable

System Advantages



1. The system host is developed based on Linux system, embedded IPC camera access management, recording & broadcasting application, central control management and other high-integration design, and supports dual-machine backup;
2. The distributed input and output terminals adopt embedded system architecture, which is safe, stable and reliable;
3. The distributed input and output terminals have dual network backup of one optical port and one electrical port, as well as power adapter & network POE dual power backup applications to ensure audio and video command and scheduling;
4. Integrated design terminal: with multi-channel input and output, built-in conventional central control interface to meet the needs of different scenarios;
5. The built-in information publishing module of the system can define the upper or lower or left or right edge display of the screen used on site;
6. KVM seat: face recognition, fingerprint and other multi-mode login, takeover, push, office collaboration, etc.;
7. Supports the UI interface of the customized control terminal according to user usability to meet the application of different scenarios according to the usability of the user;
8. Create emergency plans, define different screen layouts and presentations according to different application requirements, and play a role in quick emergency command and dispatch;
9. Personalized scene environment linkage, according to different application scenarios, can be linked to corresponding system equipment and central control equipment to automatically turn on and off, presenting personalized applications.

03 Scenario Schematic Design

Preliminary Knowledge of the Project

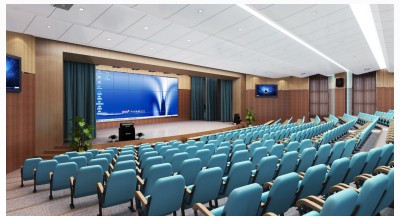
- Project Application Type
- New Construction & Renovation
- Number of Points & Definition
- Peripheral Equipment Demand
- Network Situation





Application Overview of Enterprise & School

Multiple meeting rooms, lecture halls, large-screen displays and other scenarios, using the 4K visualized distributed integrated management platform, can realize the functions of high-definition signal acquisition, visual lossless, high-definition restoration, environmental control, interconnection and other functions between regions. The signal sources in different areas can be controlled and scheduled in real time through touch control. At the same time, it supports local independent control and remote centralized control, etc.



Lecture Hall

LED Screen in Lobby

Conference Room

Enterprise & School Demand Diagram

Scheme Design of Conference Room

Demands

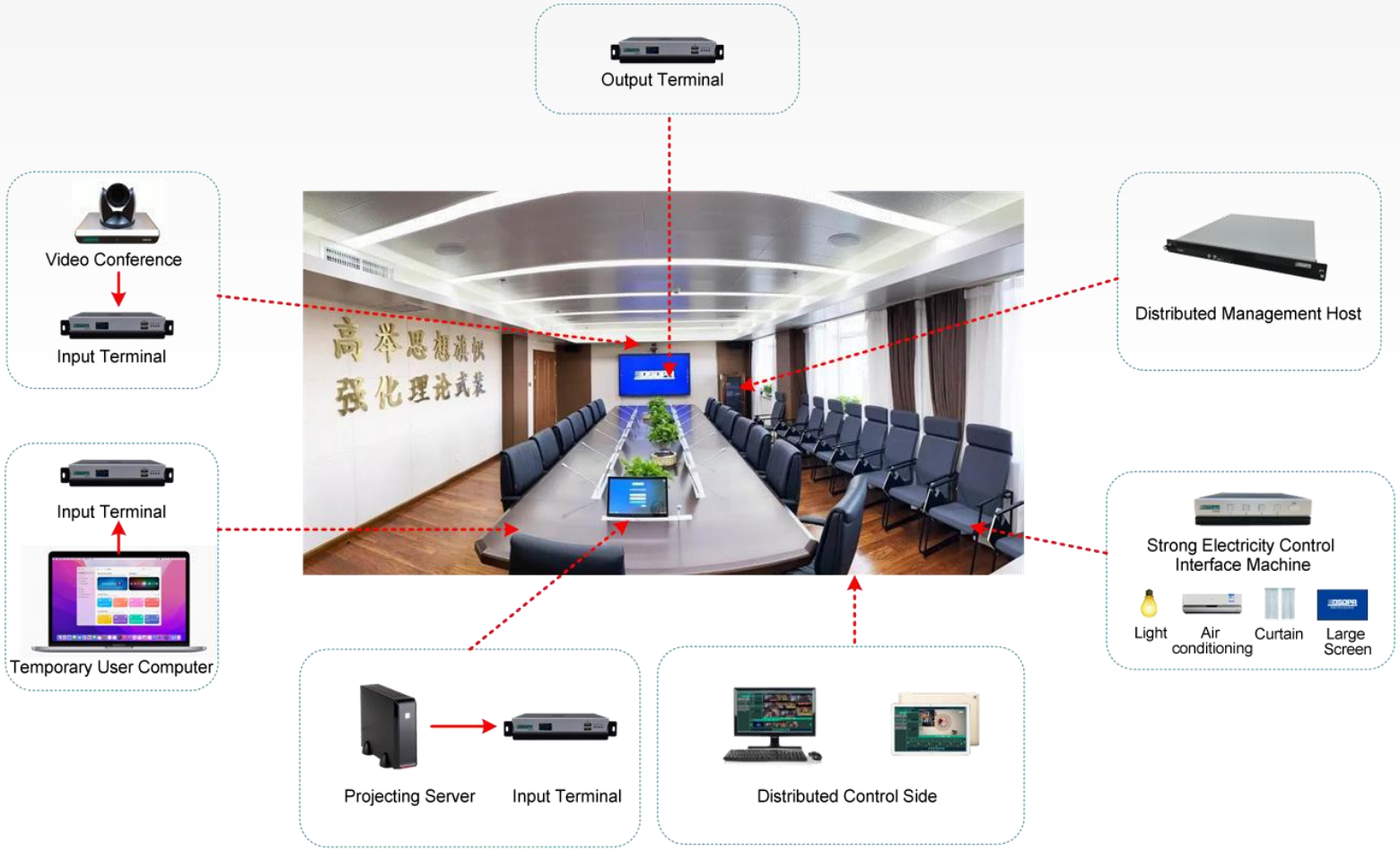
① To achieve paperless conference application;

