HIKVISION pStor V1.5.1

User Manual

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Please use this Manual with the guidance and assistance of professionals trained in supporting the Product.

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Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	**Description**
	Provides additional information to emphasize or supplement important points of the main text.
	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

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Chapter 1 Preface

1.1 Product Introduction

HIKVISION pStor is the storage access service software developed by Hangzhou Hikvision Digital Technology Co., Ltd. You can set the server local HDD to be the storage room, or set the logical HDD (standard iSCSI/CIFS) mounted by the server to be the storage room via the software. It provides efficient and compatible storage access management service for Hikvision video surveillance management platform.

HIKVISION pStor can be deployed flexibly, supporting centralized deployment with Hikvision surveillance platform and internal deployment in server independently. It provides basic video storage, picture storage, and system management.

1.2 Purpose

The purpose of the user manual is to guide you to install the software correctly and master the operation, avoiding unnecessary risks or property damage caused by misoperation.

The applicable targets of the user manual are the system maintenance personnel and daily operation personnel.

Before using the product, read the user manual carefully, and keep it properly for reference.

1.3 Notice

1.3.1 Personnel Quality Requirements

As the installation and maintenance personnel, you should have the qualification certificates or experiences of being engaged in video surveillance system installation and maintenance. Besides, you must master the following knowledge and skills.

- Basic knowledge and installation skills of video surveillance system and components.
- Basic network security skills and the capacity of understanding the user manual.

1.3.2 Notice

- The system may face network security risk after it is accessed to Internet. Strengthen your personal information and data security protection. When you find that the system may in the hidden danger of network security, contact us in time.

- You shall acknowledge that you have the responsibility to configure all the passwords, server security settings, and other security settings of the system reasonably, and keep your user name and password properly.

1.4 Software Preparation

Check if the hardware is working normally, if the operating system is installed, and the version information.

1.4.1 Operating System

The following operating systems are recommended:

- 64-bit Windows Server 2012R2
- 64-bit Windows Server 2008R2
- 64-bit Windows Server 2016
- 64-bit Win10
- 64-bit Win7

1.4.2 Product Version Description

The installation package is named as *Product Line-Product Series-Vx.x.x-buildyymmdd-R<n>*. The detailed description of the name is shown as below.

- **Product Line**: HikCentral
- **Product Series**: pStor
- **Vx.x.x**: Baseline version information
- **buildyymmdd**: Delivered date
- **R<n>**: R stands for the delivered system test version. n stands for the times of system test. E.g., *HIKVISION pStor-V1.1.0-build180118-R2.exe* means the product is delivered as V1.1.0 at January 18th, 2018, and has passed 2 cycles of system tests.

1.5 Environment Preparation

1.5.1 Network Environment

HIKVISION pStor product supports multiple NICs binding. If the video data for storage are too large, you need to bind multiple NICs of the storage device to increase network bandwidth.

NOTE

If Intel NIC is used for the server, you need to configure NIC parameters to enhance NIC transmission performance.

1.5.2 Power Supply Environment

HIKVISION pStor product is strict in the stability of power supply. It is recommended to equip the machine room with two independent power lines to provide dual power supply, with independent UPS, and with generator.

1.5.3 Machine Room Environment

As the temperature, humidity, and dust have a great influence on the service life of disks and device, it is recommended to locate the machine room in a relatively closed environment and equip it with independent environment control device to guarantee all the devices are in the environment with constant temperature, constant humidity, and no dust.

1.5.4 Port

Port segment from 6001 to 6100, from 6111 to 6114, port 6120, and port 6201 are used in pStor system.

1.5.5 System Firewall

After HIKVISION pStor is installed successfully, Windows firewall will be enabled automatically, and port 2188, port 554, port 6011, port segment from 6021 to 6100, from 6111 to 6114, port 6120, port 6201, and port segment from 34000-36000 will be enabled.

Chapter 2 Software Installation

Step 1 Double click *HIKVISION pStor-xxx.exe* to start installation, as shown in figure below.

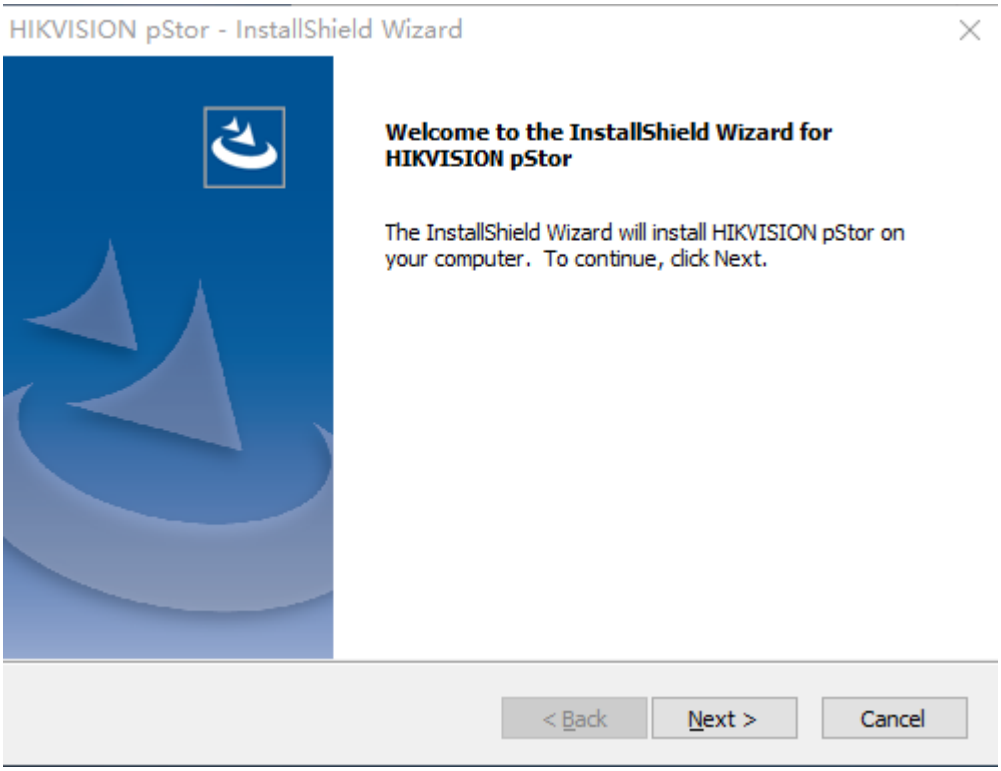


Figure 2-1 Start Installation

Step 2 Click **Next** to go to license agreement, as shown in figure below.

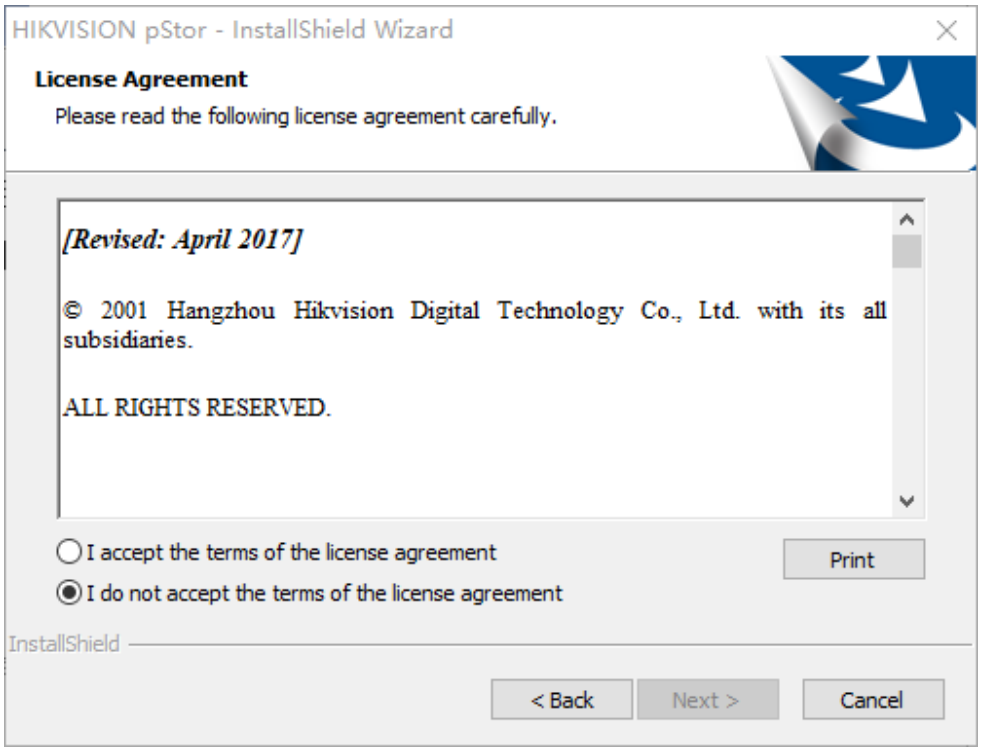


Figure 2-2 License Protocol

Step 3 Check **I accept the terms of the license agreement** and click **Next** to select installation path, as shown in figure below.

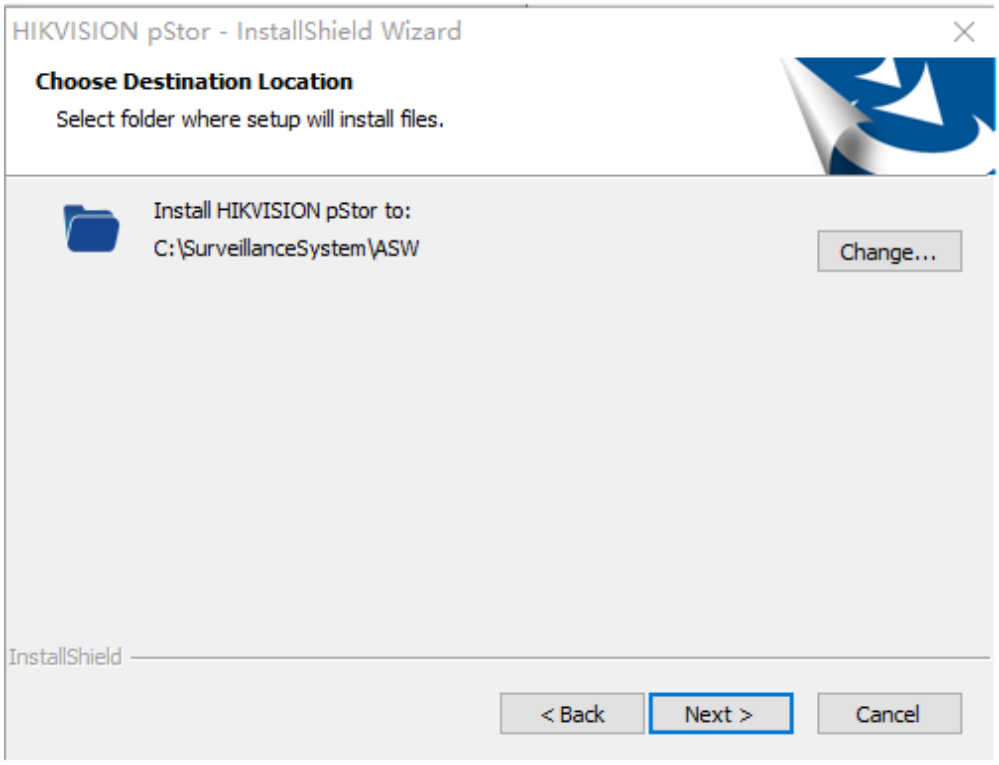


Figure 2-3 Select Installation Path

Step 4 Click **Next** to enter the installation preparation interface, as shown in figure below.

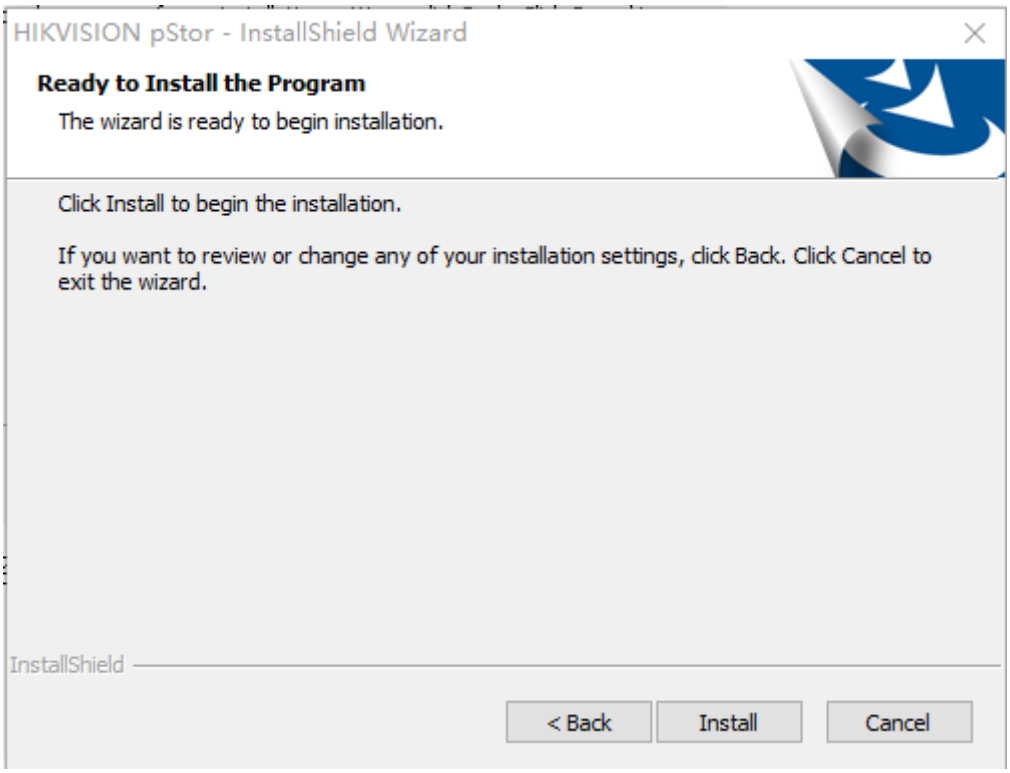


Figure 2-4 Prepare to Install

Step 5 Click **Install** to install the software as shown in figure below.

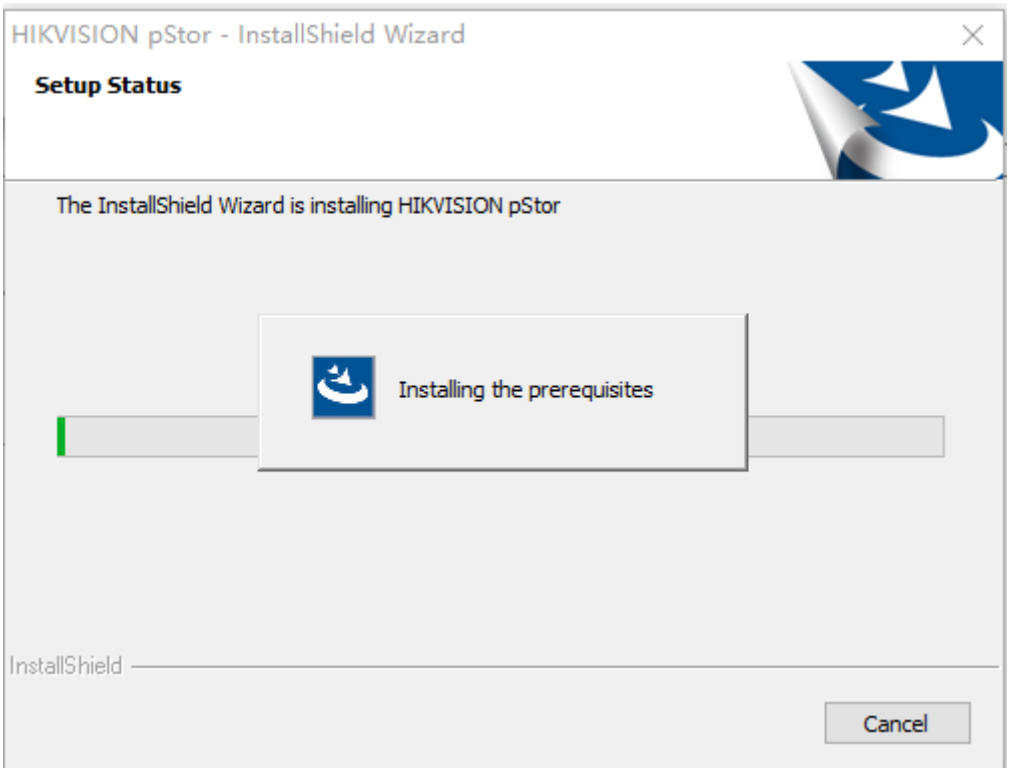


Figure 2-5 Install Software

Step 6 During the installation process, you may need to install Microsoft Visual C++ 2013 Redistributable. Follow the wizard to install them. Then continue to install HIKVISION pStor.

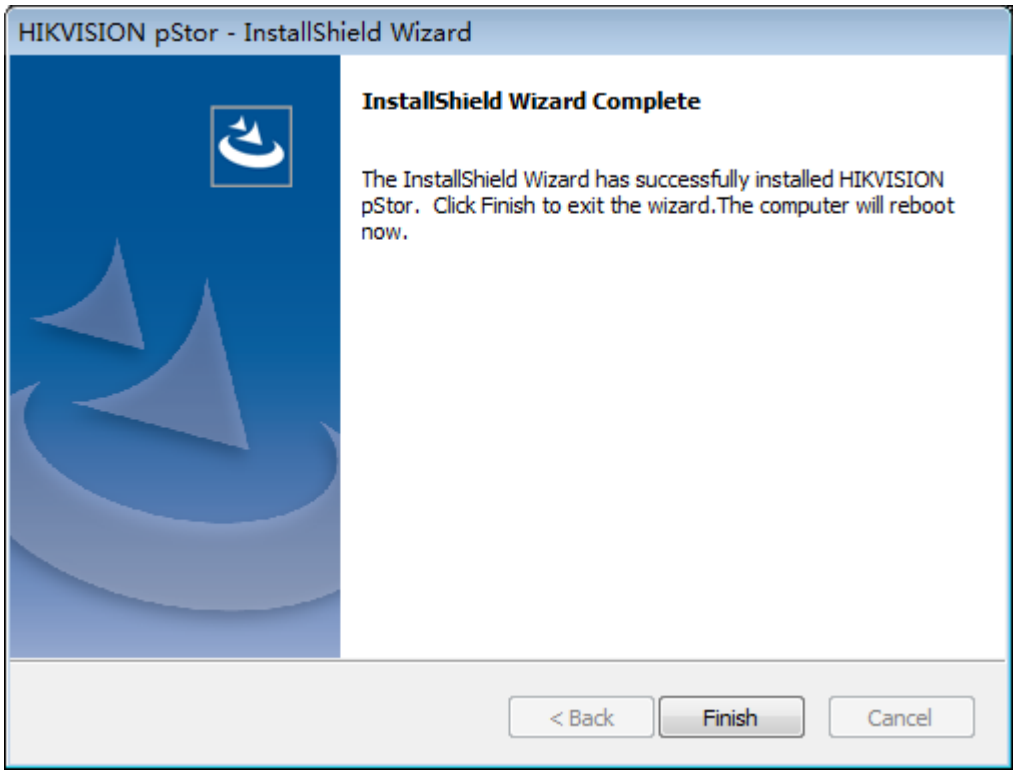


Figure 2-6 Finish Installation

Step 7 Click **Finish** to finish the software installation.

2.2 Software Uninstallation

Step 1 Deactivate license before uninstallation. See details in **3.8.13 Configure License**. Double click the file named HIKVISION pStor-xxx.exe. See figure below.

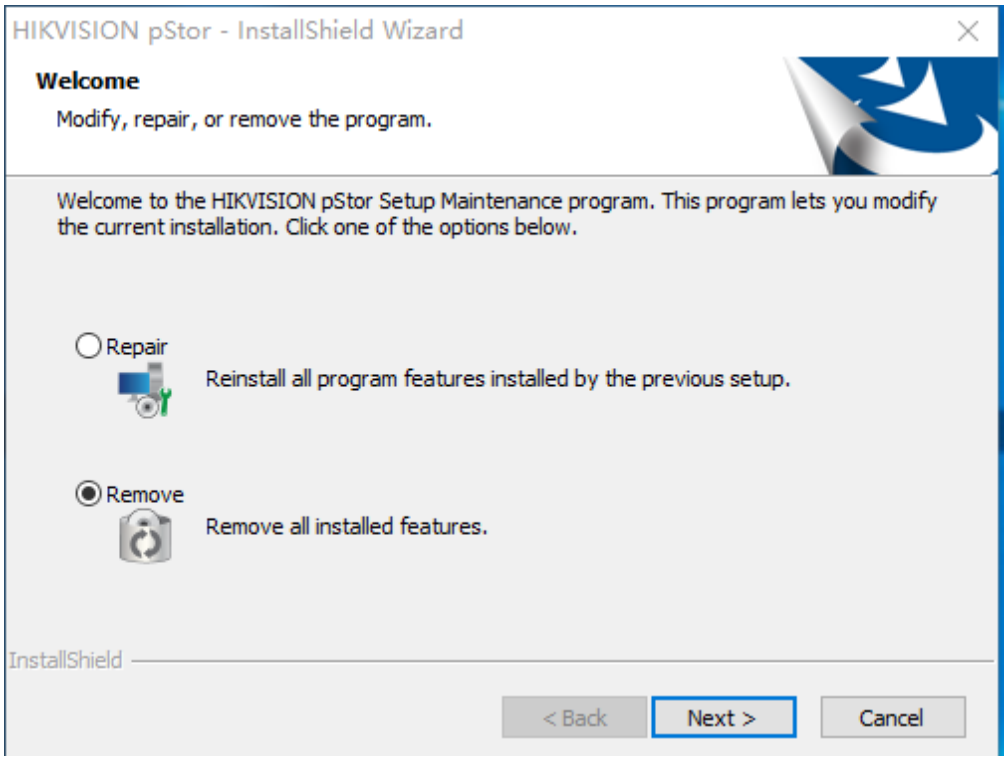


Figure 2-7 Start to Uninstall

Step 2 Select **Remove** and click **Next**. See figure below.

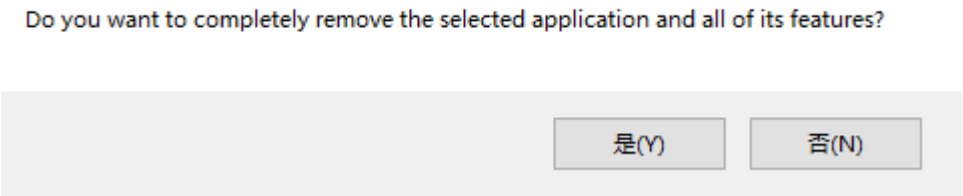


Figure 2-8 Uninstall Software

Step 3 Click **Yes** to uninstall. Click **Finish** after uninstallation completed and the server will reboot. See figure below.

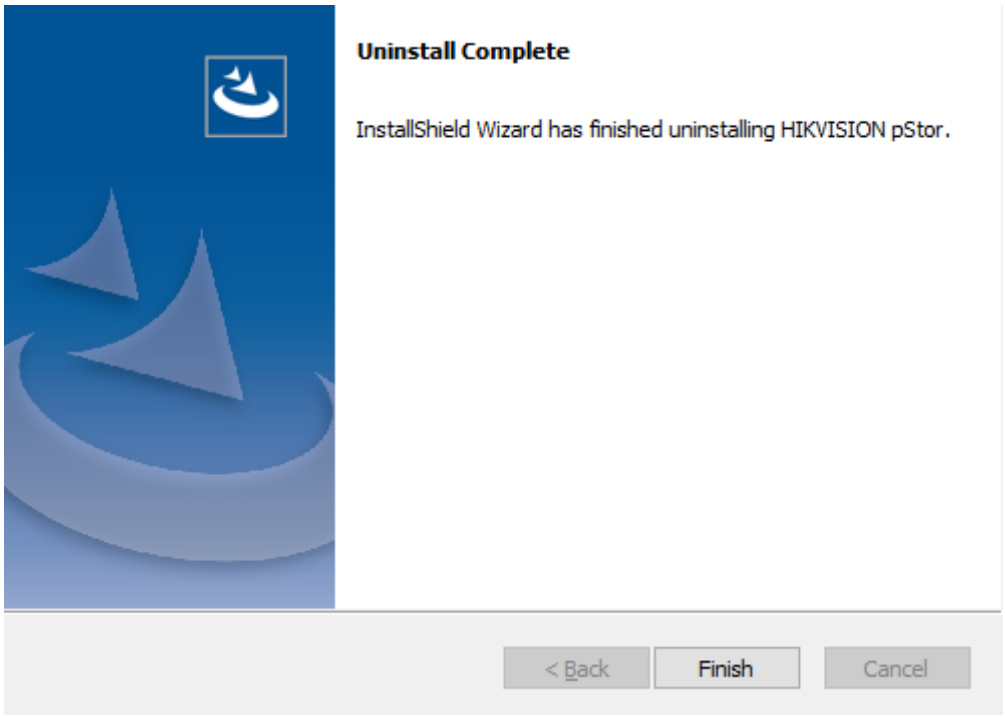


Figure 2-9 Uninstallation Completed

2.3 Software Upgrade

Step 1 Double click the file named HIKVISION pStor-xxx.exe to upgrade. See figure below.

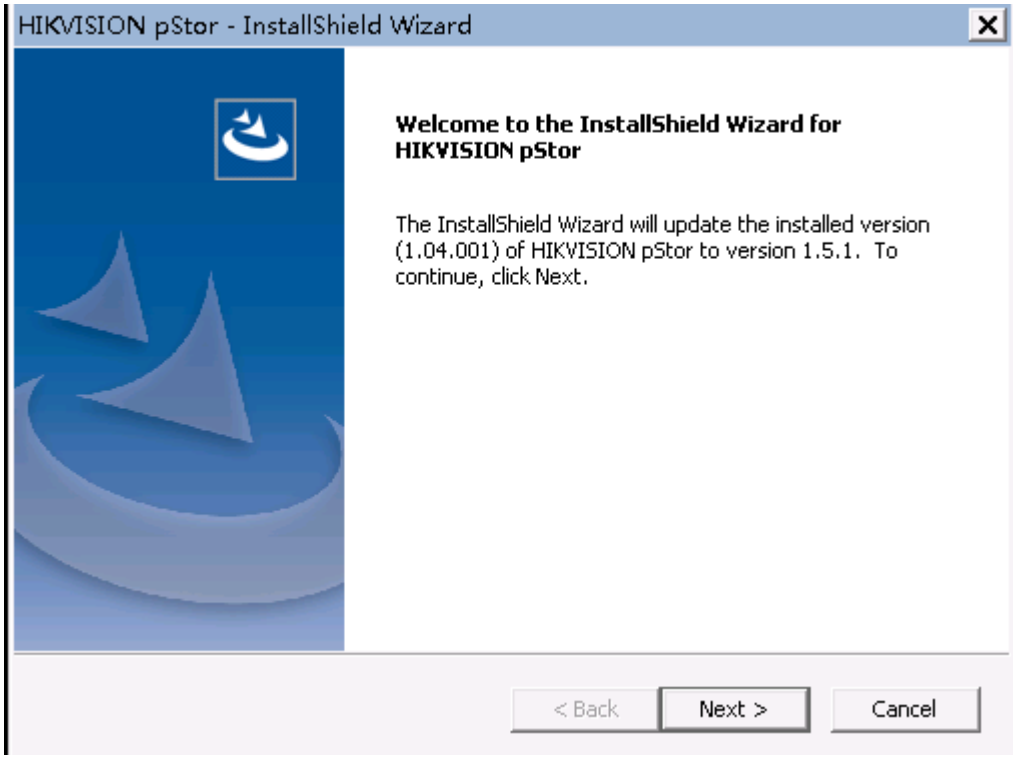


Figure 2-10 Start to Upgrade

Step 2 Click **Next** to start upgrade and click **Finish** after upgrade completed.

