Playback data
Collection system
Environmental construction
procedures

for Buffalo NAS

Introduction

This Environment Construction Procedure (hereafter referred to as this document) describes the Environment Construction Procedure for constructing a system (playback data acquisition system, hereafter referred to as this system) that aggregates playback data on a TeraStation WS5020 manufactured by Buffalo.

Objects of this manual

This manual covers the following scope of this system.

- Setting methods for outputting camera data from NW cameras to a NAS for aggregation or a NW camera-dedicated NAS
- Setting methods for sending backup files and variable logs from Omron machine automation controller NX502-1X00 (NX5) to the aggregation NAS
- Setting methods for aggregating backup files and variable logs output from NX5 to the aggregation NAS and camera data stored in the aggregation NAS or NW camera-dedicated NAS

This manual does not cover the following ranges in this system.

- Default settings for NAS for consolidation and NW camera-specific NAS
- Installing Python (Version 3.6.8) and pip on an Aggregation NAS
- Default settings for NW cameras
- How to set up for sending camera data out trigs from NX5 to NW

Precautions for use

Before using this system, fully confirm that the expected results can be obtained in your environment. Omron does not guarantee the operation of NAS.

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Terminology and notation

The following terms are used in this document:

Term	Definitions
Playback data	Generic term for backup files, variable logs, and camera data
Script	Script file for executing aggregation in this system
Script configuration file	Script configuration file
NX5	Machine automation controller targeted by this system
NW Camera	Network camera
NAS for aggregation	NAS for aggregating playback data
NW camera-specific NAS	NAS for storing camera data for NW cameras
NAS	Generic term for NAS for consolidation and NW cameras
NW equipment	Switching hubs and routers to build each block on the same network
Backup file	Project backup files that NX5 exports
Variable Log	Variable log files output by NX5
Camera data	Group of camera data from NW cameras
Trigger	Input sent from NX5 to NW
WinPC	Windows10 OS PC for infrastructure management
FTP	File Transfer Protocol Communication Protocol Used in File-Transfer Between NX5 and Aggregation NAS
SMB	Server Message Block Communication protocols used for file transfer between NAS and between NAS and NW cameras

Related materials

The related documents in this document are organized as shown below. See also.

Document number	Document name
W639-E	NJ/NX-series CPU Unit Automation Playback User's Manual
W641-E	Automation Playback Camera control sample program INSTRUCTIONS

Revision history

The revision symbol is attached to the end of Man.No. shown at the lower left of the cover.

Man. No.	W631-E1

Revision symbol

Revised symbol	Date of revision	Details of revision
1	Jul 2023	First edition

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Chapter 1

System configuration

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1   System configuration

1-1-1 Equipment used

This manual explains the system configuration using the following devices.

Block	Equipment used
NAS for aggregation	Buffalo's TeraStation WS5020
NW camera-specific NAS	(FW versionversion 3.70)
NW Camera	AXIS M5525-E made by Axis Communications Corporation
NX5	Omron's machine automation controller type NX502-1□00
NW equipment	PoE compatible switching hub
WinPC	Windows10 OS PC (device name not applicable)

1-1-2 Basic System Configuration

NX5 and one NW camcorder are connected on the same network. This is a basic configuration for the consolidation NAS.

In addition, a NAS(NW camera-specific NAS for accumulating camera data outputted from NW cameras) can be added to the configuration.

In addition, any number of NX5, NW cameras and NW camera-dedicated NAS can be selected. Since this system handles large-capacity data, it is recommended that the system be constructed based on the following performance as a guideline.

- Ethernet line rate: 1Gbps
- Write performance of NAS where NW cameras store camera data: 100～200MB/s

1-1-3 Communication specifications between blocks

The communication method and data contents between each block are as follows.

| Between blocks	Communication method	Communication data
Aggregation NAS↔NX5	FTP Create a FTP Site on the Aggregation NAS and NX5 Transferring Files	Backup file Variable Log
Intensive NAS↔NW cameras	SMB Create a SMB share directory on the aggregation NAS and NW outputs the file.	Camera data
NW camera-dedicated NAS↔NW camera	SMB NW camera-specific NAS to create SMB shared directories and NW cameras output files	
NAS↔NW camera-dedicated NAS for consolidation	SMB NW on a camera-only NAS to create a SMB shared directory. Aggregation NAS aggregates files.	
NX5↔NW Camera	NX5 sends camera data out trigs to NW cameras	Trigger

1-1-4 Sample system configuration

Examples of the system configuration are as follows.

■ Sample Playback Data Aggregation in a Single NAS

The configuration consists of one NX5, one NAS for consolidation, and one NW camera.
These cameras are connected on the same network.
The backup file output by NX5 on the aggregation NAS, the variable log, and the camera data output by NW camera on the aggregation NAS are aggregated.
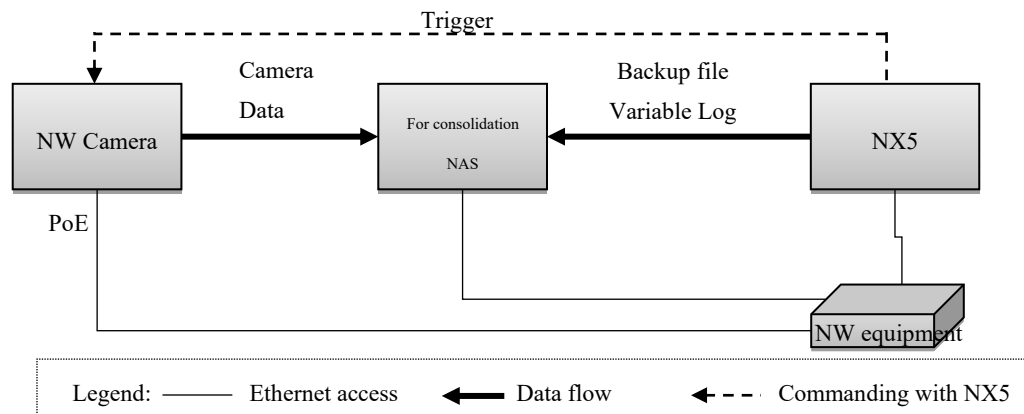
■ Sample Playback Data Aggregation Using Multiple NW Camera-Only NAS

The configuration consists of one NX5, one NAS for consolidation, two NW camera-dedicated NAS, and three NW cameras connected on the same network.
NX5 consolidates the backup files and variable logs printed on the consolidation NAS and NAS for consolidating the camera data accumulated in NW camera-dedicated NAS.

■ Sample Playback Data Aggregation Using Several NX5

Construction in which NAS (1 unit), NX5 (2 units), NW camera (2 units) and NW camera (3 units) are connected on the same network.
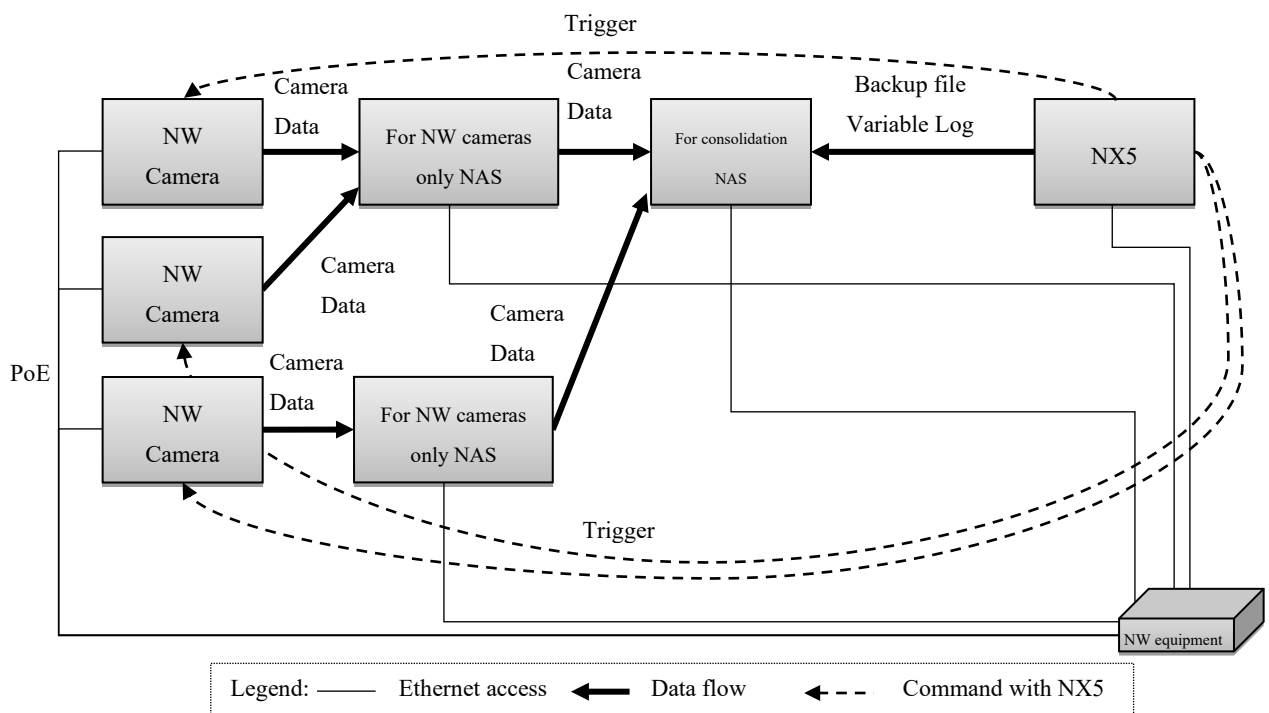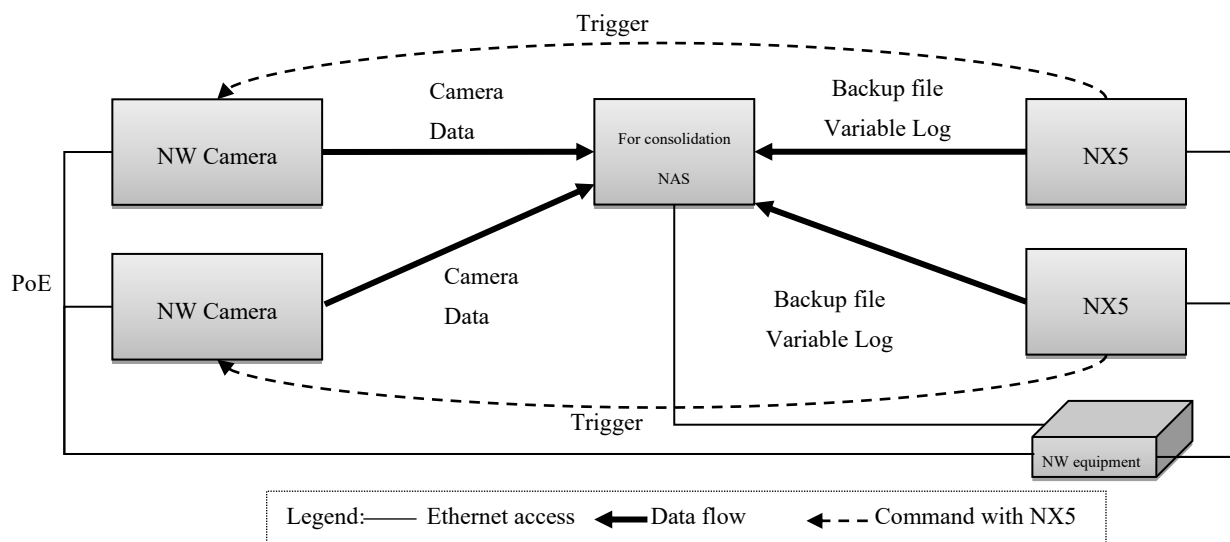
The backup files and variable logs output by NX5 on the aggregation NAS and the camera data output by NW camera on the aggregation NAS are aggregated.

1-1-5   Camera for checking the operation of this system

The operation of this system has been checked using the following cameras. However, operation is not guaranteed by Omron.

Type	OS Version	Shape	Maximum resolution	Max. fps
AXIS M3085-V	11.4.63	Dome type	1920×1080	25/30
AXIS M3086-V	11.4.63		2688×1512	25/30
AXIS M3115-LVE	10.12.166		1920×1080	25/30
AXIS M5075-G	11.4.63	PTZ	1920×1080	50/60
AXIS M5525-E	8.40.19		1920×1080	25/30
AXIS P1245	9.80.28	Sensor/Unit separate type	1920×1080	25/30
AXIS P1275	9.80.28		1920×1080	25/30
AXIS P1375	10.12.166	Box type	1920×1080	50/60
	11.4.63			

Chapter 2

Construction of environment

2

Construction of environment

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2-11   PC settings for environment construction

</div>

Because TeraStation WS5020 does not have an interface, such as a display or keyboard, you must change the settings from another computer on the same network.

This manual uses a Windows10 personal computer (hereinafter referred to as "WinPC") as a computer for infrastructure management and configures settings from the dedicated NAS setting software.

Perform the following steps when WinPC is connected to an Internet-connected NW device.
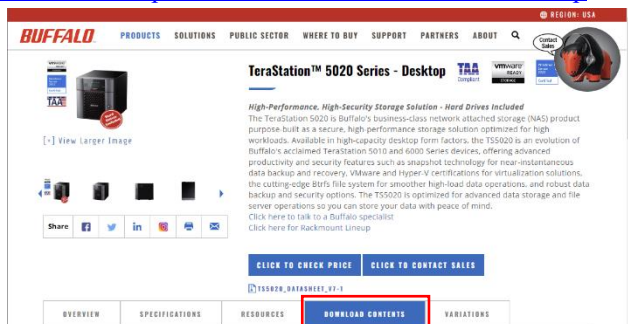
Internet

NW
equipment

WinPC
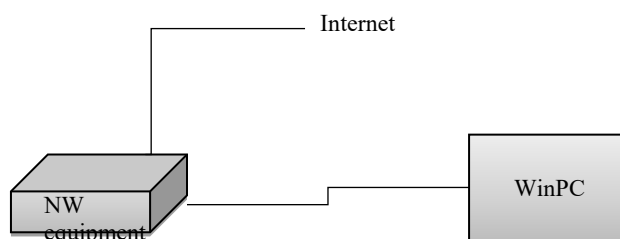
2-1-11   Installing NAS Configuration Software

■ Downloading the Installer

Visit the download site by clicking URL below and click "DOWNLOAD CONTENTS".

https://www.buffalotech.com/products/terastation-5020-series-desktop

Download "NAS Navigotor for Windows" from ［Utilities］ section and extract downloaded zip file.

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Construction of environment
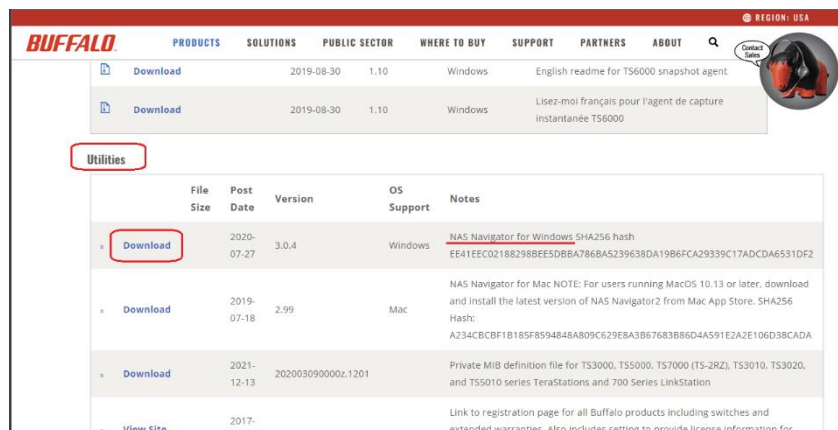
■ Run the installer.

Right-click the downloaded installer "NASNaviInst.exe" and select [Run as administrator].

Installer files

∨ Today

NASNaviInst.exe
NASNaviInst.ini
NASNaviLang.ini
Module
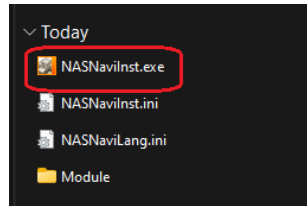
When the installation is complete, the following screen is displayed.
Select [OK] to exit the installer.

NAS Navigator2 Installer ×

i NAS Navigator2 installation completed.

OK
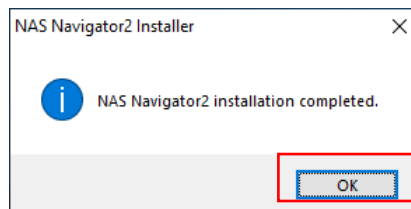
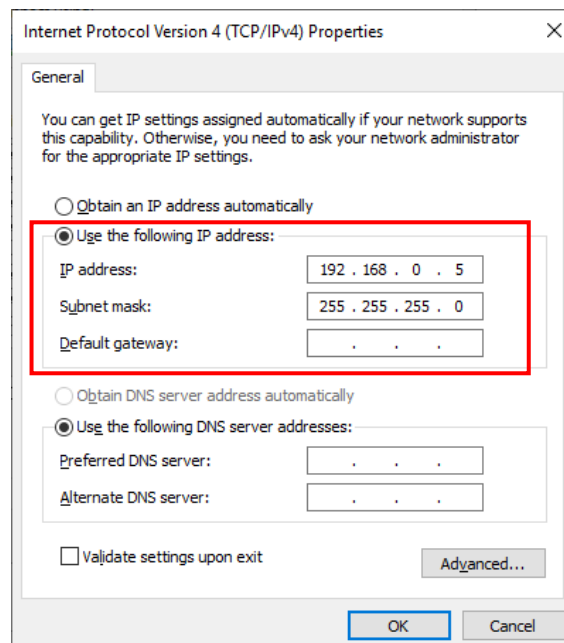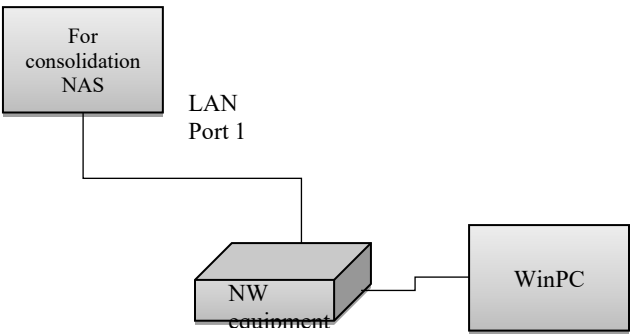### 2-1-2 Network settings

To connect WinPC to NAS, NW cameras and configure settings, you must configure the network settings so that the network is the same.
The following is an example when "192.168.0.5" is set for IP and "255.255.255.0" is set for the subnet mask.

