

# **Product Security Hardening Guide**

V2.0.0

DAHUA TECHNOLOGY CO., LTD.



# Legal Statement

#### **Copyright Statement**

© 2017 Zhejiang Dahua Technology Co., Ltd. All rights reserved. Without the prior written permission of Zhejiang Dahua Technology Co., Ltd. (hereinafter referred to as Dahua), no one can copy, transmit, distribute or store any content of this document in any form. Products described in this document may contain software copyrighted by Dahua or some other third person. Unless approved by the related obligee, no one can copy, distribute, modify, extract, decompile, disassemble, decode, reverse engineer, lease, transfer or sub-license the above-mentioned software in any form which may lead to property infringement.

#### **Trademark Statement**

alhua alhua alhua HDCVI are trademarks or

registered trademarks owned by Zhejiang Dahua Technology Co., Ltd.

- HDMI logo, HDMI and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC. This product has been authorized by HDMI Licensing LLC to use HDMI technology.
- VGA is the trademark of IBM.
- Windows logo and Windows are trademarks or registered trademarks of Microsoft.
- Other trademarks and company names mentioned are the properties of their respective owners.

#### Disclaimer

- Within the scope allowed by applicable laws, in any case, this company won't compensate any special, contingent, indirect and secondary damages resulting from relevant contents and products described in this document, nor compensate any losses in profits, data, reputation, document loss or expected savings.
- Products described in this document are provided "as is". Unless required by applicable laws, this company doesn't provide any express or implicit guarantees for all contents in the document, including but not limited to guarantees for marketability, quality satisfaction, application to specific purpose and non-infringement of third-party rights.
- The security technologies, capability and characteristics described in this document shall be subject to the specific product model, software version, software platform and the implementation of specific solution. It does not provide any expressed or implied guarantee that all the products or solutions of Dahua provide all the security technologies, capability and



characteristics described in this document.

### **Export Control Compliance Statement**

 Dahua abides by applicable export control laws and regulations, and implements export, re-export and transfer requirements of hardware, software and technology. Regarding products described in this manual, please fully understand and strictly conform to applicable export control laws and regulations at home and abroad.

# **About This Document**

- If the PDF document obtained cannot be opened, please upgrade the reading tool to the latest version or use other mainstream reading tools.
- The company reserves the right to modify any information in this document at any time. The modified contents will be added to the new version of this document without prior notice. There may be slight difference in part of the product functions before and after the update.
- This document may contain technical inaccuracies, discrepancies with the product function and operation or typographical errors. All subject to the final interpretation of the company.



# Table of Contents

| LEGAL STATEMENT   | I                    |
|---|----------------------|
| 1.PREFACE   | 1                    |
| 1.1 Acronym   | 1                    |
| 1.2 Overview  | 1                    |
| 2 Security Level  | 3                    |
| 2.1 Security Level Introduction   | 3                    |
| 2.2 Level 1 Protection  | 4                    |
| 2.2.1 Factory Default Setting   | 4                    |
| 2.2.2 Password Management   | 4                    |
| 2.2.3 Set Reset Password Info   | 6                    |
| 2.2.4 Use Latest Firmware or Client   | 8                    |
| 2.2.5 System Time Calibration   | 9                    |
| 2.2.6 Function Minimization   | 10                   |
| 2.2.7 Set Account Locking rules   | 11                   |
| 2.2.8 Check Log   | 12                   |
| 2.2.9 Check Online User   | 13                   |
|   |                      |
| 2.3 Level Two Protection  | 13                   |
| 2.3 Level Two Protection  |                      |
|   | 13                   |
| 2.3.1 Port Management   | 13<br>14             |
| 2.3.1 Port Management<br>2.3.2 Hierarchical Account Management  | 13<br>14<br>16       |
| 2.3.1 Port Management<br>2.3.2 Hierarchical Account Management<br>2.3.3 Enable HTTPS Service  | 13<br>14<br>16<br>21 |
| <ul> <li>2.3.1 Port Management</li> <li>2.3.2 Hierarchical Account Management</li> <li>2.3.3 Enable HTTPS Service</li> <li>2.3.4 Audio Video Transmission Encryption</li> </ul>   |                      |
| <ul> <li>2.3.1 Port Management</li> <li>2.3.2 Hierarchical Account Management</li> <li>2.3.3 Enable HTTPS Service</li> <li>2.3.4 Audio Video Transmission Encryption</li> <li>2.3.5 Block and Allow List Configuration</li> </ul>   |                      |
| <ul> <li>2.3.1 Port Management</li> <li>2.3.2 Hierarchical Account Management</li> <li>2.3.3 Enable HTTPS Service</li> <li>2.3.4 Audio Video Transmission Encryption</li> <li>2.3.5 Block and Allow List Configuration</li> <li>2.3.6 Limit Max Concurrency of Login</li> </ul>   |                      |
| <ul> <li>2.3.1 Port Management</li> <li>2.3.2 Hierarchical Account Management</li> <li>2.3.3 Enable HTTPS Service</li> <li>2.3.4 Audio Video Transmission Encryption</li> <li>2.3.5 Block and Allow List Configuration</li> <li>2.3.6 Limit Max Concurrency of Login</li> <li>2.3.7 Backup Config Data</li> </ul>   |                      |
| <ul> <li>2.3.1 Port Management</li> <li>2.3.2 Hierarchical Account Management</li> <li>2.3.3 Enable HTTPS Service</li> <li>2.3.4 Audio Video Transmission Encryption</li> <li>2.3.5 Block and Allow List Configuration</li> <li>2.3.6 Limit Max Concurrency of Login</li> <li>2.3.7 Backup Config Data</li> <li>2.3.8 Automatic Network Resume</li> </ul> |                      |
| <ul> <li>2.3.1 Port Management</li></ul>  |                      |



| Thermologia                              |    |
|--|----|
| 3.2 Config SNMP Securely                 | 29 |
| 3.3 Config AP Hotspot Securely           |    |
| 3.4 Config SMTP Securely                 | 30 |
| 3.5 Safe Config FTP Function             | 31 |
| 4 INCIDENT RESPONSE                      | 33 |
| 4.1 Security Incident Response Mechanism | 33 |
| 4.2 Security Incident Response Email     |    |



# 1 Preface

This document mainly introduces security levels and various security hardening items, secure application of some functions and incident response mechanism and contact info.

# 1.1 Acronym

| Abbreviation | Full Name   |
|--------------|---|
| ARP          | Address Resolution Protocol                           |
| FTP          | File Transfer Protocol                                |
| MAC          | Media Access Control                                  |
| SSH          | Secure Shell  |
| Onvif        | Open Network Video Interface Forum                    |
| UPnP         | Universal Plug and Play                               |
| NTP          | Network Time Protocol                                 |
| DDNS         | Dynamic Domain Name System                            |
| CGI          | Common Gateway Interface                              |
| 3G           | 3rd-generation  |
| PPPoE        | Point to Point Protocol over Ethernet                 |
| HTTPS        | Hyper Text Transfer Protocol over Secure Socket Layer |
| HTTP         | Hyper Text Transfer Protocol                          |
| SMTP         | Simple Mail Transfer Protocol                         |

# 1.2 Overview

With rapid development of IoT network scale and application, continuous increase of audio/video multi-media application, network environment becomes more and more complicated. All kinds of network threats and attacks are emerging, and network security issue raises more and more concern. Network security events occur frequently, including



Trojan virus, ARP spoofing, application and system attack and so on.