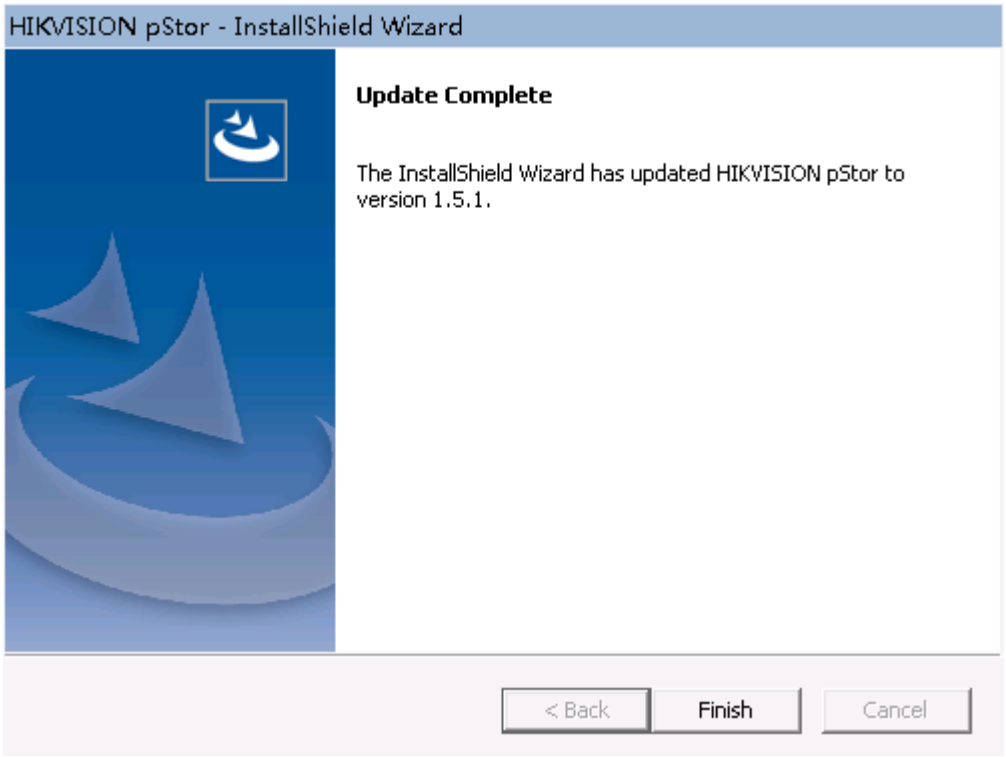


Figure 2-11 Upgrade Completed

Chapter 3 Software Operation

3.1 Browser Requirement

You can configure the system via web browser. The supported web browsers include IE10, IE11, Firefox, and Chrome. The supported resolution includes 1280*768, 1366*768, 1440*900, and 1920*1080.

3.2 Login

Step 1 Open the supported web browser.

Step 2 Input the server IP address and port No. (6060) in the address bar. E.g., https://***.***.***.***:6060. Press enter key to enter the login interface, as shown in figure below.

Figure 3-1 Login

Step 3 Input the user name and password.

NOTE

The default user name is admin, and the default password is HIK88075998. You need to modify the password after login for the first time. Refer to **3.2.1 Modify Default Password** for details.

Step 4 Click **Login**.

3.2.1 Modify Default Password

You need to modify the default password after login for the first time.

Step 1 On the Login interface, click **Login**, and the **Change Initial Password** message box pops up as shown in figure below.

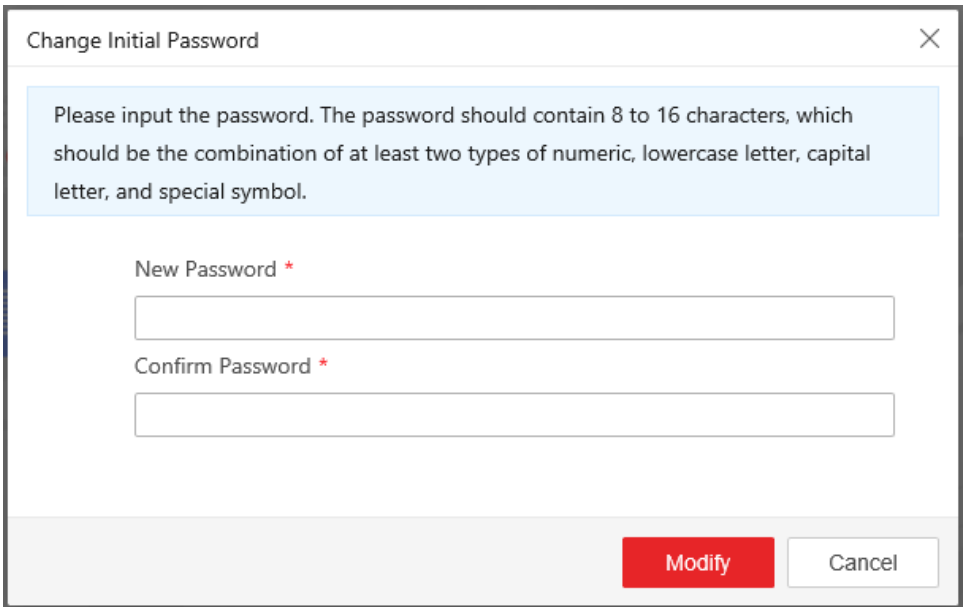


Figure 3-2 Modify Password

Step 2 Input new password and confirm.

Step 3 Click **Modify**, and the message box pops up as shown in figure below.

Figure 3-3 Successful Modification

Step 4 Click ✕ to finish the modification.

3.2.2 Login

After default password modification, input the server IP address and port No. (6060) in the address bar. Press enter key to enter the login interface. Input the user name and modified password to log in to the system.

3.3 Home Page

After login, enter the home page, on which you can view the HA mode, system time, storage space, service status, etc., as shown in figure below.

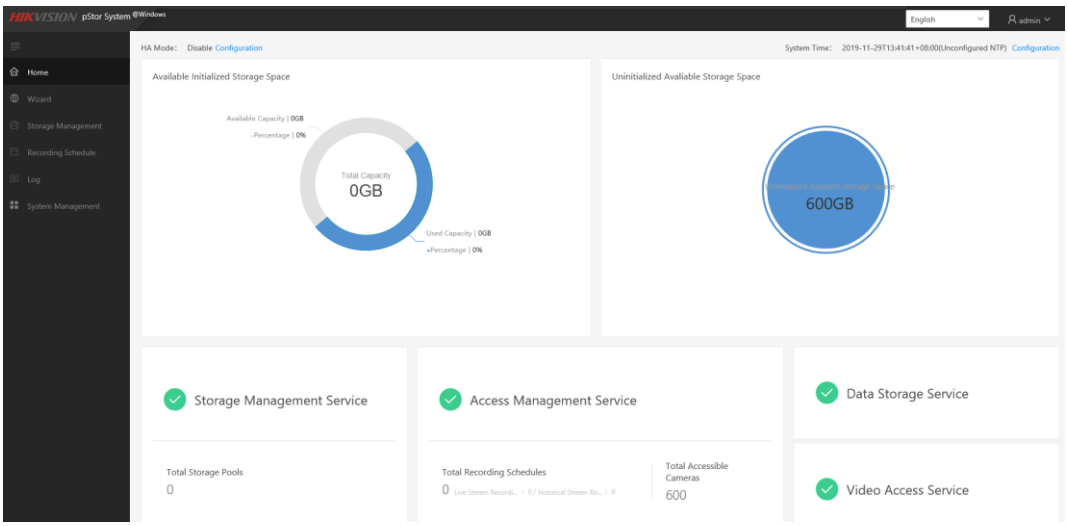
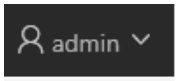


Figure 3-4 Home Page

- **System time**: It shows the current time of storage accessing to server, and the time is changing all the time.
- **Pie chart**: The left one shows storage total capacity, used capacity, and available capacity; the right one shows uninitialized available storage space.
- **Service status**: It shows storage management service status, data storage service status, access management service status, and video access service status.
- **General information**: It shows total resource pools, total recording schedules, live stream recording schedule, historical stream recording schedule, and total accessible cameras.

3.3.1 Modify Admin Password

You can modify the admin password.

Step 1 Click 

on the upper right corner of the home page, as shown in figure below.

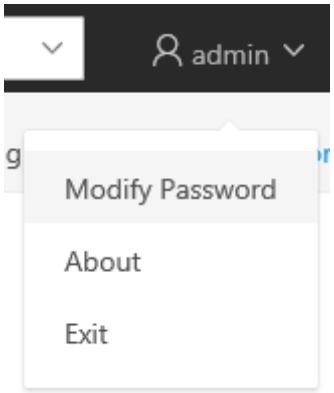


Figure 3-5 Menu

Step 2 Click **Modify Password** to enter the interface as shown in figure below.

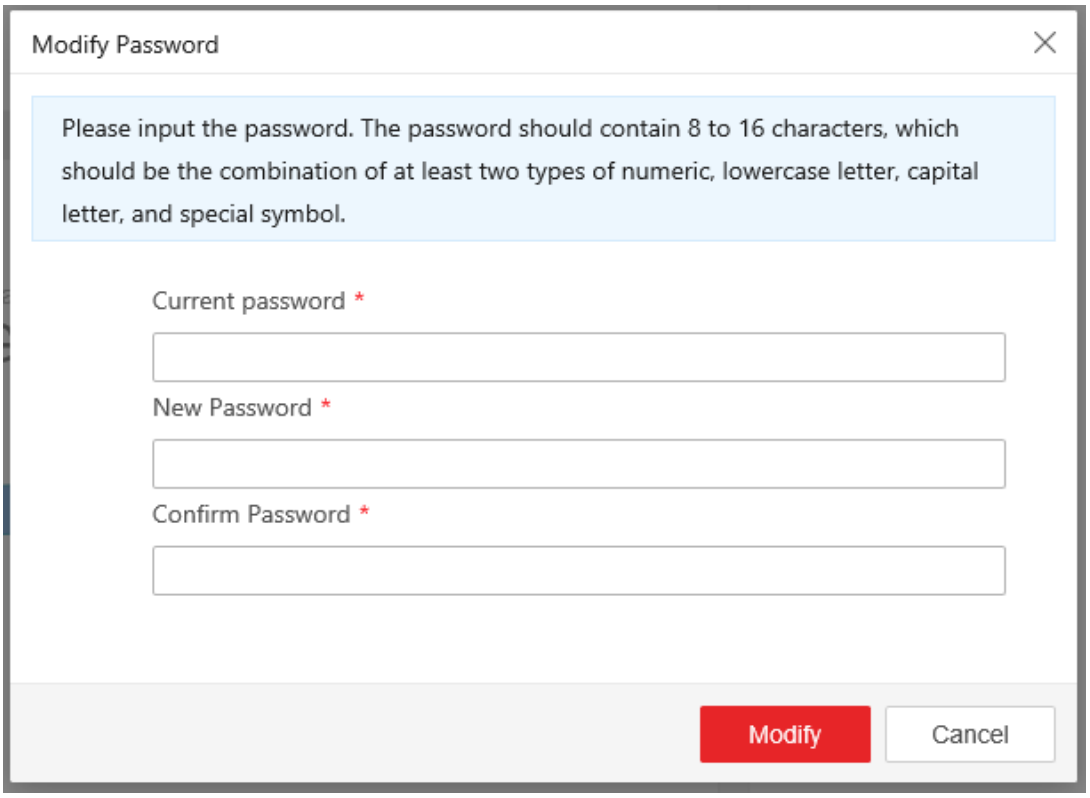


Figure 3-6 Modify Password

Step 3 Input current password, new password, and confirm the new password.

Step 4 Click **Modify**, and the message box pops up as shown in figure below. It hints if the password modification is successful or not.

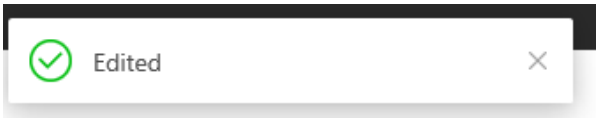


Figure 3-7 Successful Modification

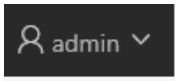
Step 5 Click to finish the modification.

NOTE

After modifying the password, when you log out of the system and log in again, you need to input the new password.

3.3.2 About

You can view the version information of the system.

Step 1 Click 

on the upper right corner of the home page, as shown in figure below.

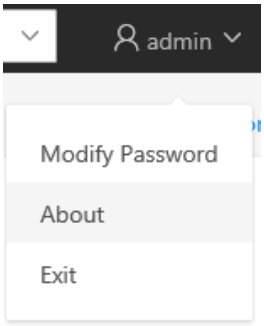


Figure 3-8 Menu

Step 2 Click **About**, and the interface pops up as shown in figure below.

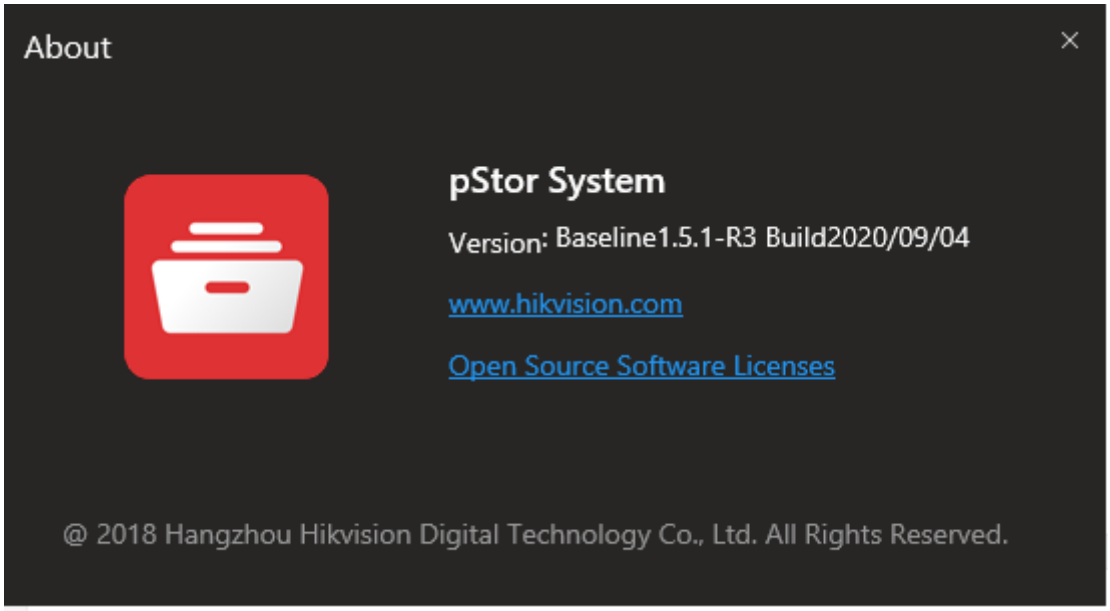
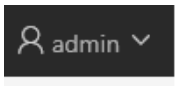


Figure 3-9 About

3.3.3 Logout

Step 1 Click 

on the upper right corner of the home page, as shown in figure below.

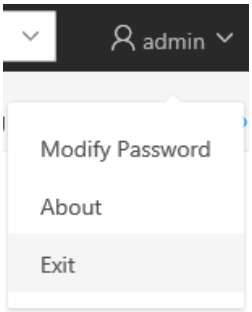


Figure 3-10 Menu

Step 2 Click **Exit** to log out of the system.

3.4 Wizard

You can follow the wizard to configure the main functions of the system quickly. Then you can use the system normally.

Click **Wizard** on the left menu to enter the wizard interface, which provides quick configuration, including adding storage space, and adding resource pool, as shown in figure below.

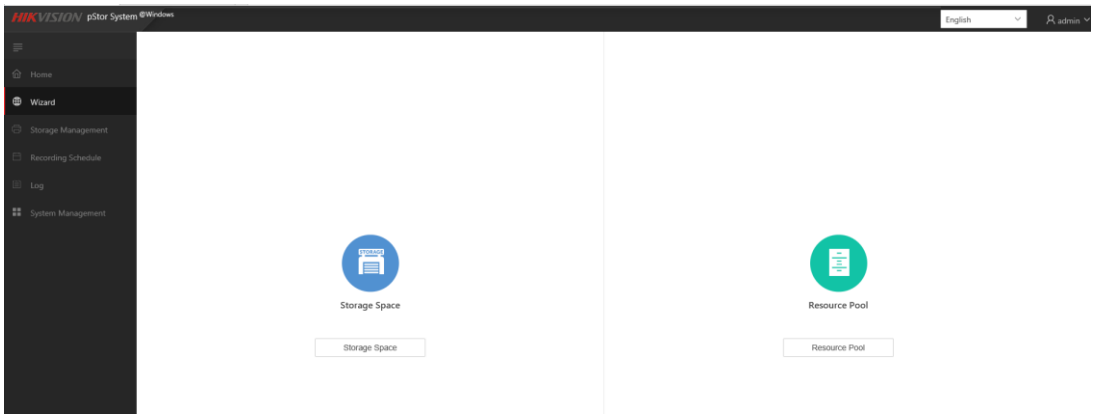


Figure 3-11 Wizard

3.4.1 Add Storage Space

Step 1 On the wizard interface, click **Storage Space** to enter the interface as shown in figure below.

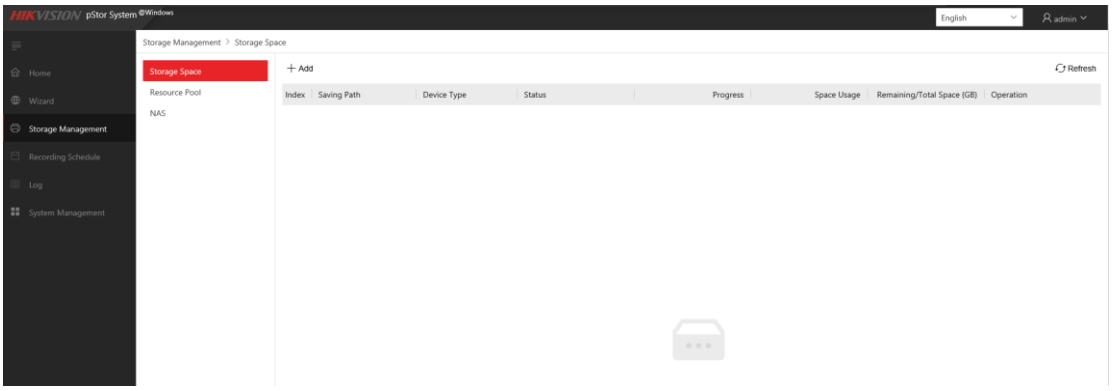


Figure 3-12 Add Storage Space

Step 2 Add storage space. Refer to **3.5.1 Storage Space** for details.

3.4.2 Add Resource Pool

Step 1 On the wizard interface, click **Resource Pool** to enter the interface as shown in figure below.

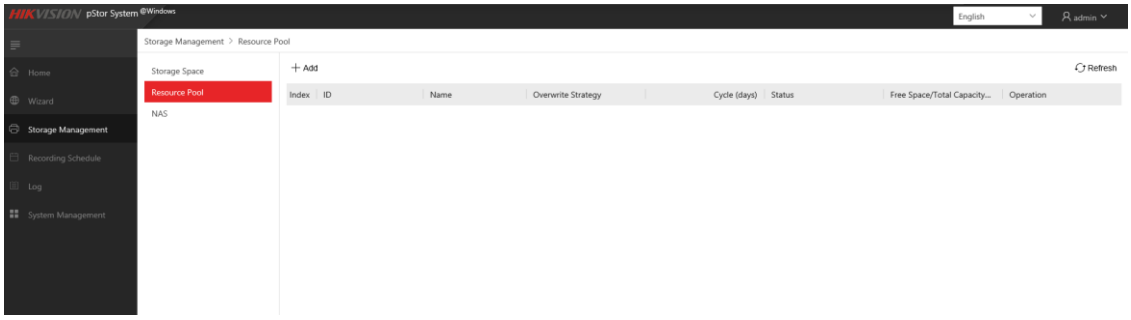


Figure 3-13 Add Resource Pool

Step 2 Add resource pool. Refer to **3.5.2 Resource Pool** for details.

3.5 Storage Management

3.5.1 Storage Space

The system supports local disk, iSCSI input device and RAID (RAID equipped in Windows or hardware RAID card). The disk installed in storage device must be formatted to NTFS file system.

Storage Space mainly manages file folders in storage device, and includes information such as Saving Path, Device Type, Status, Progress, Space Usage, and Remaining/Total Space. You can add, delete, initialize, and restore storage space, as shown in figure below.

Figure 3-14 Storage Space

3.5.1.1 Add Storage Space

Click **Add** to add storage space, as shown in figure below.

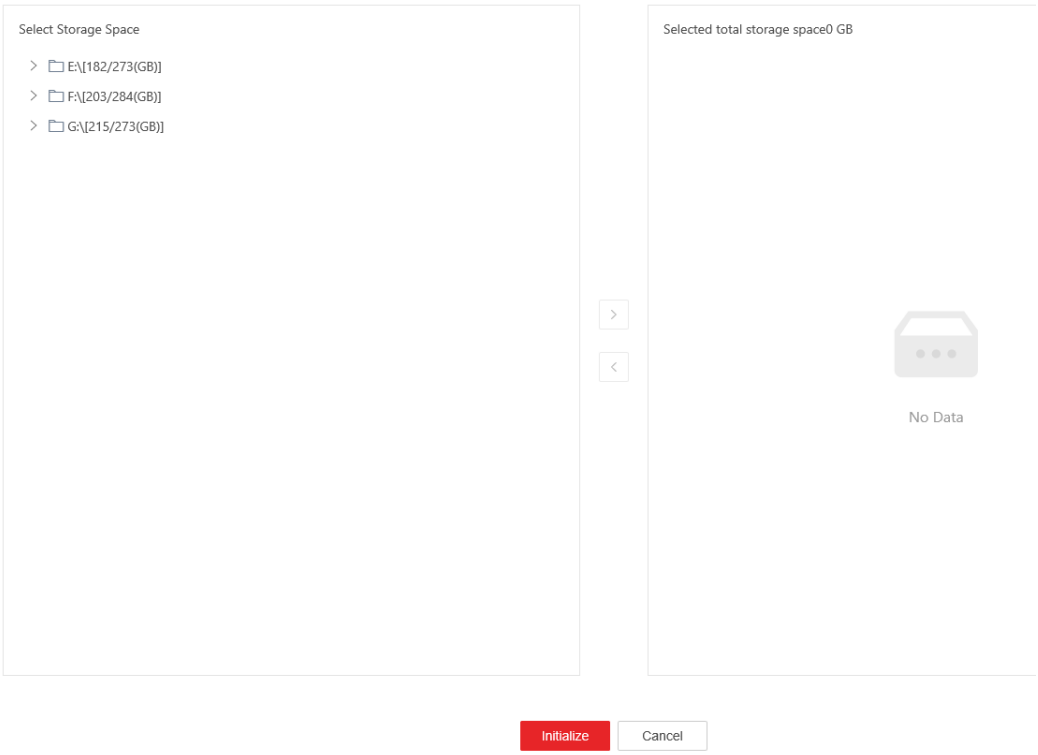


Figure 3-15 Add Storage Space

- Existed folders: When you go to Add Storage Space page, the system will read all the information of folders, except for folders in C drive (C drive is the system drive, not for data storage). If only one disk partition exists, storage space cannot be created. Because the system disk is reserved partition.
- Add folders: Go to Add Storage Space page, move to the parent folder G:\[215/273(GB)] , and click to creat a new child folder storData(4) . The new folder will be created on the server at the same time.
- Rename folders: Move to or click the child folder, click to rename the folder. The folder will be renamed on the server at the same time.
- Delete folders: Move to or click the child folder, click to delete the folder. The folder will be deleted on the server at the same time.
- Select folders: before folders means these folders can not be selected, because they have already been initialized to storage space. before folders means the folders can be selected.
- Configure storage space (GB): When the child folder is selected, a text box such as storData(4) 5 GB will appear at the end of the folder. You can configure appropriate storage space according to your need (at least 5 GB).

- Move to the right: Select folders and configure their storage spaces, and then click . All the selected folders in the left and their configured storage spaces will be copied to the right.
- Move to the left: Select one or more folders with shift key pressed and held down, and then click . All the selected folders in the right will be removed. You can also double click one folder to remove it.
- Total storage space: The system can automatically calculate the total storage space of the selected folders in the right.
- Initialize: Click **Initialize** to initialize all the folders in the right at the same time. The page will jump to Storage Space when the operation finished.

3.5.1.2 Initialize Storage Space

On the Storage Space page, choose the storage space you want to initialize, and click in the same line, and then a confirmation message box pops up as shown in figure below.

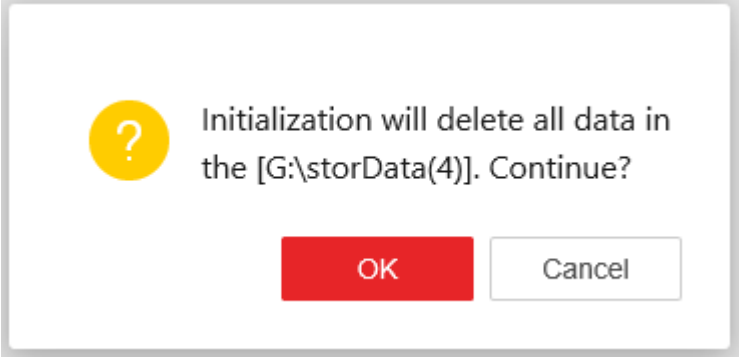


Figure 3-16 Initialize Storage Space

NOTE

- Initialization will delete all the data in the selected saving path. Please be careful.

3.5.1.3 Delete Storage Space

On the Storage Space page, choose the storage space you want to delete, and click , and then a confirmation message box pops up as shown in figure below.

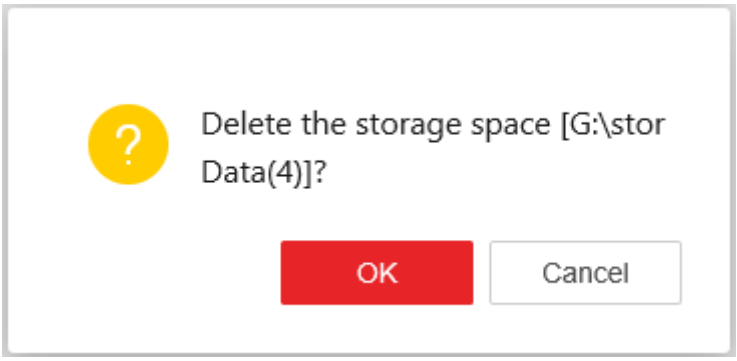


Figure 3-17 Delete Storage Space

WARNING

As deletion is dangerous, you can only delete the storage space in Lost status.

3.5.1.4 Restore Storage Space

After reinstalling HIKVISION pStor software, you can see the previous storage space on the Storage Space page, as shown in figure below.

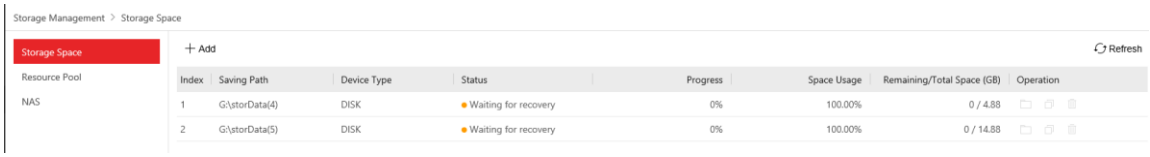


Figure 3-18 Restore Storage Space

Click to restore the storage space (invalid in the trial version), and a confirmation message box pops up as shown in figure below.

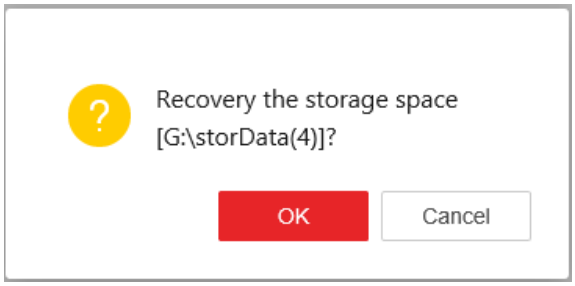


Figure 3-19 Restore Storage Space

Click **OK** and the recovery results will show in the Status column, as shown in figure below.

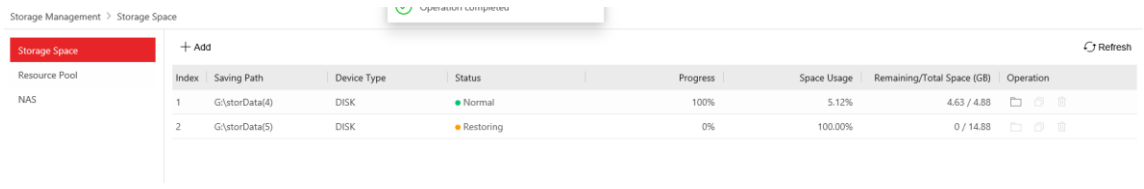


Figure 3-20 Restore Storage Space—Restoring

The status changes from Restoring to Formatting, and you can see the progress to know how huch has been done. When the status turns to Normal, the recovery is finished, as shown in figure below.

Figure 3-21 Restore Storage Space—Recovery Finished

3.5.2 Resource Pool

The resource pool is a basic unit of system data storage. With enough storage space, you can create up to 20 resource pools. After created, resource pool ID need to be configured on Hikvision platform. When configuring recording schedule, you need to link resource pool ID to recording pool ID, and the corresponding recording data will be saved into the configured resource pool.

Select resource pool under storage management, and go to the resource pool management page. The resource list mainly includes: ID, Name, Overwrite Strategy, Cycle (days), Status, Max. Locking up Attempts (%), Free Space/Total Capacity (GB), Transcoding Type, Original Data Cycle (days), etc., as shown in figure below.