② The existing splicing processor of LED large screen requires distributed screen display and matrix switching;

③ Video conferencing and user computer input;

④ It is required to control the lights, air conditioners, curtains, and large screen switches;

⑤ Visualized operation.



Application effect: realize network matrix switching, realize the combination with paperless conference system solution, auxiliary screen display, visualized operation, etc.!

Scheme Design of Lecture Hall

Demands

① An existing LCD splicing wall requires a distributed system for splicing;

② The video conference & user computer are connected to the distributed system to realize matrix switching;

③ It is required to control the lights, air conditioners, curtains, and large screen (switches);

④ Auxiliary display;

⑤ Visualized operation.

Application effect: realize splicing display of large screen, network matrix switching, intelligent control, auxiliary screen display, visualized operation, etc.!

Application Overview of Command Center

The command center plays a significantly important role in various fields such as public security command, traffic management, production scheduling, combat command and fire linkage management, and is the nerve center of various command departments. All kinds of relevant information in the system are transmitted to the command center, and various dispatching instructions are transmitted from the command center to the various executive departments and personnel of the system, thus realizing a command and dispatch system that integrates the platform and command operations.

The command and dispatch control center integrates and utilizes the existing resources of the city on the urban emergency command system, adopts advanced information and communication technology, and establishes a highly intelligent urban emergency system that integrates communication, command and dispatch to realize an emergency communication support system that is "connected, responsive and visible".