In order to achieve the best network security, Dahua minimizes equipment security risks in product design, development and test and avoids network attacks on devices. However, equipment and service security require the response of the entire supply chain and the participation of end users. Therefore, we develop this security hardening guide to help you establish a security management system to ensure normal and safe operation of equipment and systems.



# 2 Security Level

protection.

# 2.1 Security Level Introduction

The guide formulates three protection levels according to different system scales and security needs. Please refer to Table 2-1 for more details about three protection levels and corresponding security items.

| Protection Level       | Security Item   |
|------------------------|---|
| Level 1 Protection     | Facroty Default setting                                     |
|                        | Password Management   |
|                        | Set reset password info                                     |
|                        | Use latest firmware   |
|                        | Set account lock  |
|                        | Disable unnecessary function                                |
|                        | Enable HTTPS service  |
|                        | Audio and video transmission encryption                     |
|                        | System time Calibration                                     |
|                        | Disable anonymity login                                     |
|                        | Online upgrade  |
|                        | Check log   |
|                        | Check online users  |
|                        | Use latest version of client                                |
|                        | AP hot spot safe application                                |
| Level 2 Protection     | Port management   |
|                        | Hierarchical account management                             |
|                        | Limit the max. number of logins                             |
|                        | Configure block and Allow list                              |
|                        | Backup config data  |
|                        | Enable RAID backup storage                                  |
|                        | Safe config SNMP  |
| Level 3 Protection     | Network log   |
|                        | Enable 802.1x   |
|                        | Device anti-theft   |
|                        | Device anti-damage  |
|                        | Device anti-thunder   |
| <u> </u>               |   |
|                        | uires minimum security while level 3 protection requires    |
|                        | vel 2 protection contains all the security items of level 1 |
| protection and level 3 | protection contains all the security items of level 2       |

Home users and small micro businesses are recommended to configure level 1

| _  |     |     |   |
|----|-----|-----|---|
| Та | ble | 2-1 | 1 |

3



protection; medium-sized enterprises are recommended to configure level 2 protectionl large-sized enterprises and infrastructure projects are recommended to configure level 3 protection. Try to configure a higher security level than recommended if the condition permits.

# 2.2 Level 1 Protection

# 2.2.1 Factory Default Setting

If the device is used by other people, it is recommended to restore factory default setting in order to guarantee device security.

#### **Operation method**

The device supports the following two methods to restore factory default setting:

- Long press the button on device hardware to restore factory default setting.
- Select "Setting > System > Default" on the config interface and enter "Default" interface for operation.

| (alhua             | PREVIEW   | PLAYBACK      | AI SEARCH | ALARM  | SETUP | INFO | LOGOUT |
|--------------------|-----------|---------------|-----------|--------|-------|------|--------|
|                    | 1         | PLAYBACK      | AT SEARCH | PLATIA | SETOP | 000  | 10000  |
| IMAGE              | DEFAULT   |               |           |        |       |      |        |
| NETWORK            | 12 A#     |               |           |        |       |      |        |
| EVENT              |           | 2 NETWORK     | 2 EVENT   |        |       |      |        |
| STORAGE            | 2 CAMERA  |               | 2 EVENT   |        |       |      |        |
| T SYSTEM           | 2 STORAGE | V SYSTEM      |           |        |       |      |        |
| > GENERAL          | Default   | Factory Resel |           |        |       |      |        |
| > DISPLAY          |           | []            |           |        |       |      |        |
| > R8232            |           |               |           |        |       |      |        |
| > PTZ              |           |               |           |        |       |      |        |
| > VOICE PROMPT     |           |               |           |        |       |      |        |
| > ACCOUNT          |           |               |           |        |       |      |        |
| > SECURITY         |           |               |           |        |       |      |        |
| > AUTO MAINTENANCE |           |               |           |        |       |      |        |
| > MPEP             |           |               |           |        |       |      |        |
| DEFAULT            |           |               |           |        |       |      |        |
| > UPGRADE          |           |               |           |        |       |      |        |



### 2.2.2 Password Management

Password includes device admin password and ONVIF access user password, it will cause the device to be invaded if the password is exposed or broken, and it is recommended to make password maintenance according to the following aspects:

- Adopt strong password.
  - Password length should be between 8 and 32 characters, it has to contain at least two kinds of characters including lower-case English letters a~z, capital English letters A~Z, numbers 0~9, special characters (except "'", """, ";", ";", ":", "&", blank and nonprinting characters).
  - The more kinds of character contained in the password, the stronger the password becomes with higher security. It is to set strong password according to



system prompt.

- The password is not recommended to use user name or inverted order of user name, Try to reduce continuous letters or numbers (such as 123, abc and so on).
   Try to reduce continuous use of the same character (such as 111, aaa and so on).
- Modify password regularly

If the password was used by non-staff, it can avoid password being preserved for long term and reduce device exposure risk via modifying password.

#### **Operation method**

Set password

It is required to initialize the device if it is the first time to use the device or the device is used for the first time after factory default setting. Please set strong password for admin user according to the interface prompt.

• Modify device admin password

Select "Setting > System > User Management > User Management", click is modify device admin password.

| Modify User      | 1                                |
|------------------|----------------------------------|
| User             | admin 💌                          |
| Group            | admin 👻                          |
| Memo             | admin 's account                 |
| User MAC         |                                  |
| Modify Password  |                                  |
| Old Password     |                                  |
| New Password     |                                  |
|                  | Low Middle High                  |
| Confirm Password |                                  |
| Email Address    | z***@tech.com                    |
| Authority        |                                  |
| System           | Playback Monitor                 |
|                  |                                  |
|                  | 'STEM SYSTEM INFO MANUAL CONTROL |
|                  |                                  |
|                  |                                  |
|                  |                                  |
|                  |                                  |
|                  |                                  |
|                  |                                  |
|                  |                                  |
|                  | Save Cancel                      |

Figure 2-2

• Modify ONVIF access username and password



Select "Setting > System Management > User Management > ONVIF User", click to modify ONVIF access username and password.



| Modify User      | ×                |
|------------------|------------------|
| User             | admin 💌          |
| Group            | admin            |
| Memo             | admin 's account |
| User MAC         | · · · · · · ·    |
| Modify Password  |                  |
| Old Password     |                  |
| New Password     |                  |
|                  | Low Middle High  |
| Confirm Password |                  |
|                  | Save Cancel      |

# 2.2.3 Set Reset Password Info

Dahua device is equipped with the capability of password reset for admin user; it helps users to manage account better. In order to avoid the function being used by malicious attacker, please set reset password info in advance, please modify in time if there is information being altered. Reset password related info includes reserved email and security question. It is recommended not to use answers which are easy to be guessed when setting security question.