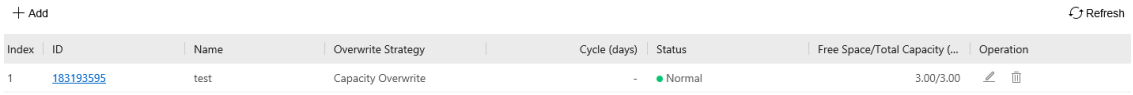


Figure 3-22 Resource Pool

NOTE

- You can add, delete, edit and view resource pools.
- You can create up to 20 resource pools.

When configuring recording, you need to choose resource pool ID to get linked. After configuration, you can view recording schedule in Live Stream Recording Schedule. The recording schedule contains resource pool ID information, and the recording data will be saved into the corresponding resource pool.

3.5.2.1 Add Resource Pool

Click **Add** to add resource pool, as shown in figure below.

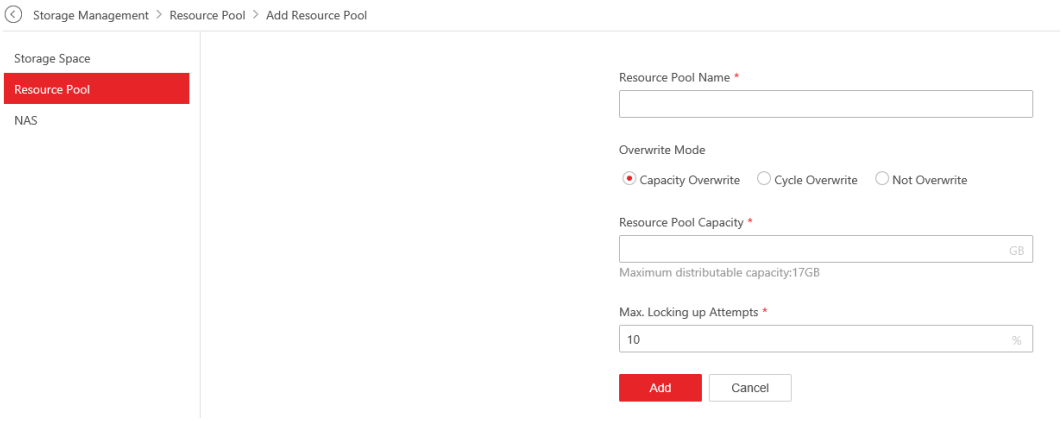


Figure 3-23 Add Resource Pool

Enter needed information, and click **Add** to finish adding resource pool.

Frame extracting can be selected as transcoding type of resource pool. See figure below.

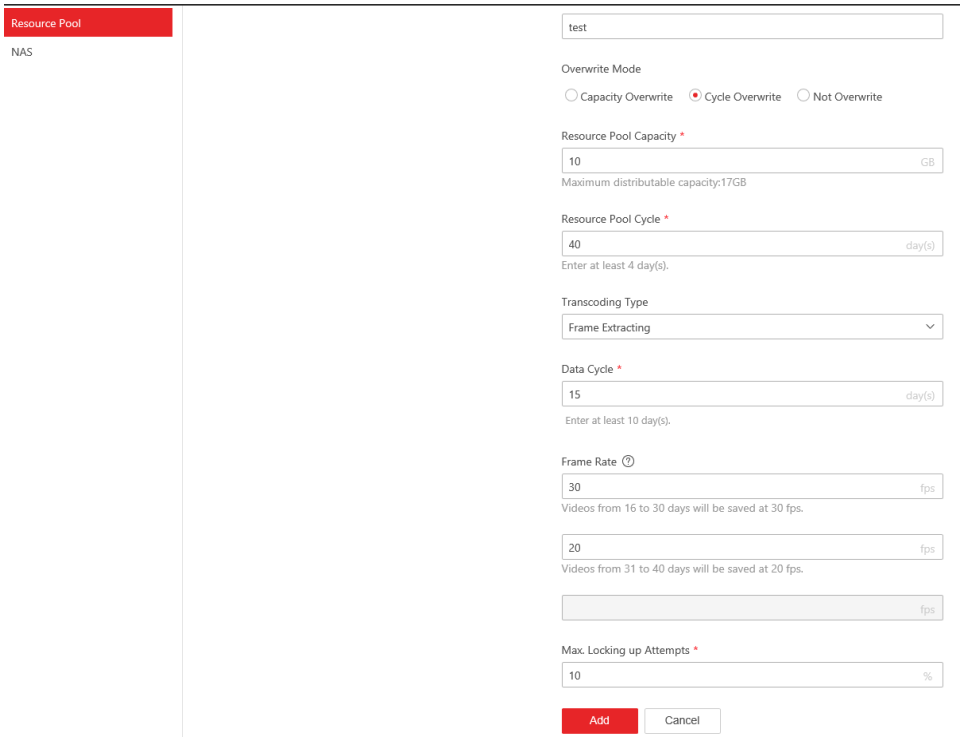


Figure 3-24 Frame Extracting

Cycle overwrite should be selected, and other parameters, such as resource pool capacity and cycle, data cycle, frame rate, max. locking up attempts, should be entered as required. Click **Add** to finish resource pool adding if transcoding type is frame extracting.

3.5.2.2 Edit Resource Pool

On the Resource Pool page, choose the resource pool you want to modify, and click in the same line to go to Edit Resource Pool page, as shown in figure below.

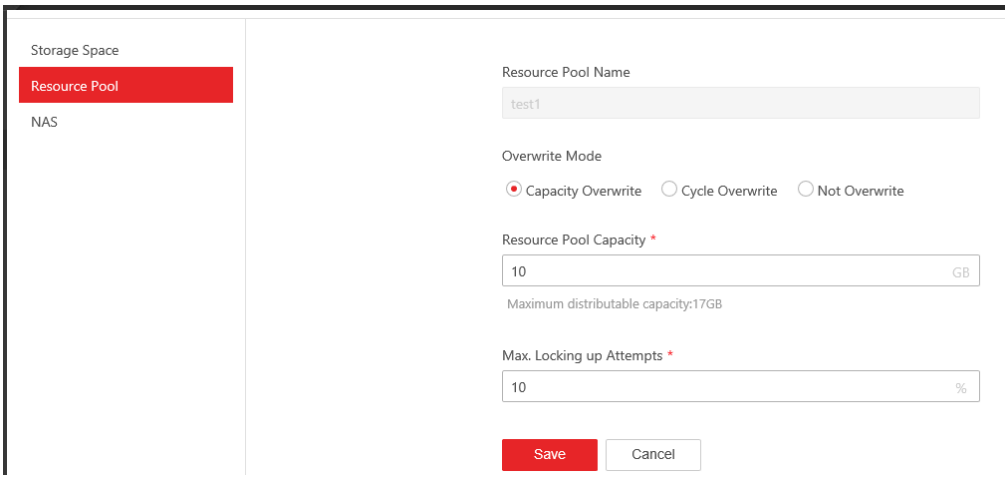


Figure 3-25 Edit Resource Pool

Enter needed information, and click **Save** to finish editing resource pool.

3.5.2.3 Expand Resource Pool

- When storage space is enough, select resource pool to be expanded, click in the same line to enter editing resource pool interface. The max. distributable capacity will be shown. And you can configure resource pool capacity accordingly. See figures below.

Figure 3-26 Expand Resource Pool

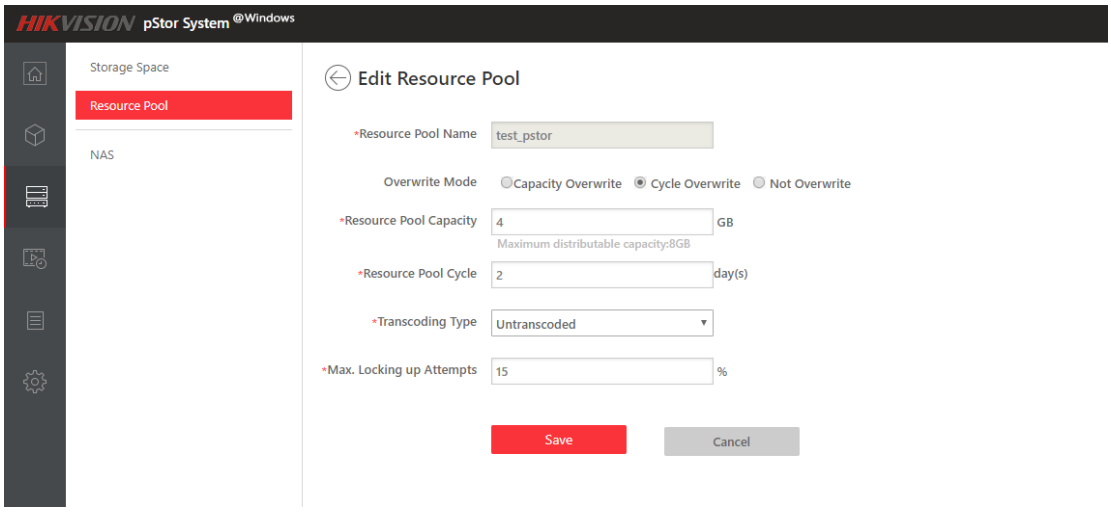


Figure 3-27 Expand Reouse Pool

- When storage space is not enough and adding hardware device is required, add storage space according to **3.5.1 Storage Space.** And edit resource pool in the same way as above.

3.5.2.4 Delete Resource Pool

On the Resource Pool page, choose the resource pool you want to delete, and click , and then a confirmation message box pops up as shown in figure below.

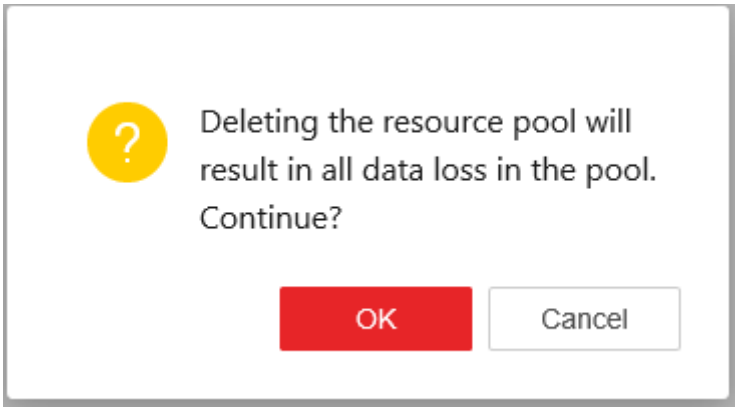


Figure 3-28 Delete Resource Pool

Click **OK** to delete resource pool.

3.5.2.5 View Resource Pool

On the Resource Pool page, choose the resource pool you want to view, and click corresponding ID in the same line, such as

Index	ID
1	205040650

, to see details, as shown in figure below.

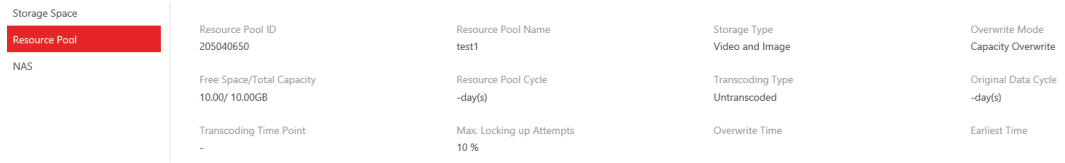


Figure 3-29 Detailed Information of Resource Pool

3.5.3 NAS

Network-attached storage (NAS) is a file-level computer data storage server connected to a computer network providing data access clients. The system supports to add NAS device, and after added, it can be used in Add Storage Space page.

NOTE

At present, window server 2012 and window server 2016 support NAS, while window server 2008 does not. Other operation systems have not been verified.

3.5.3.1 Add NAS

Click **Add** to go to Add NAS page, as shown in figure below.

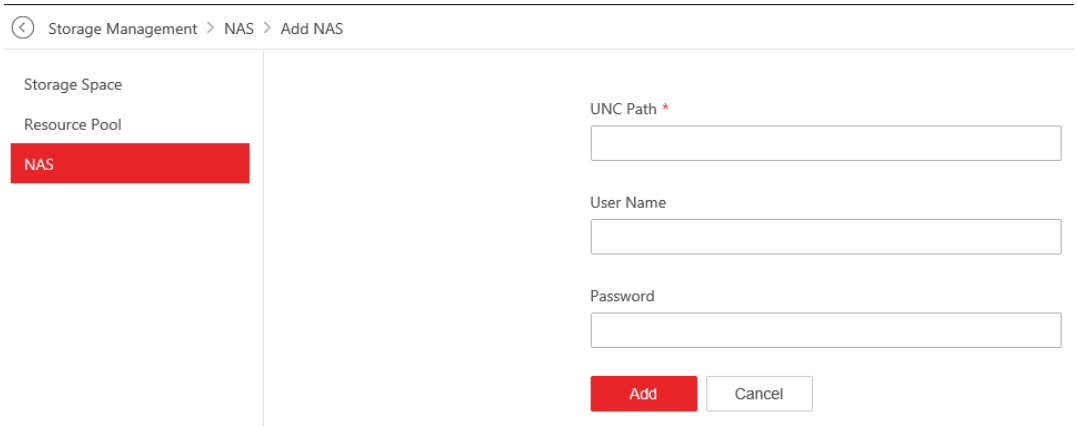


Figure 3-30 Add NAS

Enter UNC Path, User Name, Password, and then click **Add**. After addition, you can check NAS information including UNC Path, User Name, Status, Mapping Driver, etc., as shown in figure below.

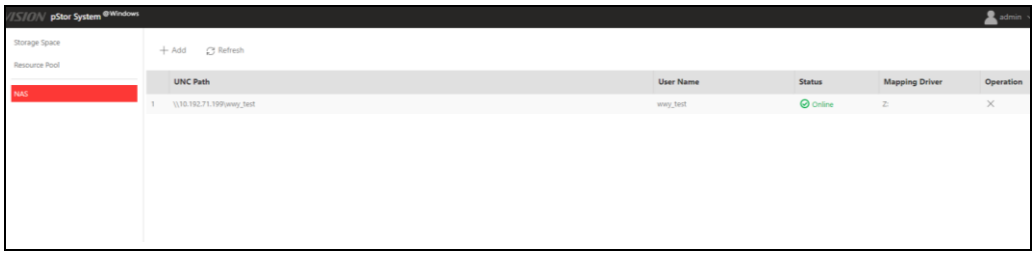


Figure 3-31 NAS Information

3.5.3.2 Delete NAS

Click ✕ on NAS page, and a confirmation message box pops up as shown in figure below. Click **OK** to delete NAS.

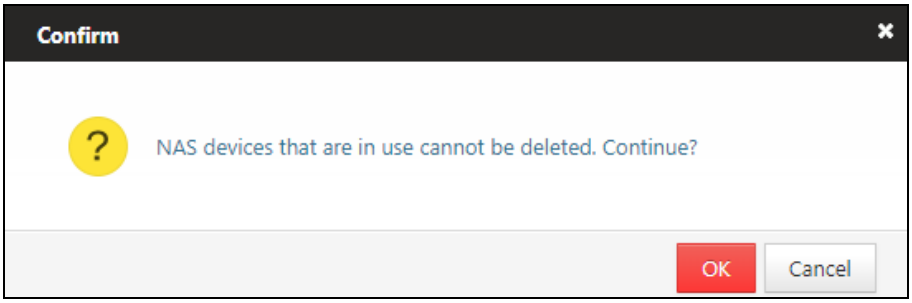


Figure 3-32 Delete NAS

3.6 Recording Schedule

The system supports to view recording schedules and recording status, meanwhile inspect videos, but does not support to add, edit or delete recording schedules. Recording status includes normal, streaming error, and recording error.

3.6.1 Live Stream Recording Schedule

Live Stream Recording Schedule mainly includes Camera ID, Camera Name, IP Address, Port No, Device Type, Channel No, Resource Pool ID, Recording, Stream, Pre-Recording Duration (sec), Post-record (sec), Recording Status, Arming Status.

You can search the recording schedule according to camera name or camera IP address, as shown in figure below.

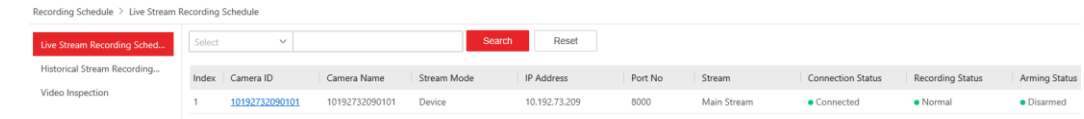


Figure 3-33 Live Stream Recording Schedule

3.6.1.1 View Recording Schedule

Click camera ID to view recording schedule, as shown in figure below.

Figure 3-34 View Recording Schedule

3.6.2 Historical Stream Recording Schedule

Historical Stream Recording Schedule mainly includes Camera ID, Camera Name, IP Address, Port No, Device Type, Channel No, Post-record Start Date, Resource Pool ID, Connection Status, Video Type, Upload Speed (KB/s), Stream Type.

You can search the recording schedule according to camera name or camera IP address, as shown in figure below.

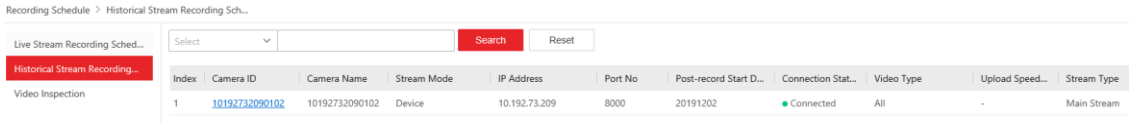


Figure 3-35 Historical Stream Recording Schedule

3.6.2.1 View Historical Recording Schedule

Click camera ID to view historical recording information, as shown in figure below.

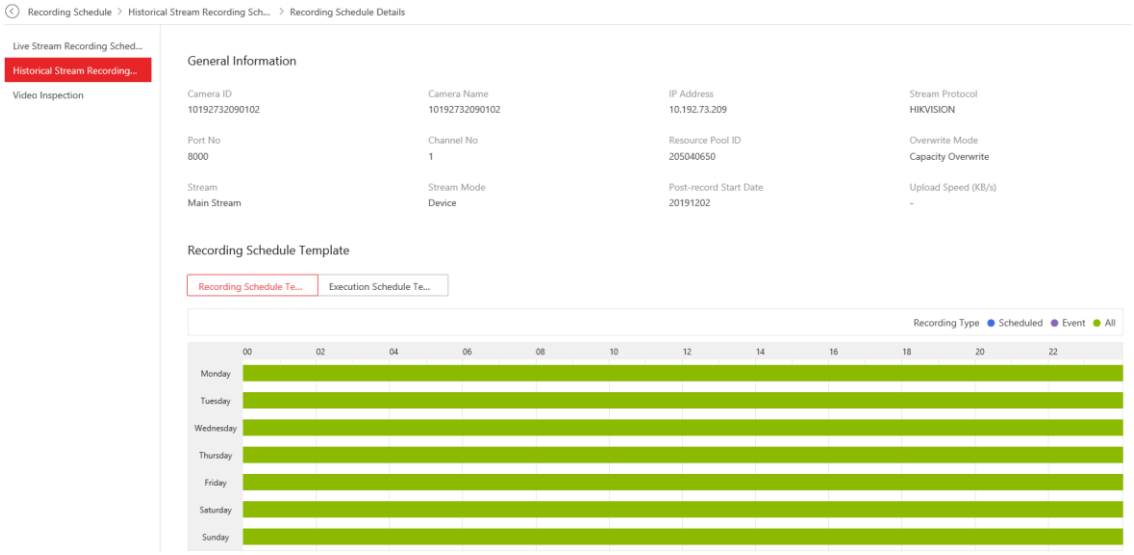


Figure 3-36 View Historical Recording Schedule

3.6.3 Video Inspection

For live stream recording schedule, you can use video inspection to analyze all the recording data in schedule.

3.6.3.1 Check Videos by Day

Choose the date you want to check in Time 2019/12/01 , and then click **Search**. You can check camera ID\name\IP, channel No, exception hour(s) and recording status of the whole day, as shown in figure below.

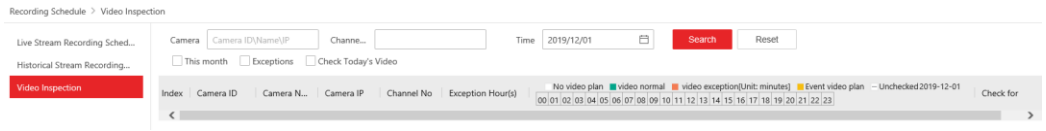


Figure 3-37 Check Videos by Day

You can filter the videos by camera ID\name\IP or channel No to check what you want to view.

Click the red block, such as 19, to check the recording status in this one hour, as shown in figure below.

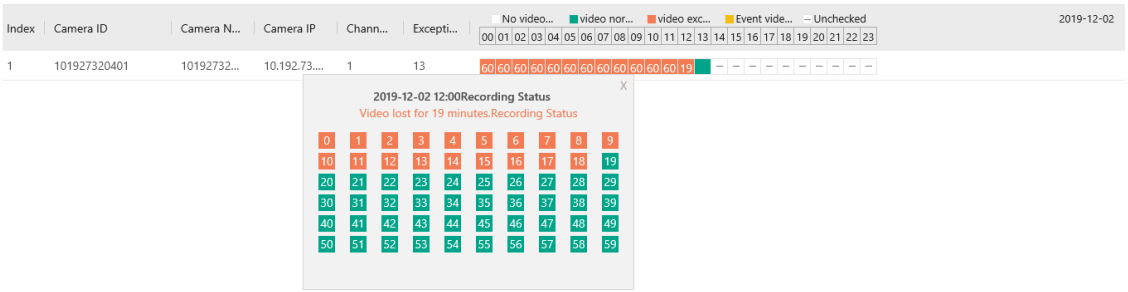


Figure 3-38 Detailed Information of Video Exception

NOTE

You cannot inspect today's video and only the videos of the day before today can be inspected.

3.6.3.2 Check Videos by Month

Select This month, and click **Search** to check recording status by month. You can check Camera ID\Name\IP, Channel No, Exception Hour(s), and Recording Status, as shown in figure below.

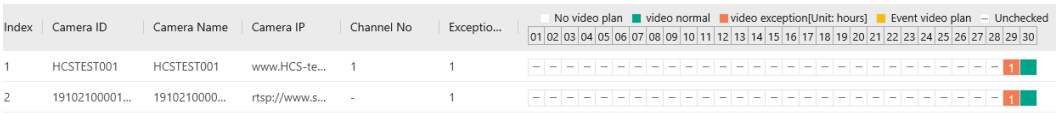


Figure 3-39 Check Videos by Month

Click 1 or to check the recording status in this one hour, as shown in figure below.

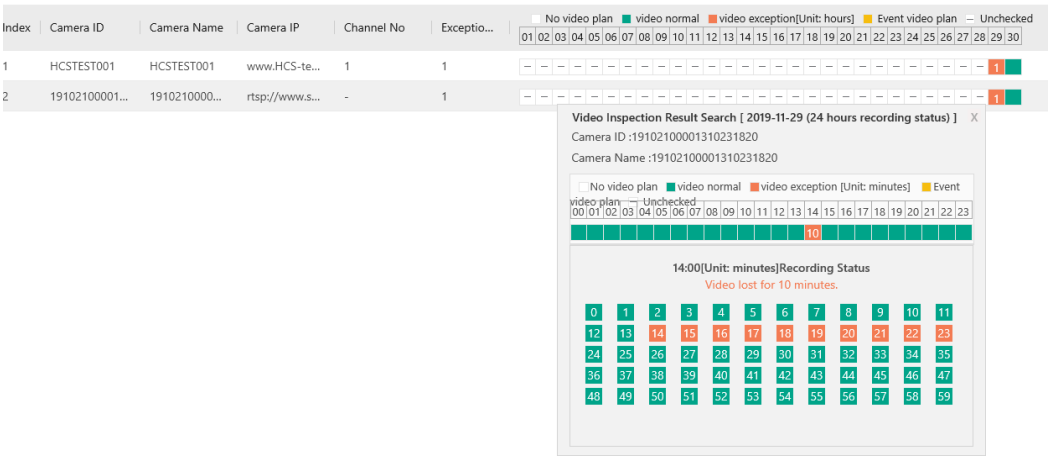


Figure 3-40 Detailed Information of Video Inspection

3.6.3.3 Check Today's Video

Click Check Today's Video at the top right corner to check today's video, as shown in figure below.

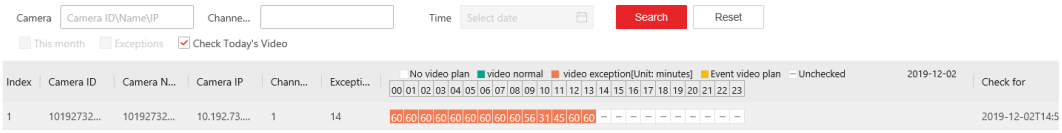


Figure 3-41 Check Today's Video

You can filter the videos by camera ID\name\IP or channel No to check what you want to view. Click 31 to check the recording status in this one hour, as shown in figure below.

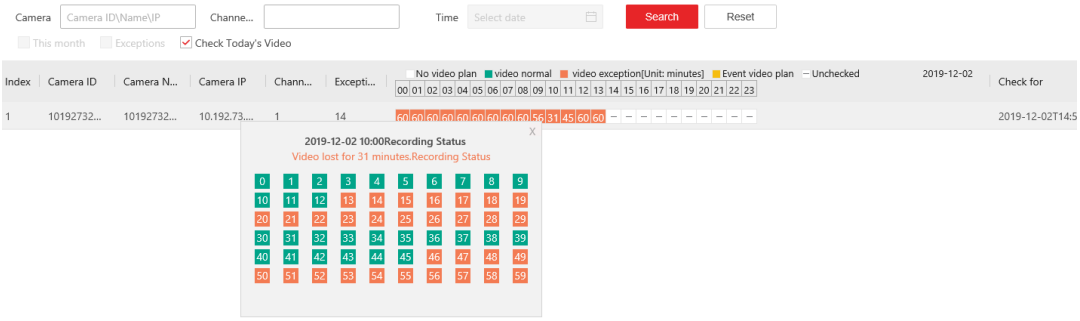


Figure 3-42 Detailed Information of Video Inspection

3.7 Log

3.7.1 Display Log

Log displays IP, time, level, content, etc.

Select the number of log displayed per page in the lower left corner, as shown in figure below.

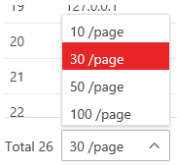


Figure 3-43 Log

In the lower right corner, it displays the current page and total page number.

Click < or > to switch to the previous or next page.

Enter number in 1 / 3 , click **Go** to the specific page, as shown in figure below.

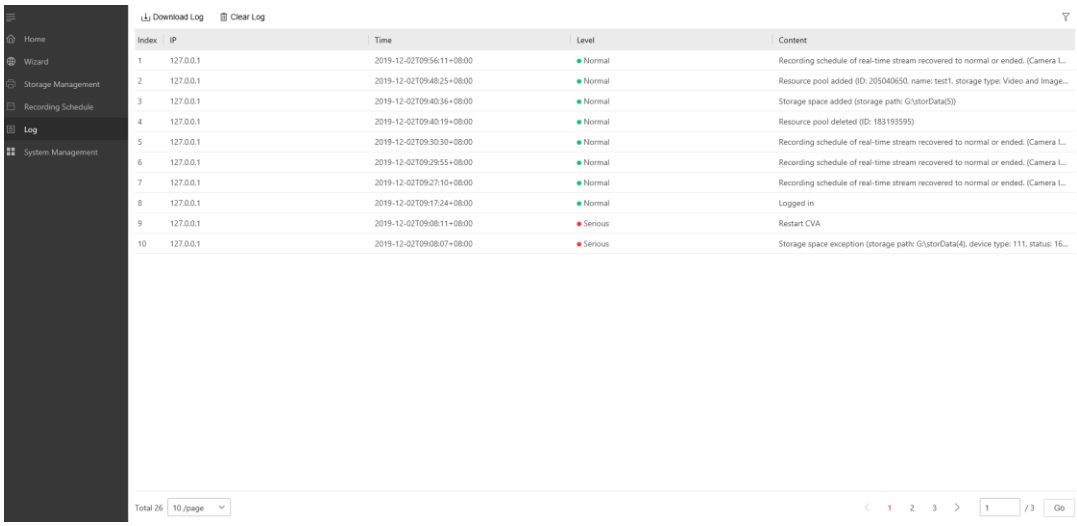


Figure 3-44 Log

3.7.2 Download Log

Click **Download Log** in the upper left to download log to local.

NOTE

Up to 1 million log entries can be downloaded.

3.7.3 Clear Log

Step 1 Click **Clear Log** in the upper left.

Step 2 Click **OK** to confirm the operation, as shown in figure below.