Internet Protocol Version 4 (TCP/IPv4) Properties ×

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically
◉ Use the following IP address:
IP address: 192 . 168 . 0 . 5
Subnet mask: 255 . 255 . 255 . 0
Default gateway: .   .   .

○ Obtain DNS server address automatically
◉ Use the following DNS server addresses:
Preferred DNS server: .   .   .
Alternate DNS server: .   .   .

☐ Validate settings upon exit   Advanced...

OK   Cancel

2-2   Configuring NAS

Use NAS configuration software from WinPC to configure NAS.

Power up NAS by connecting LAN1 at the back of NAS to your NW device and follow these steps:

NAS to be connected must have user-defined settings and LAN port-1 networking settings in advance.

In this manual, the following steps are described with NAS set as shown below.

| Preset items	Set value
Server name (computer name)	APB4
User name	APB4\APB
IP address	192.168.0.24
Subnet Mask	255.255.255.0

2-2-1   Connect to NAS

NAS selection window is displayed when BUFFALO NAS Navigator2 is executed.

Right-click the connected NAS and select [Open Remote Desktop].
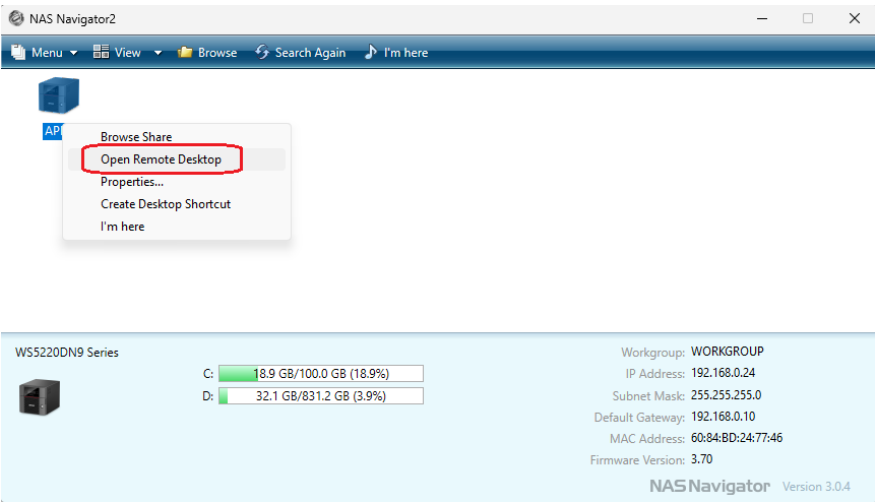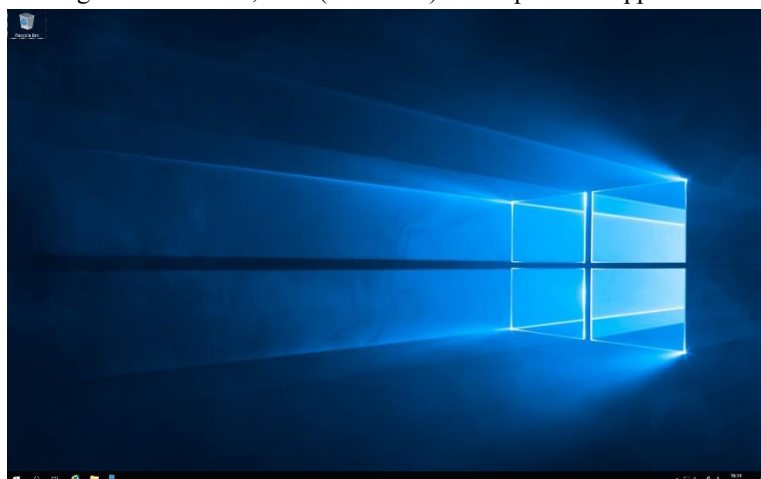

Windows log in window is displayed.

Select the user name you want to configure and enter the password to log in.
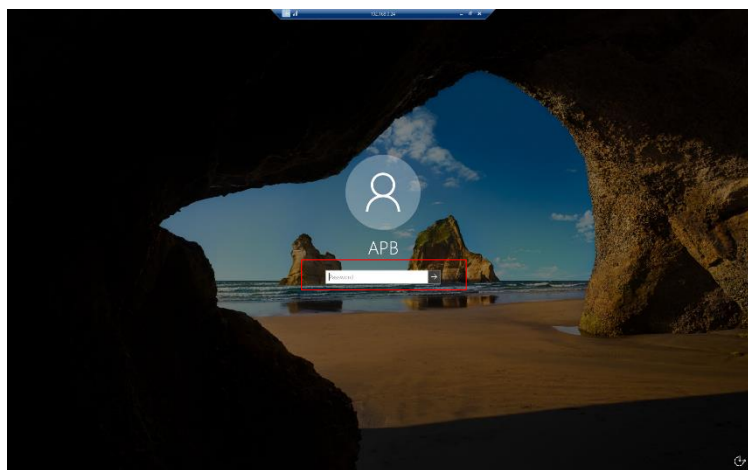
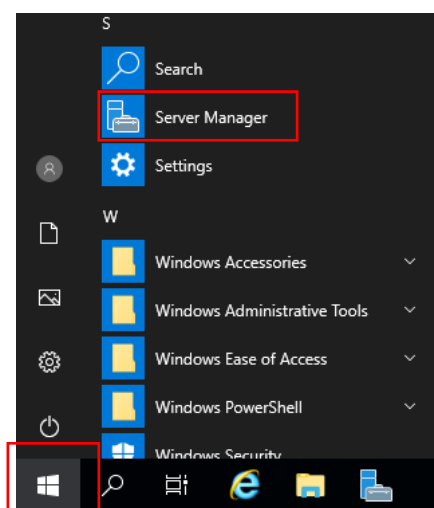If the login is successful, NAS(Windows) desktop-screen appears.

2-2-2   To set timezone

NAS time zone must be the same as NX5.

To set the time zone, perform the following steps:

Select the Start button on the taskbar and run〔Server Manager〕.

Select [Local Server].
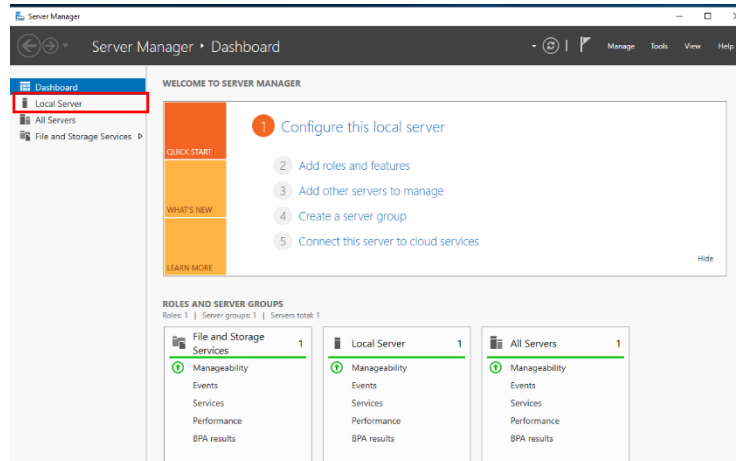
Select the blue area to the right of [Time Zone].
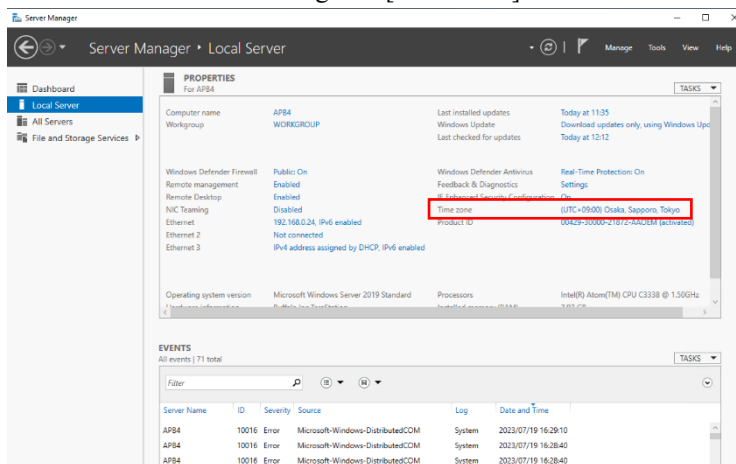
Select [Change Time Zone].
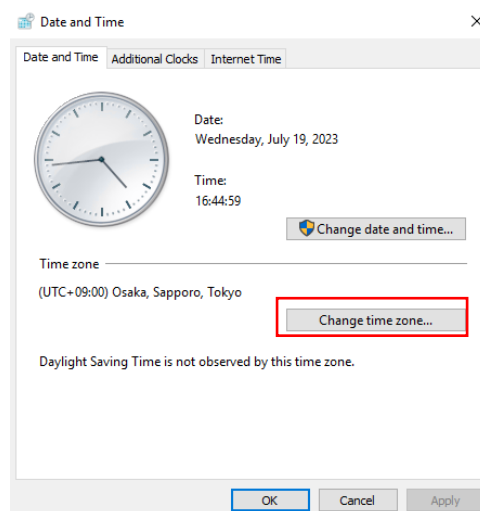
Select the same time zone as NX5 in the time zone pull-down menu, and then select [OK].

The following shows an example of setting the Eastern time (UTC -05:00) in the time zone.
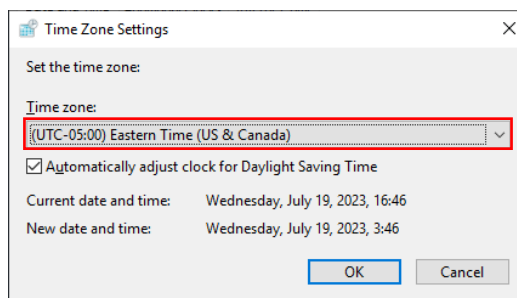
2-2-3　　Configuring FTP

Create a FTP directory (FTP site) on the aggregation NAS so that backup files and variable logs can be transferred from NX5 to the aggregation NAS.

■ Enabling FTP

Select the Start button on the taskbar and run Server Manager.
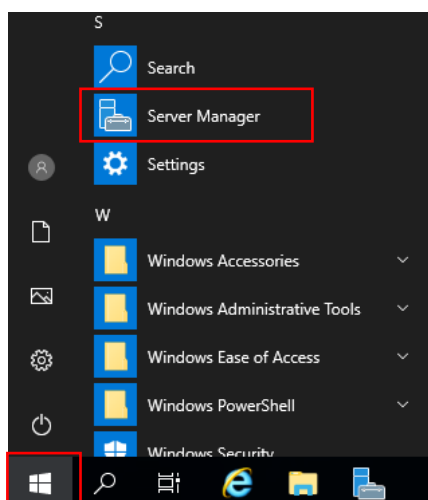
Select [Add roles and features].
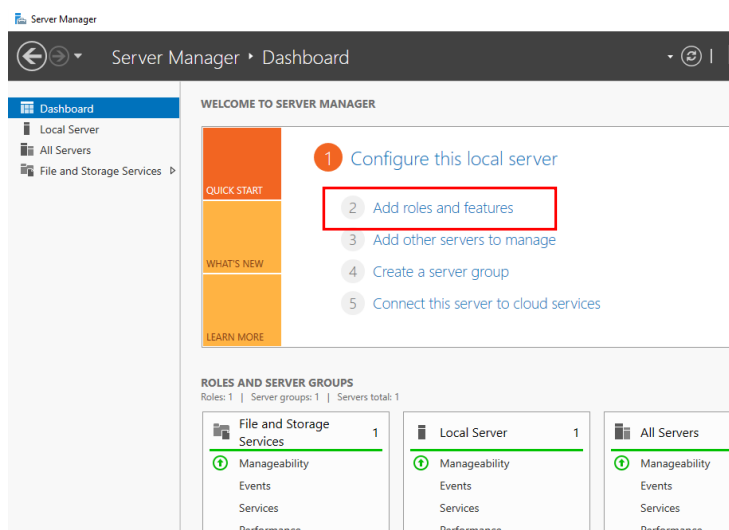
Then select [Next].
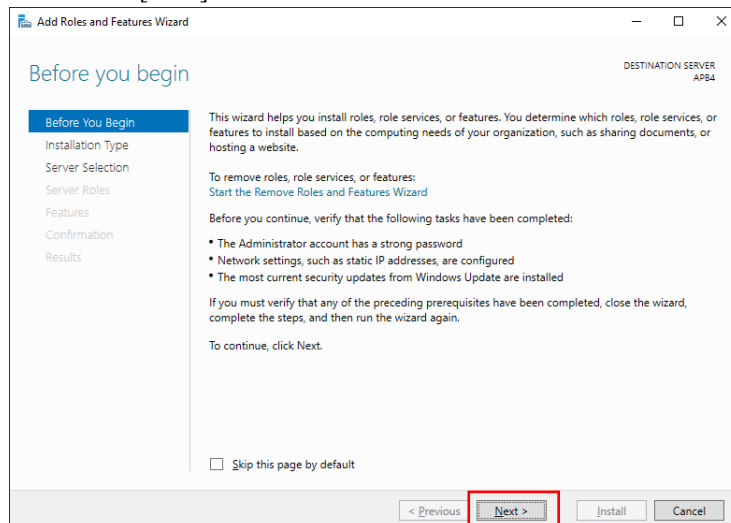
Select [Role-based or feature-based installation], and then select [Next].
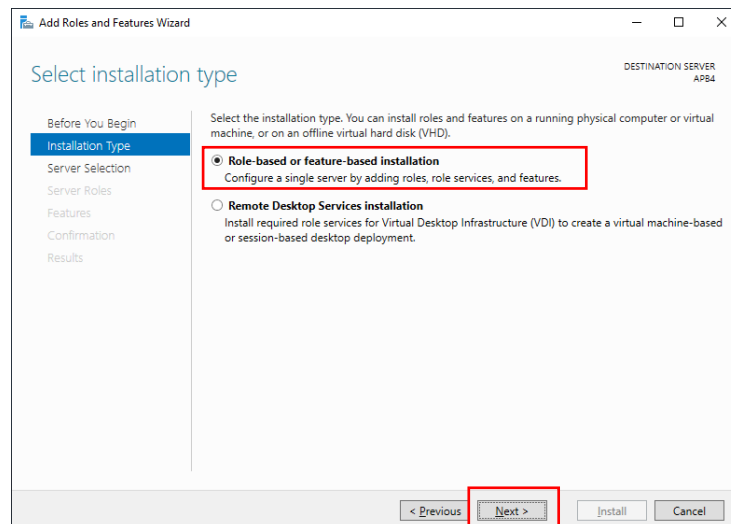
Select the server name from the list of server pools and select [Next].
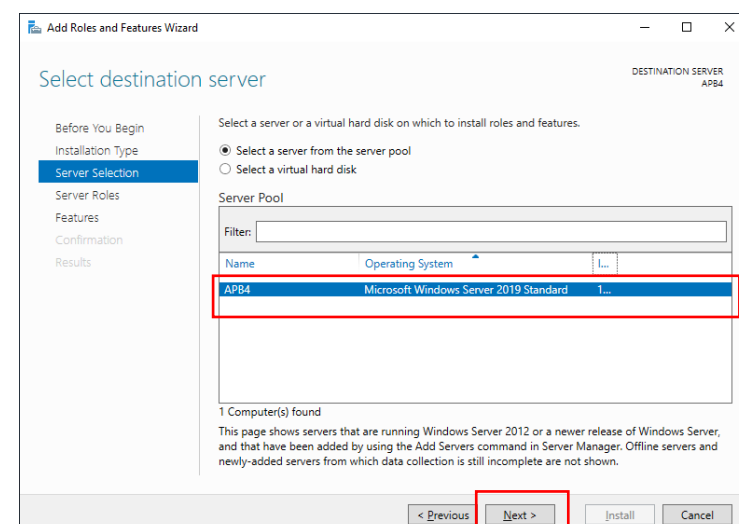
Select the checkbox of [Web Server (IIS)] from the list of roles.
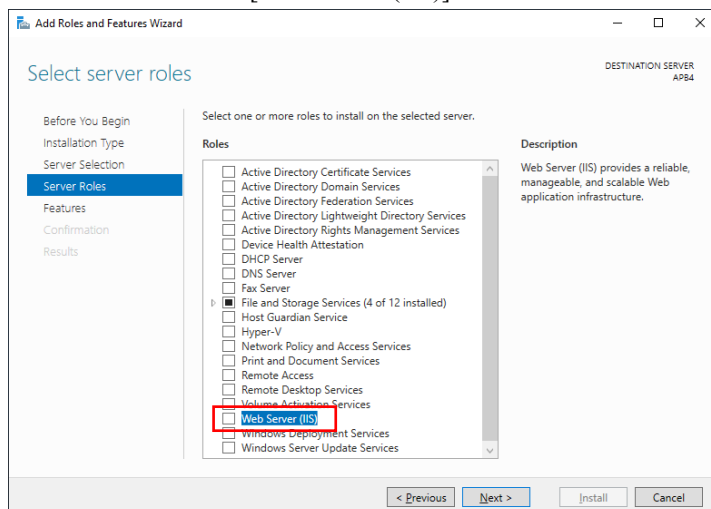
The [Add Roles and Features Wizard] is displayed. Select [Add Features].
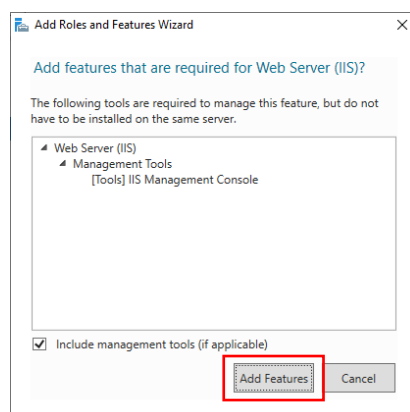
Select the [FTP Service], [FTP Extensibility], and [IIS Management Console] checks, and then select [Next].
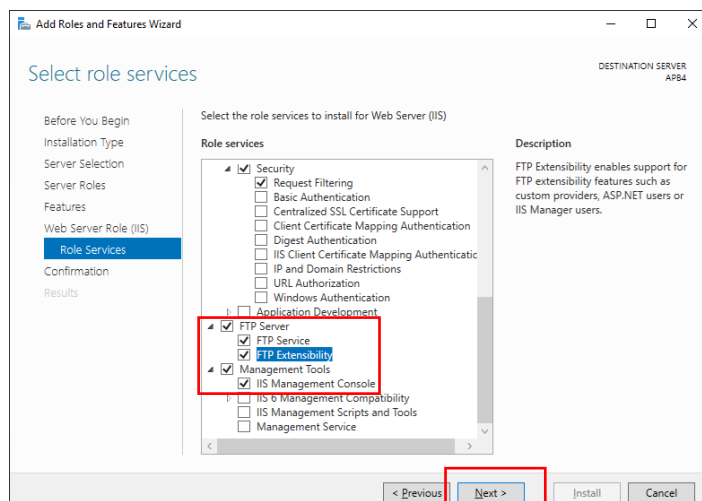
Select [Install].
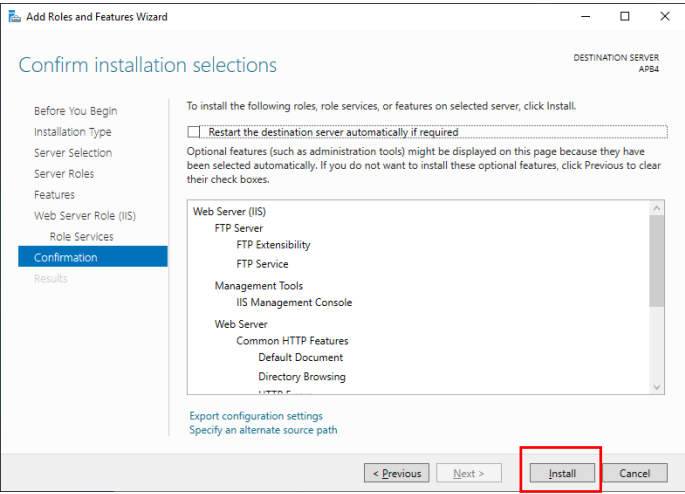
■ Create a directory for FTP site.