### 2.2.3.1 Set Reserved Email Address

#### **Operation Method**

Password reset operation via reserved email address includes enabling password reset switch and setting reserved email address.

Enable Password Reset Switch
 Select "Setting > System > Security Management > System Service", enter "System
 Service" interface to operate.

Figure 2-4



| @lhua  | PREVENT PLAYBACK SMARTPLAT ALARM BETUP NPO LODOUT  |
|--|--|
| MAGE<br>NETWORK<br>EVENT<br>STORAGE<br>STREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCREAM<br>SCR | PASSABLY     PLAYBACK     SHART PLAY     ALARM     SETUP     INFO     LODOUT       IF FILTER     Bystem Service     HITPS     HITPS       PASSADDD RESET @ Data     HITPS       DOI     @ Enues       DOI     @ Enues       AvdinYoos     The encountry concert is adheen that same       Texerman |
| > AUTO MANTENANCE<br>> MPEXP<br>> DEFAULT<br>> UPGRADE   |  |

- Set Reserved Email Address
  - The device is required to initialize if it is the first time to use the device or the device is used after factory default setting, please set reserved email address according to the interface prompt.
  - Select "Setting > System > User Management", enter "User" interface to modify reserved email address.

| User             |                  |                    | ×              |
|------------------|------------------|--------------------|----------------|
| Username         | admin            | •                  |                |
| Group            | admin            | <b>•</b>           |                |
| Memo             | admin 's account |                    |                |
| Modify Password  |                  |                    |                |
| Old Password     |                  |                    |                |
| New Password     |                  |                    |                |
|                  | Low Middle       | High               |                |
| Confirm Password |                  |                    |                |
| Email Address    |                  |                    |                |
| Authority        |                  |                    |                |
| System           | Playback         | Monitor            |                |
|                  |                  |                    |                |
| ACCOUNT          | SYSTEM           | SYSTEM INFO        | MANUAL CONTROL |
| ✓File Backup     | STORAGE          | ✓ EVENT            | ✓NETWORK       |
|                  | SECURITY         | Device Maintenance |                |
|                  |                  |                    |                |
|                  |                  |                    |                |
|                  |                  |                    |                |
|                  |                  |                    |                |
|                  |                  |                    |                |
|                  | ок               | Cancel             |                |
|                  | UN               | Cancer             |                |
|                  |                  |                    |                |
|                  |                  |                    |                |

Figure 2-5

# 2.2.3.2 Set Security Question



Only storage device supports setting security question.

#### **Operation Method**

- The device is required to initialize if it is the first time to use the device or the device is used after factory default setting, please set security question according to the interface prompt.
- Some storage devices are configured locally, select "Main menu > Setting > System > User Management > Security question" and it supports modifying security question.

|                                    | SETTING   |  |
|------------------------------------|---|--|
| CAMERA                             | TRANSPORT SYSTEM  |  |
| GENERAL<br>DISPLAY<br>RS232        | User Group Security Qu ONVIF User<br>Please set a security question so that you can find the password of admin again. |  |
| PTZ<br>BROADCAST<br>VOICE PROMPT   | Ouestion 1 What is your favorite children's book?   |  |
| ACCOUNT<br>SECURITY<br>AUTO MAINTE | Question 2 (What was the first name of your first boss?   |  |
| IMP/EXP<br>DEFAULT<br>UPGRADE      | Question 3 (What is the name of your favorite fruit?  |  |
|                                    | Setting Delete  |  |

| Figure | 2-6 |
|--------|-----|
|--------|-----|

# 2.2.4 Use Latest Firmware or Client

When some key system vulnerabilities are found, we will release new firmware in order to repair vulnerabilities and stop attackers trying to adopt known vulnerabilities to attack device. Meanwhile the client is matched with device firmware for repairing function or hole. In order to enhance device security level and lower the risks of device being attacked or invaded, please make sure you use the latest firmware version and client which conform to Dahua security baseline.

#### **Operation Method**

• Acquire the latest firmware

Ω

Acquiring the latest firmware or client is only used for manual upgrade, please ignore this if you are using online upgrade function.



Log in Dahua website www.dahuatech.com to download the latest firmware version or client version, or you can download the latest mobile APP in application store.

• Uprade Device

It supports file upgrade and online upgrade. File upgrade requires that firmware has been obtained. Online upgrade requires that your device has been accessed to public network. Online upgrade function can remind you of latest firmware information in order to help you find latest version in time.

Select "Setting > System > System Upgrade", enter "System Upgrade" interface to upgrade firmware version.

| (a)hua  | PREVIEW       | PLAYBACK                                     | AI SEARCH          | ALARM      | SETUP       | INFO    | LOGOUT |
|---|---------------|--|--------------------|------------|-------------|---------|--------|
| IMAGE<br>NETWORK<br>EVENT<br>STORAGE<br>SY&TEM<br>> GENERAL<br>> DISPLAY<br>> R9232                             | System Upgrad |  |                    |            | Browse      | Upgrade |        |
| > PTZ<br>> VOICE PROMPT<br>> ACCOUNT<br>> SECURITY<br>> AUTO MAINTENANCE<br>> IMPRENP<br>> DEFAULT<br>> UPGRADE |               | ade<br>check for updales<br>m Version 321500 | 00008.0 Build Date | 2018-06-28 | blanual Che | 3       |        |

Figure 2-7

# 2.2.5 System Time Calibration

From a security perspective, it is very important to set correct date and time. It will destroy the retrospectivity of recorded file and log if the device time is not correct.

It is recommended to use NTP time sync function. You can adopt public NTP server if NTP server is not deployed, such as time.windows.com.

### Operation method

Select "Setting > System >General > Date", enter "Date" interface to set.



| Figure | 2-8 |
|--------|-----|
| riguic | 20  |

| alhua     | PREVIEW   | PLAYBACK AI SE   | IRCH ALAR  | M   | SETUP | INFO | LOGOUT |
|-----------|---|--|--|---|-------|------|--------|
|           | PREVIEW<br>General<br>Date Format<br>Time Format<br>Date Separator<br>Time Zone<br>System Time<br>System Time<br>DST Type<br>Start Time<br>End Time<br>End Time<br>Server<br>Port | Date& Time YYYY MM DD 24-HOUR - GMT+08:00 2018 - 08 - 09 Date Date Veek Jan Last We Last We time windows.com 123 | Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday<br>Holiday | <ul> <li>&lt;</li> <li></li> <li></li></ul> |       | INFO | LOGOUT |
| > UPGRADE | Interval  | 60<br>OK]  | Min (0-65535)<br>Refresh   | Default.  | 1     |      |        |

# 2.2.6 Function Minimization

It is recommended to conform to the minimization principle when using device function, for reducing device attack surface and improving device security.