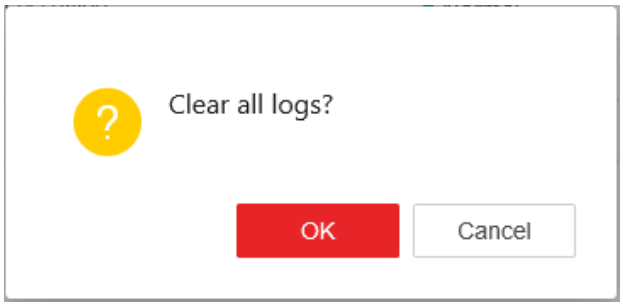


Figure 3-45 Clear Log

3.7.4 Search Log

Click in the upper right, and search log according to type, time, level, IP or content, as shown in figure below.

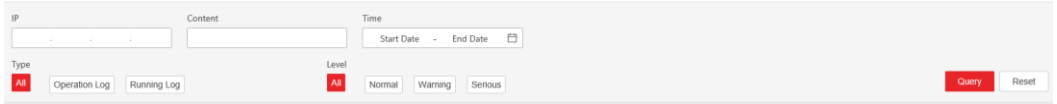


Figure 3-46 Search Log

3.8 System Management

3.8.1 Configure NTP

Set the time sever for linked storage service system.

Step 1 Click **System Management** > **NTP Settings** to enter the NTP settings interface as shown in figure below.

Time sync is OFF by default.

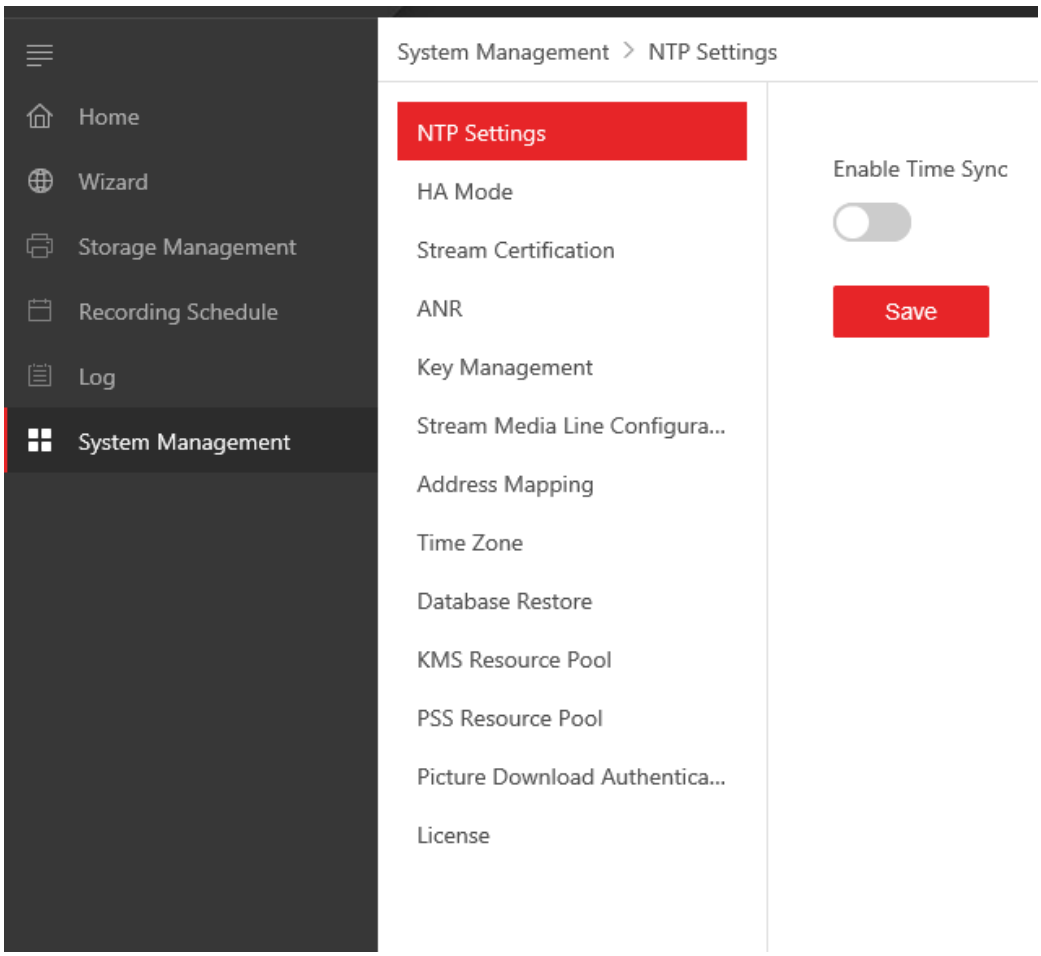


Figure 3-47 Time Sync Switch

Step 2 Click to turn on time sync function, as shown in figure below.

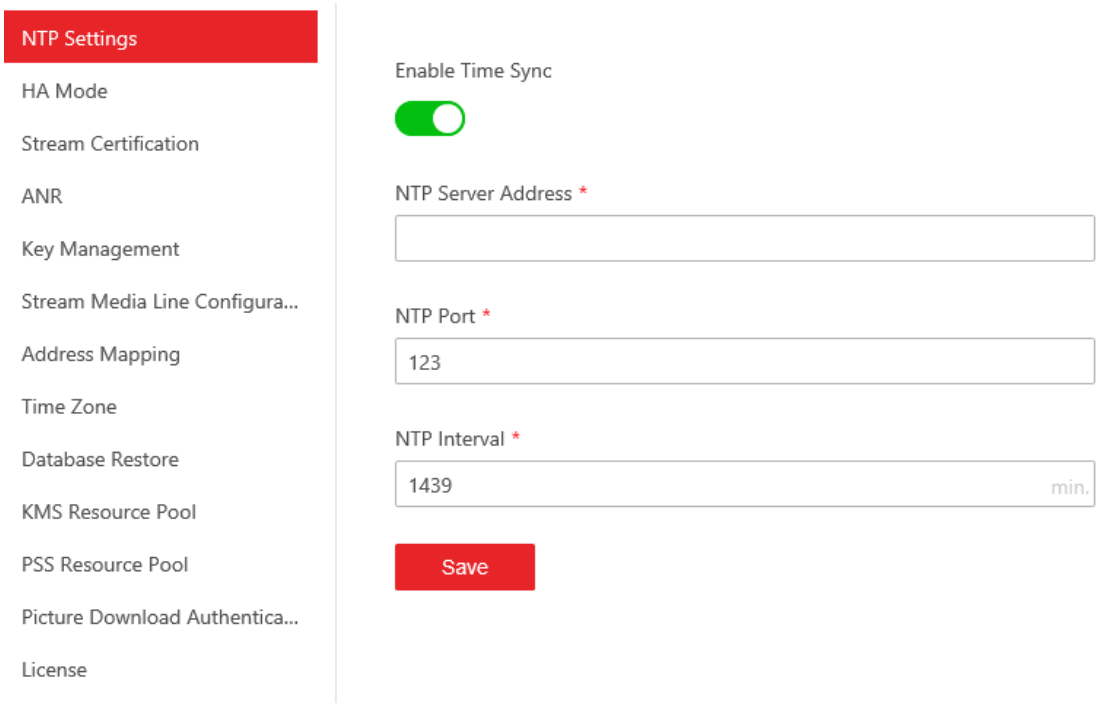


Figure 3-48 NTP Settings

Step 3 Enter the parameters accordingly, and click **Save**.

NOTE

The default NTP port is 123; the default NTP interval is 1439.

The storage access service management system will make the first correction, and the result can be viewed through the home page. The storage access service management system will regularly update the time according to the set interval.

3.8.2 Configure Time Zone

Time zone function is designed to ensure the accuracy of searching and ANR time period in case that pStor and front-end devices are not in the same time zone or the DST is adjusted.

Step 1 Click **System Management** > **Time Zone** to enter the time zone settings interface as shown in figure below.

Step 2 Click to enable the function.

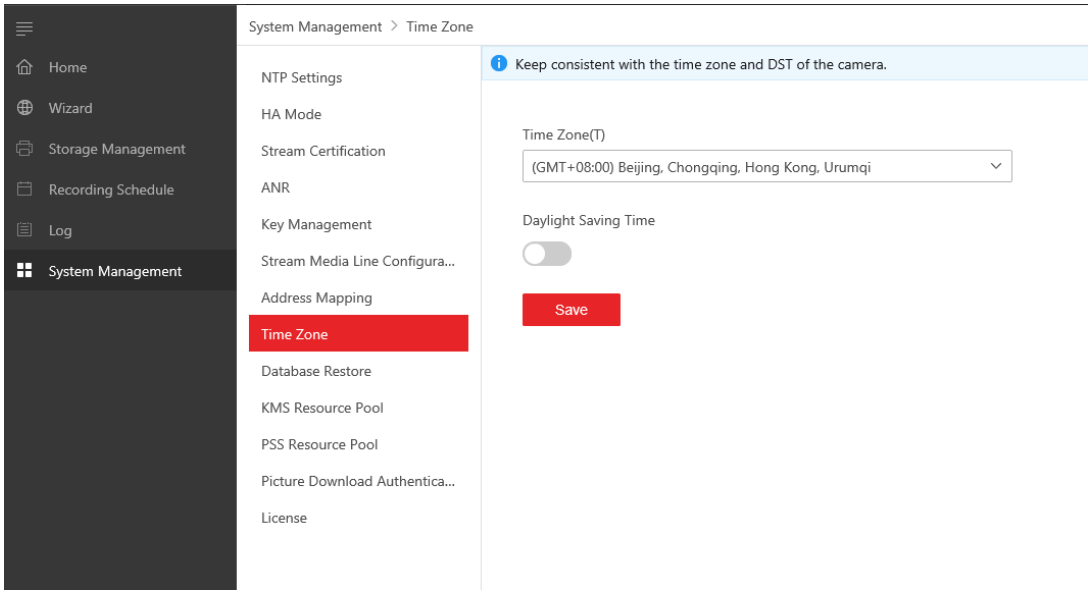


Figure 3-49 Disabled Daylight Saving Time

Step 3 Select time zone, saving time period, and time offset accordingly.

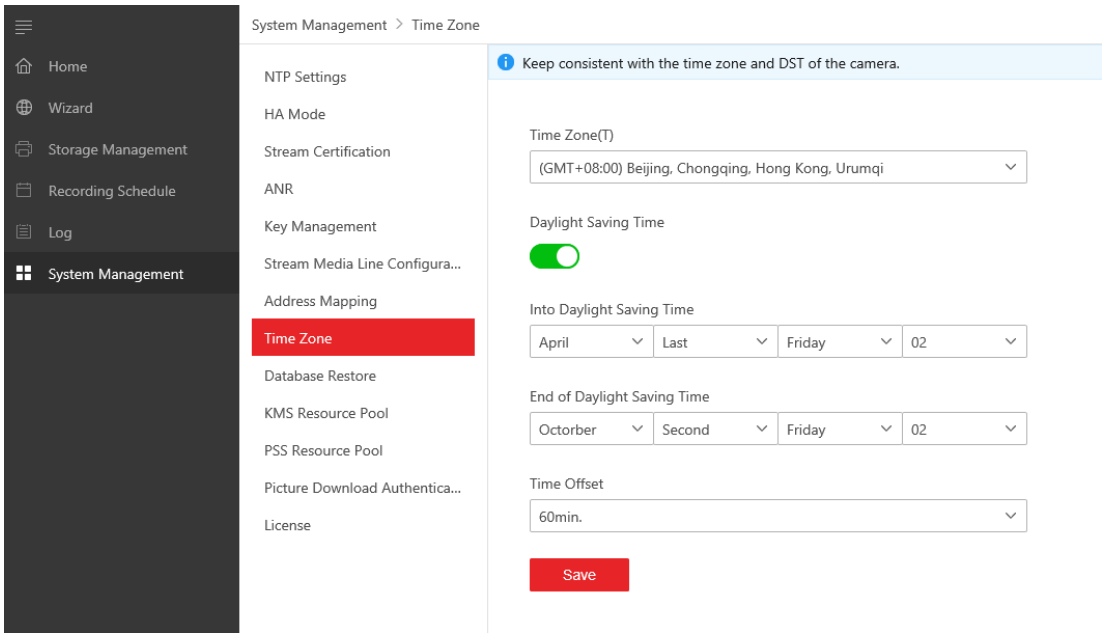


Figure 3-50 Enabled Daylight Saving Time

Step 4 Click **Save**.

3.8.3 Configure Stream Authentication

Step 1 Click **System Management** > **Stream Authentication** to enter the stream authentication settings interface as shown in figure below.

Step 2 Click to enable the function.

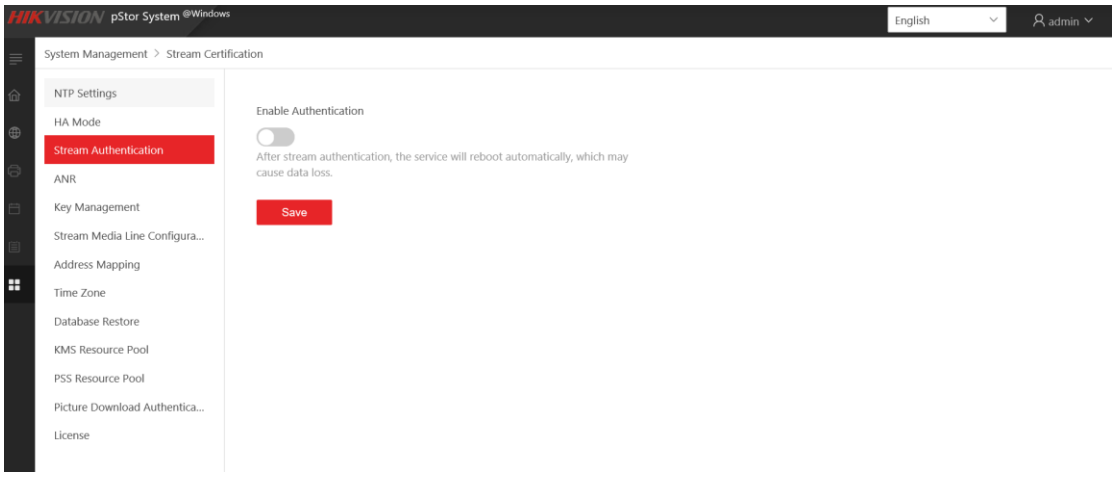


Figure 3-51 Enable Stream Authentication

Step 3 Enter the parameter value accordingly, and click **Save**, as shown in figure below.

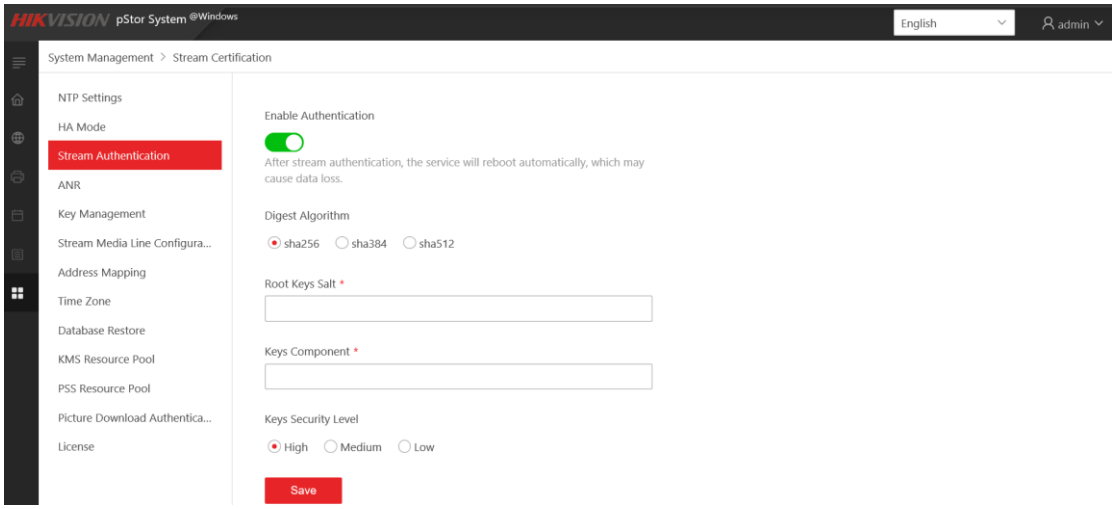


Figure 3-52 Stream Authentication Settings

3.8.4 Configure ANR

Step 1 Click **System Management** > **ANR** to enter the ANR settings interface as shown in figure below.

Step 2 Click to enable the function.

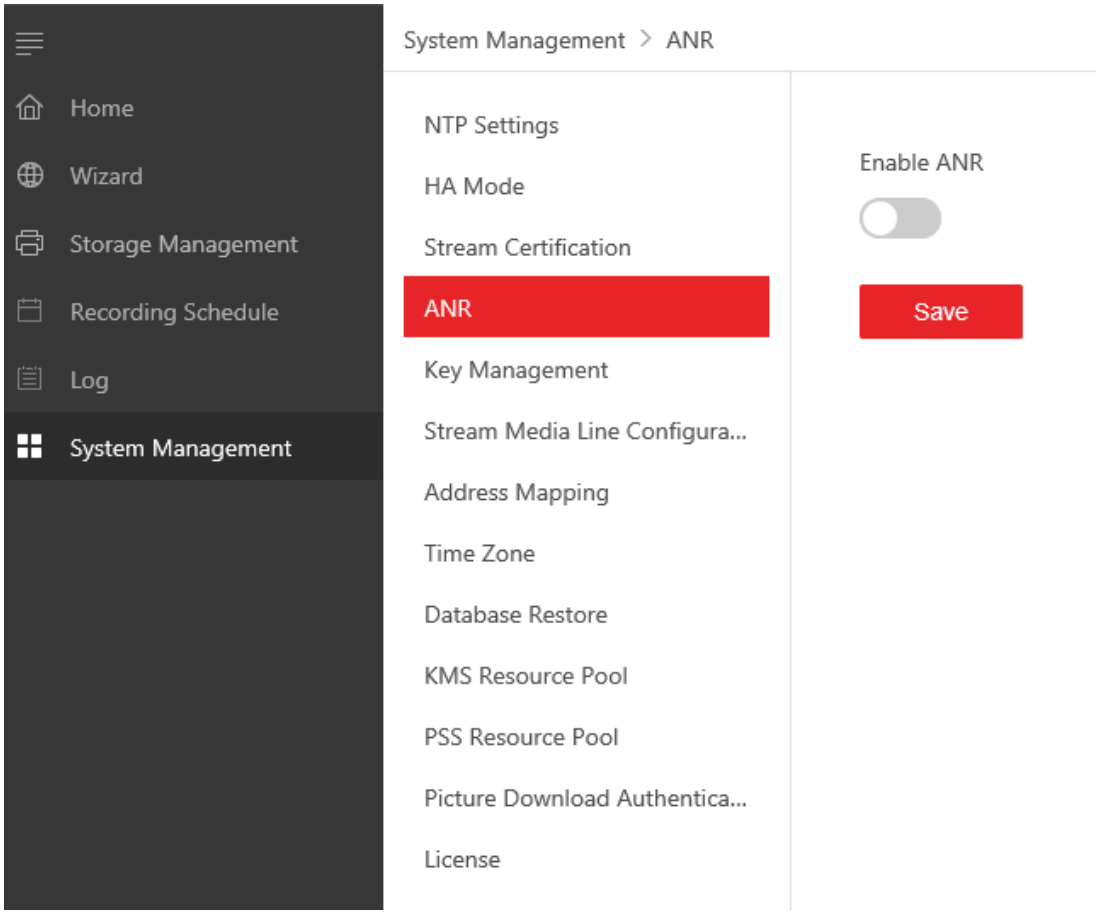


Figure 3-53 ANR Settings

Once configured, the storage access service takes the real-time flow from the camera for storage. When streaming is interrupted, the storage access service generates the recording task for the interrupted time period to make up the missing video data from the camera.

NOTE

ANR is not supported when real-time streaming through ONVIF protocol.

3.8.5 Configure Picture Download Authentication

Step 1 Click **System Management** > **Picture Download Authentication** to enter the settings interface as shown in figure below.

Step 2 Click the switch to enable/disable the function, click **Save**.

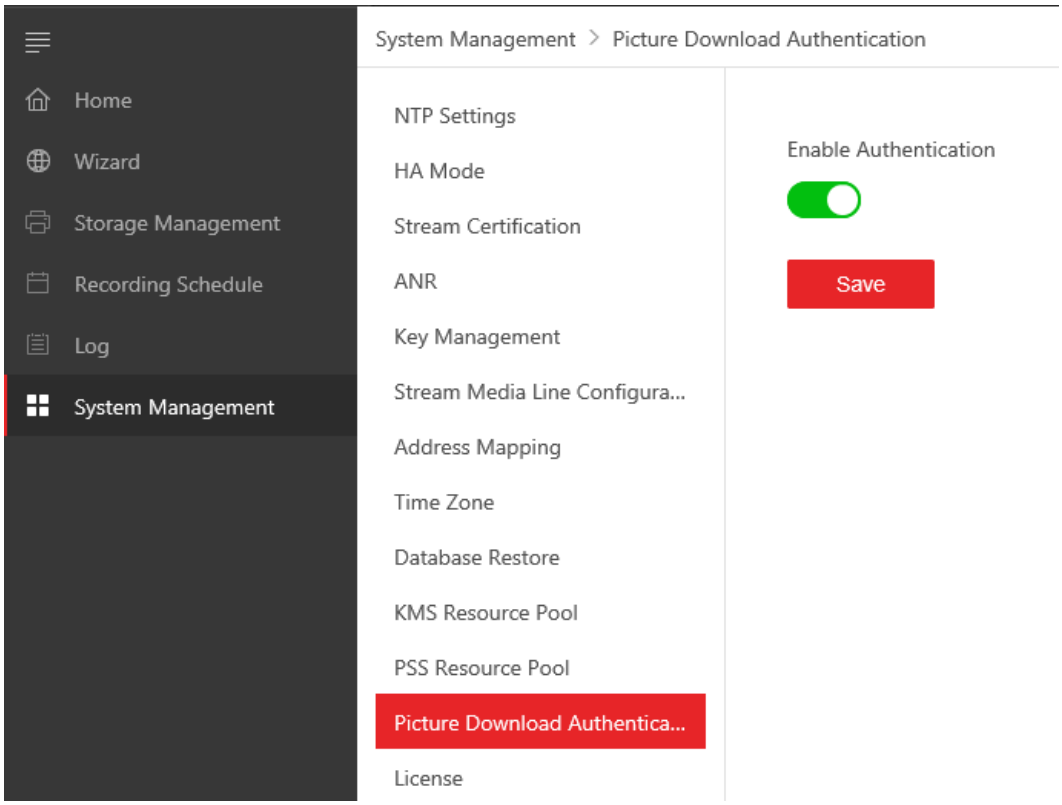


Figure 3-54 Picture Download Authentication Settings

NOTE

Picture download authentication is enabled by default. It needs authentication when downloading picture via Restful. If you turned off the function, no authentication is needed when downloading picture via Restful. You can check the picture via web browser.

3.8.6 Configure Stream Media Line

Stream media line configuration is mainly applied in multi-network cards storage server environment.

Click **System Management** > **Stream Media Line Configuration** to enter the server NIC settings interface as shown in figure below.

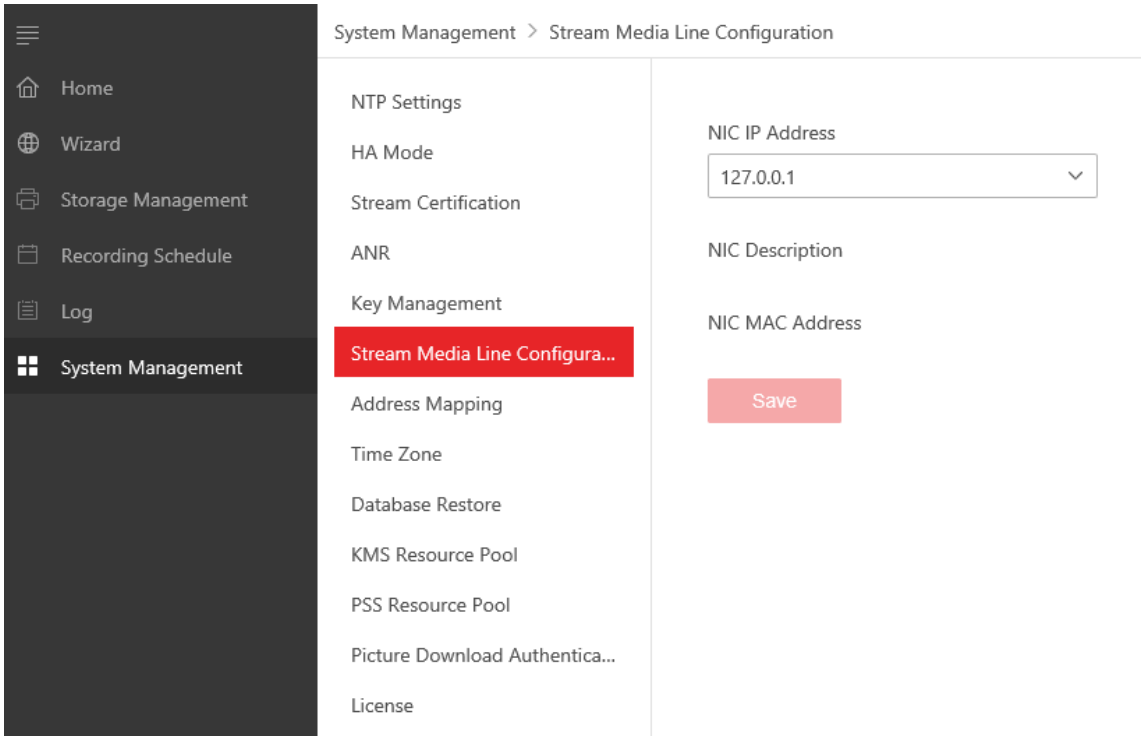


Figure 3-55 Server NIC Settings

When there are multiple network cards available, the first network card will be considered by default as the current network card. If you need modify the NIC Settings, select a network card from the drop down box.

Click **Save**, and the page will prompt "The NIC has been changed. Restart the computer to take effect.", and restart the server.

NOTE

If the NIC IP is not modified, you can't click **Save**.

3.8.7 Configure Address Mapping

3.8.7.1 Multi-Line

Multi-line function is mainly applied in scenario, that is, pStor system and platform with fixed IP address are in different network environments.

Step 1 Click **System Management** > **Address Mapping** to enter the address mapping settings interface.

Step 2 Click + Add to configure address mapping and client authorized IP segment.

Figure 3-56 Configure Address Mapping

Step 3 Enter the IP Address and port of external network and click **Add** to configure IP addresses, as shown in figure below.

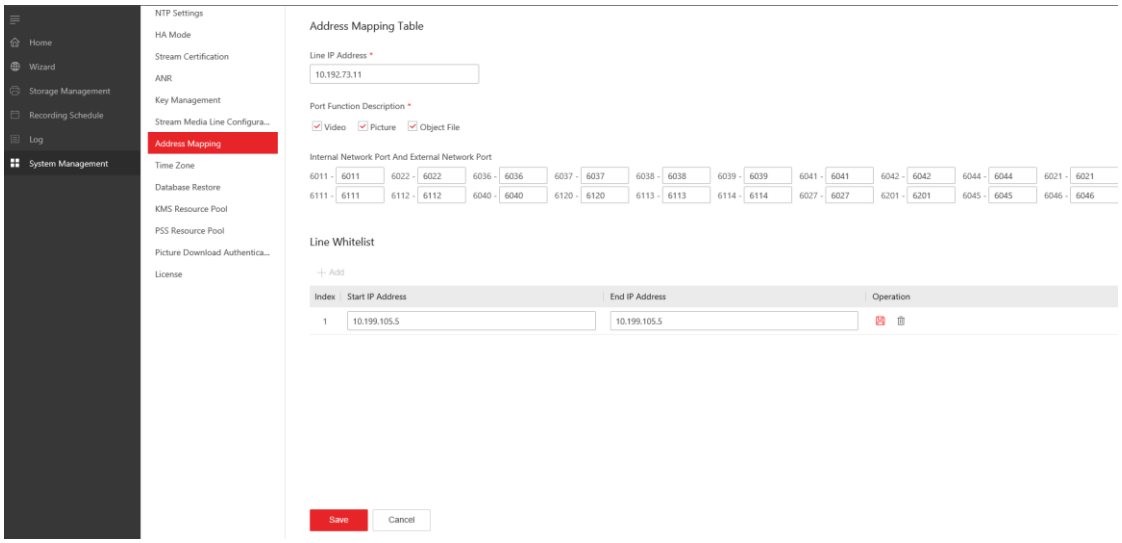


Figure 3-57 Address Mapping (Enabled)

Step 4 Enter authorized start and end IP address, and click and **Save**, as shown in figure below.

Start IP and end IP should belong to the same IP segment.