Command Hall

Duty Room

Command Center

Decision Room

Conference Room

Scheme Design of Duty Room

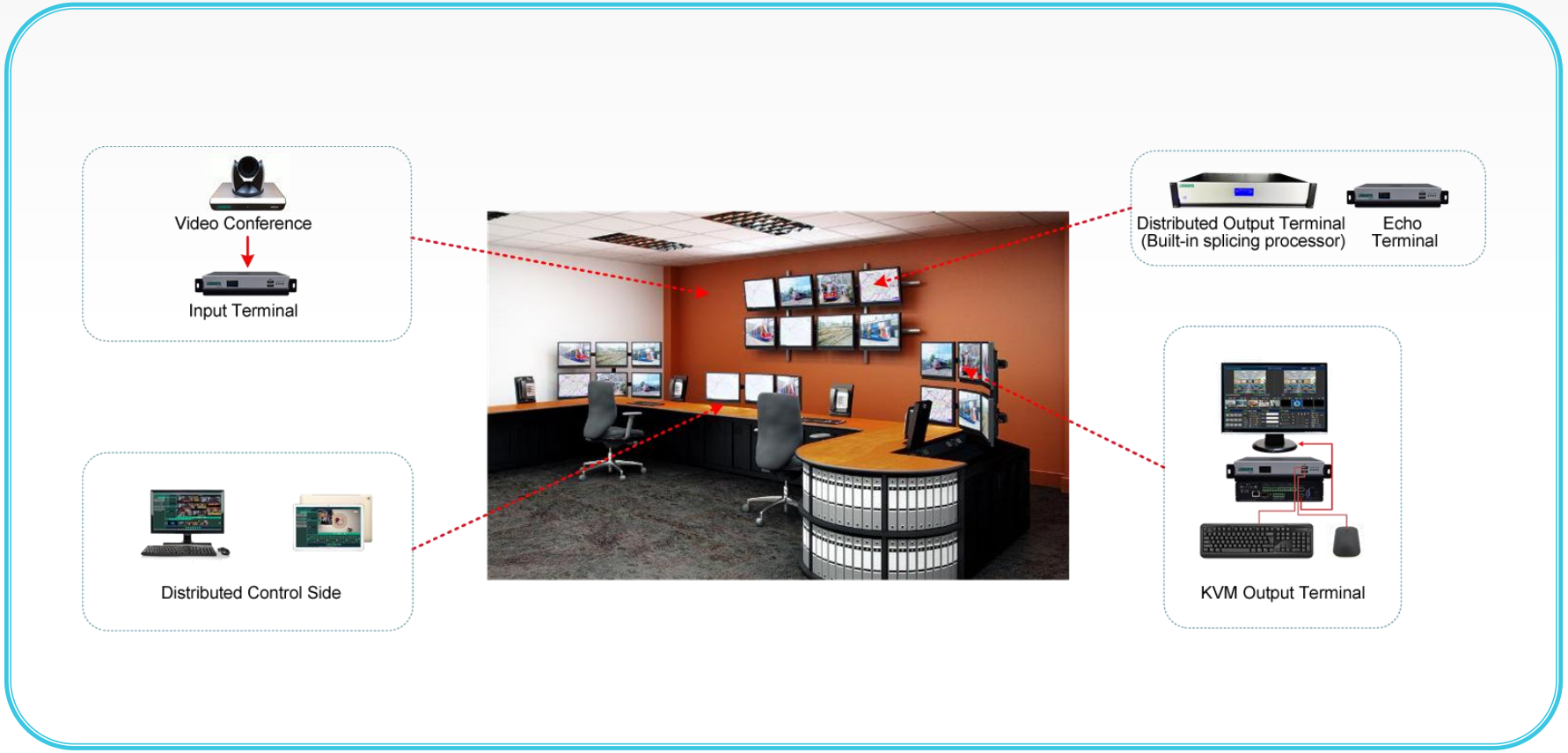
Demands

① To achieve 2*4 LCD splicing screen, a distributed system is required for splicing processing;

② The video conference is connected to the distributed system to realize matrix switching;

③ There are 2 seats, and each seat has 6 display screens to operate, realizing office collaboration and so on;

④ Visualized operation



Application effect: realize splicing display of LCD screen, network matrix switching, KVM seat management, visualized operation, etc.!

Scheme Design of Command Hall

Demands

① There is an existing LED large screen, which requires a distributed system for splicing processing;