| Function     | Entry Condition                                | Factory | Default |
|--------------|--|---------|---------|
|              |  | Status  |         |
| UPnP         | Select "Setting > Network > UPnP"              | Disable |         |
| Multicast    | Select 'Setting > Network > Multicast"         | Disable |         |
| SSH          |  |         |         |
| (Only        |  |         |         |
| supported by | Select "Setting > System > Security > SSH".    | Disable |         |
| IPC and PTZ  |  |         |         |
| camera)      |  |         |         |
| Onvif        | Select "Setting > System > Security > System". | Enable  |         |
| CGI          | Select "Setting > Security > System".          | Enable  |         |
| Wi-Fi        | Select "Setting > Network > Wi-Fi".            | Disable |         |
| 3G/4G        | Select "Setting > Network > 3G".               | Disable |         |
| AP Hotspot   | Select "Setting > Network > AP Hot Spot".      | Disable |         |
| PPPoE        | Select "Setting > Network > PPPoE".            | Disable |         |
| DDNS         | Select "Setting > Network > DDNS".             | Disable |         |
| SNMP         | Select "Setting > Network > SNMP".             | Disable |         |

| Т | а | bl | е | 2. | -2 |
|---|---|----|---|----|----|
|   |   |    |   |    |    |



| Function   | Entry Condition   | Factory Default<br>Status   |
|--|---|---|
| Bonjour<br>(Only<br>supported by<br>IPC and PTZ<br>camera)         | Seelct "Setting > Network > Bonjour".   | Enable  |
| Register   | Select "Setting > Network > Register".  | Disable   |
| FTP  | Select "Setting > Storage > FTP Storage".   | Disable   |
| NAS  | Take IPC for example, select "Setting > Storage > NAS".   | Disable   |
| Password reset   | Select 'Setting > System > Security > System Service".  | Enable  |
| P2P  | Select "Setting > Network > P2P".   | Enable  |
| Audio  | Select "Setting > Camera > Encode > Stream"   | IPC/NVR/DVR:<br>Main stream is<br>enabled by default,<br>sub stream is<br>disabled by default.<br>PTZ camera: It is<br>disabled by default. |
| Alarm center   | Select "Setting > Network > Alarm Center".  | Disable   |
| SMTP   | <ul><li>DVR/NVR: Select "Setting &gt; Network &gt; Email Setting".</li><li>IPC/PTZ: Select "Setting &gt; Network &gt; SMTP (Email).</li></ul> | Disable   |
| ISCSI (Only<br>supported by<br>some NVR)                           | Select "Setting > Storage > ISCSI"  | Disable   |
| GB 28181   | Select 'Setting > Network > GB 28181".  | Disable   |
| Anonymity<br>login (Only<br>supported by<br>IPC and PTZ<br>camera) | Seelct "Setting > System > User > User".  | Disable   |

# 2.2.7 Set Account Locking rules

The attacker may log in the device forcibly via trying password for several times, account locking can avoid the possibility of attackers trying continuously for several times and it can protect the device account security.

#### **Operation Method**

• NVR/DVR: select "Setting > Event > Abnormity > User", enter the "User" interface to set, the fewer attempts allowed, the longer the lock time becomes and the higher the



security level is.

| <b>-</b> : | ~ ~ |
|------------|-----|
| Figure     | 2-9 |

| (alhua  | PREVIEW                | PLAYBACK      | AL SEARCH    | ALARM | SETUP | INFO | LOGOUT |
|---|------------------------|---------------|--------------|-------|-------|------|--------|
| IMAGE   | HOD                    | Network       | User         | Fan   |       |      |        |
| - EVENT   | Event Type             | Illegal Login |              |       |       |      |        |
| VIDEO DETECTION     SMART PLAN                                | V Enable<br>Attempt(s) | 5             | Times (1-10) |       |       |      |        |
| > IVS<br>> FACE DETECTION                                     | Lock Time              | 5             | Min. (1~30)  | ļ     |       |      |        |
| <ul> <li>FACE RECOGNITION</li> <li>HUMAN BODY DETE</li> </ul> | Latch                  | 10            | Sec(0-300)   |       |       |      |        |
| > ANPR<br>> PEOPLE COUNTING                                   | Voice Prompts          | File Name     | None         | •     |       |      |        |
| > HEAT MAP<br>> AUDIO DETECT                                  |                        | OK            | Refresh      |       |       |      |        |
| > ALARM   |                        |               |              |       |       |      |        |
| > ALARM OUTPUT  |                        |               |              |       |       |      |        |
| > POS<br>• STORAGE  |                        |               |              |       |       |      |        |
| > SYSTEM  |                        |               |              |       |       |      |        |

• IPC/PTZ Camera: Seelct "Setting > Event > Abnormity > Illegal Access", enter the "Illegal Access" interface to set, the fewer login error allowed, the higher the security level becomes.

# 2.2.8 Check Log

Log is the important basis to trace device abnormity, you are advised to check log regularly, such as security type log, illegal user login and so on, and it has to troubleshoot if the device is safe timely.

#### **Operation Method**

Seelct "Information > Log", enter "System Log" interface to inquire if there is log of security type.

Figure 2-10



| i)hua          | PREVIEW         | PLAYBACK   | AI SEARCH | ALARM    | SETUP    | INFO       | LOGOUT        |
|----------------|-----------------|------------|-----------|----------|----------|------------|---------------|
| PO             | Log             |            |           |          |          |            |               |
| dirson         | mattine         | 2018-08-09 | 77 (      | 00 00 00 | End Time | 2018-08-10 | 770 00 00 00  |
| MUNE USERS     | Tjpe            | Al         | •         | Search   |          |            |               |
| EOPLE COUNTING | S 1No.          |            |           | Tême     |          |            | Exm           |
| EATMAP         |                 |            |           |          |          |            |               |
| 60             |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                |                 |            |           |          |          |            |               |
|                | System Log info |            |           |          |          |            |               |
|                | Terne<br>Type   |            |           |          |          |            |               |
|                | Time            |            |           |          |          |            |               |
|                | Terne<br>Type   |            |           |          |          |            |               |
|                | Terne<br>Type   |            |           |          |          |            | H 4111 H H    |
|                | Terne<br>Type   |            |           |          |          |            | H 4 111 P M T |

# 2.2.9 Check Online User

The device is equipped with the function which can display the info of online users; it is recommended that you can check online user info occasionally and troubleshoot if the device is logged in illegally. NVR/DVR also supports the function of removing unexpected users.