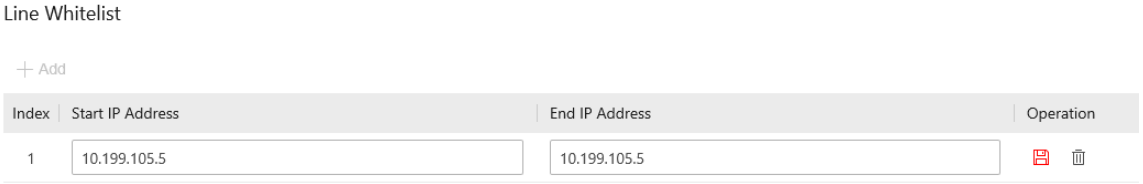


Figure 3-58 Client Authorized IP Segment

After address mapping is saved, the figure is shown below.

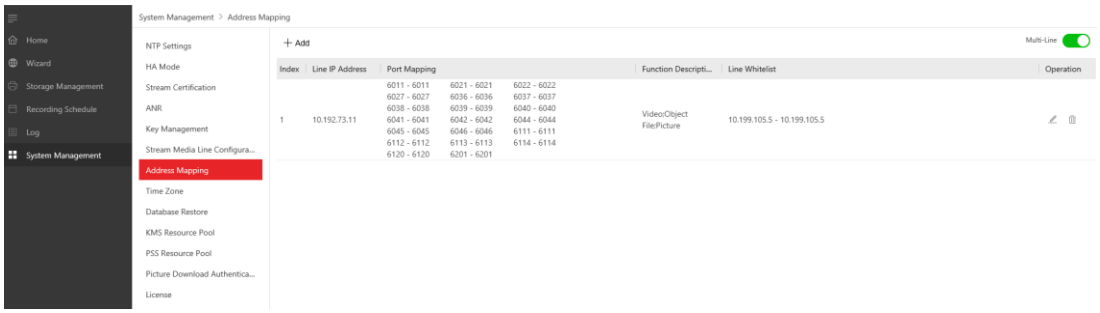


Figure 3-59 Succeeded Address Mapping

3.8.7.2 Multi-Domain

Multi-domain function is mainly applied in scenario, that is, pStor system and client with unfixed IP address (e.g. 4G mobile device) are in different network environments, and pStor system cannot be accessed by configuring authorized IP segment due to unfixed IP address.

You should configure IP segment of internal network. External IP address should be configured with address mapping.

Step 1 Click **System Management** > **Address Mapping** to enter the address mapping settings interface.

Step 2 Disable multi-line to change to multi-domain mode.

Step 3 Click + Add to configure address mapping and IP segment of internal network.

Figure 3-60 Configure Address Mapping

Step 4 Enter the IP Address and port of external network and click **Add**, as shown in figure below.

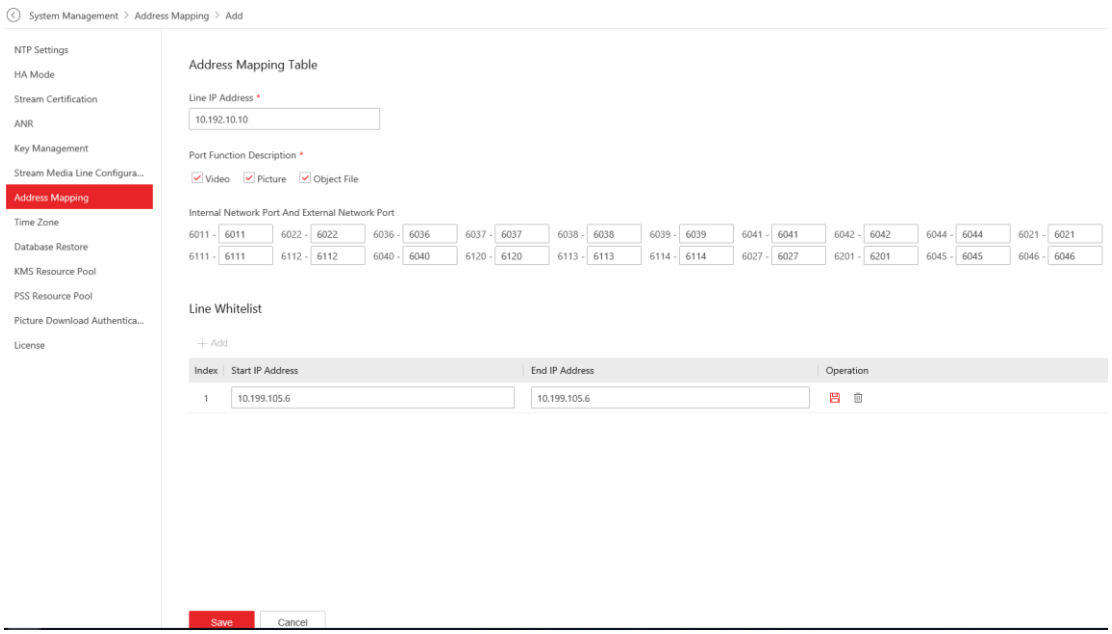


Figure 3-61 Address Mapping (Enabled)

Step 5 Enter the start and end IP address of internal network, and click **Save**, as shown in figure below.

Start IP and end IP should belong to the same IP segment. And local IP address should be added into the IP segment of internal network.

Figure 3-62 IP Segment of Internal Network

After address mapping is saved, the figure is shown below.

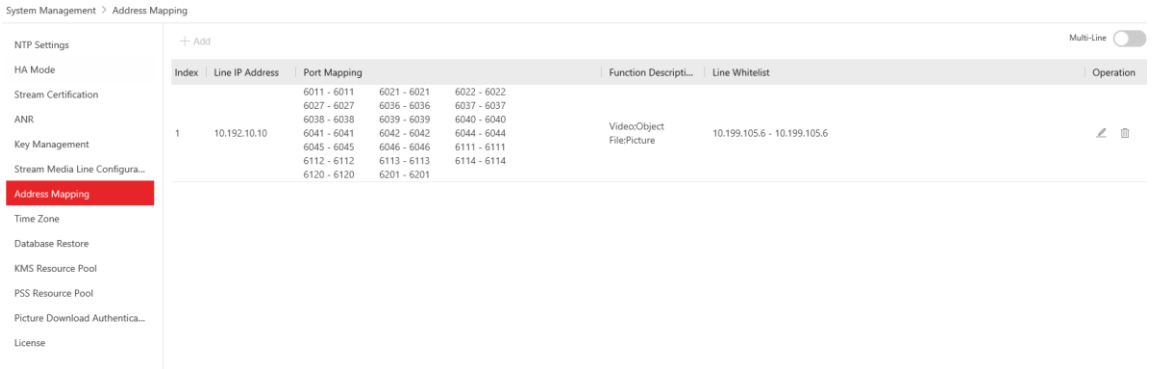


Figure 3-63 Succeeded Address Mapping

3.8.8 KMS Resource Pool

Step 1 Click **System Management > KMS Resource Pool** to enter the settings interface as shown in figure below.

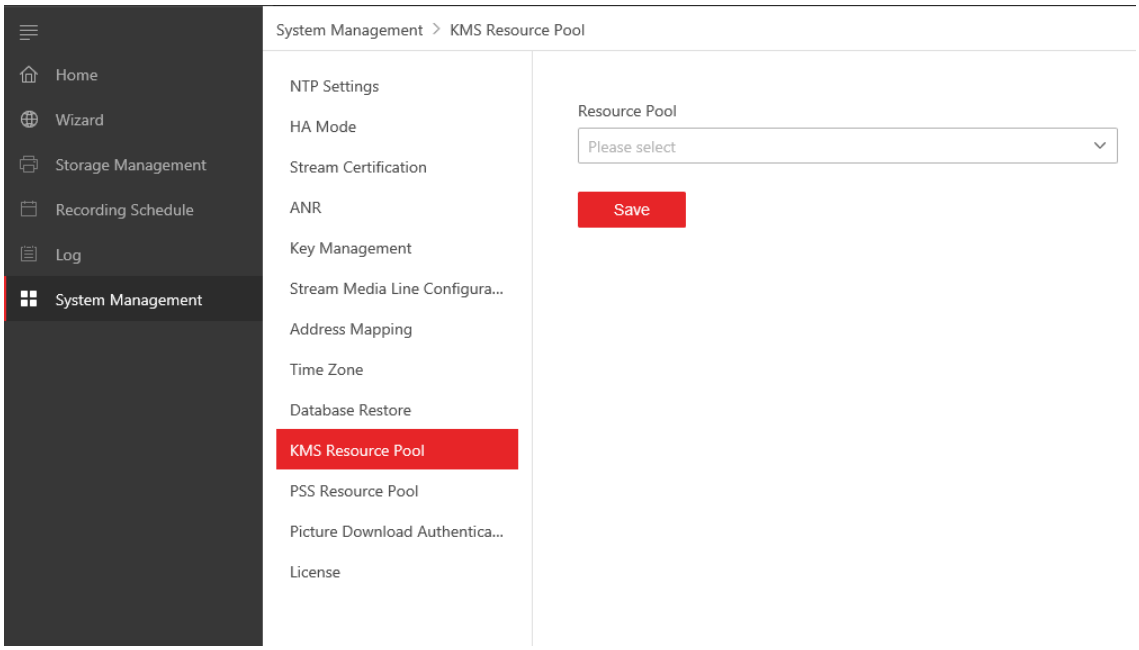


Figure 3-64 Setting KMS Resource Pool

Step 2 Select resource pool in drop-down box and click **Save**.

3.8.9 PSS Resource Pool

Step 1 Click **System Management** > **PSS Resource Pool** to enter the settings interface as shown in figure below.

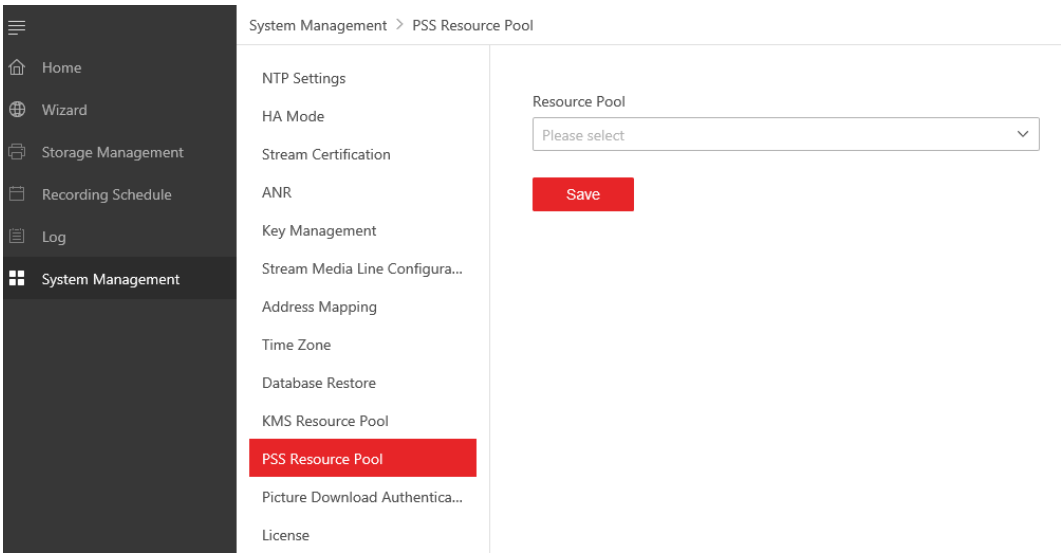


Figure 3-65 Setting PSS Resource Pool

Step 2 Select resource pool in drop-down box and click **Save**.

3.8.10 HA Mode

Step 1 Click **System Management** > **HA Mode** to enter the HA mode settings interface as shown in figure below.

HA mode is OFF by default.

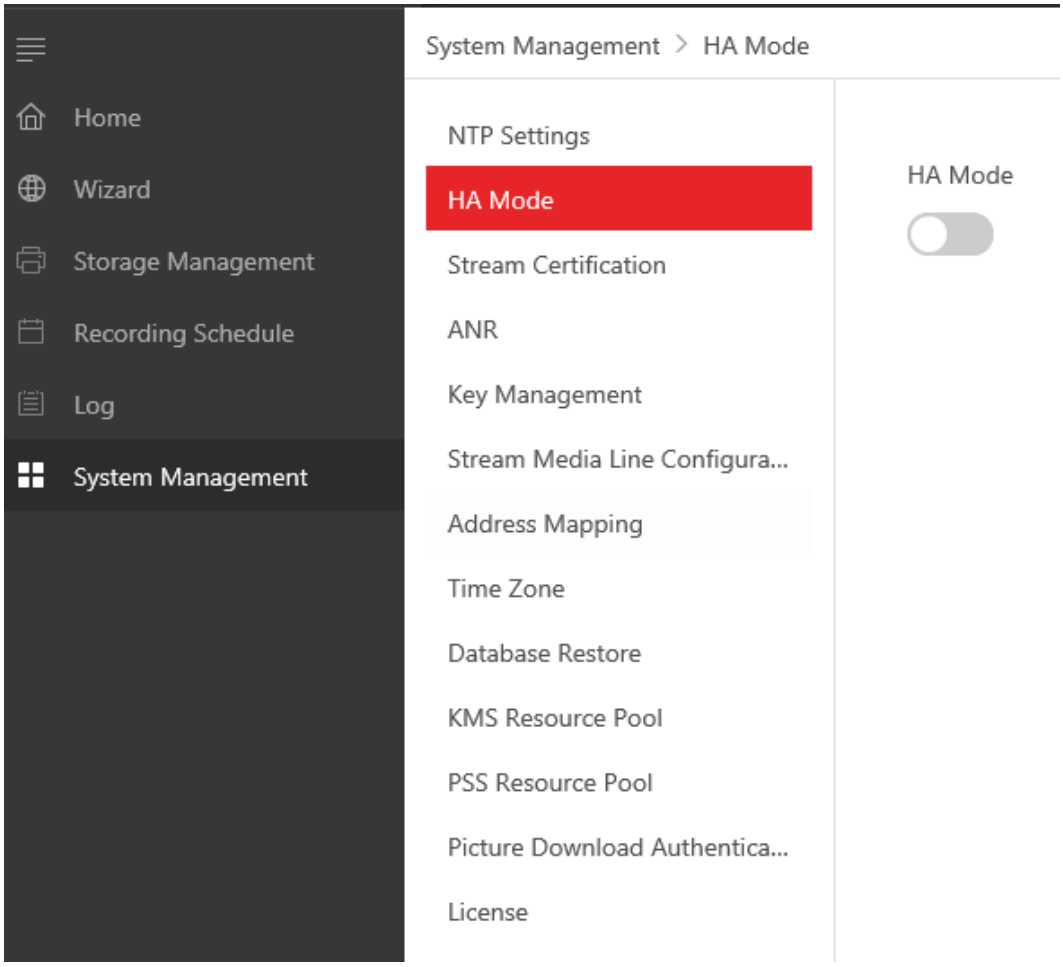


Figure 3-66 HA Mode Settings

HA Mode

Step 2 Click , configure background services, and make deployments to enable the function.

3.8.11 Restore Database

System supports database automatic backup. System will backup important data information automatically and regularly. When the system encounters an unrecoverable failure, the original system can be restored by reinstalling the system and by restoring the backup database. Due to the delay of database backup, the backup data may have some error.

Step 1 Click **System Management** > **Restore Database** to enter the restore database interface.

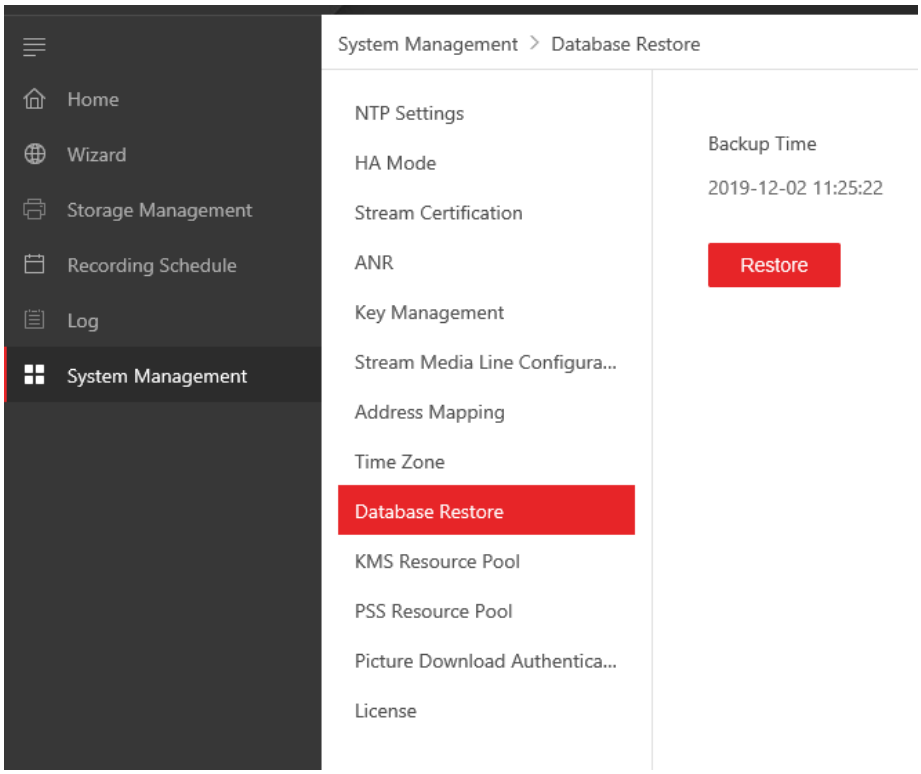


Figure 3-67 Data Restoration

Step 2 Click **Restore** to start restoring the database, and the message box pops up as shown in figure below.

Users should be careful when performing database restoration to avoid data loss.

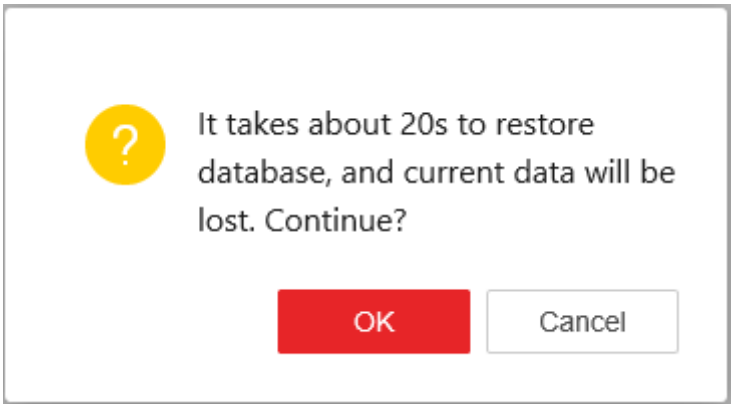


Figure 3-68 Confirm to Restore the Database

Step 3 Click **OK** to continue.

After the system runs for a period of time, if the user reloads the system, a prompt box will pop up when the user enters the web page for the first time. It indicates whether to restore the database to the state of saved by the system before reloading, as shown in figure below.

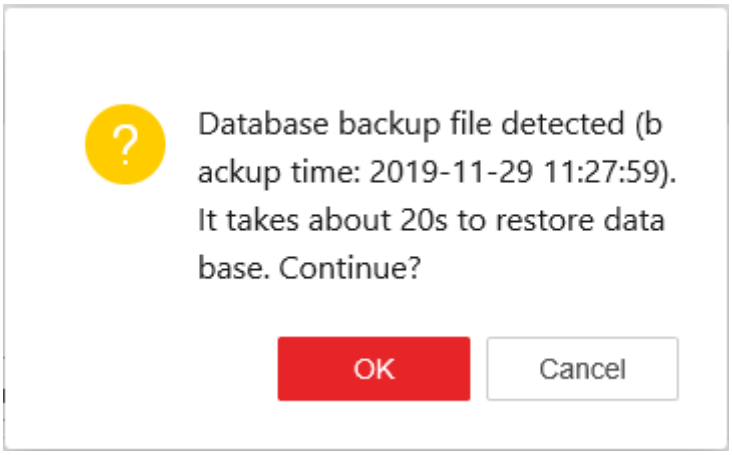


Figure 3-69 Restore the Database Prompt Window

Step 4 Click **OK**.

3.8.12 Manage Key

The system provides access key and encryption key, which are mainly used in Restful image storage protocols.

Step 1 Click **System Management** > **Key Management** to enter the key management settings interface as shown in figure below.

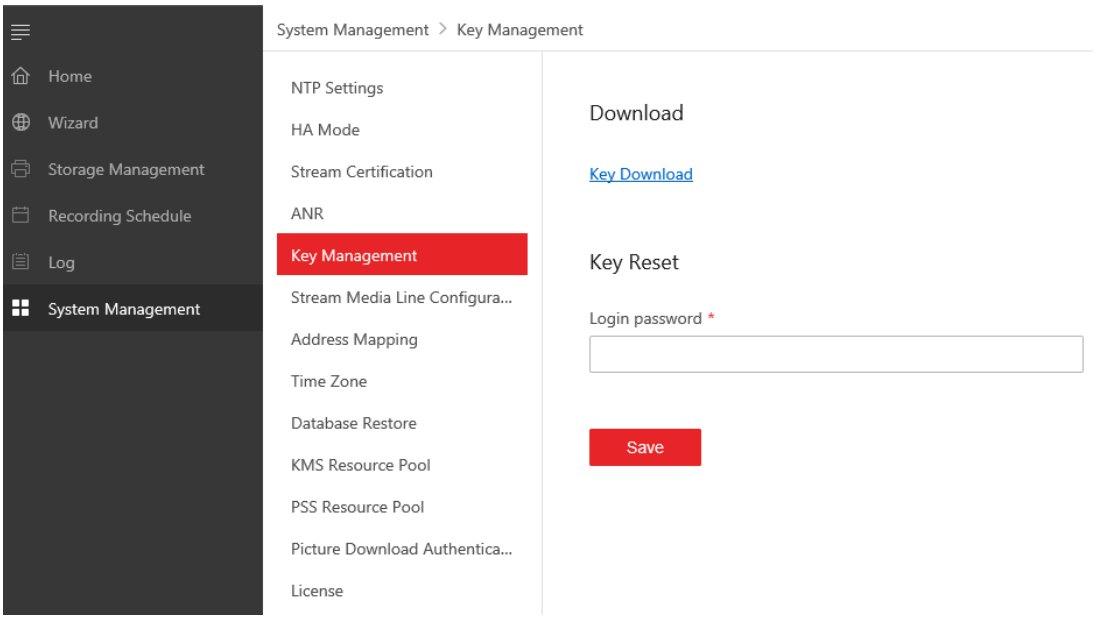


Figure 3-70 Key Management Settings

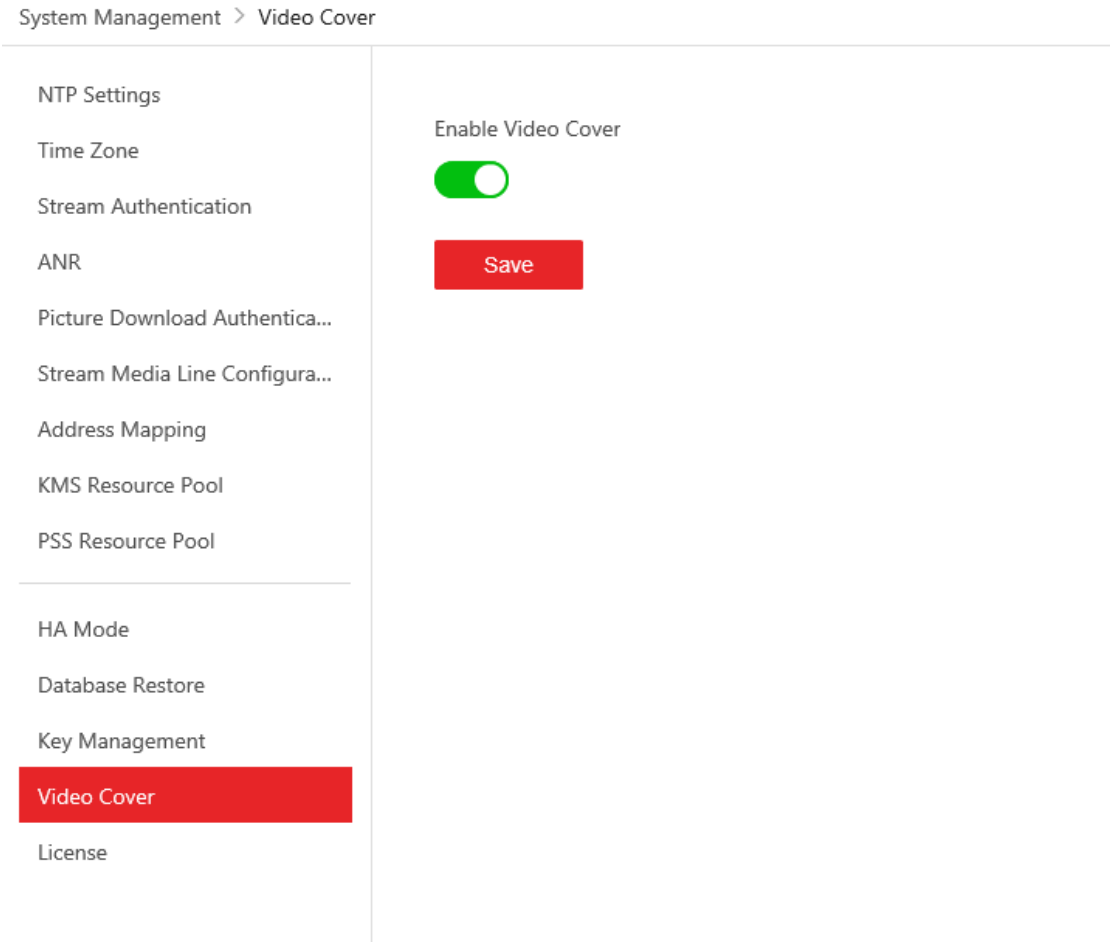
Step 2 Click Key Download to download and save the key files.

(Optional) Enter login password to reset the password, click **Save**.

3.8.13 Video Cover

It will provide cover for videos if users enable this feature, and click **System**

Management > Video Cover to enable it.



3.8.14 Configure License

You can check the system authorization information, activate and deactivate license.

For non-authorized users, the system can be used for 1 month by default and supports up to 8 channels of video recording. When exceeding 1 month, please contact us to obtain authorization documents.

Click **System Management** > **License** to enter the license settings interface as shown in figure below. You can check the license related information.

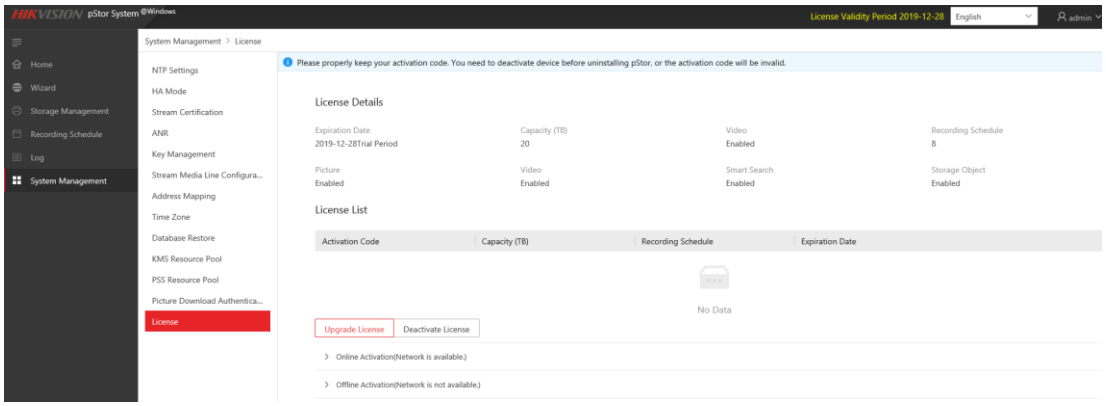


Figure 3-71 License Settings

3.8.13.1 Online Upgrade License

The method is applied when the license is invalid and network is available.

Step 1 Click › before online activation and click Enter activation code to pop up the online activation window. See the figure below.

Figure 3-72 Online Activate License

Step 2 Enter activation code and click **OK** to pop up license protocol window. See figure below.

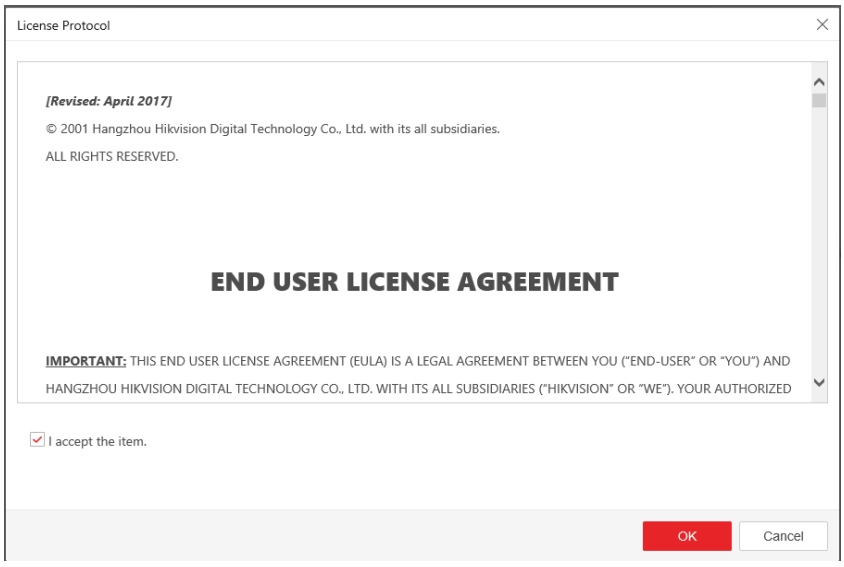


Figure 3-73 License Protocol

Step 3 Check **I accept the item** and click **OK**. The license prompt window will pop up to show license update status. See the figure below.