Open Explorer and create a directory for your FTP site.

The following is an example of creating a directory when the path of FTP site is C:\apb_tmp\Script.
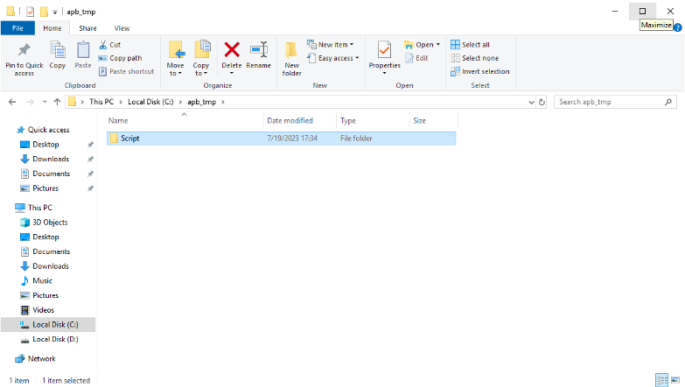
■ Creating a FTP website

Select the [Computer Management] on the "Tools" menu on the "Server Manager" window.
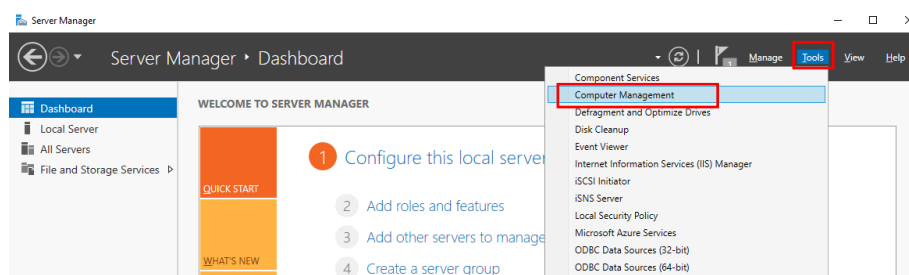
Select [Services and Applications], select the pull-down menu, and then select [Internet Information Services (IIS) Manager].
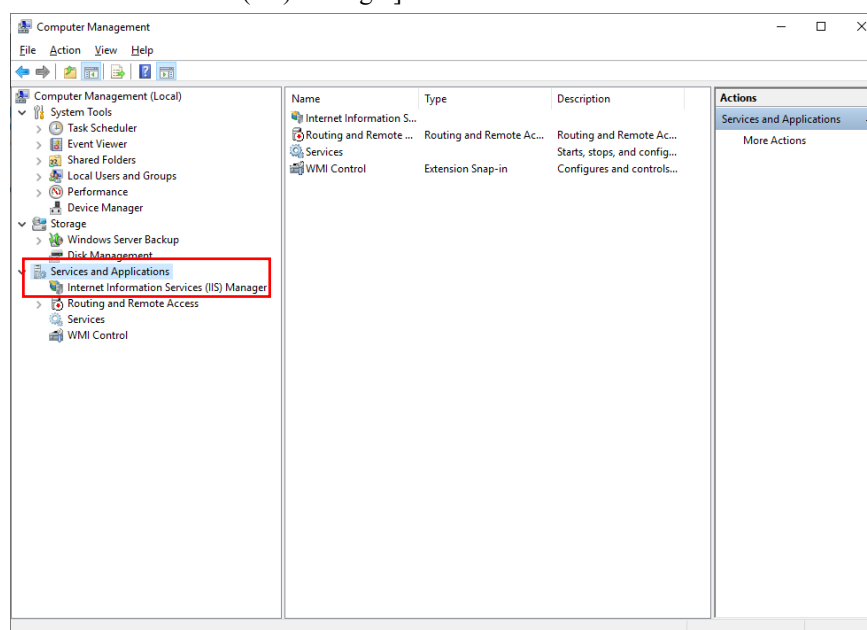
Select [Site], and then select [Add FTP Site] from the [Actions] tabbed page that appears.
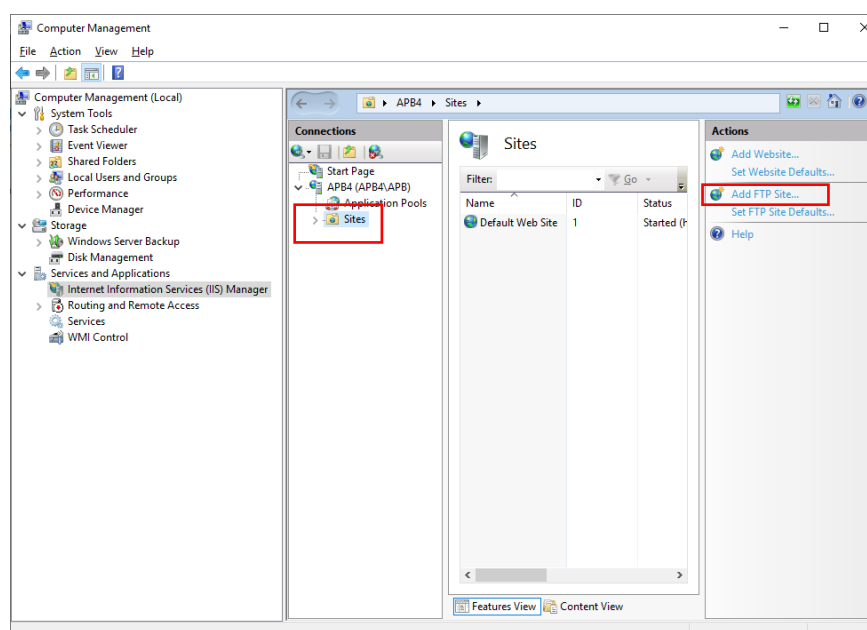
Enter any name in [FTP site name], and enter the absolute path of the directory to be set as the path of FTP site in [Physical Path] of [Content Directory].

The path set for FTP is the base directory where the backup files and variable logs to be transferred by FTP from NX5 are placed.

In the following example, FTP site name is set to "APB" and FTP site path is set to "C:\apb_tmp\Script".

After inputting, select [Next].

Enter "21" for IP address and port of the server being set as IP address.

To set SSL, select [No SSL], and then select [Next].

Check [Basic] in [Authentication], enter the user name of the target to be set in [Specified users] of [Allow access to], and check [Read] and [Write] for the access permission.
After completing, select [Finish].
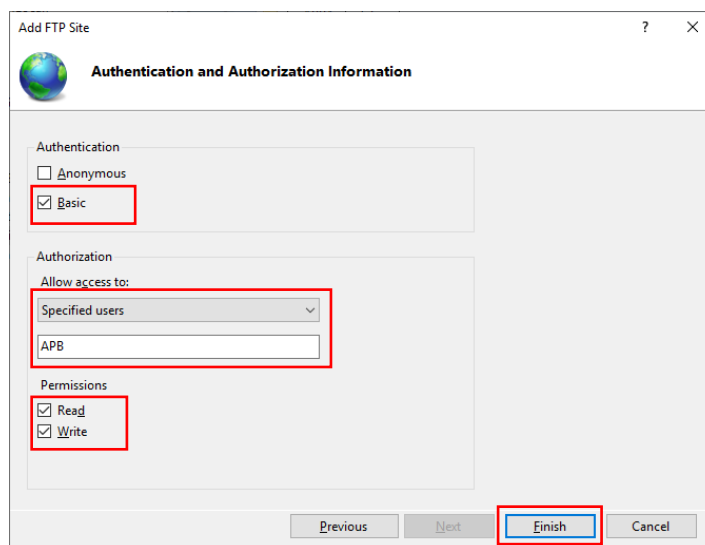
■ Directory Access Privilege Sets

Right-click the directory that is set as the path of FTP site. (In the following example, select C:\apb_tmp\Script) and then select [Properties].
Then select [Edit] in the [Security] tab.
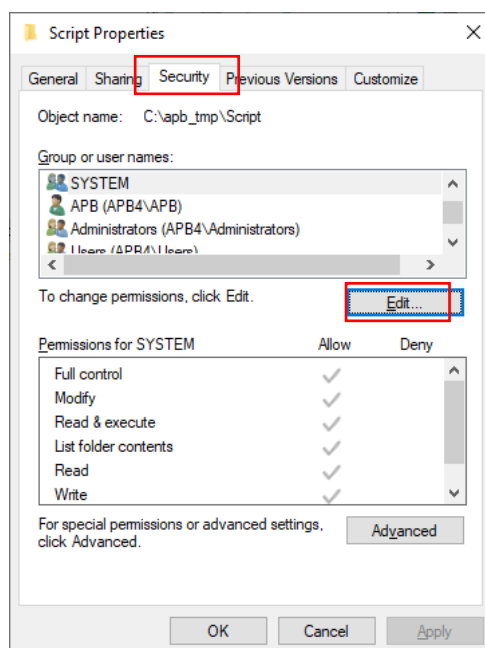
Enter the user name to be set in [Enter the object name to select] and select [Check Names] to change the user name to the correct format.

After confirming, select [OK].
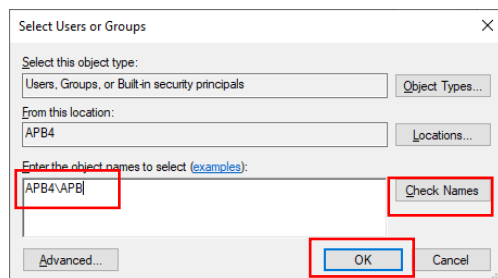
Select the checkbox next to "Full Control" in [Permission] of the directory access permissions, and then select [OK].
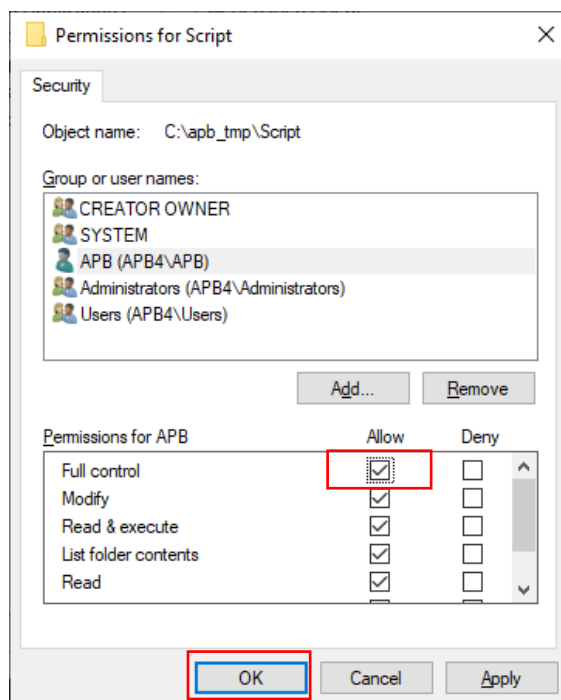
2-2-4   Configuring SMB Sharing Directories

Create a SMB Shared Directory on NAS to allow camera data to be aggregated from NW cameras to the aggregate NAS or NW camera NAS, and from the aggregate NAS to NAS for NW cameras.

Start Server Manager, and select [File and Storage Services].
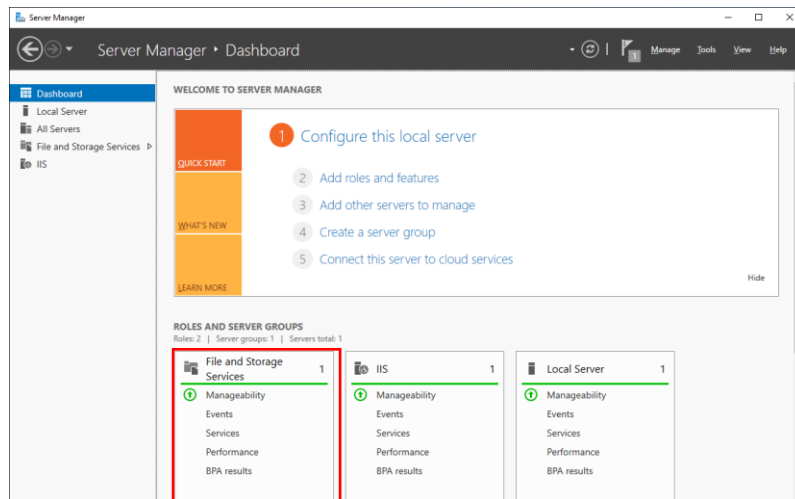
Select [Shares].

Then, select [To create a file share, start the New Share Wizard.].
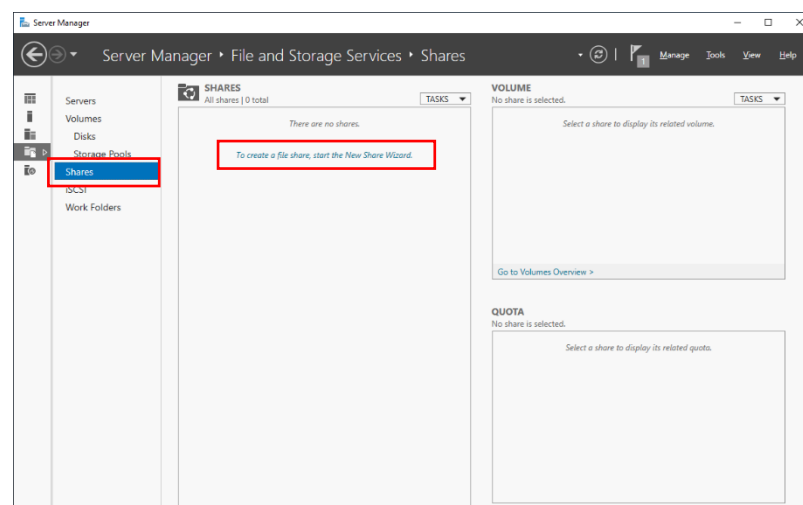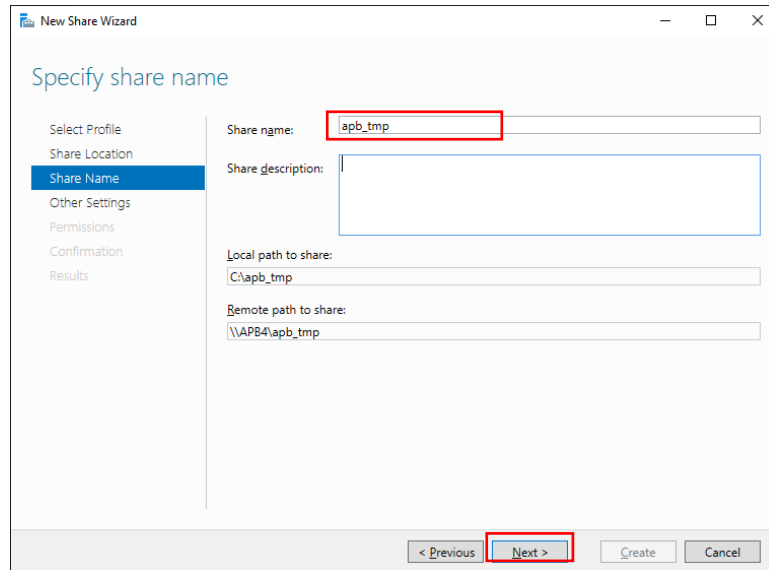
Select [SMB Share-Quick], and then select [Next].
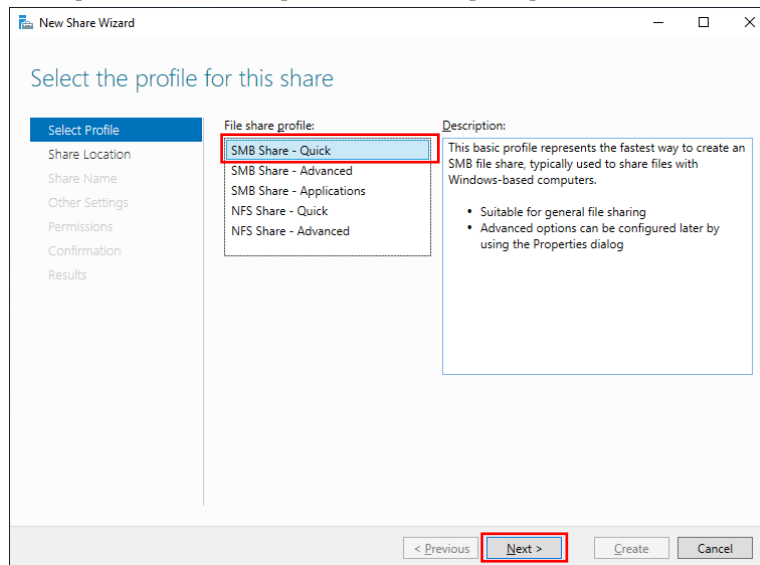
Select [Type a custom path] and enter the desired directory path in SMB share directory.