#### **Operation Method**

Select "Information > Online User", enter "Online User" interface to inquire.

| alhua   | PREVIEW     | PLAYBACK AI SEAR   | CH ALARM               | SETUP INFO                 | LOGOUT              |
|---|-------------|--------------------|------------------------|----------------------------|---------------------|
| INFO  | Online User |                    |                        | 20 <sup>2</sup>            |                     |
| > VERSION<br>> LDC<br>> OPENER (SEER)<br>> PEOPLE COUNTING<br>> HEAT MAP<br>> HDD | His.        | Unertaine<br>admin | Contraj Mathe<br>admin | 19 Antoine<br>10 18 119 26 | 0018-06-02 02 31 10 |
|   | Reheab      | 8                  |                        |                            |                     |

Figure 2-11

# 2.3 Level Two Protection

### 2.3.1 Port Management

Batch attacks in a network often look for well-known ports as direct entry points for attacks. Modifying the port can hide itself and block certain attacks, it is recommended that you customize service port number of the device.



### **Operation Method**

Select "Setting > Network > Port", enter "Port" interface to set.

```
Figure 2-12
```

| alhua             | PREVIEW       | PLAYBACK   | AI SEARCH            | ALARM               | SETUP  | INEG              | LOGOUT |
|-------------------|---------------|------------|----------------------|---------------------|--|-------------------|--------|
| IMAGE<br>NETWORK  | PORT          | HTTPS      |                      |                     |  |                   |        |
| ICRIF             | Mas Connectio | 128        | 10                   | 1280                |  |                   |        |
| Paul              | TCP Port      | 37777      | 61                   | (25-65830)          |  |                   |        |
| PPOE.             | UDP Port      | 37778      | 010                  | 125-6953E)          |  |                   |        |
| 00148             | HTTP Past     | 80         | 0                    | (65535)             |  |                   |        |
| SIVING TIME RIGHT | HTTPS Plot    | 443        | .01                  | 65535) [] Enster    |  |                   |        |
| EWAL              | RTSP Part     | 554        | (1-                  | -665351             |  |                   |        |
| UPnP              | POS Pad       | 38800      | 0                    | -05535)             |  |                   |        |
| 3144F             | RTSP Format   | itsp:/~Use | mamer: «Paseword-    | g-sP Addresses-Port | -/cam/realmon/tor?ch   | iannel=1&sublge=0 |        |
| WILTICAST         |               | channel Cl | tannel, 1-32, subhpe | Code-Shwam Type A   |  | team 1            |        |
| REGISTER          |               | ~~~~       | Better               | h Detaut            |  |                   |        |
| ARM CENTER        |               |            |                      | n Cardina           | termine in the second s |                   |        |
| 2P                |               |            |                      |                     |  |                   |        |
| BWTCH             |               |            |                      |                     |  |                   |        |
| NT                |               |            |                      |                     |  |                   |        |
| ORAGE             |               |            |                      |                     |  |                   |        |
| SYSTEM            |               |            |                      |                     |  |                   |        |

# 2.3.2 Hierarchical Account Management

Hierarchical account management realizes different authorities for people with different identity, which is to avoid exceeding authority. For example, an video surveillant is limited to check video. It is recommended that you classfy and decentralize system users and assign the minimum scope of authority required for each user to control the risk of misuse of equipment, while facilitating security audits.

#### **Operation Method**

#### Step 1

Select "Setting > System > User > User > User Group", enter "User Group" interface to set user group and give the user group corresponding authority.

| (alhua )  | PLAYS  | ACK A) SEARCH ALAR                        |   | LOGOUT        |          |
|---|--|---|---|---------------|----------|
| IMADE     NETWORK     EVENT     STORAGE     SY STEM     CONERNL     CONERNL     OUSPLAT     NOLOC PROMPT     AUDOLART     SECURITY     SUCCORTY | Diski<br>Diski<br>2<br>2<br>5<br>3<br>2<br>2<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5<br>5 | User<br>Geop<br>Doop lane<br>adren<br>aan | Nervis<br>administrator group<br>wear group | Width Dr<br>2 | itte<br> |
| > BUYEOF<br>> DEFAULT<br>> UPGRADE  |  |   |   |               |          |

Figure 2-13



Figure 2-14

| , | Add Group   |             |          | ×      | 3 |
|---|---|-------------|----------|--------|---|
|   | Group Name<br>Memo                                  |             |          |        |   |
|   | Authority   |             |          |        |   |
|   | System  | Playback    | Monitor  |        |   |
|   | AII<br>Device Maintenance<br>NETWORK<br>SYSTEM INFO | File Backup | SECURITY | CAMERA | - |
|   |   | ок          | Cancel   |        |   |

# Step 2

Select "Setting > System > User > User > User", enter "User" interface to add user or modify user group.

| Figure 2 | -15 |
|----------|-----|
|----------|-----|

| Add User                                    | ×              |
|---|----------------|
| User  |                |
| Password                                    |                |
| Low Middle High                             |                |
| Confirm Password                            |                |
| Group admin 💌                               |                |
| User MAC                                    |                |
| Memo  |                |
| Period Setting                              |                |
| Authority                                   |                |
| System Playback Monitor                     |                |
| I III<br>I IIII<br>I IIIIIIIIIIIIIIIIIIIIII | MANUAL CONTROL |
|   |                |
|   |                |
|   |                |
|   |                |
|   |                |
|   |                |
|   |                |
| Save Cancel                                 |                |



# 2.3.3 Enable HTTPS Service

HTTPS is the protocol service based on TLS encrypted link transmission. It ensures that the data is encrypted during transmission when it accesses to device via WEB, which is to prevent attackers stealing it maliciously, it is recommended that you have to enable and use HTTPS to access device WEB.

#### **Operation method**

Take NVR for example; please refer to the corresponding user manual for operation if it needs to configure IPC or PTZ camera.

#### Step 1

Select "Setting > Port > Port", enter "Port" interface to enable HTTPS function.

#### Note

Please select "Setting > Network > HTTPS" for config access of IPC and PTZ camera.

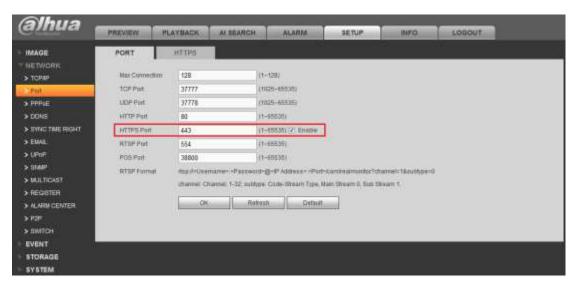


Figure 2-16

#### Step 2

Create server certificate.

It needs to implement "Create Server Certificate" if it is your first time to use the function or modify device IP.

- 1. Select "Setting > Port > HTTPS", enter "HTTPS" interface.
- 2. Click "Create Server Certificate", the system will display the dialog box of "Create Server Certificate".

Figure 2-17



| Create Server Certificate |               |  |  |  |  |
|---------------------------|---------------|--|--|--|--|
| Country                   | AU            |  |  |  |  |
| State                     |               |  |  |  |  |
| Locatity                  |               |  |  |  |  |
| Oragnization              |               |  |  |  |  |
| Oragnization Unit         |               |  |  |  |  |
| IP or Domain Name         | 10.10.6.238   |  |  |  |  |
|                           | Create Cancel |  |  |  |  |
|                           |               |  |  |  |  |
|                           |               |  |  |  |  |

3. Fill in the corresponding "Country", "Province" and other info, click "Create". The system will prompt "Successfully created" after it is created successfully.