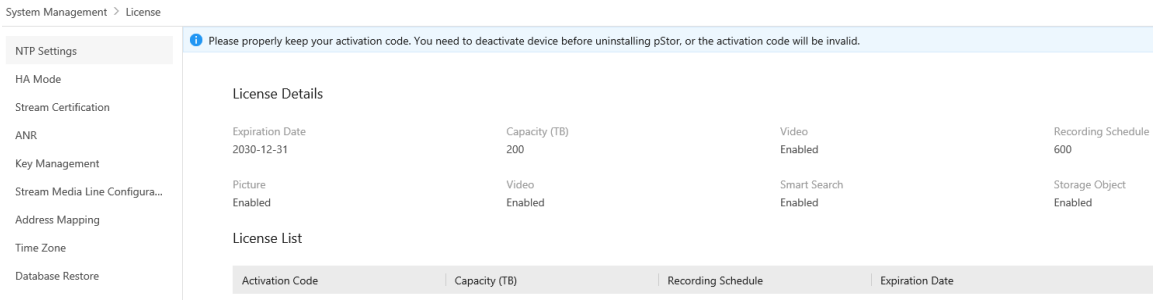


Figure 3-74 License Update Result

3.8.13.2 Offline Upgrade License

The method is applied when both license and network are invalid.

Step 1 Click > before offline activation and click Export License Request File to pop up the offline activation window. See the figure below.

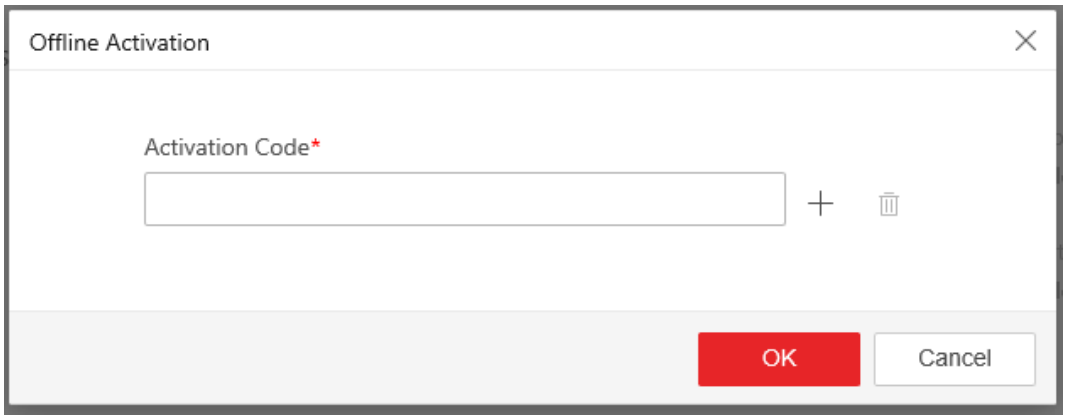


Figure 3-75 License Offline Activation

Step 2 Enter activation code and click **OK** to pop up the license protocol window. Check the **I accept the item** and save the file to local. See the figure below.

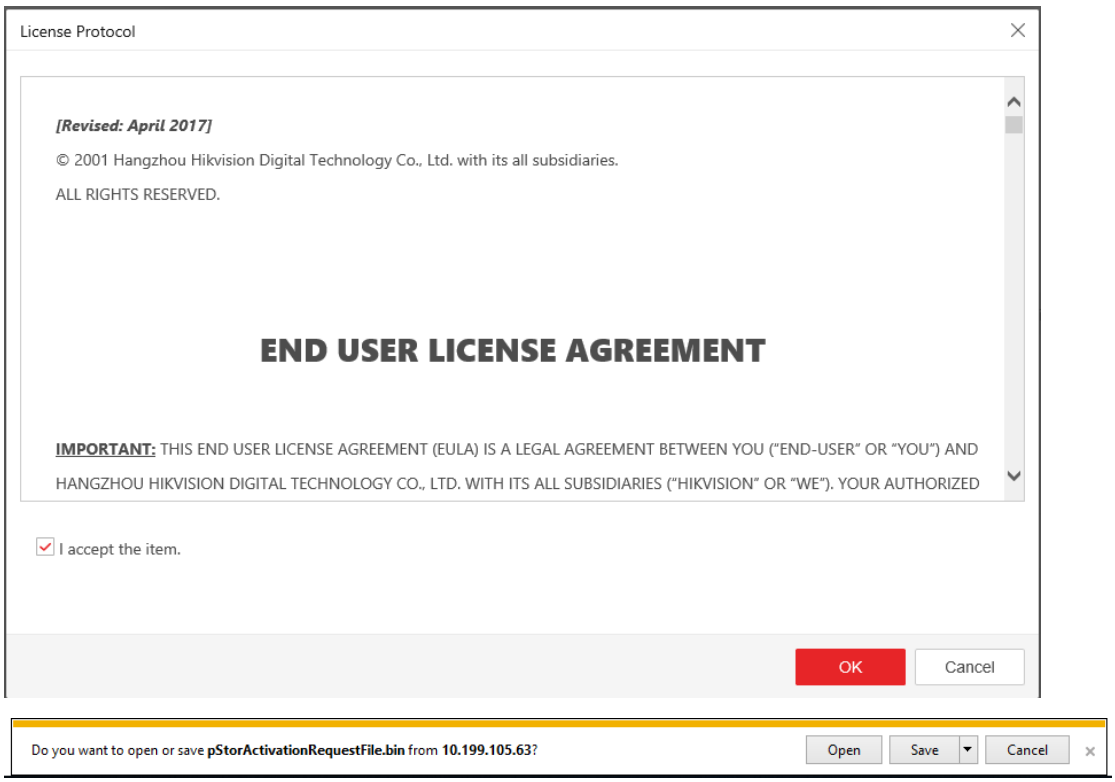


Figure 3-76 License Protocol and Saving File

Step 3 Visit offline activation website (https://www.hikvision.com/en/VMS/Support/LicenseManagement) and click **How to Activate Your Account**. Click **Browse** and select offline license request file and click **Submit**. Download offline activation response file accordingly. See figures below.

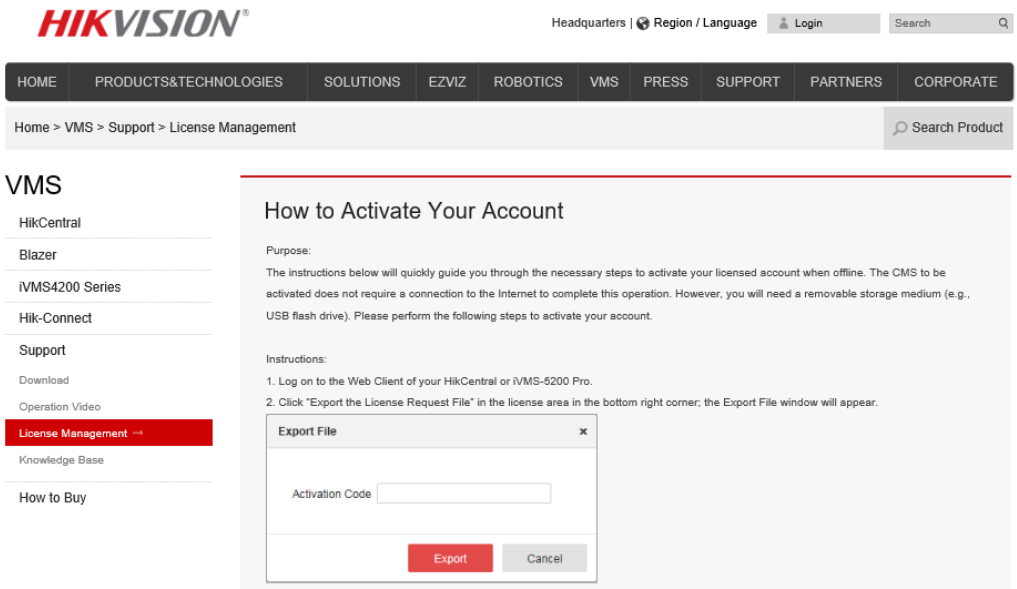


Figure 3-77 Offline Activation Website

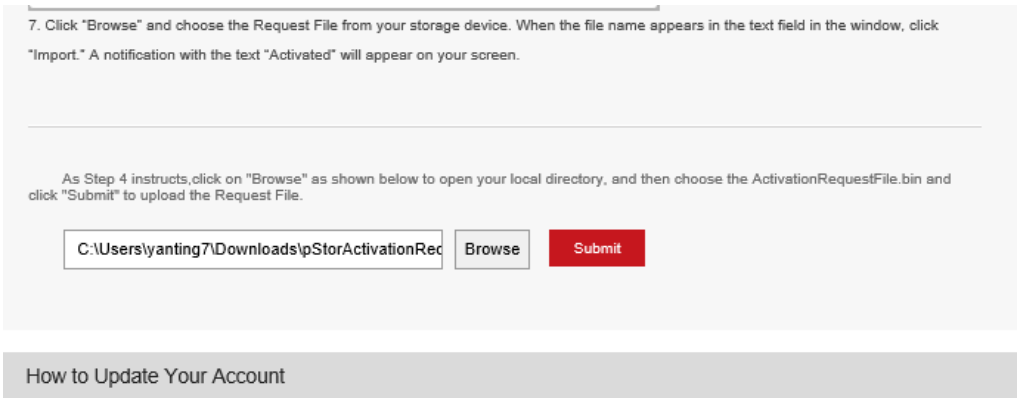


Figure 3-78 Upload License Request File

Step 4 Go to **System Management** > **License** > **Upgrade License**. Click Step 2 Import Activation File under offline activation. And click to import the offline activation request file in step 3. Click **Import**. See the figure below. The license prompt window will pop up to show license update status.

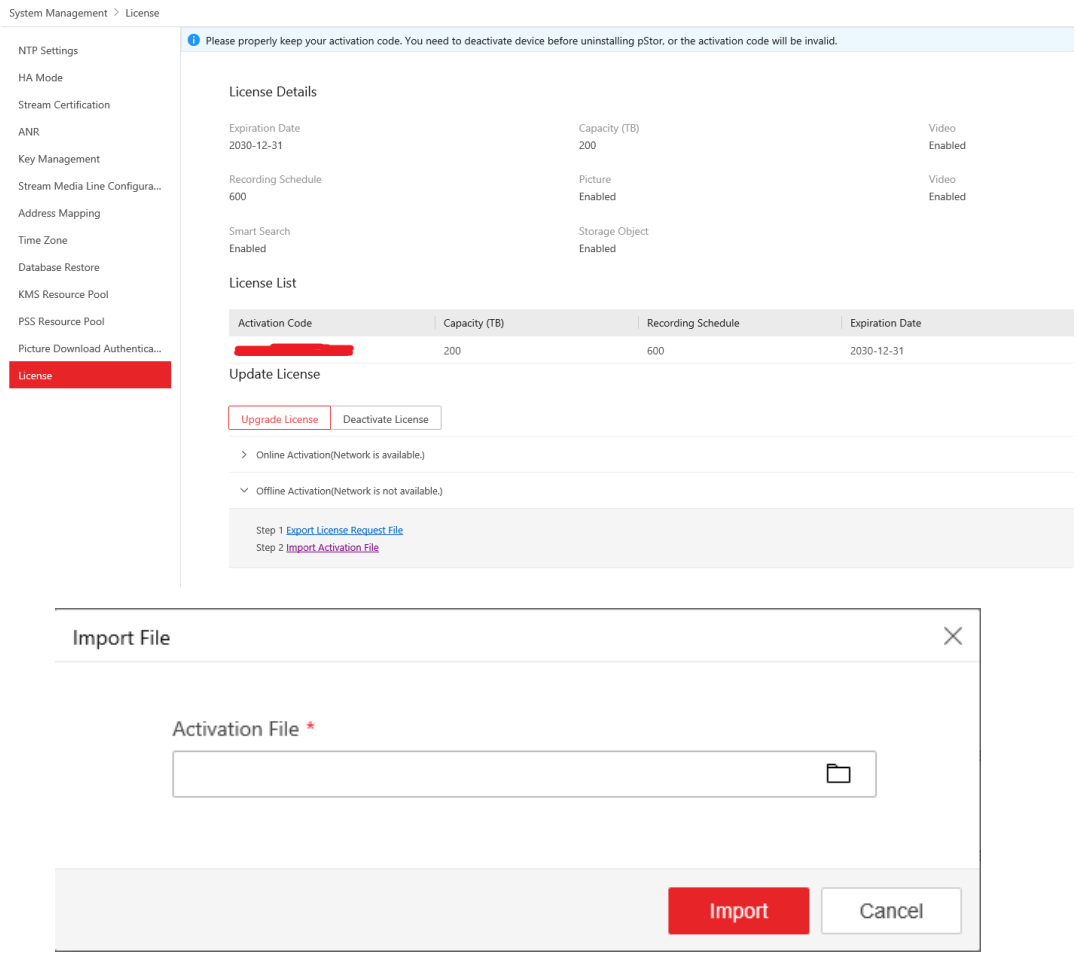


Figure 3-79 Import Activation File

3.8.13.3 Online Deactivate License

You need to deactivate license before uninstalling pStor, or the activation code will be invalid. The method is applied when network is available.

Step 1 Click > before online deactivation and Select activation code will pop up.

Step 2 Select the activation code, and click **OK**.

The license status will be updated. See the figure below.

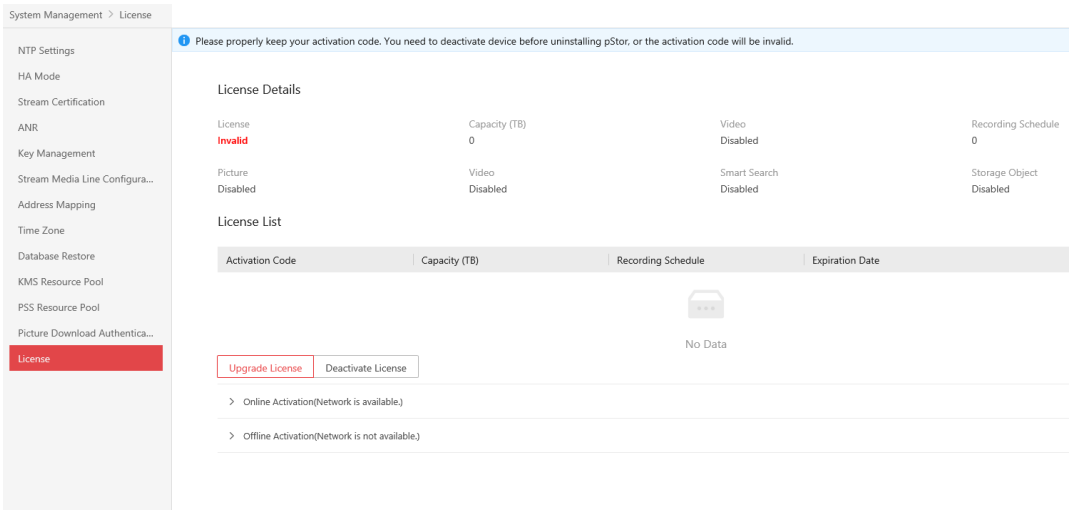


Figure 3-80 License Update

3.8.13.4 Offline Deactivate License

The method is applied when network is not available.

Step 1 Click > before offline deactivation and click Step 1 Export License Request File to pop up the offline deactivation window. See the figure below.

Figure 3-81 Offline Deactivate License

Step 2 Select activation code, and click **Export**. Save the license request file.

Step 3 Visit offline activation website (https://www.hikvision.com/en/VMS/Support/LicenseManagement) and click **How to Deactivate Your Account**. Click **Browse** and select offline license request

file and click **Submit**. Download offline deactivation response file accordingly. See figures below.

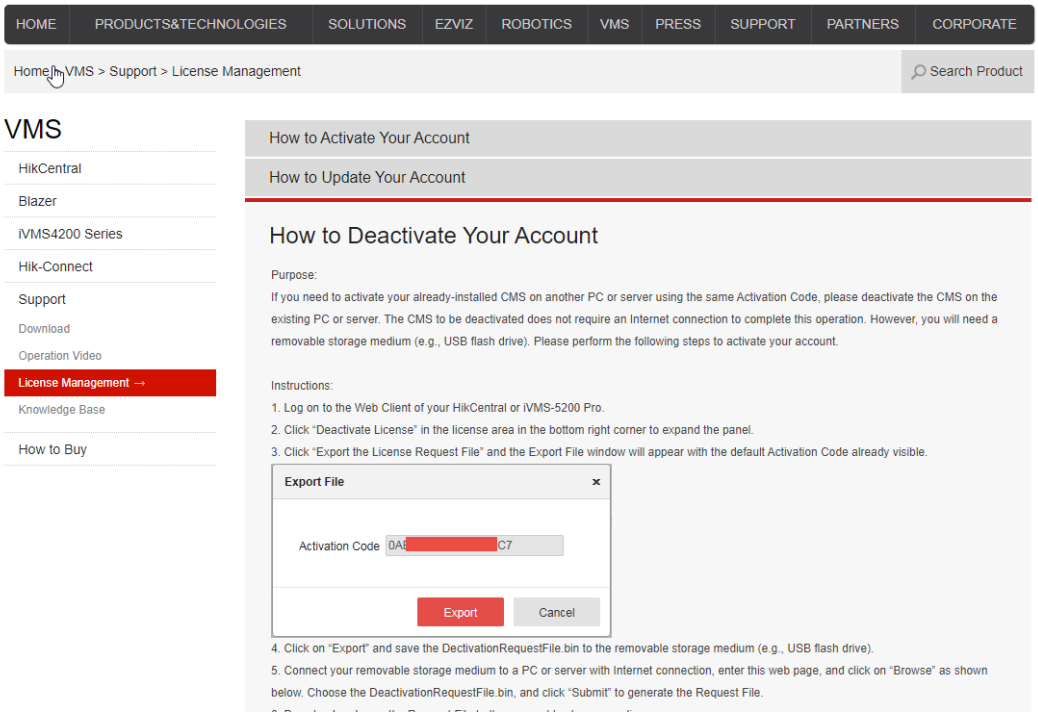


Figure 3-82 Offline Deactivate Website

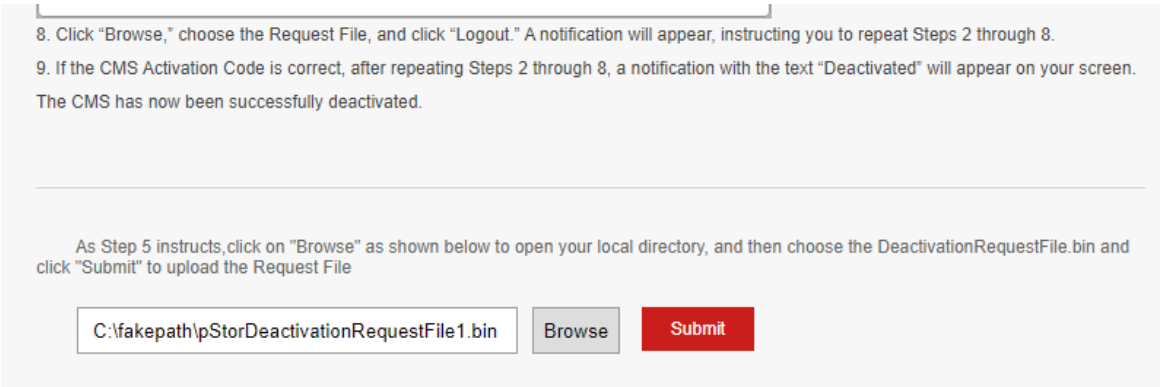


Figure 3-83 Upload License Request File

Step 4 Go to **System Management** > **License** > **Deactivate License**. Click Step 2 Import Activation File under offline deactivation.

Step 5 Click to import the offline deactivation response file in step 3. Click **Import**. See the figure below. The offline deactivation file will be downloaded automatically on offline deactivation page.

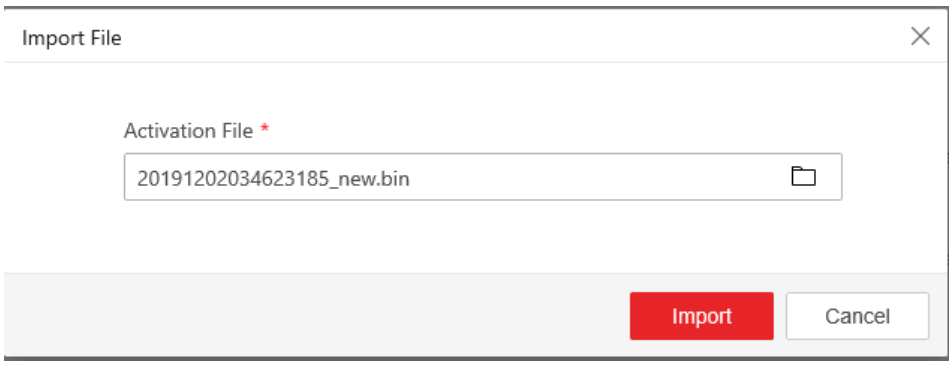


Figure 3-84 Import Activation File

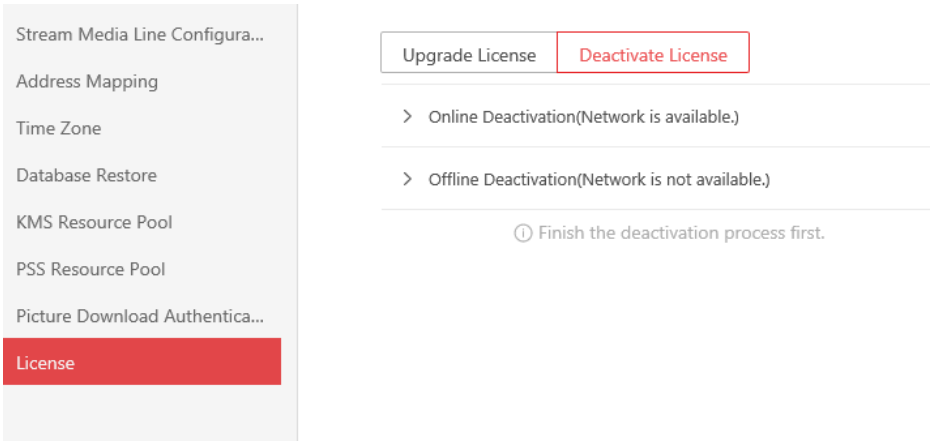


Figure 3-85 Offline Deactivation Page

Step 6 Repeat step 3 and step 4.

Step 7 Click to import the offline deactivation response file again. Click **Import**. See the figure below. The license prompt window will pop up to show license update status.

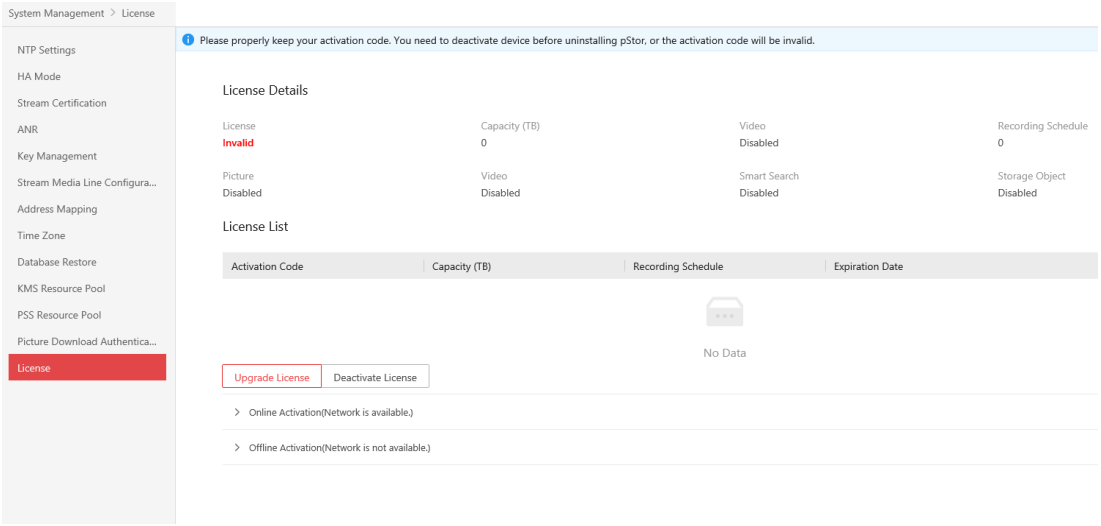


Figure 3-86 License Update Result

Chapter 4 Appendix

4.1 Mount iSCSI to Windows System

4.1.1 Map IPSAN to iSCSI initiator

Take Hikvision IPSAN as an example.

Step 1 Enter Hikvision IPSAN management interface (2004), and click **Enable iSCSI Service**.

Step 2 Enter server IP address which can access iSCSI target (e.g. IP address of pStor server), and iSCSI storage ID.

Step 3 Select available logical volume.

Step 4 If iSCSI target of third-party manufacturer can be accessed by all IP addresses, mapping is not required. Click **OK**.

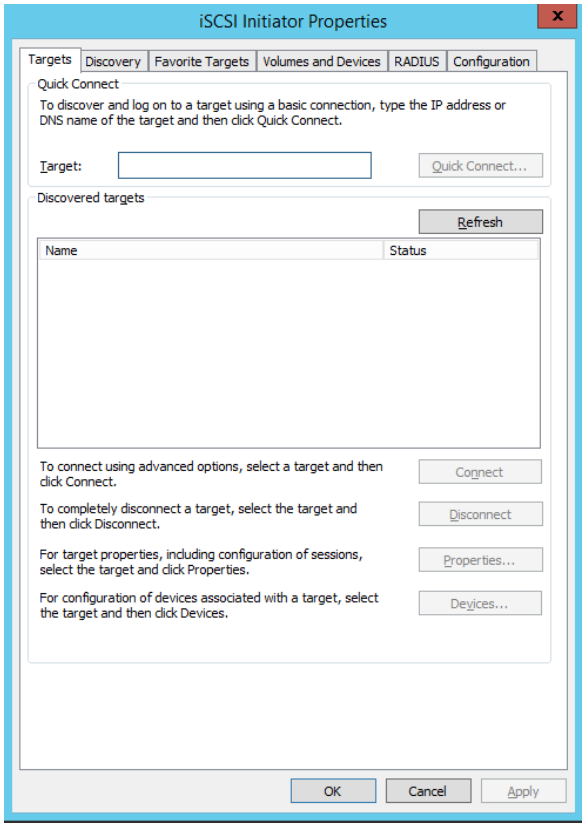
Step 5 If Chap is not enabled in iSCSI target, **Advanced** is not required to click in **Step 8** in **4.1.2 Connect iSCSI initiator to iSCSI target**, and **Step 9** can be skipped.

4.1.2 Connect iSCSI initiator to iSCSI target

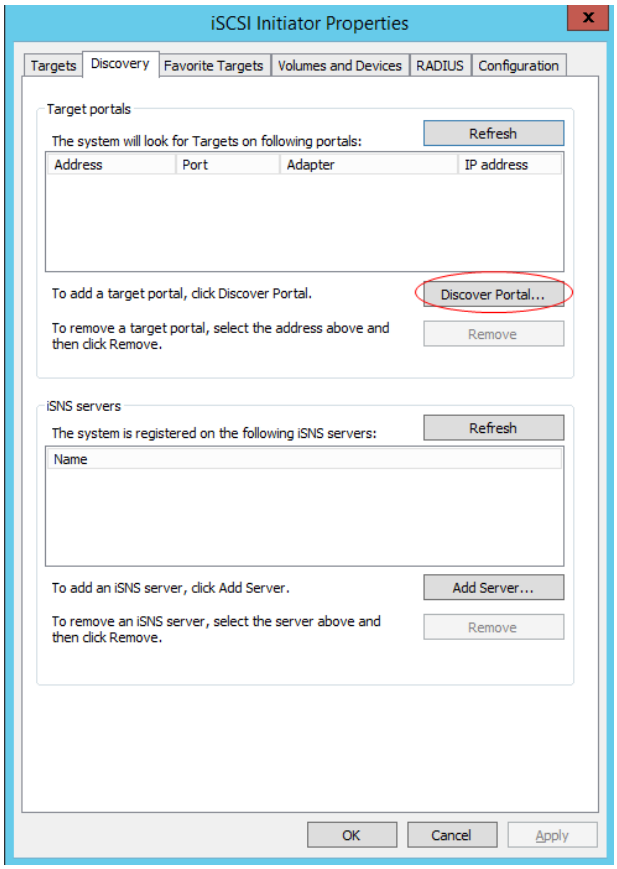
Step 1 Enter Windows system of pStor server, and click **Start**.