The following is an example of setting "C:\apb_tmp" to the path of SMB shared directory.

Since C:/apb_tmp is created in 2-2-3, the directory-creation procedure is omitted.

If you need to create a directory, create the directory before configuring the settings.
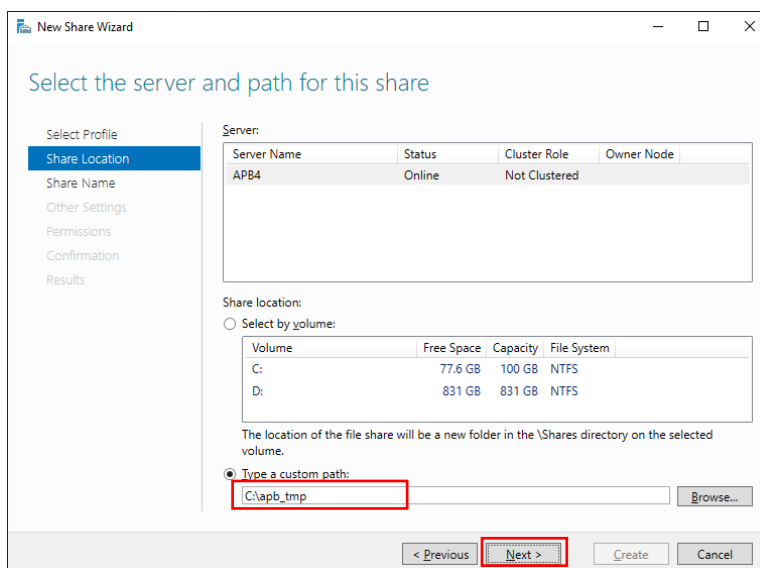
Specify the name to be specified when accessing [Share name] from outside.

The following is an example of setting "apb_tmp" to the shared directory name.

Then select [Next].

Then select [Next].

Select [Customize permissions].
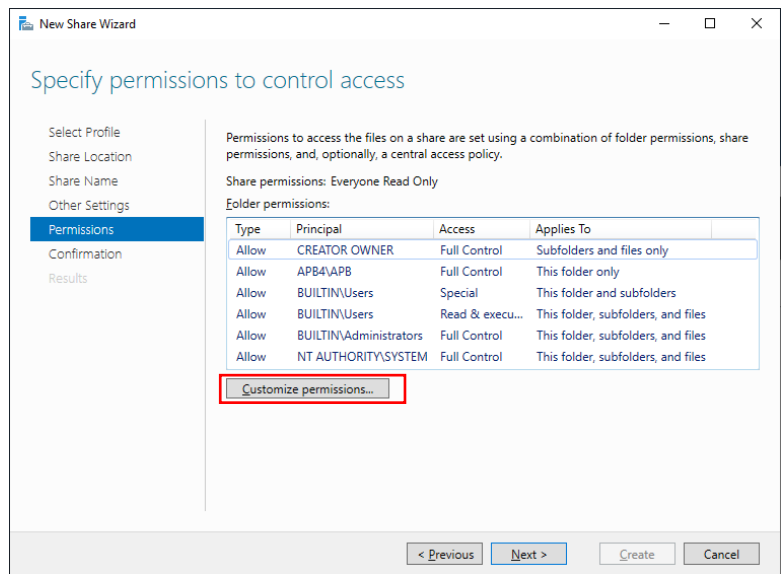
Check that the target user name is in the list of access permission entries on the [Permissions] tab.
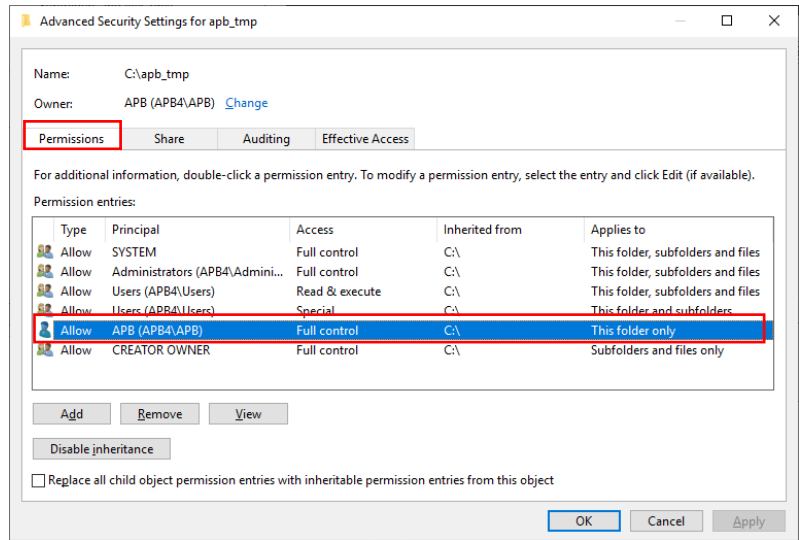
Select the [Share] tab and select [Add].
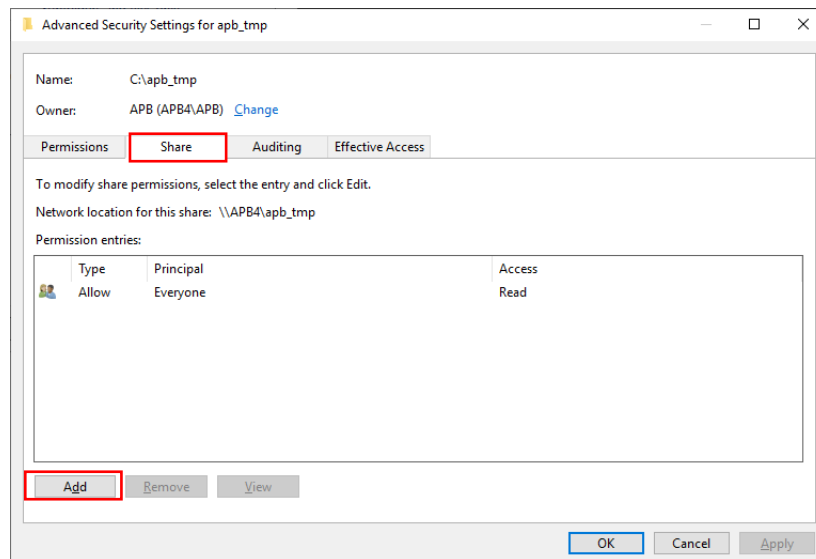
Select [Select Principal].
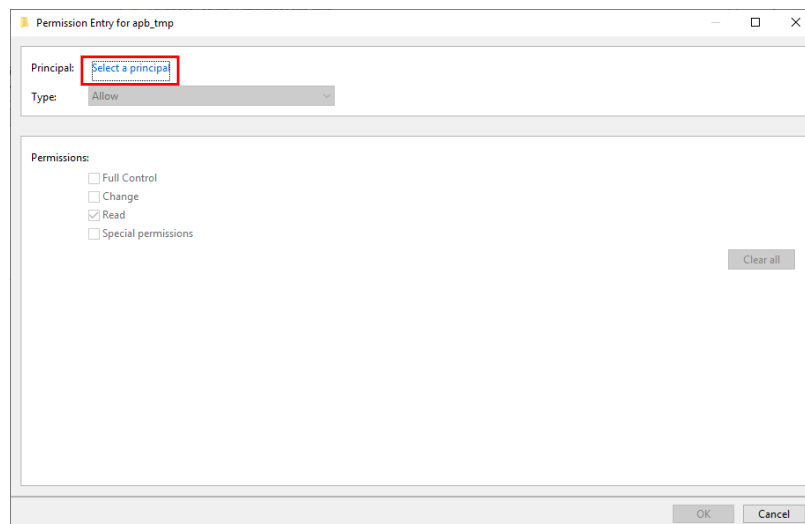
Enter the user name to be set in [Enter the object name to select] and select [Check Names] to change the user name to the correct format.
After confirming, select [OK].
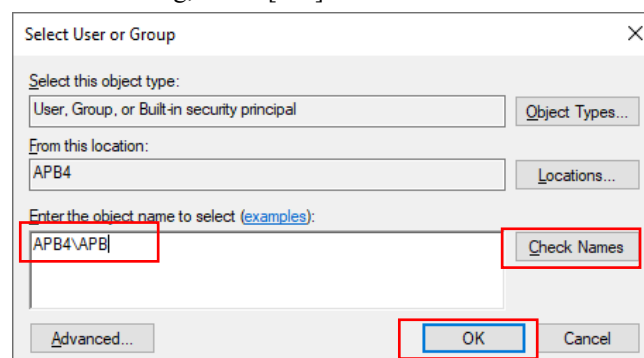
Select the [Full Control], [Change], and [Read] checks for the access permissions, and then select [OK].
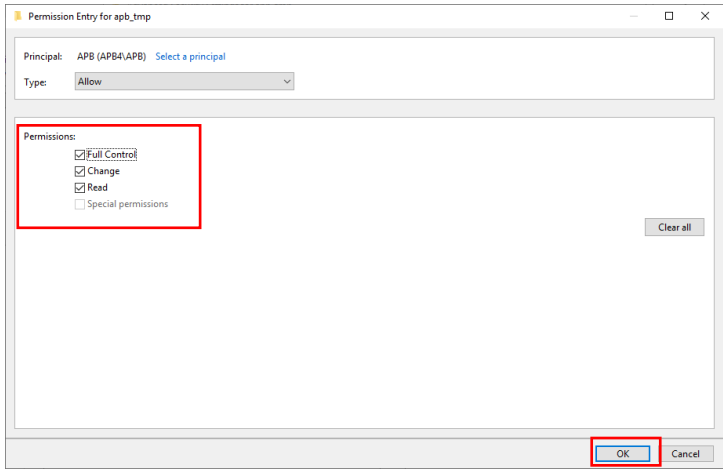
Select [Apply] > [OK].
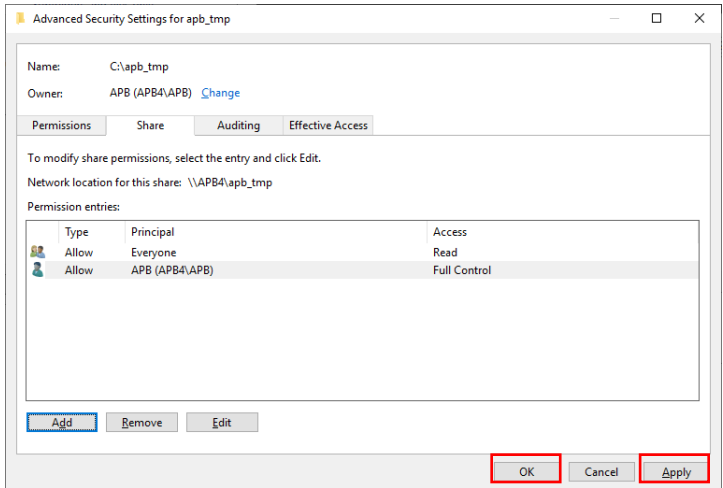
Select [Create].
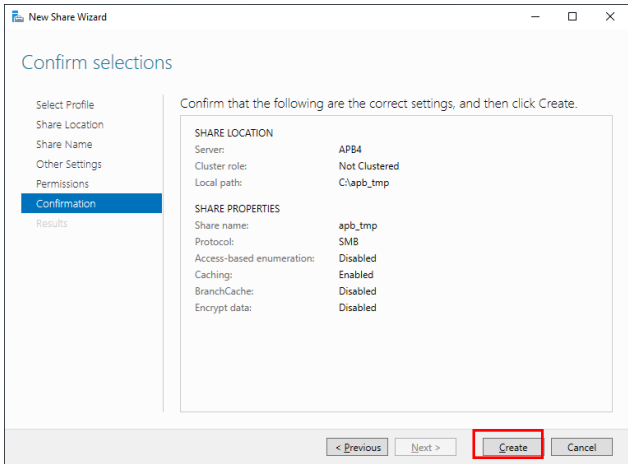
Confirm that the progress of all tasks has been completed, and select [Close].
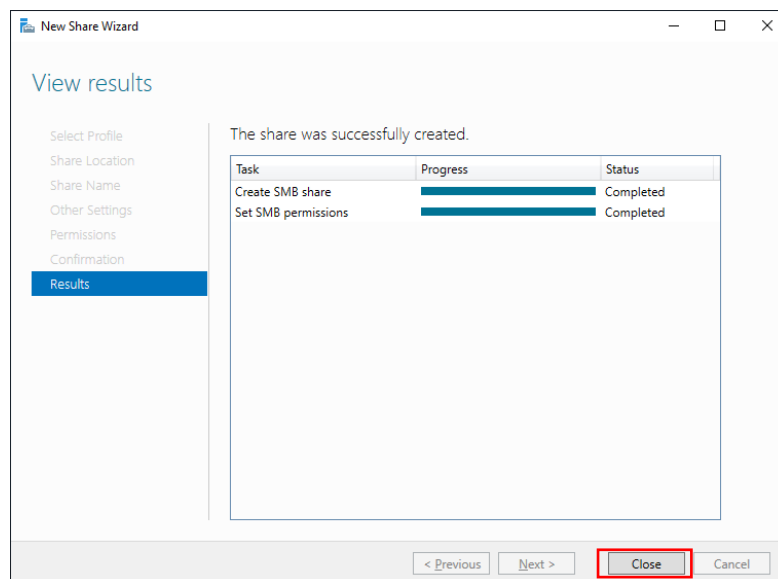
2-2-5　　How to set NW camera-dedicated NAS (optional)

Set 2-2-1, 2-2-2, 2-2-4, and 2-2-5 for each NW camera-dedicated NAS when setting NAS as a NW camera-dedicated NAS.
However, NW camera-dedicated NAS must be set to a IP address that differs from other NAS and devices.

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2-3   Building the Script Execution Environment

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To run the script on an aggregation NAS, you must install a script-dependent Python library from the internet.

This manual uses WinPC to configure NAS for aggregation from NAS configuration software. Connect LAN port-2 on the back of NAS to an Internet-connected NW device and perform the following steps.
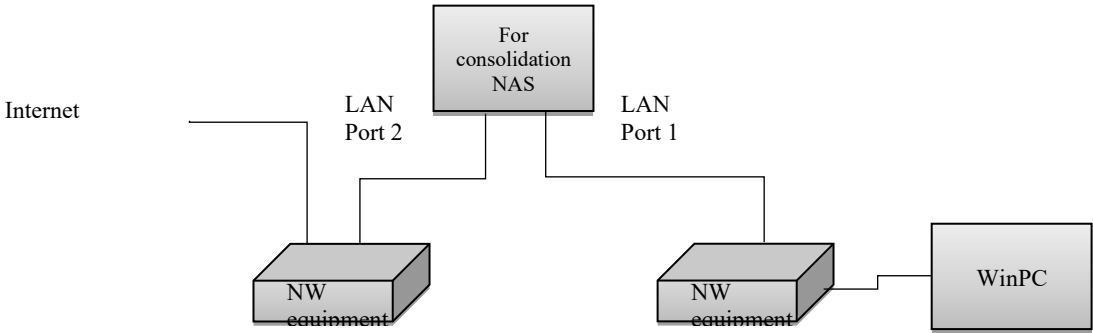
After logging in to the aggregation NAS from NAS configuration software, open the Control Panel. Select [Network and Internet] → [Network and Sharing Center].

Next, select [Ethernet] of the network connected to the Internet.
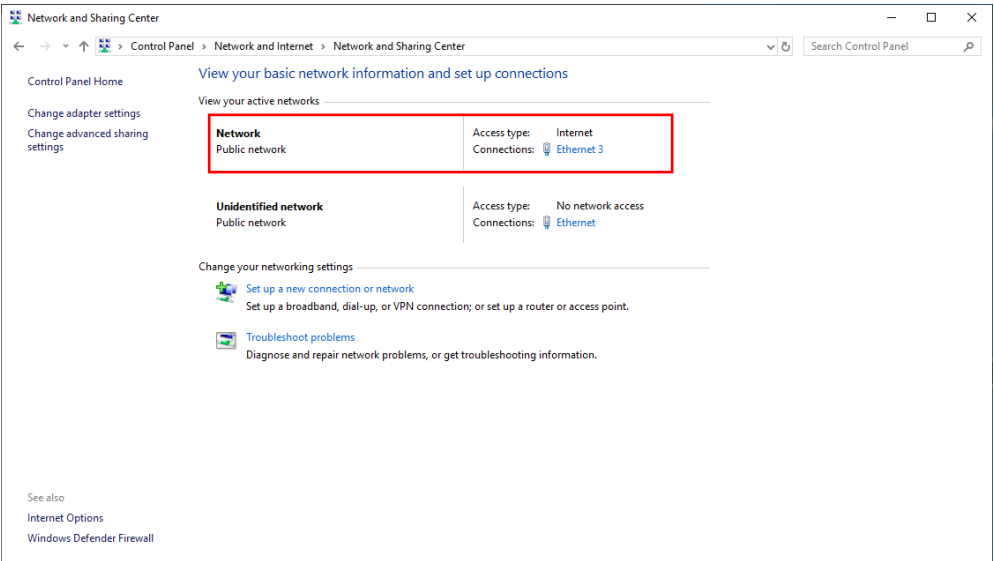
Select [Properties] → [Internet Protocol Version 4 (TCP/IPv4)] → [Properties], and then [Obtain an IP address automatically] and [Obtain DNS server address automatically] to verify that they are selected.
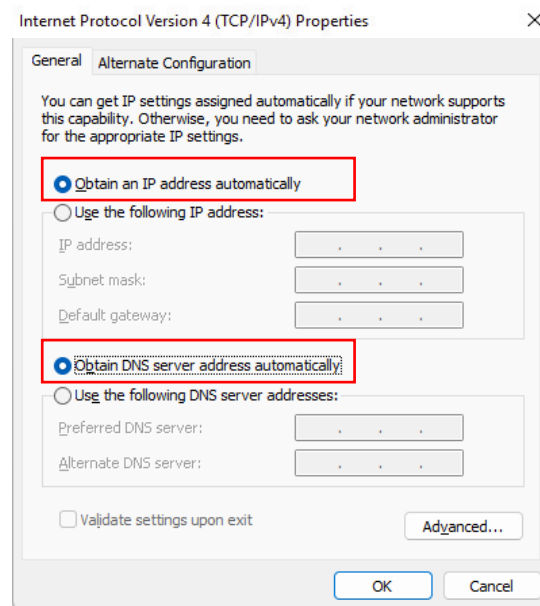
2-3-1   Installing Python Library

After logging in to the aggregation NAS, start the command prompt and enter the following command.

```
Pip install pysmb moviepy tzlocal watchdog python-dateutil
```

This completes the installation of the associated libraries.
Disconnect LAN 2 on the back of the aggregation NAS from the internet-connected NW device.
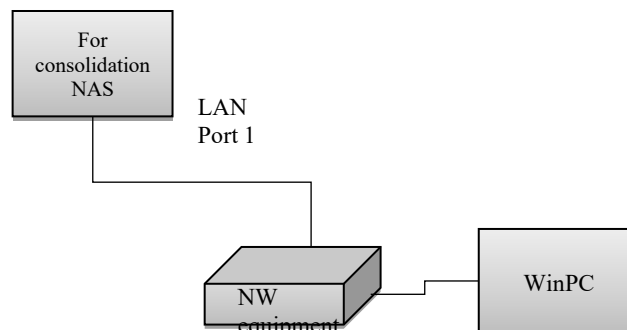
2-3-2   Script Set and Placement

Place the scripts and script configuration files in any directories on the aggregation NAS.
Script configuration files are files that contain various settings required for script execution and are imported when the script is executed.