Note

The value of "IP or Domain Name" has to be in accordance with the device IP or domain name.



| HTTPS                     |                           |  |
|---------------------------|---------------------------|--|
| Create Server Certificate | Download Root Certificate |  |
|                           |                           |  |

#### Step 3

Download root certificate.

It needs to implement "Download Root Certificate" if it is your first time to use HTTPS on your computer.

- 1. Select "Setting > Port > HTTPS", the system will display "HTTPS" Interface.
- 2. Click "Download Root Certificate", the system will display the interface of "File Download".

Figure 2-19



| File Download - Security Warning       |  |  |  |  |
|--|--|--|--|--|
| Do you want to open or save this file? |  |  |  |  |
|  | Name: ca.crt<br>Type: Security Certificate<br>From: <b>10.10.6.238</b>   |  |  |  |
|  |  |  |  |  |
| 1                                      | While files from the Internet can be useful, this file type can<br>potentially harm your computer. If you do not trust the source, do not<br>open or save this software. <u>What's the risk?</u> |  |  |  |

3. Click "Open", the system will display the interface of "Certificate" info.

| 39         | Certificate Information  |
|------------|--|
| inst       | s CA Root certificate is not trusted. To enable trust,<br>call this certificate in the Trusted Root Certification<br>horities store. |
| 9 <u>9</u> | Issued to: test  |
|            | Issued by: test  |
|            | Valid from 2016/ 7/ 8 to 2020/ 7/ 7  |
|            |  |

Figure 2-20

4. Click "Install Certificate", the system will display the interface of "certificate Import Wizard".

Figure 2-21





5. Click "Next", the system will display the interface of selecting certificate storage area.

Figure 2-22



| Certificate Store                                   |   |
|---|---|
| Certificate stores are system are                   | eas where certificates are kept.                          |
| Windows can automatically selec<br>the certificate. | ct a certificate store, or you can specify a location for |
| Automatically select the or                         | ertificate store based on the type of certificate         |
| Place all certificates in the                       | following store   |
| Certificate store:                                  |   |
| Trusted Root Certificatio                           | on Authorities Browse                                     |
| Learn more about <u>certificate stores</u>          |   |
|   | < Back Next > Cancel                                      |

6. Click "Next", the system will display the interface of "Completing certificate import wizard".

Figure 2-23



7. Click "Finish", the system will display the interface of "Import successfully", which means certificate download has been completed.





### 2.3.4 Audio Video Transmission Encryption

Audio and video data carries a large amount of personal privacy content, which is the key object protected by device. It is recommended to enable the function of audio video transmission encryption in order to avoid audio video data being stealed maliciously by attackers during transmission; it can guarantee data security during transmission.

#### **Operation Method**



Select "Setting > System > Security > System Service", enter the interface of "System Service" to set.

Figure 2-25

| IP FILTER       | System Service HTTPS  |
|-----------------|---|
| PASSWORD RE     | SET 🔽 Enable  |
| Mobile Phone Pu | sh 📝 Enable   |
| CGI             | ✓ Enable  |
| ONVIF           | ✓ Enable  |
| Audio/Video     | Enable The corresponding device or software shall support                 |
| Transmission    | video decryption function.  |
| Encryption      |   |
| File Backup     | Enable Set Password (It is 8 to 32-digit containing letter(s), number(s), |
| Encryption      | symbol(s). It contains at least two types.)                               |
|                 | OK Refresh Default  |

# 2.3.5 Block and Allow List Configuration

Enable allow list, it can access the device only when IP/MAC addresses are added to the allow list. Enable block list, the IP/MAC addresses added to block list is prohibited to access to device. It is recommended to enable block list or allow list, it is to set the minimum range that the device can be accessed to, and reduce the device attack surface via block and allow list function.

#### Note

IPC/PTZ camera only supports allow list function.

#### **Operation method**

Select "Setting > System > Security > IP Filter", enter "IP Filter" interface to set.



| IP Filter     |                    |       |               |
|---------------|--------------------|-------|---------------|
| Transit Silve |                    |       |               |
| Trusted Silve |                    |       |               |
|               | Pablica MAC abbres | Multy | Dates         |
|               |                    |       |               |
|               |                    |       |               |
|               |                    |       |               |
|               |                    |       |               |
|               |                    |       |               |
|               |                    |       |               |
| ANIPMAC       |                    |       |               |
|               |                    |       | L. Martine Ad |
| Celait        | and the second     |       |               |
|               |                    |       |               |

# 2.3.6 Limit Max Concurrency of Login

It is to limit the number of clients (WEB client, platform client and mobile client etc.) that devices allow to log in at the same time, help the device limit malicious flow attack and



protect normal operation of important business.

#### **Operation Method**

Select "Setting > Network > Port", enter the "Port" interface to set.

| F | in | ıır | þ | 2- | .2  | 7 |
|---|----|-----|---|----|-----|---|
| L | ıy | uı  | e | ۷. | · _ | 1 |

| CONNECTION     | HTTPS   |   |
|----------------|---|---|
|                |   |   |
| Max Connection | 128   | (0~128)   |
| TCP Port       | 37777   | (1025~65535)  |
| UDP Port       | 37778   | (1025~65535)  |
| HTTP Port      | 80  | (1~65535)   |
| HTTPS Port     | 443   | (1~65535) 🔲 Enable  |
| RTSP Port      | 554   | (1~65535)   |
| POS Port       | 38800   | (1~65535)   |
| RTSP Format    | rtsp:// <user name="">:<passw< th=""><th>vord&gt;@<ip address="">:<port>/cam/realmonitor?channel=1&amp;subtype=0</port></ip></th></passw<></user> | vord>@ <ip address="">:<port>/cam/realmonitor?channel=1&amp;subtype=0</port></ip> |
|                | channel: Channel, 1-16; sub   | type: Code-Stream Type, Main Stream 0, Sub Stream 1.                              |
|                | Save  | efresh Default  |

# 2.3.7 Backup Config Data

Backup the config data timely and it can recover quickly when the config data is destroyed.

#### **Operation method**

Select "Setting > System > Config Backup", enter the interface of "Configure Import Export" to operate.



Figure 2-28

### 2.3.8 Automatic Network Resume

IPC continues to record when NVR device detects a break in the network connection with IPC. After the network is recovered, the NVR will download the video from the IPC during



the period when the network is disconnected, so as to guarantee the integrity of the video recording of the IPC channel in the NVR equipment. The function can help you better ensure the integrity if your video.

#### **Operation Method**

IPC/PTZ camera enables the function by default; the device is able to store the video data locally without any other config during network disconnection when it is equipped with a SD card.

On the interface of NVR/DVR config interface, select "Setting > Storage > Storage > Record", enter "Record" interface and enable ANR function and set prerecord duration.