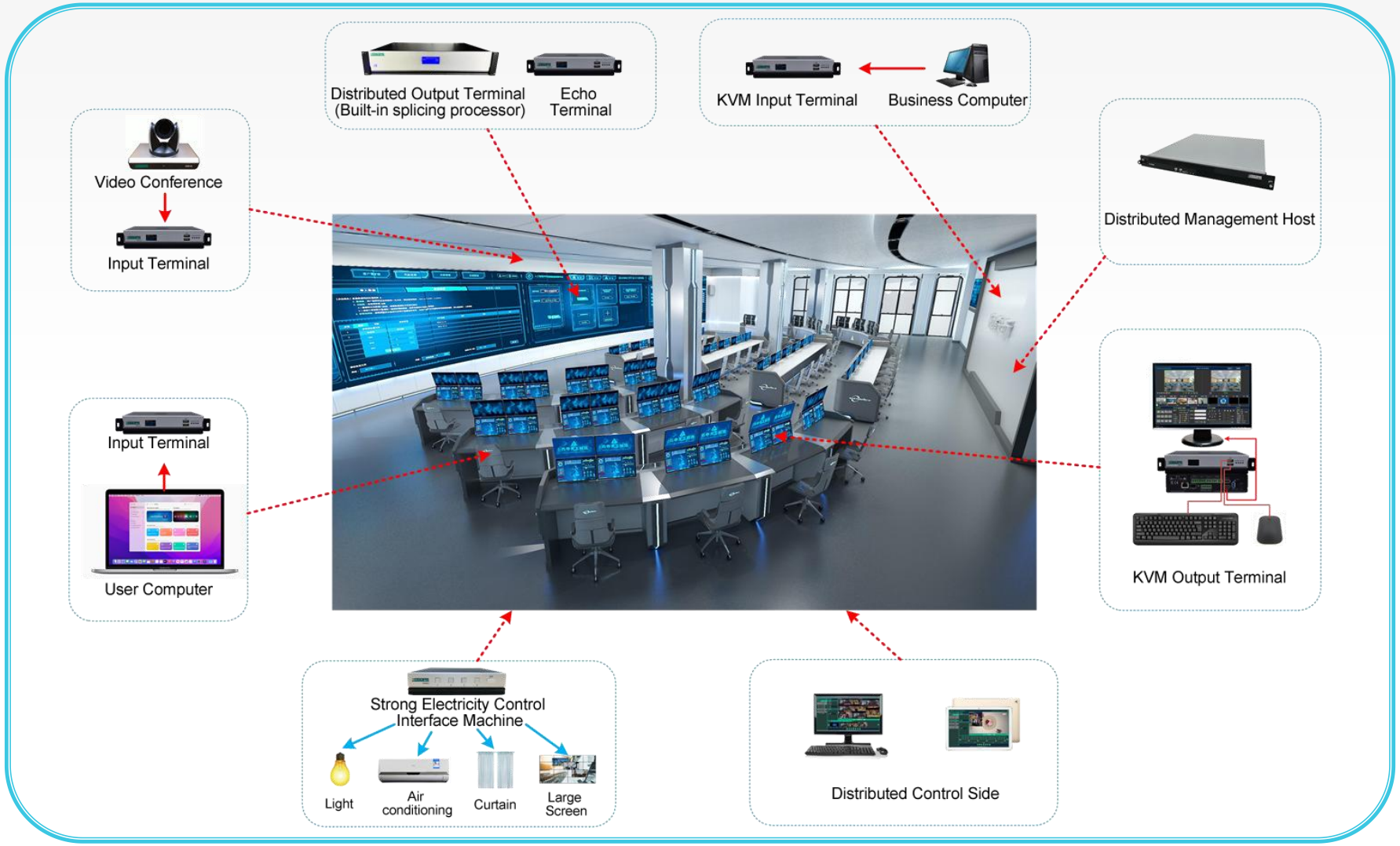
② The video conference & user computer are connected to the distributed system to realize matrix switching;

③ The Business computer can be connected to the distributed system to realize remote takeover.

④ Seats are set up in the lobby to realize office collaboration, etc;