The script configuration file must be located in the same directory as the script on the aggregation NAS.

The file names are as follows:

File type	File name
Script configuration file	Settings.py
Script	Pbdata_collection.py

■ Parameter list of script setting file

Set the script configuration file settings according to your system configuration.

The script configuration file consists of the parameters to be set for each NX5 and the parameters to be set for each NW cameras.

```
NXConfig = [
    { 'nx5_ip_addr'     : '',
      'save_path'        : '',
      'ftp_log_path'     : '',
      'ftp_bak_path'     : '',
      'latest_bak_path'  : '',
      'bak_enable'      : ,
      'retry_sec'        : ,
      'camera'          :[
                          { 'serial_name': '',
                            'camera_name' : '',
                            'smb_enable': ,
                            'smb_ip_addr'  : '',
                            'smb_user'   : '',
                            'smb_password'   : '',
                            'smb_shared_dir': '',
                            'path'        : ''
                          }
                         ]
    }
]
```

Setting for each NX5

Settings for NW Camera
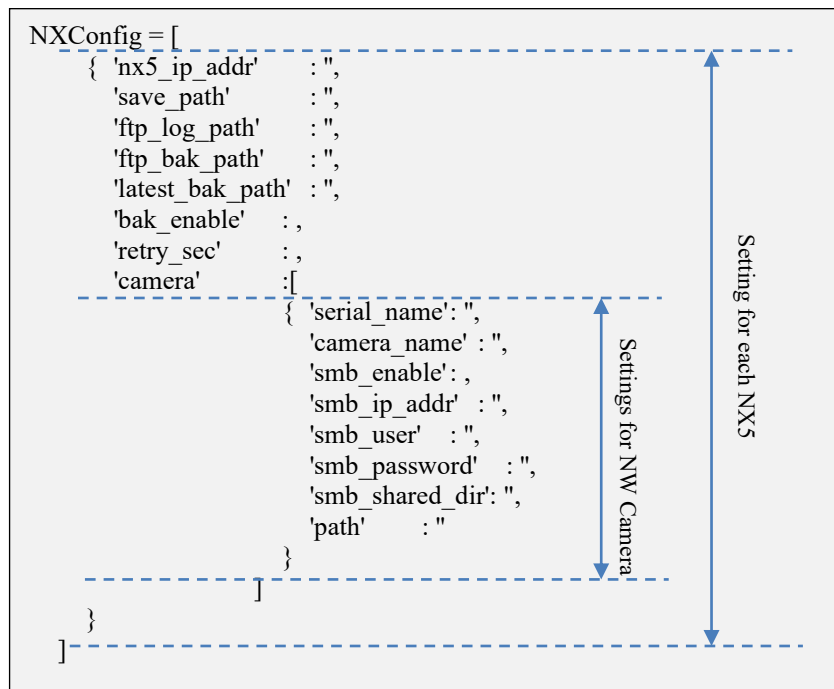
The following parameters can be set in the script configuration file.

For each path setting, use "/" as a delimiter to represent the directory hierarchy.

Parameter name			Type	Description
NXConfig			Framework Array	If there is more than one NX5, create as many arrays as there are NX5 separated by commas (,)
	Nx5_ip_addr		Character string	IP addressname of NX5 (unused parameter)
	Save_path [Destination path]		Character string	Setting the absolute path of the directory to which files are aggregated
	Ftp_log_path [Variable-log FTP pass]		Character string	Setting the absolute pathname of the directory where variable-logging is transferred in FTP from NX5 Must be consistent with NX5 transfer-destination path setting
	Ftp_bak_path [Backup file FTP path]		Character string	Setting the absolute path of the directory to which backup files are transferred in FTP from NX5 Must be consistent with NX5 transfer-destination path setting
	Latest_bak_path [Latest backup file save path]		Character string	Set the absolute path of the directory where the most recent backup file transferred to the ftp_bak_path is stored. Copy the backup file saved here to Proj directory in the aggregation destination directory
	Bak_enable		Logic	Setting Whether to Aggregate Backup Files Set True to enable, set False to disable Must be consistent with NX5 backup file save settings
	Retry_sec		Numerical value	Set the wait time before re-aggregation [sec] If the camera data to be aggregated does not exist at the time of aggregation, the camera waits for this amount of time from the aggregation time, and then checks the camera data again.
	Camera		Framework Array	If there are more than one NW camera, create only the number of NW cameras by separating the array with commas (,)
		Serial_name	Character string	Setting the serial number of NW Aggregate camera data with matching serial number
		Camera_name [Camera Name]	Character string	Any camera name for identifying a NW camera
		Smb_enable	Logic	Set True if the camera-data to be aggregated is stored in NW dedicated NAS or False if it is stored in the aggregation NAS.
		Smb_user	Character string	NW camera-dedicated NAS username If the smb_enable is True, additional parameter items must be added and set.
		Smb_password	Character string	NW camera-specific password If the smb_enable is True, additional parameter items must be added and set.
		Smb_shared_dir	Character string	Shared Directory Names of NW Camera-Only NAS If the smb_enable is True, additional parameter items must be added and set.
		Path [Camera Data Path]	Character string	If the camera data is saved in NW camera-specific NAS (smb_enable is True), set the directory under SMB shared directory name. (If it is directly below, set to empty) If camera-data is stored in the aggregation NAS (smb_enable is False), set the absolute path of the directory.

2

Construction of environment

■ Example for Parameter Setting of Constant Speed

● Sample settings for outputting camera data to the aggregation NAS
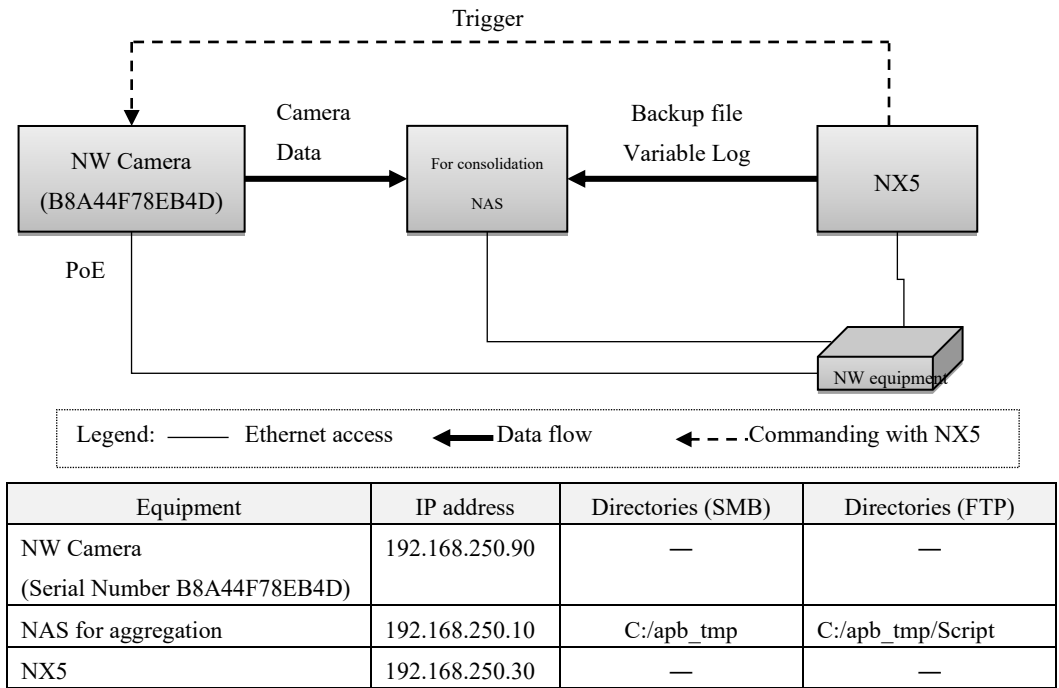
Equipment	IP address	Directories (SMB)	Directories (FTP)
NW Camera (Serial Number B8A44F78EB4D)	192.168.250.90	—	—
NAS for aggregation	192.168.250.10	C:/apb_tmp	C:/apb_tmp/Script
NX5	192.168.250.30	—	—

The following are the required setting items and setting examples of the script setting file in this configuration.

```
NXConfig = [
    { 'nx5_ip_addr' : '192.168.250.30',
      'save_path' : 'C:/apb_tmp/Script/save',
      'ftp_log_path' : 'C:/apb_tmp/Script',
      'ftp_bak_path' : 'C:/apb_tmp/Script/Proj',
      'latest_bak_path' : 'C:/apb_tmp/Script/latest',
      'bak_enable' : True,
      'retry_sec'    : 10,
      'camera'        :[
                      { 'serial_name': 'B8A44F78EB4D',
                        'camera_name' : 'Cam1',
                        'smb_enable' : False,
                        'path'       : 'C:/apb_tmp'
                      }
                  ]
    }
]
```

For the aggregation NAS
Set local path

● Setting when camera data is outputted to NAS for NW camera

Equipment	IP address	Directories (SMB)	Directories (FTP)
NW Camera (Serial Number B8A44F78EB4D)	192.168.250.90	—	—
NW camera-specific NAS	192.168.250.10	apb_tmp	—
NAS for aggregation	192.168.250.20	—	C:/apb_tmp/Script
NX5	192.168.250.30	—	—

The following are the required setting items and setting examples of the script setting file in this configuration.

```
NXConfig = [
    { 'nx5_ip_addr' : '192.168.250.30',
      'save_path' : 'C:/apb_tmp/Script/save',
      'ftp_log_path' : 'C:/apb_tmp/Script',
      'ftp_bak_path' : 'C:/apb_tmp/Script/Proj',
      'latest_bak_path' : 'C:/apb_tmp/Script/latest',
      'bak_enable' : True,
      'retry_sec'    : 10,
      'camera'        :[
                      { 'serial_name' : 'B8A44F78EB4D',
                        'camera_name' : 'Cam1',
                        'smb_enable' : True,
                        'smb_ip_addr'    : '192.168.250.10',
                        'smb_user' : 'smbuser',
                        'smb_password' : 'smbpassword',
                        'smb_shared_dir' : 'apb_tmp',
                        'path' : ''
                      }
                   ]
    }
]
```

On a NW camera-dedicated NAS Configure SMB Sharing

● Setting when two NW cameras are outputting camera data to a NAS dedicated to NW cameras
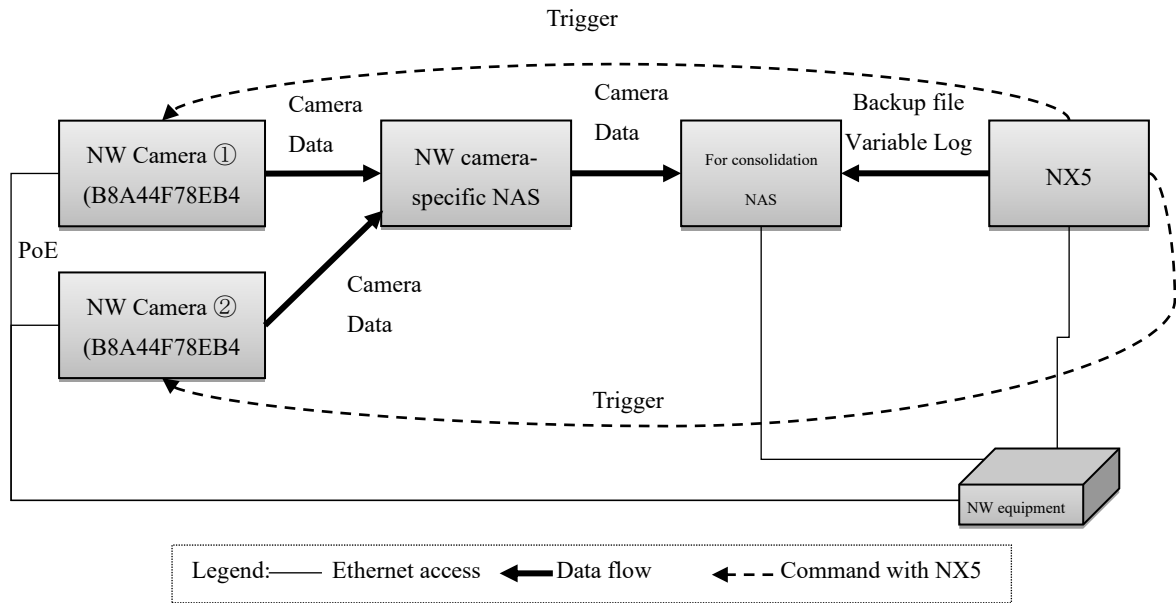
Equipment	IP address	Directories (SMB)	Directories (FTP)
NW Camera ① (Serial Number B8A44F78EB4D)	192.168.250.90	—	—
NW Camera ② (Serial Number B8A44F78EB4E)	192.168.250.91	—	—
NW camera-specific NAS	192.168.250.10	apb_tmp	—
NAS for aggregation	192.168.250.20	—	C:/apb_tmp/Script
NX5	192.168.250.30	—	—

The following are the required setting items and setting examples of the script setting file in this configuration.

```
NXConfig = [
    {  'nx5_ip_addr' : '192.168.250.30',
       'save_path' : 'C:/apb_tmp/Script/save',
       'ftp_log_path' : 'C:/apb_tmp/Script',
       'ftp_bak_path' : 'C:/apb_tmp/Script/Proj',
       'latest_bak_path' : 'C:/apb_tmp/Script/latest',
       'bak_enable' : True,
       'retry_sec'    : 10,
       'camera'        :[
                    {  'serial_name' : 'B8A44F78EB4D',
                       'camera_name' : 'Cam1',
                       'smb_enable' : True,
                       'smb_ip_addr'    : '192.168.250.10',
                       'smb_user' : 'smbuser',
                       'smb_password' : 'smbpassword',
                       'smb_shared_dir' : 'apb_tmp',
                       'path' : ''
                    },
                    {  'serial_name' : 'B8A44F78EB4E',
                       'camera_name' : 'Cam2',
                       'smb_enable' : True,
                       'smb_ip_addr'    : '192.168.250.10',
                       'smb_user' : 'smbuser',
                       'smb_password' : 'smbpassword',
                       'smb_shared_dir' : 'apb_tmp',
                       'path' : ''
                    }
                ]
    }
]
```