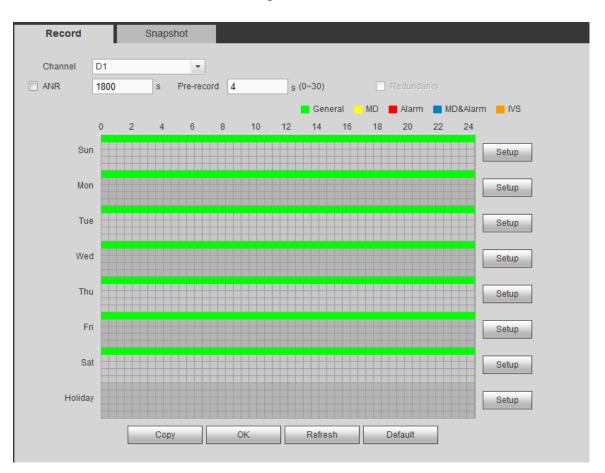


Figure 2-29

# 2.4 Level Three Protection

### 2.4.1 Network Log

Due to limited storage capacity of the device and limited logging capability, it is recommended that you enable network logging, which will ensure that critical logs are synchronized to the network log server. The function is only supported by IPC and PTZ camera.

# **Operation Method**

#### Note

Please make sure the syslog server is deployed on the remote host and the server is



enabled before using the function.

Take IPC for example, select "System Info > System Log > Remote Log Record".

Figure 2-30

| og           | Remote Lo | g      |   |     |           |      |
|--------------|-----------|--------|---|-----|-----------|------|
| Enable       |           |        |   |     |           |      |
| IP Address   | 192       | 168    |   | 108 |           |      |
| Port         | 514       |        |   |     | (1~65534) |      |
| Device Numbe | 22        |        |   |     | (0-23)    |      |
|              | D         | efault |   | Re  | tresh     | Save |
|              |           |        | - |     | -         |      |
|              |           |        |   |     |           |      |

# 2.4.2 Enable 802.1x

802.1x is a network access authentication protocol. Only after passing the authentication, can it implement normal network communication. It is recommended that you establish an 802.1x access control system to block malicious terminal access to private network. IPC and PTZ camera can support 802.1x access authentication now.

#### **Operation Method**

Take IPC for example, select "Setting > Network > 802.1x", enter "802.1x" interface to set.

Figure 2-31

| alhua   |  |                  |        | Live | 112 | Paybas | Satup | Alarm | Logout |
|---|--|------------------|--------|------|-----|--------|-------|-------|--------|
| - Camera  | 802.1x   | 1                |        |      |     |        |       |       | 0      |
| <ul> <li>Hellwork</li> <li>TCMP</li> <li>Connection</li> <li>Herrigg</li> <li>DOME</li> <li>Hir Friter</li> <li>SWITHERMIN</li> <li>Linger</li> </ul> | y Erate<br>Autometaton<br>(Invrore<br>Passwort | PEAP<br>sone<br> | Refeat |      |     |        |       |       |        |
| > StatP<br>> boux#<br>> tottaat<br>> Col:<br>= Event<br>= Storige<br>= System<br>= Information  |  |                  |        |      |     |        |       |       |        |

### 2.4.3 Cluster Service

Cluster service refers to a cluster composed of multiple isomprphic devices. When one or more of the devices fail the function is switched to the standby device and the standby device replaces the primary device. The failure of master equipment will not result in the inability to view real-time monitoring or loss of video. Only some NVR support this function.

#### **Operation Method**

#### Step 1

Add master device and standby device on the standby device.

• Select "Setting > Cluster Service > Master Device", enter the interface of "Master



Device" and add master device.

Figure 2-32

| Manual Add                  |                          | UPPER LINE | CHARGINGAR |        |
|-----------------------------|--------------------------|------------|------------|--------|
| Matter Divice Kenne<br>M/R1 | 17 Astren<br>172.11.3.28 | Warking    | Operation  | Datata |
|                             |                          |            |            |        |
|                             |                          |            |            |        |
|                             |                          |            |            |        |
|                             |                          |            |            |        |

 Select 'Setting > Cluster Service > Standby Device", enter the interface of "Standby Device" and add standby device.

Note

Add all the standby equipments except itself.

Figure 2-33

| Stave Device Name | IP Address   | Replace IF | Status                  | Operation | Datate |
|-------------------|--------------|------------|-------------------------|-----------|--------|
| NVR2              | 172.11.2.233 | 6          | DCS Working Device+Free | P         | 0      |
|                   |              |            |                         |           |        |
|                   |              |            |                         |           |        |
|                   |              |            |                         |           |        |
|                   |              |            |                         |           |        |

### Step 2

Select "Setting > Cluster Service > Cluster IP" on the master device, enable cluster service and set virtual IP.

### Note

The IP address in "TCP/IP" is used for cluster internal control (that is, for internal interaction between master and standby devices), and the virtual IP address set here is used for cluster external control (that is, for use with an external network connection).

Figure 2-34



| Enable          |   |    |   |    |   |    |   |     |     |      |   |  |
|-----------------|---|----|---|----|---|----|---|-----|-----|------|---|--|
| IP Address      | 0 | Э÷ | 0 | 16 | 0 |    | 0 |     |     |      |   |  |
| Subnet Mask     | 0 | 30 | 0 | ×. | 0 |    | 0 |     |     |      |   |  |
| Default Gateway | 0 | ÷  | 0 | æ  | 0 |    | 0 |     |     |      |   |  |
|                 |   | 0  | ж | _  | 7 | Č. | R | ish | Def | ault | 1 |  |

Select "Setting > Cluster Service > Cluster Control > Cluster Control" and enable cluster function.

|                 | Antoitean an ID |  |
|-----------------|-----------------|--|
| CLUSTER CONTROL | Arbitrage IP    |  |
| Start Cluster   | Delete Cluster  |  |

### Figure 2-35

# 2.4.4 Physical Protection

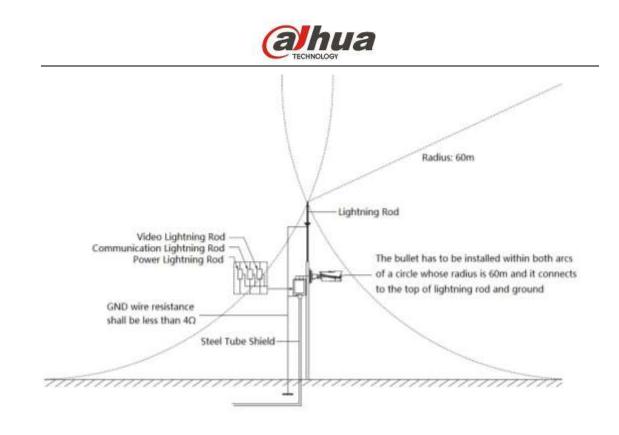
• Device anti-theft

Prevent device being stolen, it is recommended that you install mobile alarm; digital detection alarm and component lock etc. when installing the device.