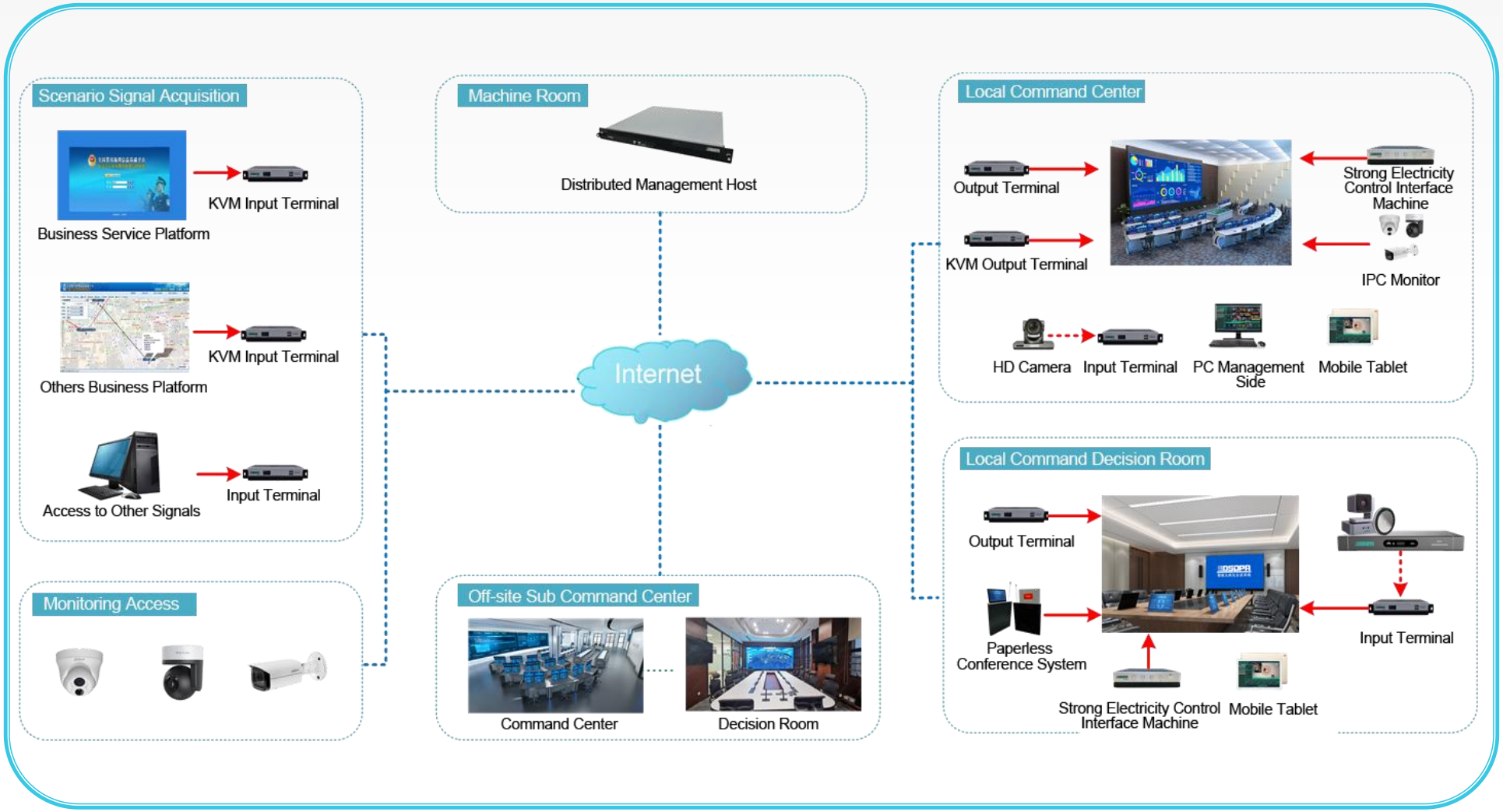
⑤ It is required to control the lights, air conditioners, curtains, and large screen (switches);

⑥ Visualized operation.



Application effect: realize splicing display of LED screen, network matrix switching, KVM seat management, intelligent control, visualized operation, etc.!

Scheme Design of Command Center



Note

① To achieve audio and video dispatching of two off-site command center;

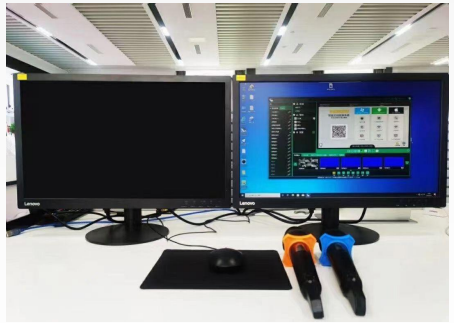
② In command center, to achieve large-screen splicing, audio and video scheduling, KVM seat collaboration, and environmental control;

③ In decision room, to achieve large-screen splicing processing, which can be combined with paperless conference and video conference;

④ IPC monitoring access to distributed management system for scheduling display

04 Typical Case Studies

Emergency Integrated Command Center of Tangshan city, Hebei



- DSPPA distributed matrix system was successfully applied in Tangshan Emergency Command and Dispatching Center in Tangshan City, Hebei Province.
- The command and dispatch center integrates remote dispatching command and public information service, with 5 main functions of road condition monitoring, vehicle yard / station supervision, rental management service, road law enforcement management and public information service, etc., which is an important guarantee for Tangshan government to respond to emergency events!