NW camera① setting

NW Camera ② Settings
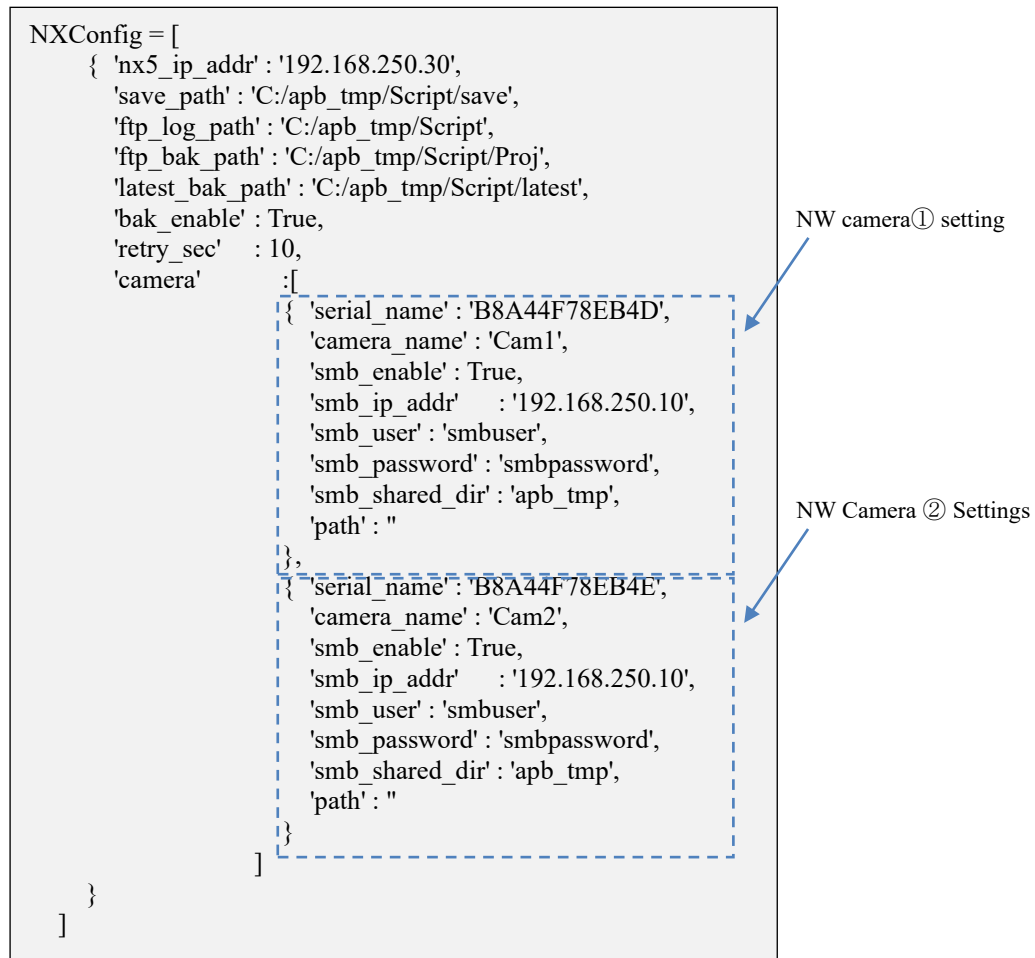
● Example of Setting With Two NX5
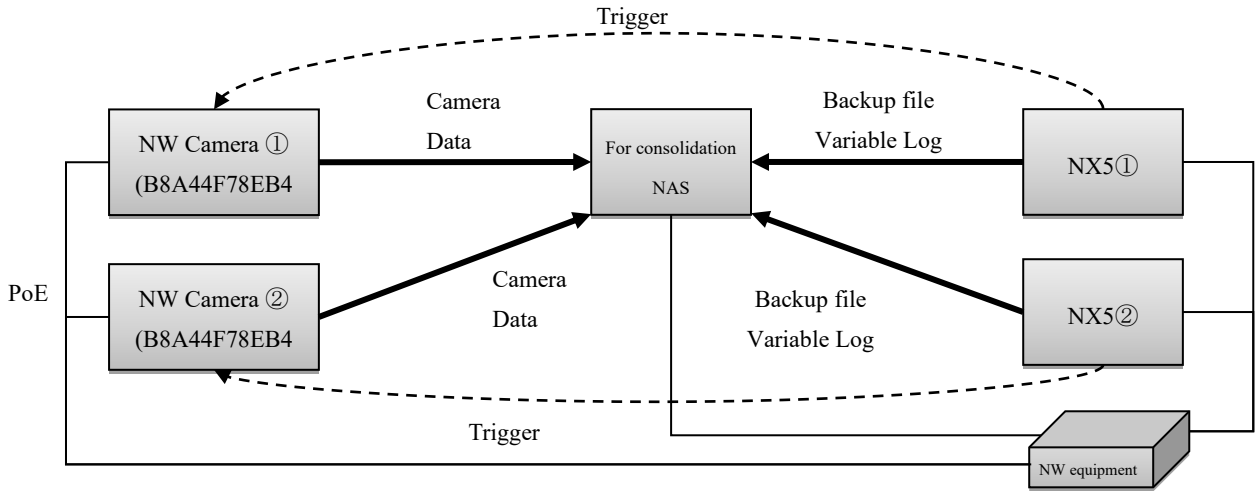
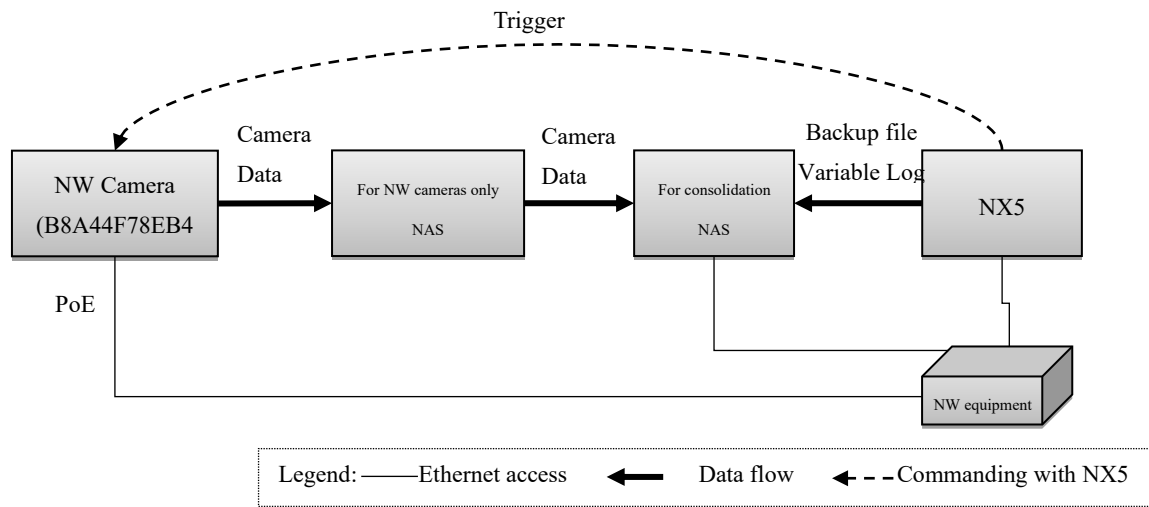| Equipment	IP address	Directories (SMB)	Directories (FTP)
NW Camera ① (Serial Number B8A44F78EB4D)	192.168.250.90	—	—
NW Camera ② (Serial Number B8A44F78EB4E)	192.168.250.91	—	—
NAS for aggregation	192.168.250.10	C:/apb_tmp	C:/apb_tmp/Script
NX5①	192.168.250.30	—	—
NX5②	192.168.250.40	—	—

The following are the required setting items and setting examples of the script setting file in this configuration.

```
NXConfig = [
    {  'nx5_ip_addr' : '192.168.250.30',
       'save_path' : 'C:/apb_tmp/Script/NX5_1/save',
       'ftp_log_path' : 'C:/apb_tmp/Script/NX5_1',
       'ftp_bak_path' : 'C:/apb_tmp/Script/NX5_1/Proj',
       'latest_bak_path' : 'C:/apb_tmp/Script/NX5_1/latest',
       'bak_enable'  : True,
       'retry_sec'    : 10,
       'camera'       :[
                        {  'serial_name'  : 'B8A44F78EB4D',
                           'camera_name'    : 'Cam1',
                           'smb_enable'  : False,
                           'path'        : 'C:/apb_tmp'
                        }
                       ]
    },
    {  'nx5_ip_addr' : '192.168.250.40',
       'save_path' : 'C:/apb_tmp/Script/NX5_2/save',
       'ftp_log_path' : 'C:/apb_tmp/Script/NX5_2',
       'ftp_bak_path' : 'C:/apb_tmp/Script/NX5_2/Proj',
       'latest_bak_path' : 'C:/apb_tmp/Script/NX5_2/latest',
       'bak_enable'  : True,
       'retry_sec'    : 10,
       'camera'       :[
                        {  'serial_name'  : 'B8A44F78EB4D',
                           'camera_name'    : 'Cam2',
                           'smb_enable'  : False,
                           'path'        : 'C:/apb_tmp'
                        }
                       ]
    }
]
```

NX5① Setting

NW camera① setting

NX5② Setting

NW Camera ② Settings

2-3-3   **Setting Up Script Autorun**

Create a batch file to run the scripts so that the scripts can run automatically when NAS for aggregation is started.

■ Creating a Script Execution Batch File

Create a "apb.bat" file in any directory on the aggregation NAS with the following content:

Apb.bat description

Cd "C:\apb_tmp\Script"
Python pbdata_collection.py

C:\ apb_tmp\Script is the directory where the script is located. It must be changed to suit your environment.

■ Auto Run Configuration at Startup

Start Server Manager, and select [Task Scheduler] from the [Tools] tab on the upper right of the screen.
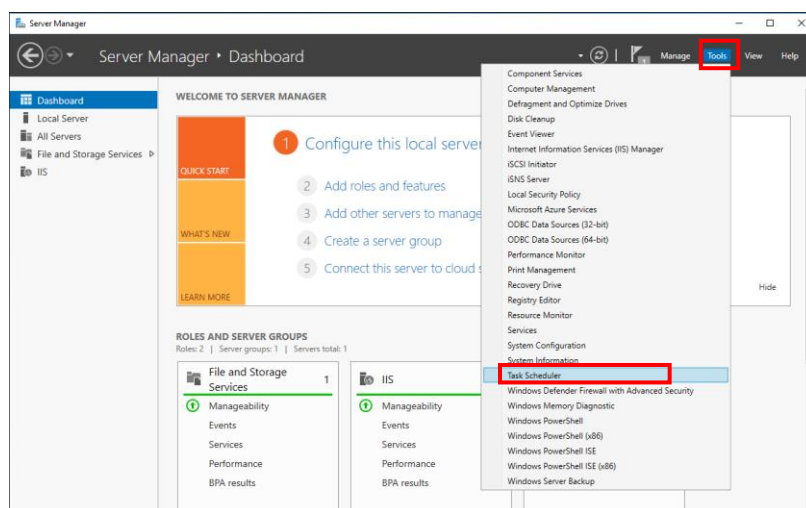
Right-click [Task Scheduler Library] to select [Create Task].
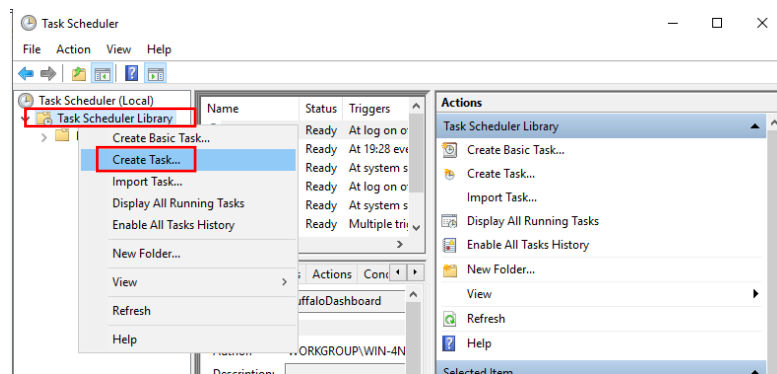
In [Name], enter an arbitrary name to be set for the task name.

Also, check that the [When running the task, use the following user account] is the user name to be set, and select [Run whether user is logged on or not].
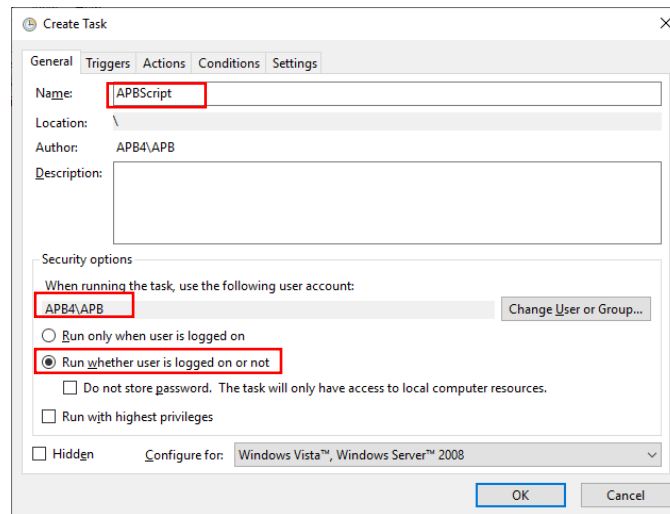
Select the [Triggers] tab and select [New].
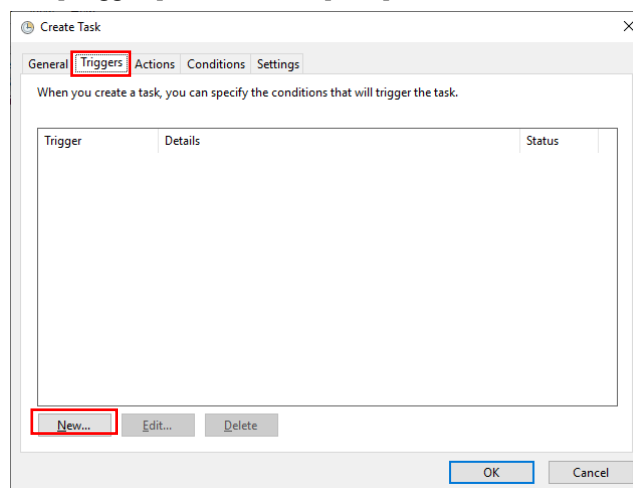
New Trigger will be displayed. Select [At startup] and [OK].
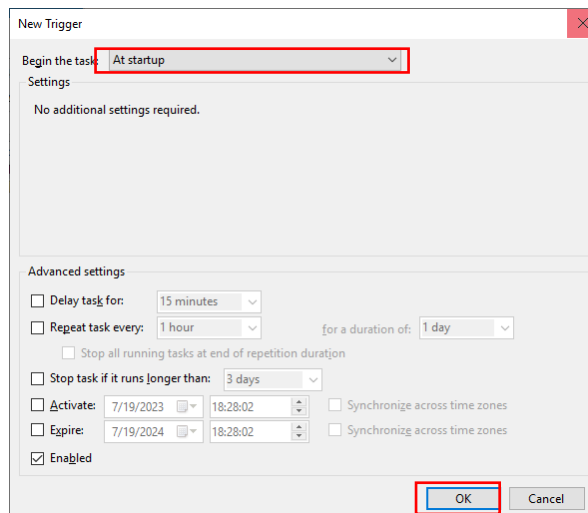
Select the [Actions] tab and select [New].
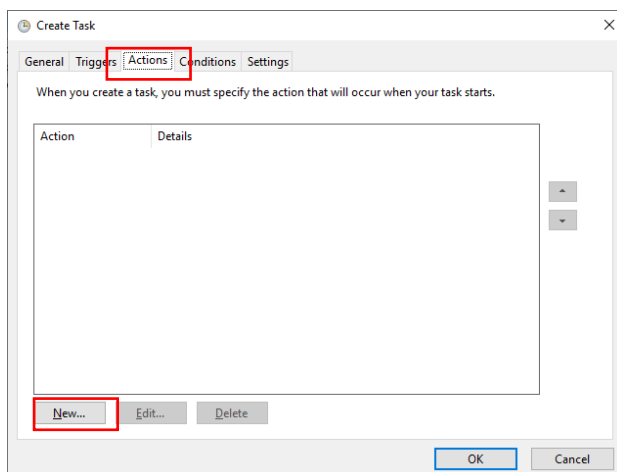
Select the operation pull-down menu and select [Start a program].

In addition, enter "cmd" in the input box of the program/script, and enter "/c <apb.dat absolute path>" in [Add argument (optional)].

The following is a sample configuration when apb.bat is placed in C:/apb_tmp/Script.

And then select OK.
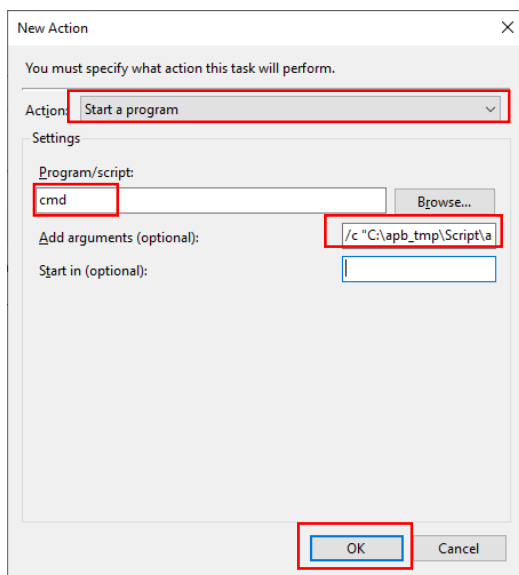
Select the [Conditions] tab. Remove the [Start task only if you are using the computer with AC power] checkbox.
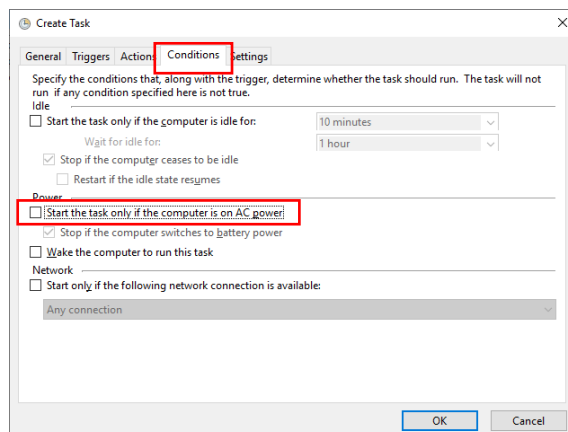
Select [Settings] Tab, and then clear the [if the running task does not end when requested, force it to stop] and [if the task is not scheduled to run again, delete it after] check boxes.
Also, select the pull-down [if the task is already running, then the following rule applies] and select [Stop the existing instance].
And then select OK.
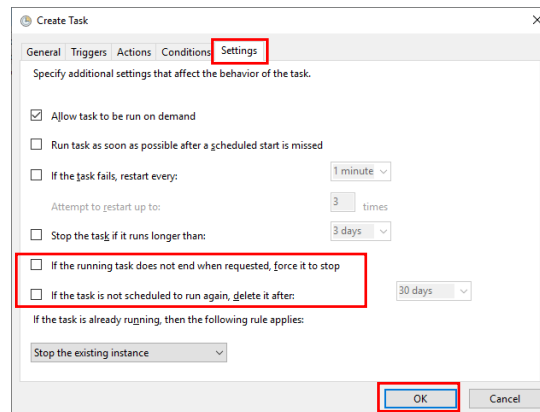
Enter the user name and password to be set in the user count information, and then select [OK].
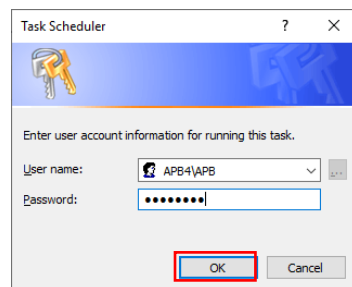
2-3-4　　　　Restarting NAS for Aggregation

Restart NAS for aggregation because the scripting will be executed automatically from the next startup.
You can restart the aggregation NAS by selecting [Restart] from the list displayed by selecting the Power button from the Start button on the taskbar.
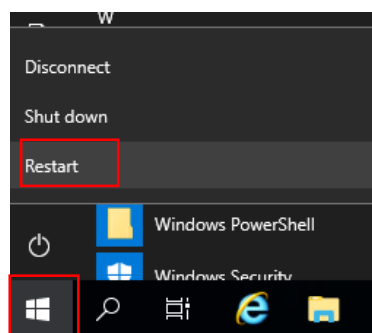
2-4   NW Camera Settings

To configure NW settings, you must configure settings from other computers on the same network.