Step 2 Enter iSCSI. System will search iSCSI initiator automatically.

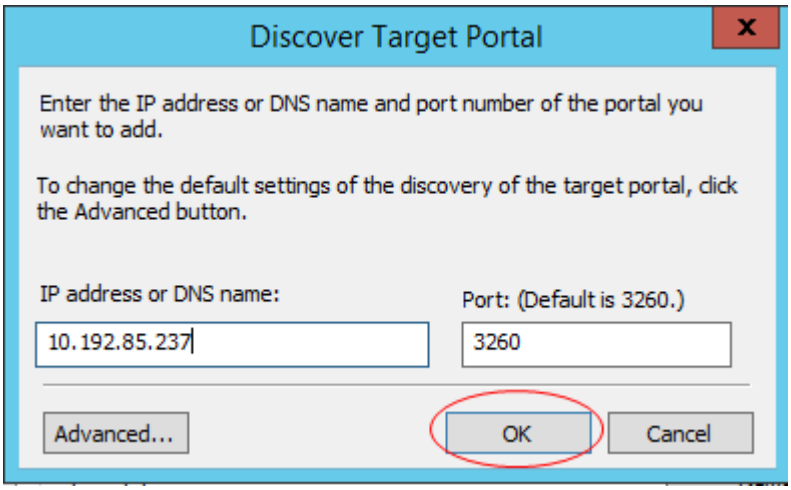
Step 3 Open the initiator and enter iSCSI control interface. See figure below.



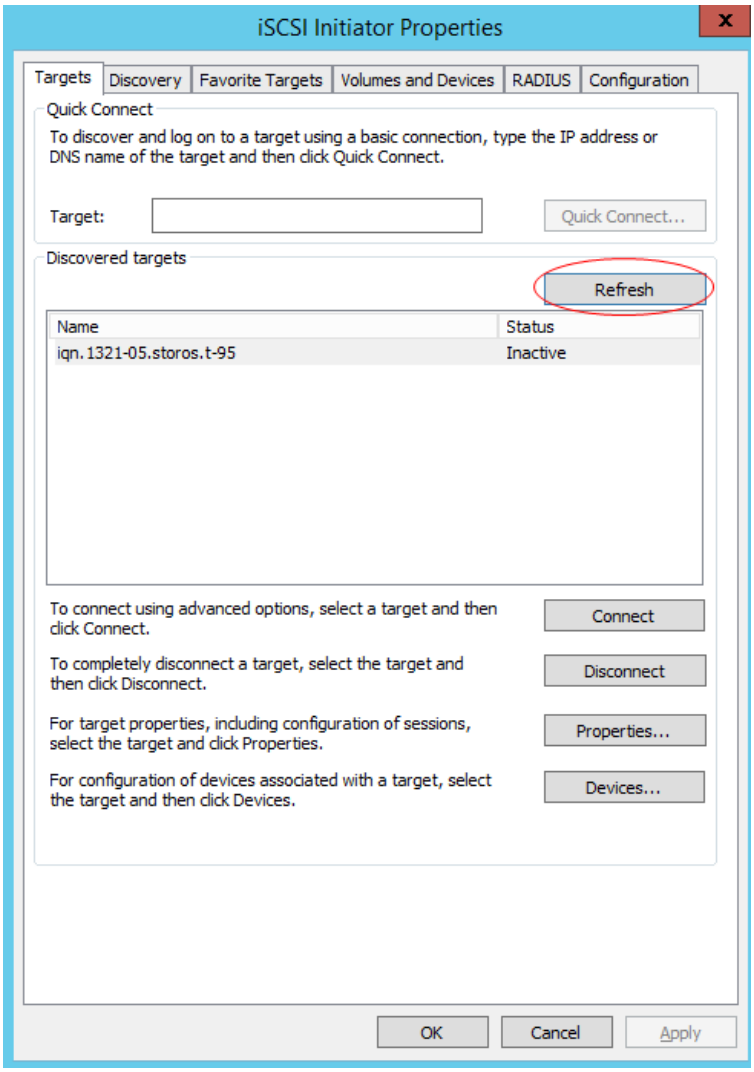
Step 4 Enter discovery interface, and click **Discover Portal**.



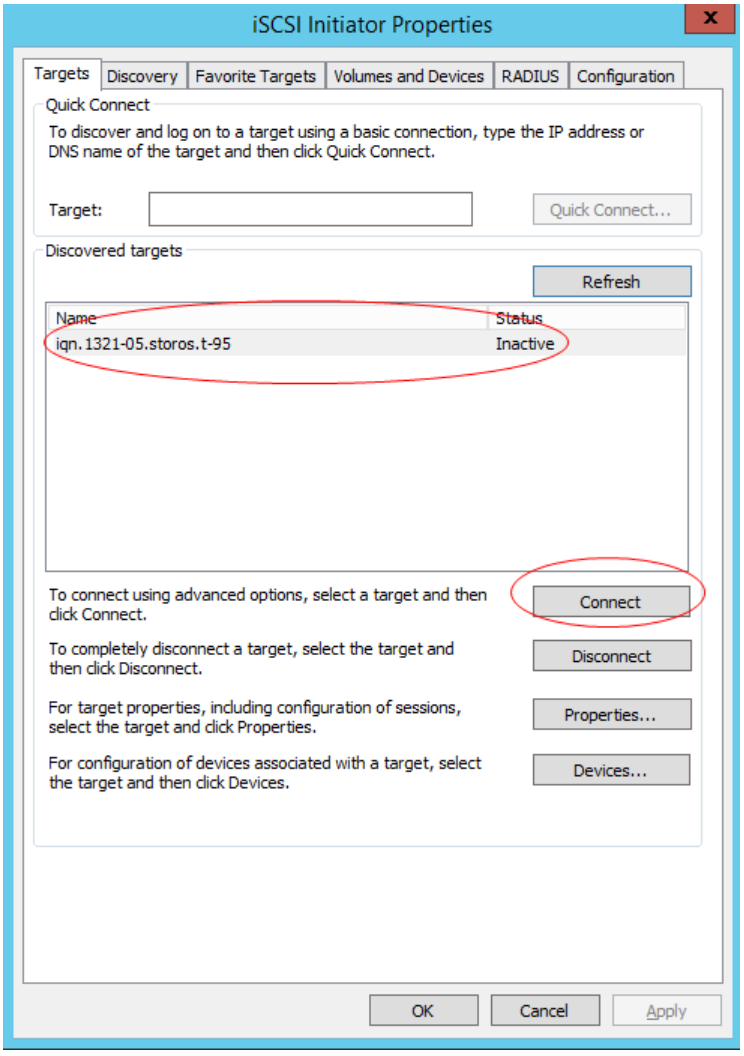
Step 5 Enter IP address of managed iSCSI target server, and click **OK**.



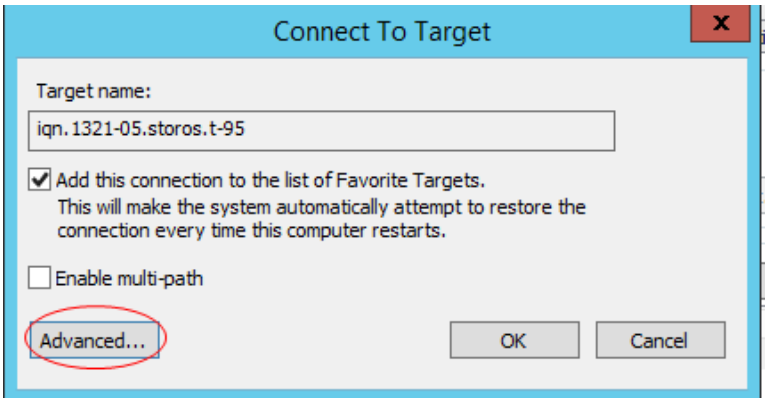
Step 6 Enter target interface, and all available targets will be shown automatically. If not, click **Refresh** or set the IP address of test device which can access iSCSI target, and refresh (target status: inactive, connected, connecting).



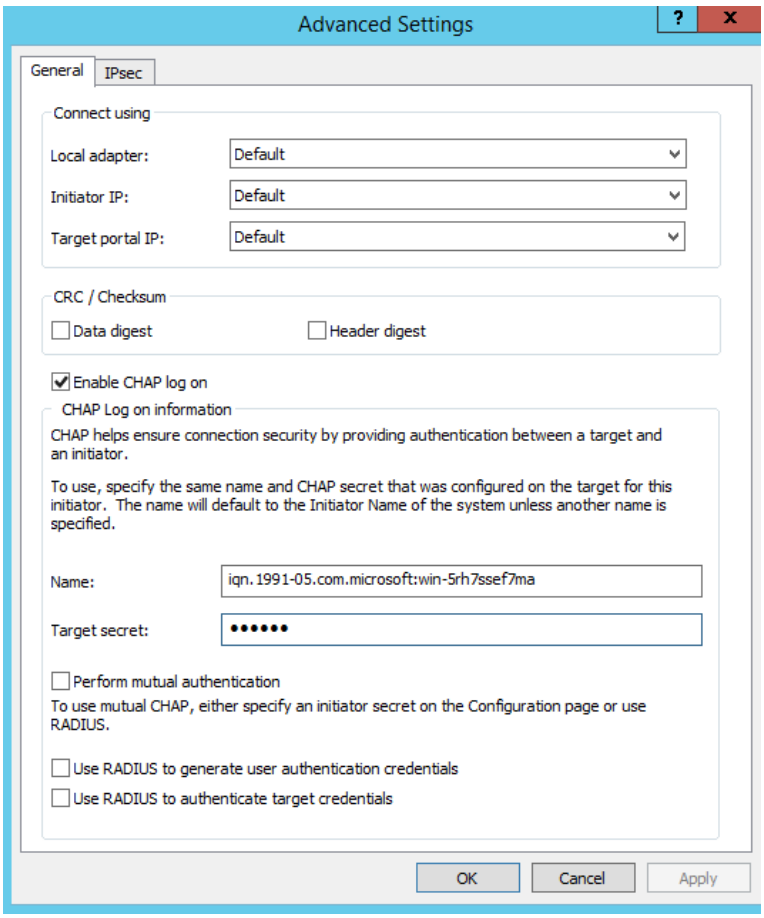
Step 7 Select a target in the list and click **Connect**. See figure below.



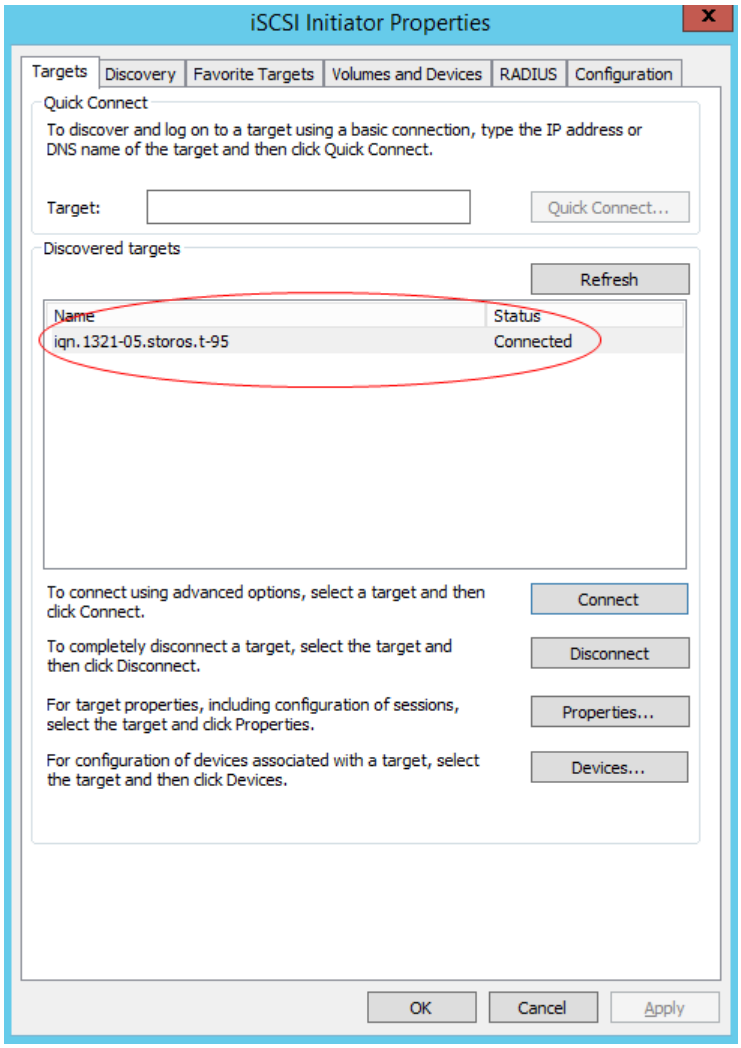
Step 8 Click **OK**. If CHAP is not enabled in iSCSI target, **Advanced** is not required to click.



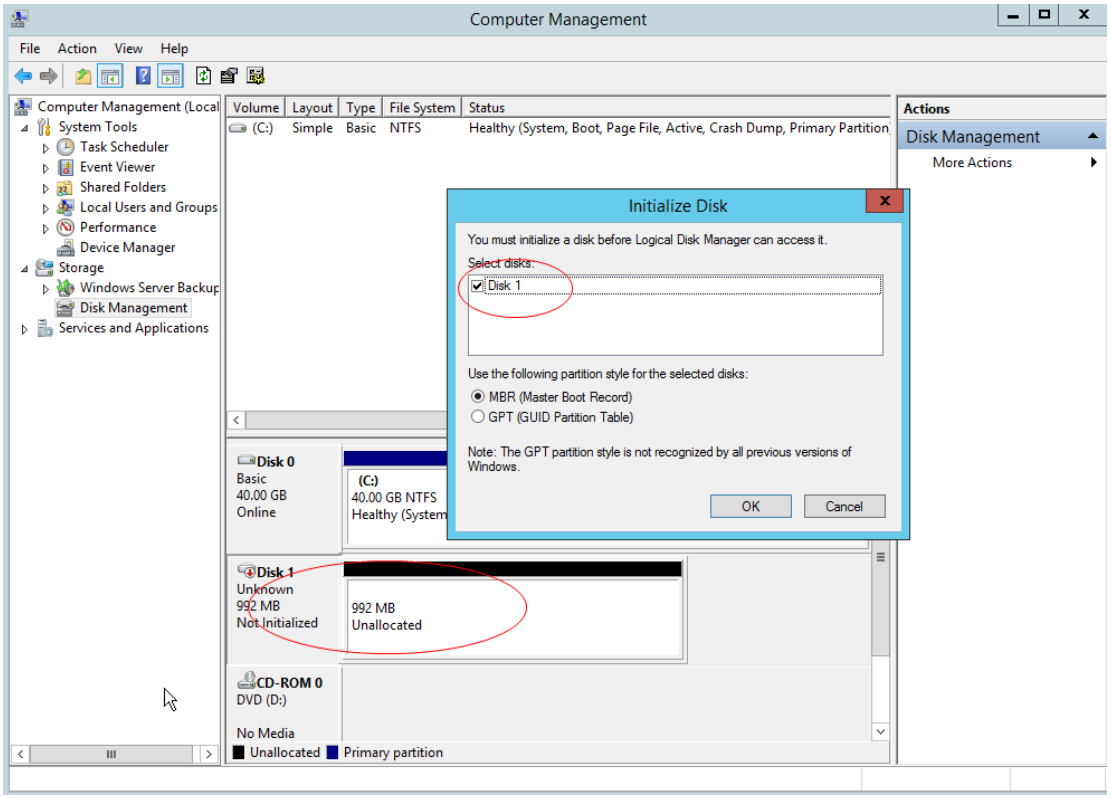
Step 9 Check **Enable CHAP log on**, and enter name and password of iSCSI target. If CHAP is not enabled, you can skip this step.



Step 10 If connection succeeded, you can view the status in target interface.



Step 11 Enter diskmgmt.msc in **Run** to open disk management. You can view added IP SAN storage and format partition. The figure below shows that iSCSI protocol is supported by IP SAN.



4.2 Windows NIC Teaming

4.2.1 Introduction

Any available Gigabit Ethernet cards can be configured as part of TEAM. Teaming can group multiple Gigabit Ethernet cards into one virtual NIC. Load balancing can be achieved through selecting available Gigabit Ethernet cards and adding them to the group for creating TEAM and sharing data stream. For user and application, only a virtual NIC can be viewed.

Any Gigabit Ethernet cards in the group can be assigned as the main card for controlling data stream. If the main card controlling failed, backup card can replace. If one of the main cards restores, it will continue to control the data.

4.2.2 Environment

Hardware: Hikvision server (NIC: Intel(R) 82574L Gigabit Network Connection)

Software: Windows server 2008 R2

4.2.3 Configuration

Step 1 Check NIC property. If the driver is too old, and no options are selected in advanced interface, drivers of intel NIC card should be downloaded.

Step 2 After driver is updated, check **Team this adapter with other adapters** under Teaming interface, and click **New Team**.

Step 3 Name the new group as “Team 1#”.

Step 4　Check NIC cards to team.

Step 5　Select teaming type (adaptive load balancing combined with advantages of fault tolerance and link aggregation).

Step 6 Go to **Properties** > **Settings**, click **Edit**, and set two NICs as main adapter and backup adapter.

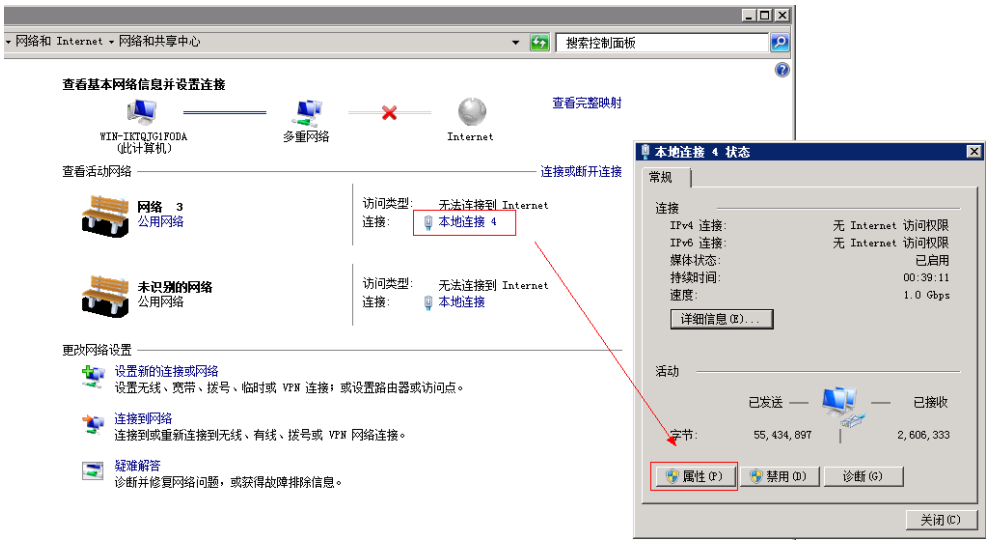
Step 7 Configure IP address for new NIC (Team 1#). IP addresses of the two NICs in teaming cannot be configured.

4.3 Edit 10 Gigabit Ethernet Card Parameters

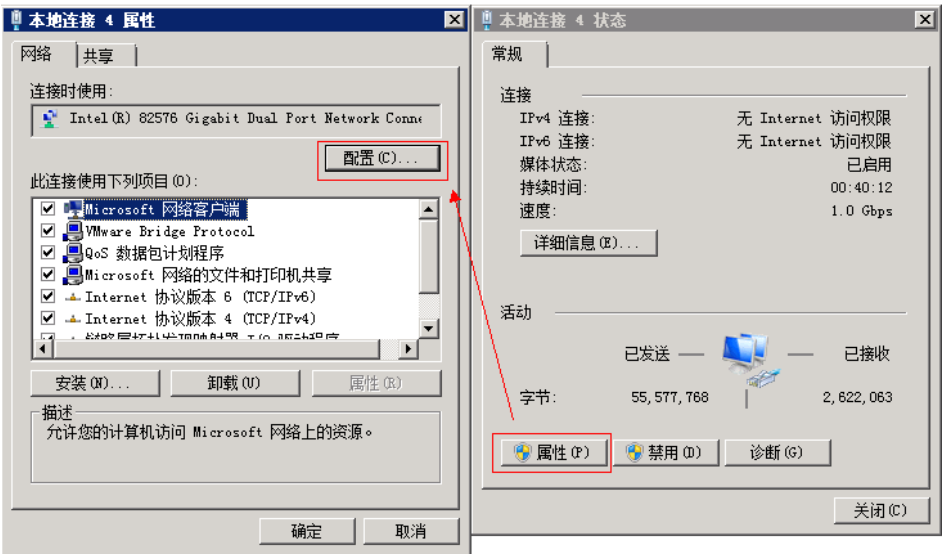
For better throughput and lower CPU usage in 10 Gigabit Ethernet environment with mass data input and output, number of receive side scaling (RSS) queues should be set as 2.

Step 1 Click the network icon and open network and sharing center.

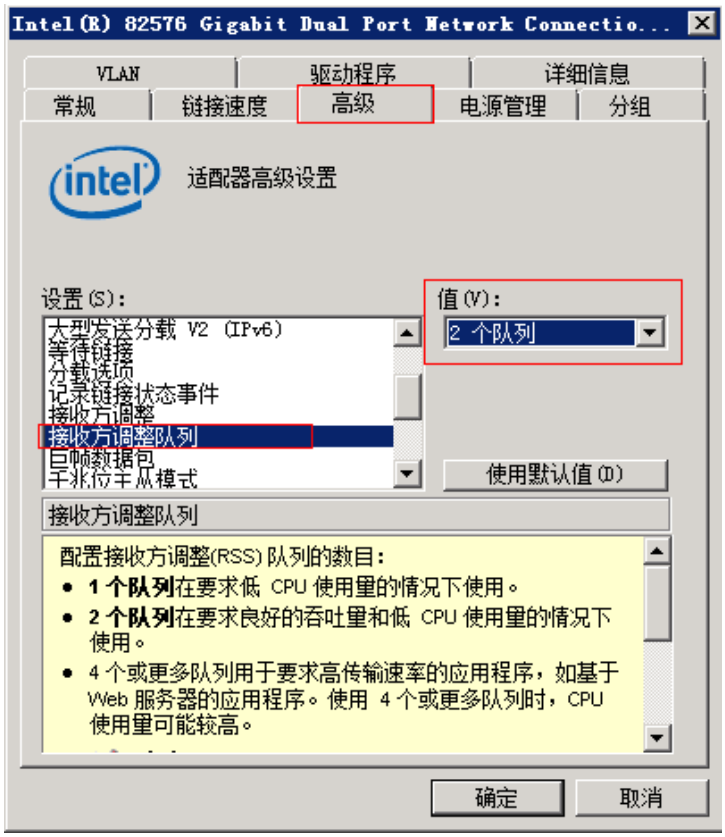
Step 2 Click connection of the NIC to be edited, and click **Properties**.



Step 3 Select NIC and click **Configure**.



Step 4 Set number of receive side scaling (RSS) queues as 2 or the max. value in **Advanced**, and click **OK**.



4.4 Failed to Write to Video Caused by Slow Overwrite of Recording Pool After pStor Shutdown for a Long Time and Running Again

4.4.1 Environment

pStor version is 1.0.0, and multiple recording schedules are being executed.

4.4.2 Description

After writing to video, pStor shuts down for a long time (e.g. 30 days), and runs again. Continuing to write data to the original data block will cause that video time span is too large. When pStor capacity is overwritten, the earliest time of recording pool exception occurs, which causes slow overwrite and writing failure.

4.4.3 Cause

1. When pStor stores video data, data is written to the original data block without checking video time span, which causes large time span of single data block.
2. Large time span of single data block with time-consuming overwrite will cause overwrite time exception, and insufficient data block.

4.4.4 Resolution

1. When pStor stores video, picture, and auxiliary, check whether time span of single data block exceeded limit which can be set in configuration file. If exceeded the limit, set the data block status as full to avoid writing data to data block and large time span of single data block.
2. When pStor overwriting, shorten overwrite strategy time and increase data overwrite speed (4-hour will be cost for overwriting data block with 30-day time span).

4.4.5 Evaluation

1. Set the status of data block with space as full will cause waste of storage space.
2. pStor with insufficient space or too many channels will also cause failed to write. See **4.4.6 Capacity Calculation**.

4.4.6 Capacity Calculation

Formula is shown below.

Parameters	Symbol	Unit
Stream	A	Mbps
Number of channels	B	
Max. storage time span of data block (overwrite time)	T	second
Capacity overwrite threshold ((e.g. 0.9))	E	

Min. space for capacity overwrite: **Z = (A*B*T)/(1-E) MB**

For example: Overwriting one-hour video costs 20 seconds, and max. storage time span of single data block is 30 days. pStor overwriting data block with 30-day time span will cost

T = 30 * 24 * 20 s = 4 H

Recording 300-ch video stream at 2 Mbps for 4 hours will cost

300 * 2 * (4 * 3600) / 8 = 1080 G (8 as denominator means converting Mbps to MB/s)

Set the threshold as 10%. Storing 300-ch video stream at 2 Mbps will take

Z=1080 G / (1- 10%) = 10.8 TB

4.5 Failed Installation of Windows Runtime Library

4.5.1 Description

vs2013 runtime library should be installed when you install HIKVISION pStor. Failed installation of vs2013 runtime library occurs in Windows server 2008. “A certificate chain could not be built to a trusted root authority” will be prompted. See figure below.

Figure 4-1 Installation Failed

4.5.2 Cause and Resolution

This problem occurs because vs 2013 runtime library is signed by Microsoft, which should be authenticated by certificate for software tamper-proofing, such as virus.

The resolution is to find and install missing certificate of windows server 2008.

Two certificate manager tools are provided by Microsoft: certmgr.exe and certmgr.msc. Enter certmgr in Run or double-click certmgr.msc in C:\Windows\System32 or C:\Windows\SysWOW64 to open the certificate manager tool. See figure below.

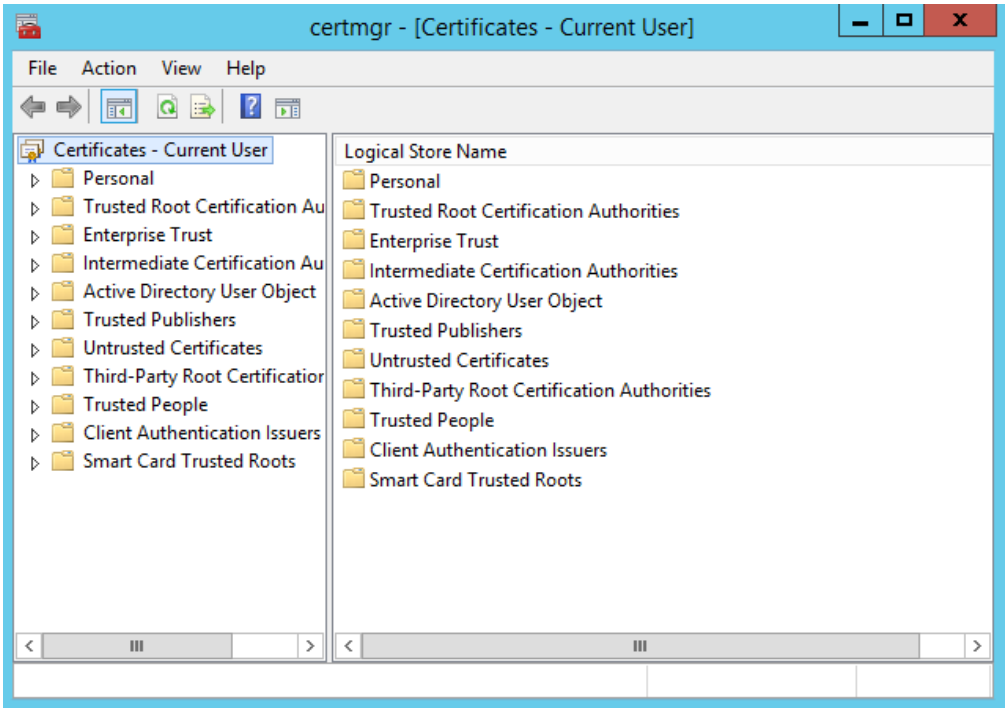


Figure 4-2 certmgr Interface

You can view logical storage path of all certificates, such as personal, trusted root certification authorities.

The error mentioned above is caused by missing certificate in trusted root certification authorities. Expand the path. See figure below.