- Device anti-damage
   Prevent the device being damaged, it is recommended that you install vandal proof enclosure when installing the device.
- Device anti-thunder

Prevent the device being damaged by thunder, it is recommended that you install lightning arrester when installing the device.

Figure 2-36



# 2.4.5 Network Isolation

It is suggested that you partition the network according to the actual network needs. If there is no communication requirement between two subnets, it is recommended to use VLAN, gateway or other means to divide the network to reduce the attack surface faced by the subet. Improve network security by reducing subnet entry surface.



# 3 Safe Use of Function

# 3.1 Complex Password

The complex password mentioned in this chapter should meet at least the following requirements.

- The password length is no less than 8 characters.
- Contains at least two types of character.
- The password does not contain the reverse order of the account name or the account name.
- Do not use continuous strings such as 123, ABC etc.
- Do not use consecutive identical characters, such as 111, aaa etc.

# 3.2 Config SNMP Securely

SNMP (simple network management protocol) which can support network management systems to monitor whether there are any situations that cause management concerns when it is connected to the network. If you need to deploy an SNMP system, it is recommended that you use SNMP safely.

- Choose the more secure version of SNMP v3;
- Read and write assign passwords to different accounts;
- Set complex authentication codes;
- Set complex encrypted password;
- Adopt a more secure form of authentication SHA.

#### **Operation Method**

Select "Setting > Network > SNMP", enter "SNMP" interface to set.

| SNMP                    |                |                |  |
|-------------------------|----------------|----------------|--|
| 9MP Verse               | SMP-1 SMP      | 2 (2) SHAMP v3 |  |
| Shall Fuel              | 161            | (1-66036)      |  |
| Head Community          | public         |                |  |
| Write Community         | private        |                |  |
| Trup Address            |                |                |  |
| Top Port                | 162            |                |  |
| Read-only Username      | public         |                |  |
| Autoretation Type       | # MDS () IBW   |                |  |
| Authentication Password |                |                |  |
| Energebox Type          | · CEC-DES      |                |  |
| Encrypton Planavard     |                |                |  |
| Readlants Gampres       | private        |                |  |
| Authentication Type     | * M05 () (\$H4 |                |  |
| Adheritation Passionst  |                |                |  |
| Energyton Type          | · CEC-DES      |                |  |
| Encryption Password     |                |                |  |
|                         | Oyfa#          | Refest See     |  |

Figure 3-1



# 3.3 Config AP Hotspot Securely

If you need to use the device'AP hotspot function for network deployment, it is recommended that you configure the AP hotspot function safely.

- Set complex password for AP hotspot
- Adopt secure encryption WPA2 PSK

#### **Operation Method**

Select "Setting > Network > WiFi Module > General Config", enter the interface of "General Config" to set.

| General Adv | anced      |         |
|-------------|------------|---------|
| 2.4GHz 🔽    | nable      |         |
| _           | VR-2hhhh   |         |
|             |            |         |
|             | VPA2 PSK   |         |
|             | Auto       |         |
|             | Aiddle     |         |
| Gain        |            |         |
|             | OK Refresh | Default |



# 3.4 Config SMTP Securely

SMTP function is integrated to cooperate with the device abnormity alarm notification, if you need to listen to the device abnormity and notify you via email; it is recommended that you conform to the following application methods:

- Use TLS to access the mailbox server.
- Set complex password for mailbox.

### **Operation Method**

Select "Setting > Network > Email", enter the interface of "Email" to set.

Figure 3-3



| (a)hua   | PREVIEW   |   | ALARM SETUP INFO LOGOUT |
|--|---|---|-------------------------|
|  | Email Enable SMTP Server Port Anseymous Oberneme Password Denster | MaiServer<br>25   | (1-65535)               |
| > SYMP<br>> HULTIDAST<br>> REGISTER<br>> ALANIA CENTER<br>> SWITCH<br>= EVENT<br>= STORAGE<br>= SYSTEM | Encrydan Type<br>Subject<br>Receiver<br>Hiterali<br>Interali      | TLS         •           NVR ALERT         120           120         Sec (F-3600)           60         Min (20-6440)           Email Tage         04 | Attactment              |

# 3.5 Safe Config FTP Function

FTP function is to extend data storage capacity through network storage. If you need to use FTP for data storage expansion, it is recommended that you follow the following safe application.

- Use more secure SFTP
- Set a complex password when establishing SFTP service.
- The upload file directory is set in the non-system root directory.
- It is recommended that the SFTP remote directory be exclusive and not shared with other applications.

#### **Operation Method**

 NVR/DVR: Select "Setting > Storage > FTP Storage", enter the interface of "FTP Storage" to set.

Figure 3-4



| alhua        | PREVIEW         | LAYBACK  | AL BEARCH     | ALARM         | SETUP        | INFO    | LODOLT |
|--------------|-----------------|----------|---------------|---------------|--------------|---------|--------|
| IMAGE        | FTP             |          |               |               |              |         |        |
| NETWORK      |                 |          |               |               |              |         |        |
| EVENT        | C Enable C E    |          | (Recommended) |               |              |         |        |
| STORAGE      | Hastiff         | 0 0      | D 0           | 0             |              |         |        |
| > BADIC      | Put             | 21       |               | 11-855381     |              |         |        |
| > BOHEDUAE   | Usemame         |          |               |               |              |         |        |
| > HOD WHAGER | Password        |          |               | Anonymisus    |              |         |        |
| FTF          | Remote Director |          |               |               |              |         |        |
| > RECORD     | File Size       | đ        | 1             | ii ii         |              |         |        |
| > ADVANCED   | Inage Opfoad an | ana 2    |               | £             |              |         |        |
| SYSTEM       | 10000000        |          |               |               |              |         |        |
|              | Chantel         | 01       |               |               |              |         |        |
|              | Weekstar        | Thursday | •             |               |              |         |        |
|              | Periodi         | 00 00    | 24 00         | ALARMAN SAPOS | E EL MD EL I | Regular |        |
|              | Pwic42          | 00 00    | - 24 00       | ALARMANTIAPOD | I DIND: DI   | Regular |        |
|              |                 | FIP TO   | et.           |               |              |         |        |
|              |                 | 1        |               |               |              |         |        |
|              |                 | - GK     | Reft          | esh Default   |              |         |        |

• IPC/PTZ Camera: Select "Setting > Storage > Storage > FTP", enter the interface of "FTP" to set.



# 4 Incident Response

# 4.1 Security Incident Response Mechanism

Dahua technology has established Dahua Cybersecurity Center (DHCC) to resolve cybersecurity issues, and provide more reliable and much safer solution to our users. It includes security vulnerabilities report, process flows, publize security knowledges, etc. Please log in <u>https://www.dahuatech.com/service/resource.html</u> if you need to check the latest suggestion for security information.

# 4.2 Security Incident Response Email

Once you encounter Dahua product vulnerabilities information, please send an email to <u>cybersecurity@dahuatech.com</u> to report the hole. Please encrypt the email if it concerns the sensitive information.