Command Center, Yuanchen City, Heyuan, Guangdong

The command center in Yuancheng District, Heyuan City adopts DSPPA 4K visualized distributed integrated management platform, paperless conference system, conference sound reinforcement system, central control matrix system, remote video conference and other overall solutions.

The command center in Yuancheng District, Heyuan City, interconnects various audio and video signals, shares multiplexes, integrated command and unified scheduling through the distributed integrated management platform, achieving data visualization, signal status visualization, and control visualization, easy and efficient management of software and hardware.

Boluo Meteorological Bureau, Huizhou

Project Overview

- LED screen splicing processing, etc., audio and video scheduling and real-time interaction, etc.;
- Centralized control and one-button shutdown.;
- Multiple information access and visualized information scheduling;
- The resolution of the picture can reach up to 3840×2160;
- Information interconnection of multiple conference rooms to achieve arbitrary scheduling of audio and video in conference rooms;
- Equipped with DSPPA Professional Sound System, achieving high-intelligible voice reinforcement.

Intelligent Command Center of the Public Security Bureau, Deqing County, Zhaoqing

Project Overview

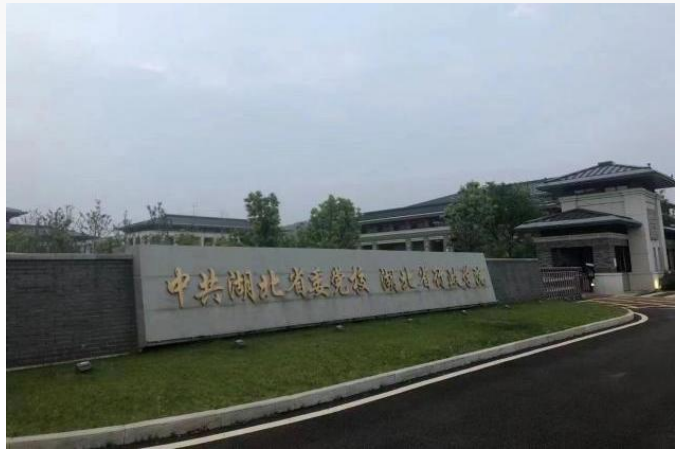
- LED screen splicing processing, etc., audio and video scheduling and real-time interaction, etc.;
- Centralized control and one-button shutdown.;
- Multiple information access and visualized information scheduling;
- The resolution of the picture can reach up to 3840×2160;
- Equipped with DSPPA Professional Sound System, achieving high-intelligible voice reinforcement.

Blood Center, Chongqing

Project Overview

- LED screen splicing processing, etc., audio and video scheduling and real-time interaction, etc.;
- Centralized control and one-button shutdown.;
- Multiple information access and visualized information scheduling;
- The resolution of the picture can reach up to 3840×2160;
- Equipped with DSPPA Professional Sound System, achieving high-intelligible voice reinforcement.

Party School of Hubei Provincial Committee of the CPC



Project Overview

- LED screen splicing processing, etc., audio and video scheduling and real-time interaction, etc.;
- Centralized control and one-button shutdown.;
- Multiple information access and visualized information scheduling;
- The resolution of the picture can reach up to 3840×2160;
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Chengdu 2021 FISU World University Games

Project Overview

- LED screen splicing processing, etc., audio and video scheduling and real-time interaction, etc.;
- Centralized control and one-button shutdown.;
- Multiple information access and visualized information scheduling;
- The resolution of the picture can reach up to 3840×2160;
- Equipped with DSPPA Professional Sound System, achieving high-intelligible voice reinforcement.

Other Successful Cases

Command Center, Gaoxin District, Zhaoqin

Smart Party Building Big Data Command Center, Dehong, Yunnan

XX Big Data Center, Lanzhou

Intelligent Traffic Management Command Center, Huizhou

Civil Air Defense Emergency Command Center, Zhanjiang

Emergency Command Center of the Cyberspace Administration of China, Hechuan, Chongqing

Other Successful Cases

Party School of Baoji Municipal Committee of the CPC, Shaanxi

Conflict Resolution Center, Guangchen Town, Zhejiang

Shanghai Pacific Insurance (Group) Co., Ltd.

Haikou People’s Hospiotal, Hainan

Fangyuan International Hotel, Taizhou City, Zhejiang

People's Armed Forces Department of Diecai District, Guilin City, Guangxi Province

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