This manual uses WinPC to configure settings from WEB browsers.

Connect your NW to NW device and do the following:
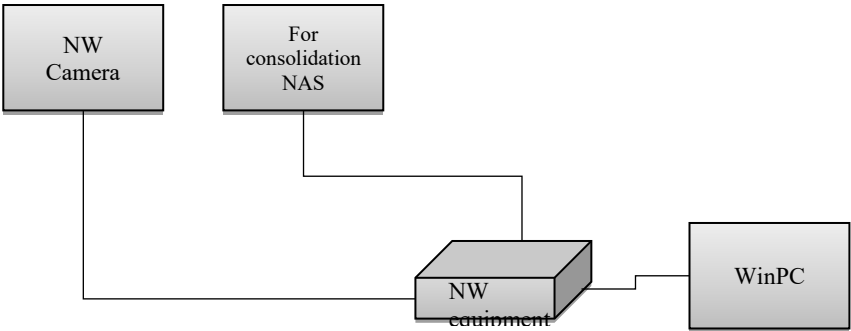
Note that NW connected must have networked settings in advance.

This manual explains how to set NW as shown below.

Preset items	Set value
User name	root
IP address	192.168.0.90
Subnet Mask	255.255.255.0

2-4-1   Connect to NW camera.

Start WEB browsers (such as Microsoft Edge) and IP NW in the address bar.

Enter the path.

Enter your username and password to sign in because access requires you to sign in.
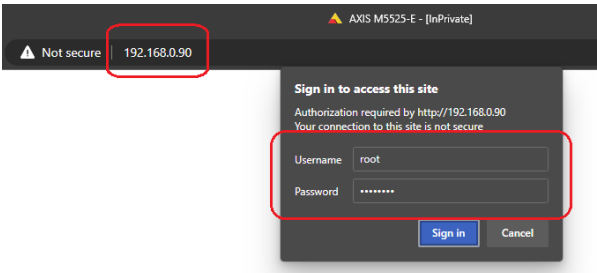
2-4-2　　　　**To set timezone**

The time zone of NW camera must be set to the same setting as NX5.

To set the time zone, perform the following steps:

Select [Settings].
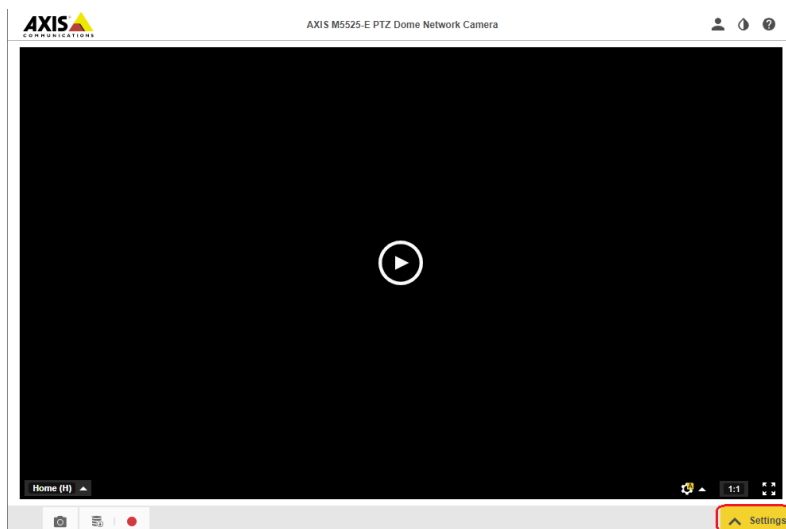
The menu is displayed as shown below.

Then select the [System] tab and select [Date and time].
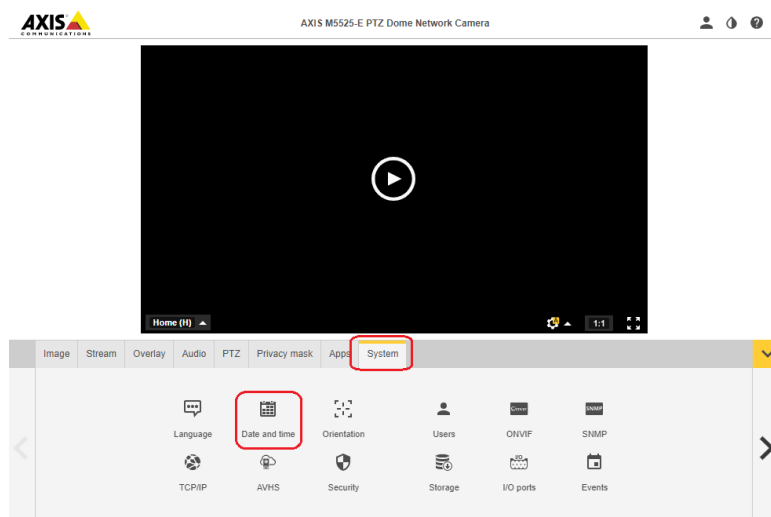
You can select the time zone by selecting the [Time zone] pull-down menu.
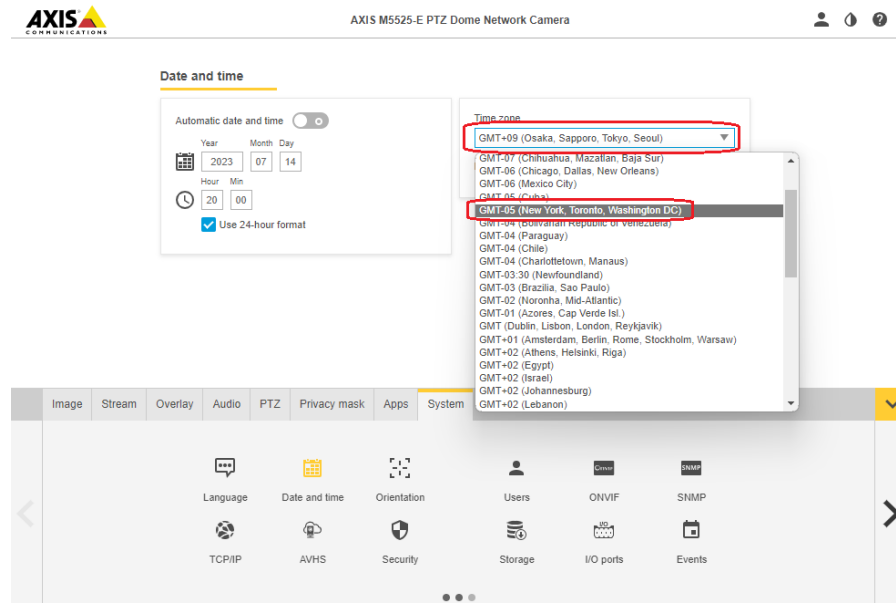
When the time zone is determined, a pop-up set you to save is displayed, and you can save the settings.
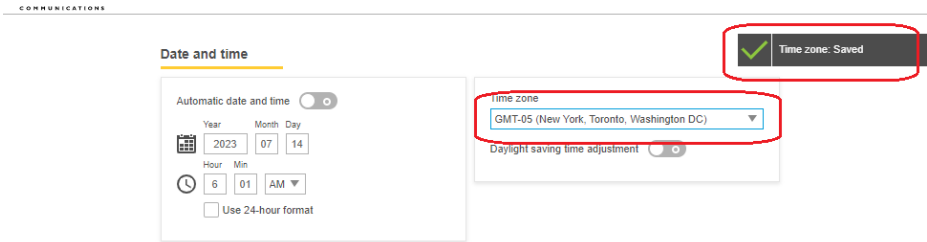
2-4-3   Event Creation

To configure NW camera to send trigs to send camera data, create events (action rules).

The setting of the event must match the setting of NX5.

■ Event creation method

Select the [System] tab and select [Events].
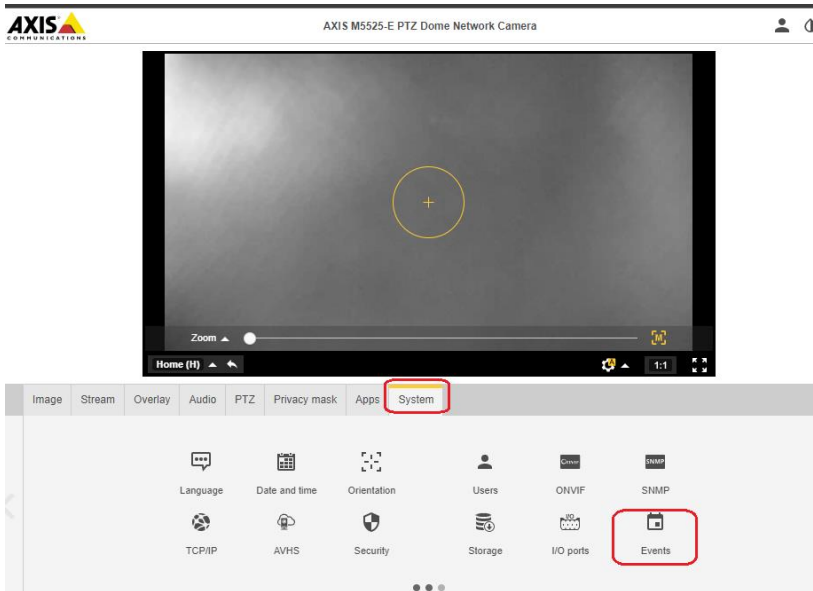
Select [Add...].
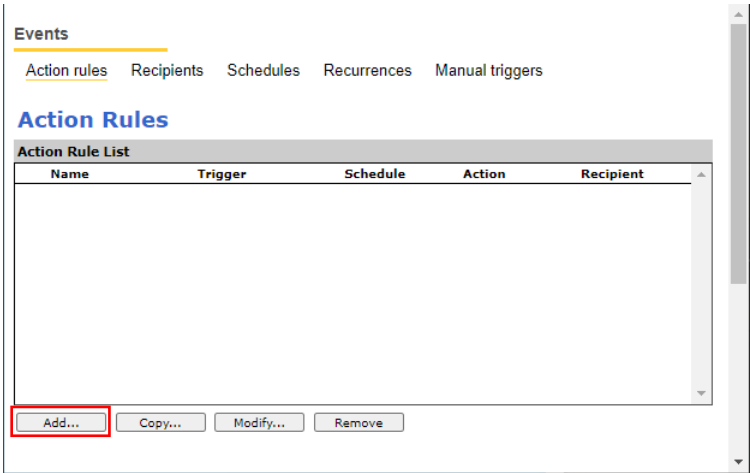
An example of setting up an event is shown below.

When you configure the desired settings and select [OK], the event is registered.

● 　Trigger FW/BW

This setting is for outputting the camera data at the previous and next times from the timing when the trig is sent to NW camera.

Large item	Parameter item	Set value		Description
General	Name	Pre_post_trigger		Optional name to identify the event
Condition	Trigger	Input Signal		Trigger method to receive
		Virtual Inputs		Set this to trigger reception from NX5
		1		Receive port number Must match NX5 set
		Start condition only	TRUE	When multiple triggers are received, processing is not performed even if a trigger is received until the first event is terminated.
	Schedule	Always(No Schedule)		Schedule on which to run the event Always enable events
Actions	Type	Record Video		Setting for saving camera data
	Stream profile	Collect_profile (Profile created)		Allows you to specify a configuration profile for saving videos For details, refer to "Setting the Profile."
	Duration	Pre-trigger time	TRUE 20	When While the rule is active is FALSE, this sets how long the camera-data will be saved from the trigger reception timing to how many seconds ago. Must match NX5 set In this example, 20 seconds is set.
		While the rule is active	FALSE	Saves the camera data while the receive trig value is active
		Post-trigger time	TRUE 10	When While the rule is active is FALSE, this sets how long the camera-data will be saved from the trigger reception timing to how many seconds ago. Must match NX5 set In this example, 10 seconds are set.
	Storage	Network Share		Set the save destination of camera data. Must be set to save to NAS See 2-4-5 for how to set the save destination.

Note

Depending on the camera model and the subject, it may not be possible to save the camera data as set in Pre-trigger time.

The remedies in this case are as follows.

- **NW is used for continuous recording.**
  - ➤ **At this time, set the camera data to be subdivided and saved with the file division option (described later) of NW camera. For example, divide every 10 seconds.**
- **In this system, only the camera data of the period corresponding to the variable log is collected.**
  - ➤ **In this system, among the camera data subdivided in the previous section, camera data for a period corresponding to the variable log is collected and combined into one camera data.**
  - ➤ **For example, if 5-minute camera data is divided every 10 seconds, it combines 5-minute camera data into one file and collects it in the directories specified in the script sets.**
- **Periodically delete camera data that is continuously recorded.**
  - ➤ **Set to automatically delete the recorded data in the camera data output destination setting of NW camera. For example, the maintenance period is one day.**

● 　　Start/save trigger method

This setting outputs camera data from the timing when a trigger is sent to NW camera until the next trigger is received.

Large item	Parameter item	Set value		Description
General	Name	Start_save_trigger		Optional name to identify the event
Condition	Trigger	Input Signal		Trigger method to receive Set this to trigger reception from NX5
		Virtual Inputs		
		2		Receive port number Must match NX5 set
		Start condition only	FALSE	When multiple triggers are received, processing is not performed even if a trigger is received until the first event is terminated.
	Schedule	Always(No Schedule)		Schedule on which to run the event Always enable events
Actions	Type	Record Video		Setting for saving camera data
	Stream profile	Collect_profile (Profile created)		Allows you to specify a configuration profile for saving videos For details, refer to "Setting the Profile."
	Duration	Pre-trigger time	FALSE	When While the rule is active is TRUE, you can specify the duration of saving the data from the first trigger reception timing to the previous second. It is disabled in this example.
		While the rule is active	TRUE	Saves the camera data while the receive trig value is active
		Post-trigger time	FALSE	When While the rule is active is TRUE, you can specify the duration of how many seconds after the second triggered receive is timed. It is disabled in this example.
	Storage	Network Share		Set the save destination of camera data. Must be set to save to NAS See 2-4-5 for how to set the save destination.

The event is enabled by checking the check box to the left of the registered event.
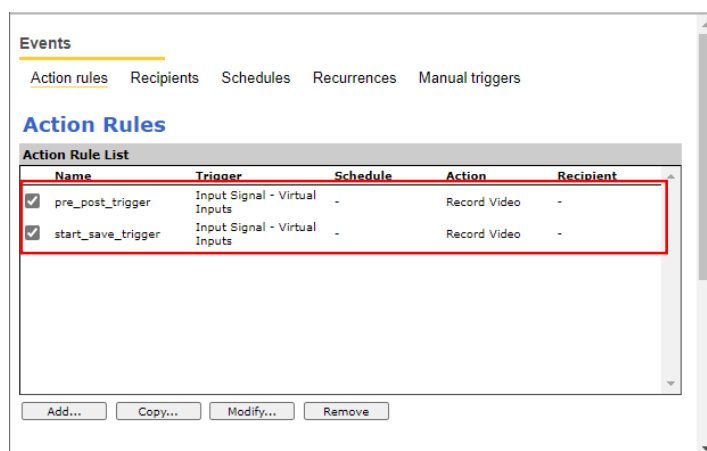
■ Profile Settings

You can set the video format of the camera data and save it individually as a profile setting.
The following parameters can be set as a setting example.
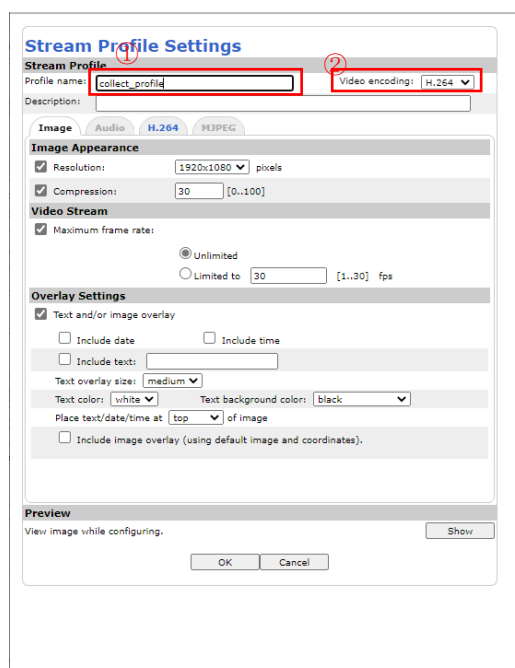
Item No.	Parameter item	Description
①	Profile name	Optional name to identify the profile
②	Video encording	Video Encoding Sets Set H.264

2-4-4　　File division saving method (option)

To divide the camera data to be saved at a specific time interval, the following settings must be made.

Select [Plain config] in the [System] tab.

When you select [Recording] from the list of plain sets, the screen for changing settings is displayed on the right side of the list.

You can save the settings by entering any number of seconds for [Default split duration] and selecting [Save].

In the following, it is set to 10 seconds.