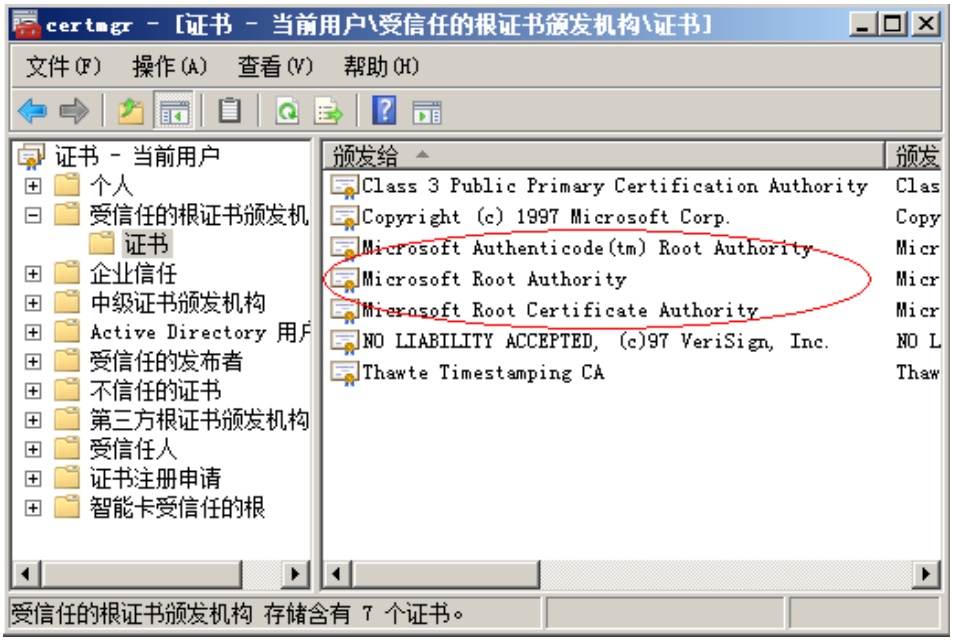


Figure 4-3 Windows Server 2008 Trusted Root Certificate

Three Microsoft certificates are shown in Figure 4-3. Open another certmgr.msc which can install other systems of vs2013 runtime library normally. See figure below.

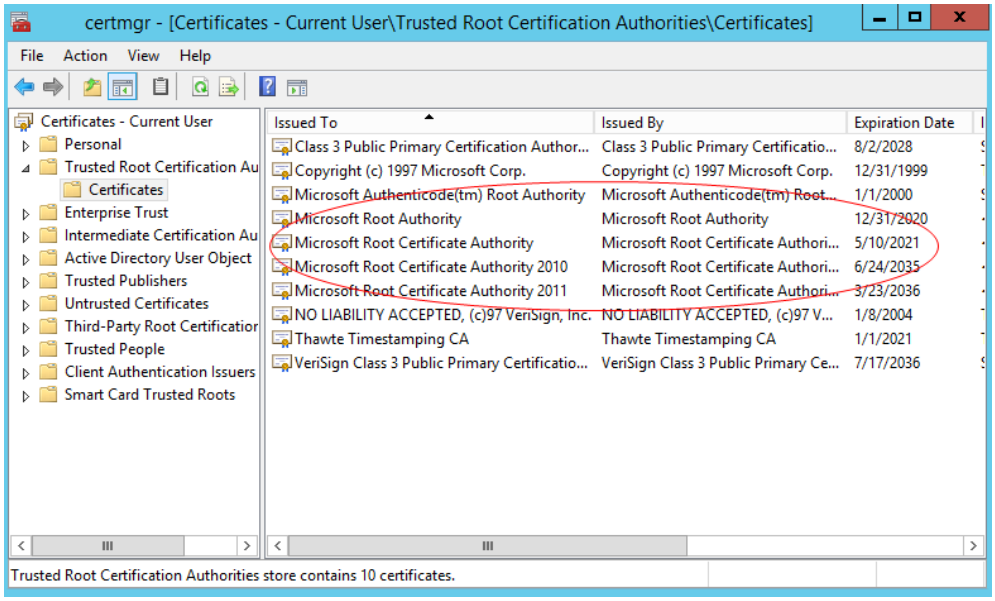


Figure 4-4 Windows 7 System Trusted Root Certificate

You can check and export the missing certificates (Microsoft Root Certificate Authority 2010/2011) after comparing two figures above (Figure 4-3 and Figure 4-4).

Right-click **Certificates**, and select **Import** in **All Tasks**. See figure below.

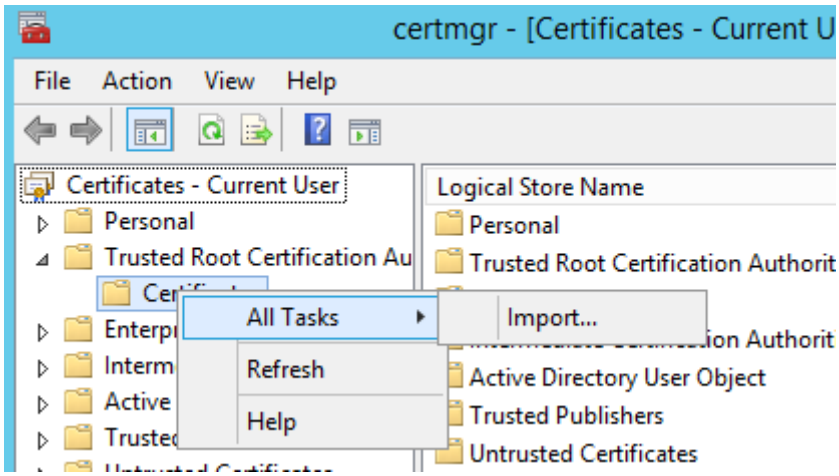


Figure 4-5 Certificate Import

Enter certificate import wizard interface. See figure below.

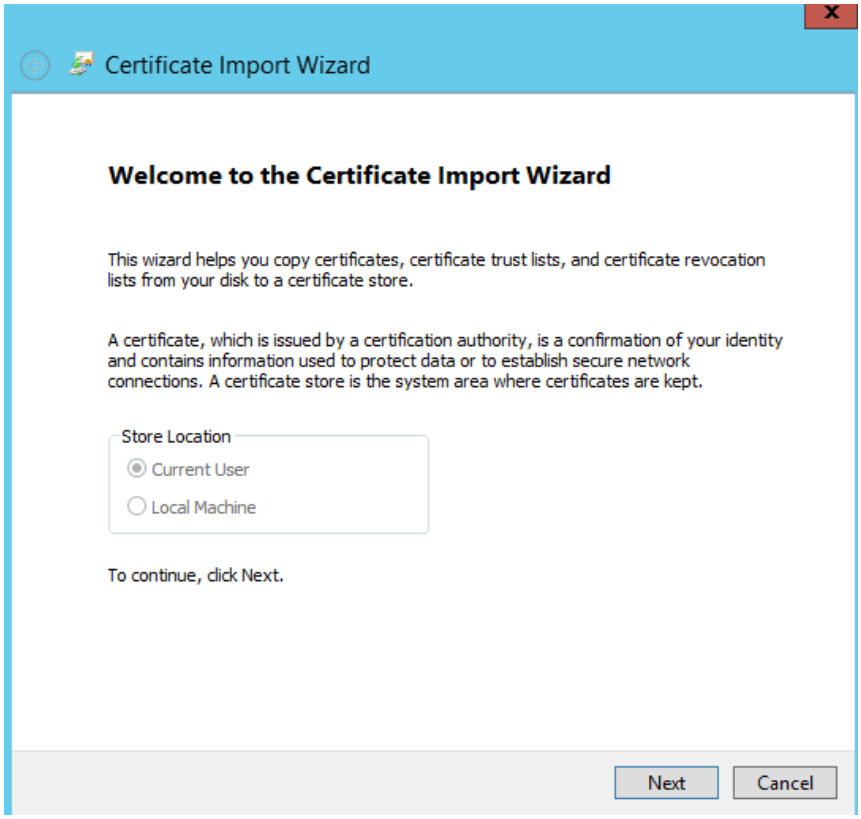


Figure 4-6 Certificate Import Wizard

Click **Next**, and select path of certificate to be imported. See figure below.

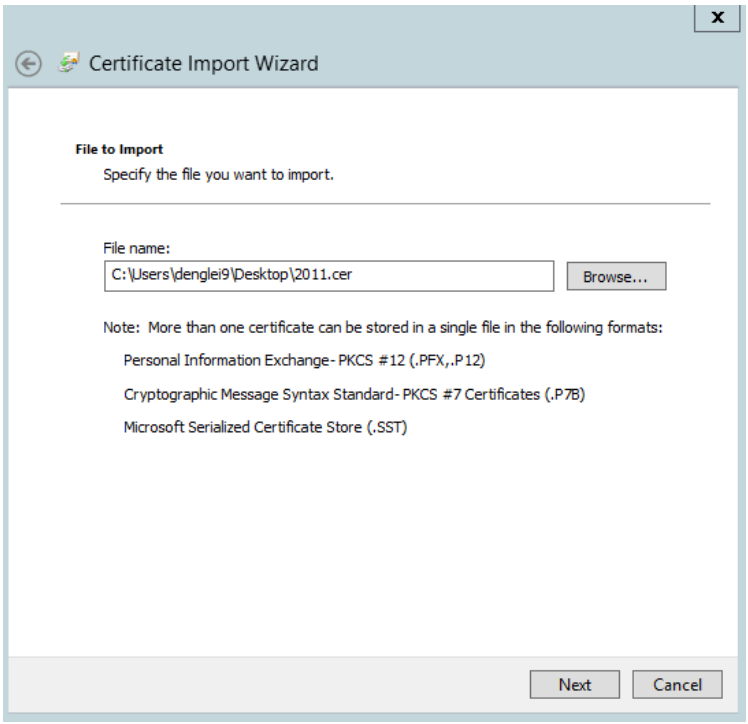


Figure 4-7 Certificate File Path

Click **Next**, and select **Trusted Root Certification Authorities** as certificate store. See

figure below.

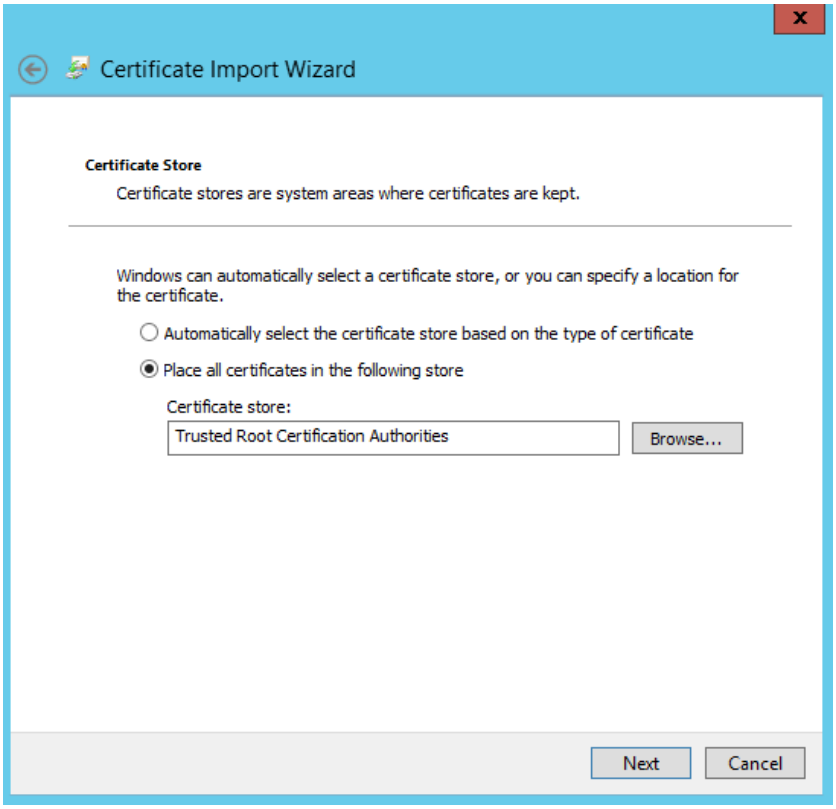


Figure 4-8 Select Certificate Store

Click **Next** and **OK**. Succeeded message will be prompted after certificate imported. See figure below.

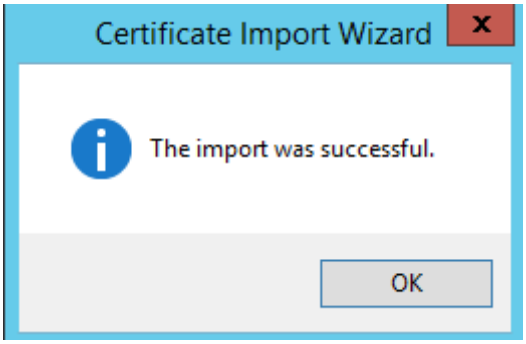


Figure 4-9 Certificate Imported

Install HIKVISION pStor again.

4.6 Mount NAS Drive to Windows System

Take Hikvision NAS as an example.

4.6.1 Create NAS Drive

Enter Hikvision NAS management interface and create a user in user and group management. Create NAS volume in NAS drive interface. Click Add NAS Drive, select an available NAS volume, input name, and select Windows (CIFS) protocol. Select the created user, reading and writing permission, and enter IP segment with accessing permission. Click **Yes**. The figure is shown below.

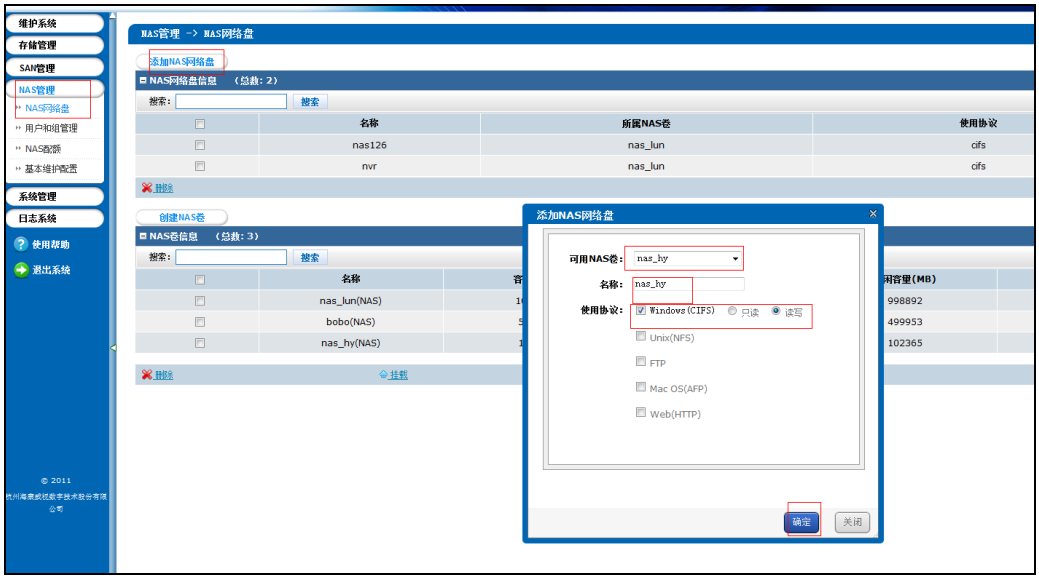


Figure 4-10 Add NAS Drive

4.6.2 Map Network Driver in Windows Operating System (Not for pStor Mounting)

Log in pStor service. Right click **My Computer** or **Network** and select **Map Network Drive** to pop up the wizard. Disconnecting to shared space can also be achieved by this function. See figure below.

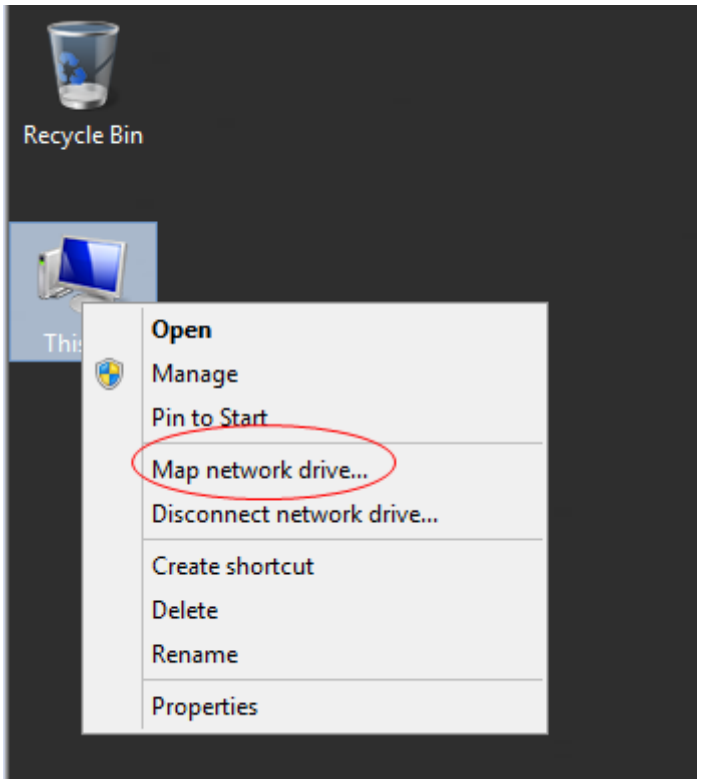


Figure 4-11 Map Network Drive

4.6.3 Create Map in Windows Operating System (Not for pStor Mounting)

Input IP address and NAS drive name of storage device. For example, \\10.192.77.9\nas_hy. And click **Finish** to go to user login interface. If connecting to shared space when startup is required, please check **Reconnect at sign-in**. See figure below.

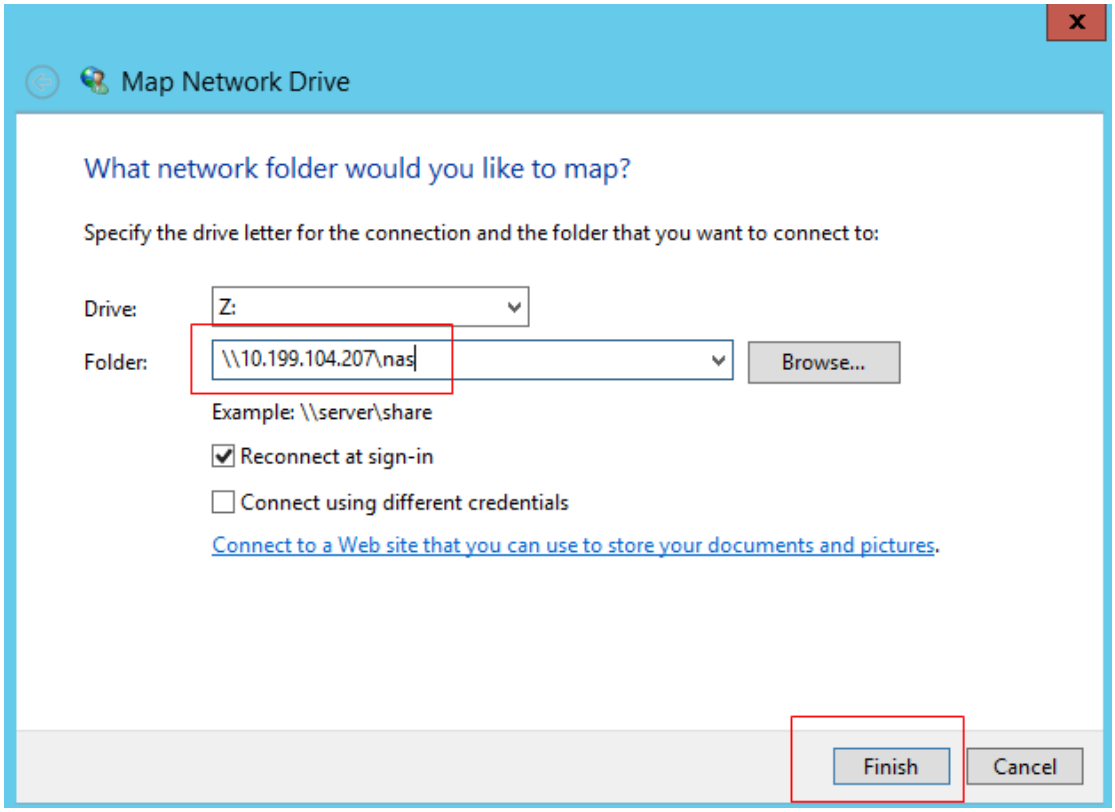


Figure 4-12 Map Network Drive

The shared space will be shown in figure below after completing configuration.

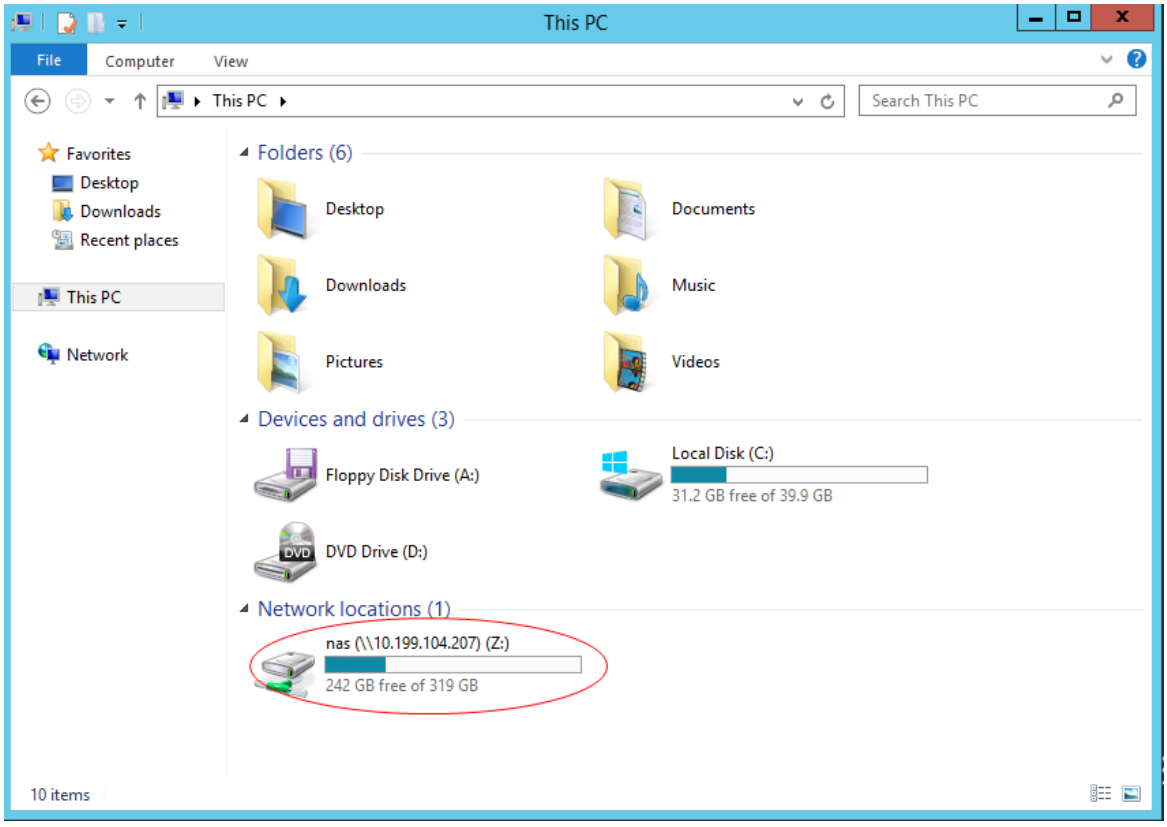


Figure 4-13 Map Network Drive Result

4.6.4 Mount NAS to pStor

See **3.5.3 NAS** for mounting NAS to pStor.

4.7 Configure Address Mapping

Multi-line button: If this button is switched to the right, the multi-line function is enabled. Otherwise, the multi-domain function is enabled.

Figure 4-14 Multi-Line

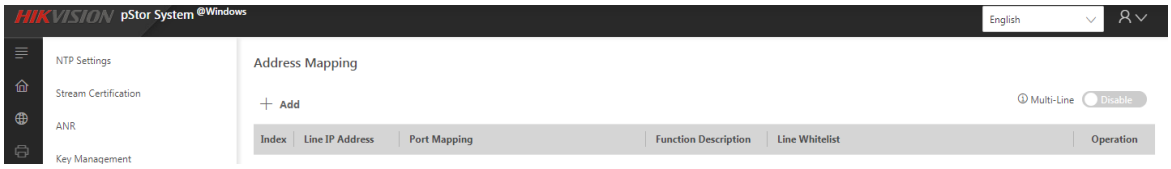


Figure 4-15 Multi-Domain

Line IP address: IP address which users in external network can access directly.
Port function description: Users can select functions as required, including picture, video, and object file. Different functions correspond to different port mapping.
Internal network port and external network port: Should be the same as the gateway port.
Line whitelist: In multi-line mode, an external IP address (start and end IP address should be the same, for example, 192.168.23.2 to 192.168.23.2) or an external IP segment (for example, 192.168.23.1 to 192.168.23.254) can be set. In multi-domain mode, an internal IP segment can be set (192.168.23.1 to 192.168.23.254).

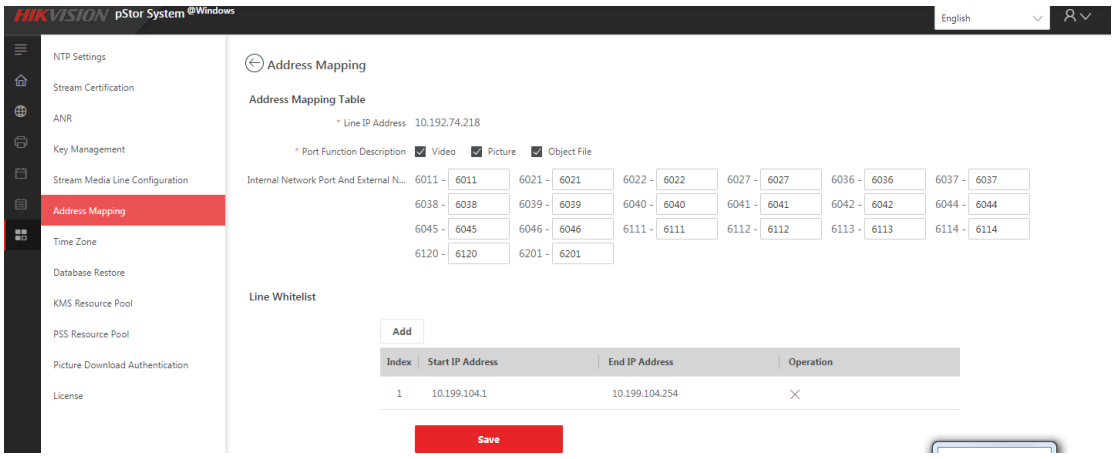


Figure 4-16 Address Mapping

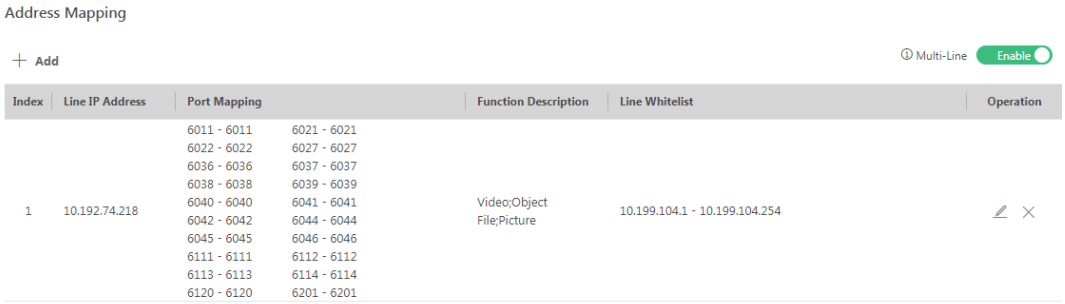


Figure 4-17 Succeeded Address Mapping (Multi-Line)

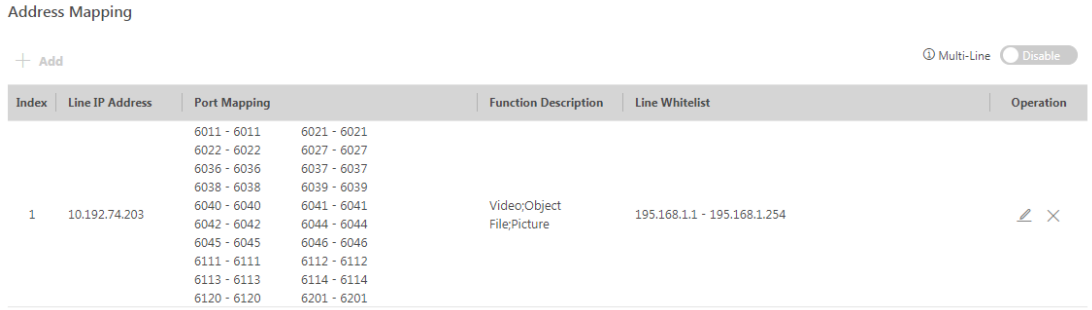


Figure 4-18 Succeeded Address Mapping (Multi-Domain)

See Far, Go Further