To activate the setting, you need to restart NW cameras.
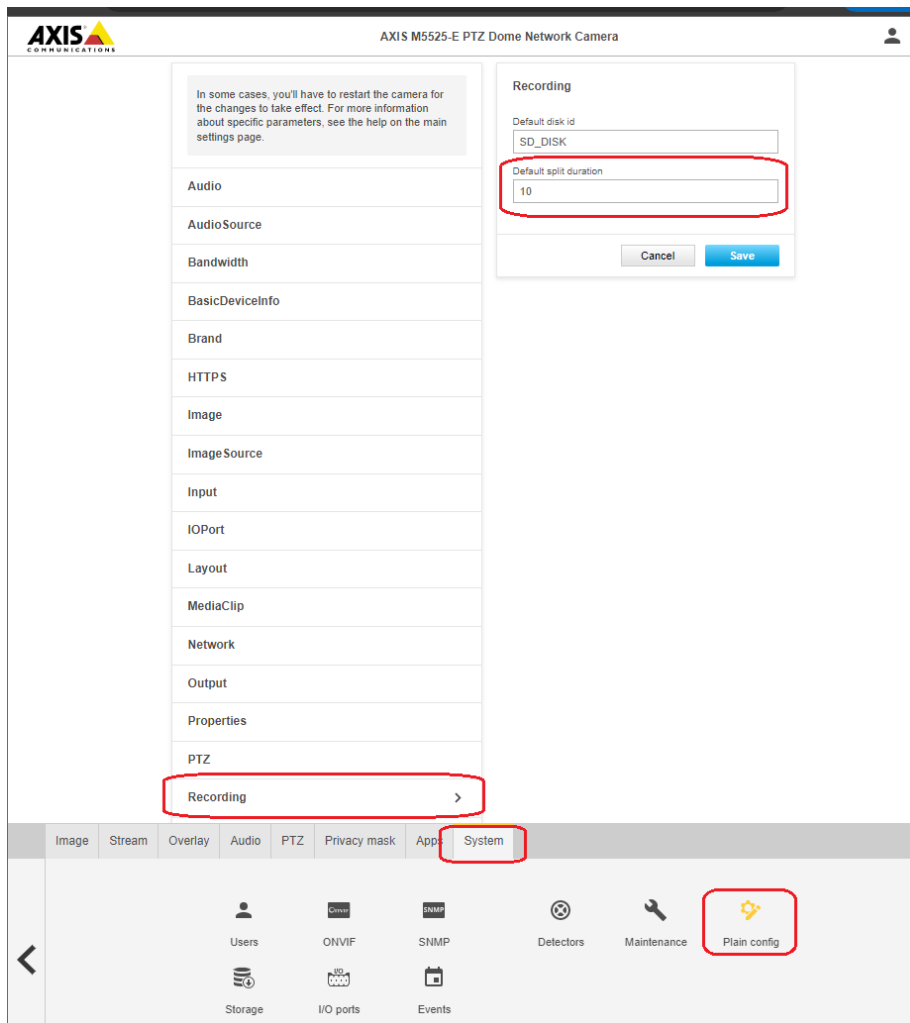
2-4-5   **Setting of output destination of camera data**

Configure network storage settings to send camera data from NW cameras to NAS for aggregation or NW cameras.

Select the [System] tab and select [Storage] to display the setting screen.

Select the [Setup] button in [Network storage].
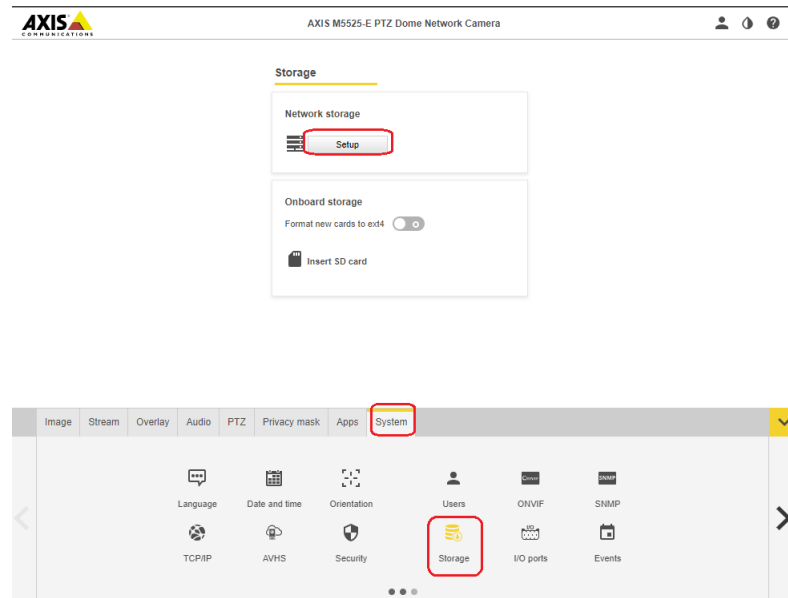
Enter IP address of NAS to be set as the destination in [Host], enter the shared directory name in [Share], and select the toggle switch for [The share requires login].

Next, in [Username] and [Password], enter the user name and password that were set in NAS to be set as the destination.

When you have finished entering the settings, select [Connect].
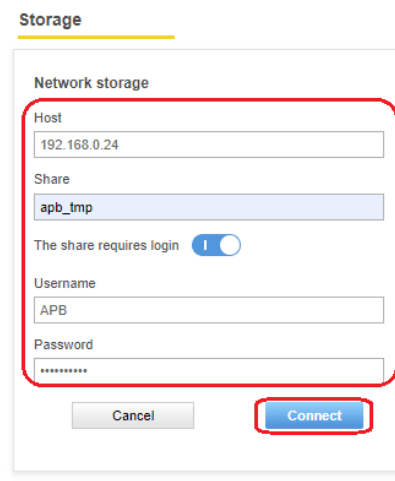
When [Okay] is displayed, you are connected.
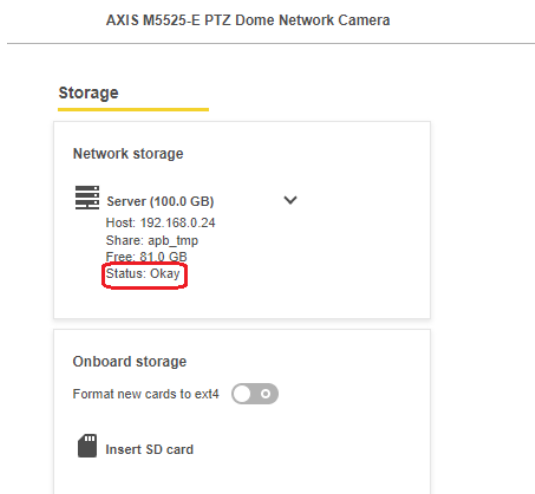
Then set the duration of the recorded data. Click [v] next to [Server].
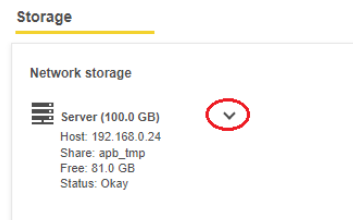
In this system, the recorded data of the time zone related to the variable log is copied to the area specified in the script setting file among the recorded data output by the camera to [Shared Directory] set here. If there is no use for recorded data other than playback with the automation playback function, you can shorten the duration of recorded data in [Shared Directory] so that you can secure the storage space of NAS.
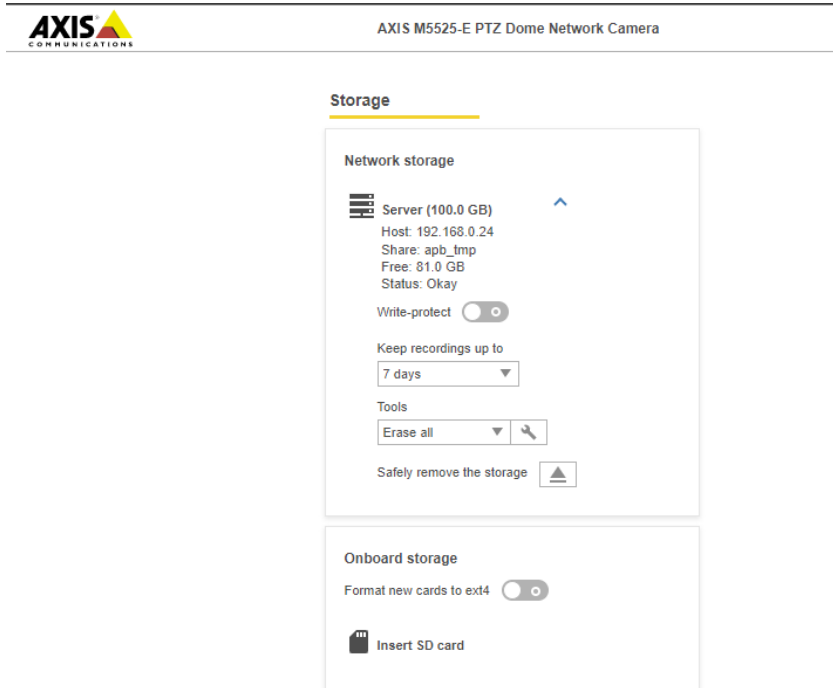
This completes NW camera-setting procedure.

Disconnect WinPC from the network.
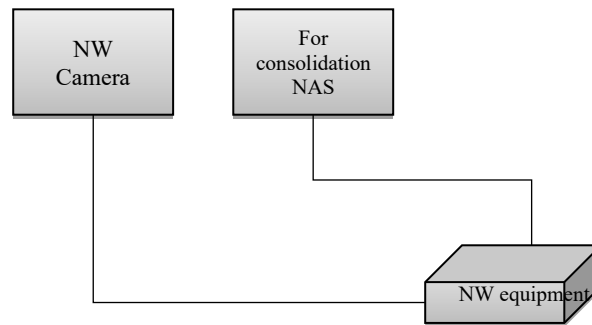
2-4-6   How to set the second and subsequent NW cameras

When adding NW cameras, perform 2-4-1 to 2-4-5 for NW camera.

However, you must set NW camera's IP address. This differs from other NW cameras and equipment.

2-5   NX5 connection

Connect NX5 to the same network to which the devices are connected and start up.

When NX5 transfers the variable log to NAS for aggregation (FTP server specified in the script setting file of this system), this system operates.

Various NX5 settings must be set in advance.
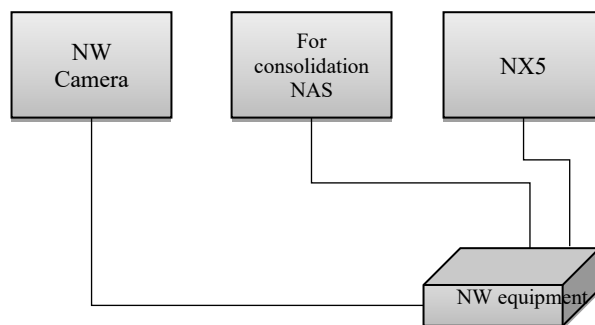
2-5-1   Transferring Project Backup Files from NX5 to NAS

Of the sample programs, refer to the program POU of ProjectUpload. Modify the following initials for your aggregation NAS(FTP server).

```
// Initialize target FTP server setting
IF P_First_RunMode OR UP_Q THEN
    // [TODO] Initialize parameters
    FTPAddr.Adr := '192.168.250.10'; // [TODO] IP address of FTP server
    FTPAddr.UserName := 'ftpuser'; // [TODO] User name of FTP server
    FTPAddr.Password := 'ftppassword'; // [TODO] Password of FTP server. The characters "A-Z", "a-z", "0-9", "-", ".", "_" are usable.
    F_PATH:='apb_tmp/PRJ'; // [TODO] The name of target directory for saving backup files.
                                        : (Omitted hereinafter)
```

2-5-2   Transferring Variable Logs from NX5 to NAS

Of the sample programs, refer to the program POU of VarLogUpload. Change the following defaults to suit your aggregation NAS(FTP server).

```
// Initialize target FTP server setting
IF P_First_RunMode OR UP_Q THEN
    // [TODO] Initialize parameters
    FTPAddr.Adr := '192.168.250.10'; // [TODO] IP address of FTP server
    FTPAddr.UserName := 'ftpuser'; // [TODO] User name of FTP server
    FTPAddr.Password := 'ftppassword'; // [TODO] Password of FTP server. The characters "A-Z", "a-z", "0-9", "-", ".", "_" are usable.
    F_PATH:='apb_tmp/Script/VarLog1'; // [TODO] The name of target directory for saving variable log files.
                                        : (Omitted hereinafter)
```

Chapter 3

Script specification

3-1	**File structure to be aggregated**

The file structure of the playback data to be aggregated in the script of this system is as follows. Files that contain time information (timestamps) are replaced with symbols.

Symbol	Definitions
YYYY	Expresses four digits of a year
MM	Expresses two digits of the month
DD	Expresses two digits of the day
HH	Expresses two digits at the time
Mm	Expresses the second digit of a minute
SS	Expresses two digits of second

3-1-1 Backup file

Backup files are backups of NX5 project files.

It is transferred in FTP from NX5 to NAS for aggregation.

To perform aggregation, you must match the settings of the destination on NX5 with the settings of the backup file FTP path in the script configuration file.

There are three backup files as follows.

File name	Overview
NXBackup.dat	Backup file
RestoreCommand.ini	Backup information file
AutoloadCommand.ini	

3-1-2 Variable log (variable log file)

The variable log (variable log file) is a file in which changes in the variables managed by NX5 are output as a variable log in the form of time series data.

It is transferred in FTP from NX5 to NAS for aggregation.

Aggregation requires matching the destination sets you configure on NX5 with the variable-log FTP paths in the script configuration file.

The variable log contains the following two files.

The names of the two files before the extension are identical.

File name	Overview
VL_YYYYMMDDHHmmSS.bin	Variable log file
VL_YYYYMMDDHHmmSS.ini	Variable log information file

3-1-3 Camera data

Camera data are video files and meta data output by NW cameras.

NW camera outputs NAS for consolidation or SMB to NW camera-specific NAS.

For aggregation, NW camera destination sets must match the camera data path in the script configuration file.

The format of the video to be outputted (encoding, frame rate, length, etc.) must be set by NX5

and NW.

"SERIALNAME" is a serial number that is set uniquely for NW camera.

"TOKENID" is a video token ID that is set every time NW camcorder executes an outputevent of camera data.

When NW camera is set to divide camera data, a set of movie files and meta data will be output for each set of specified divide times.

Video files and metadata have the same name before the extension.

Directory file name	Overview
Axis-SERIALNAME/	Directories for each camera
YYYYMMDD/	Time directory
HH/	
YYYYMMDD_HHmmSS_TOKENID_SERIALNAME/	Directory for each output event of camera data
YYYYMMDD_HH/	Directory for each time
YYYYMMDD_HHmmSS_TOKENID.mkv	Movie file
YYYYMMDD_HHmmSS_TOKENID.xml	Metadata

3-2   File structure to aggregate to

The playback data aggregated by the script of this system is output directly under the directory of the aggregation destination path set in the parameter setting file.

The file configuration is as follows:

"CAMNAME" is the cameraname set in the script setting file.

Files that contain time information (timestamps) are replaced with symbols.

Symbol	Definitions
YYYY	Expresses four digits of a year
MM	Expresses two digits of the month
DD	Expresses two digits of the day
HH	Expresses two digits at the time
Mm	Expresses the second digit of a minute
SS	Expresses two digits of second

Directory file name	Overview
Aggregate path/	Directory set in the destination path
YYYYMMDDHHmmSS/	Directory for storing aggregated playback data The directory name is the same as the time information in the variable log.
Proj/	Directory for backup files If the backup file is not activated, it will not be created.
NXBackup.dat RestoreCommand.ini AutoloadCommand.ini	Backup files transferred from NX5 Backup files that have not been transferred will not be placed
VL_YYYYMMDDHHmmSS.bin VL_YYYYMMDDHHmmSS.ini	Variable Logs Transferred from NX5
CAMNAME_YYYYMMDDHHmmSS.mkv	Video file that combines video files from camera data within the aggregation period If there are multiple cameras, only the number of cameras is created. The time information of the file name is the same as the time information of the variable log.
CAMNAME_YYYYMMDDHHmmSS.xml	CAMNAME_YYYYMMDDHHmmSS.mkv meta-data If there are multiple cameras, only the number of cameras is created. The time information of the file name is the same as the time information of the variable log.

<table>
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3-3   Script Operating Specifications

</td></tr>
</table>

The operating specifications of this system's script are as follows.

3-3-1   Starting conditions

The scripting is started by starting NAS for aggregation.

3-3-2   Stop condition

The script stops when the aggregation NAS stops or when an error occurs that causes the script to not continue during execution.

If you restart the scripting, you must restart NAS for aggregation.

3-3-3   Operation status file

To inform you of the script's operational state, the script creates an operational state file in the same directory as the script.

In addition to the operation status, an error log detected during operation is recorded in the operation status file.

The following four types of operation status files are created.

Either running.log or stopped.log is created, depending on how the scripting is running.

File name	Description
Running.log	Created if the script is running
Stopped.log	Created when the script detects and stops an error that prevents it from proceeding.
Running_bak.log	This is the rename of running.log output during the previous scripting operation.
Stopped_bak.log	Renamed stopped.log generated during the previous scripting operation

3-3-4   Error code

An error code and error details are recorded in the error log that is recorded in the operation status file.

The details of the error and the operation of the script when an error is detected are as follows.

Error code	Error description	Operation when an error occurs
001	Script configuration file does not exist	The script stops.
002	A mandatory parameter is not set in the script configuration file, or a syntax error	The script stops.
003	Accessing the Camera Data Path Set in the Script Configuration File Fails at Script Startup	The script stops.
004	Creating/Deleting/Moving/Copying Directories and Files Fails During Script Operation	The script stops.
005	Other errors detected	The script stops.
101	Receive different variable logs when variable log 2 files of the same time are not aligned	Script will not stop No aggregation is performed
102	Failed to open the variable log file or the format is incorrect.	Script will not stop No aggregation is performed
202	There is already a timestamp directory created on the destination path.	Script will not stop Delete existing directories and perform aggregation
203	The backup file is enabled in the script configuration	Script will not stop

3-3-4 Error code

	file, but the backup file is not transferred, or 3 files are not present.	Perform aggregation on transferred backup files only
204	Cannot access the camera's video save destination directory during consolidation	Script will not stop Conduct aggregation, but Camera data is placed in the aggregation destination path up to the time that can be aggregated Does not combine camera data
205	No file to be aggregated for the required time in the camera data path	Script will not stop Conduct aggregation, but Camera data will be combined up to the aggregated time.
206	Coupling fails due to corruption of aggregated camera data	Script will not stop Conduct aggregation, but Does not combine camera data

3

Script specification

Chapter 4

Used open source license

4-1	**Used open source license**

This section describes the list of open source used in the script of this system, and the version and license at the time of operation check.

Open source name	Version	License
Moviepy	1.0.3	MIT License
Pysmb	1.2.9.1	Zlib/libpng License
Python-dateutil	2.8.0	Apache Software License, BSD License
Tzlocal	4.2	MIT License
Watchdog	2.3.1	Apache Software License

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Used open source license