Deployment & User Guide

KiloLink Bonding Platform V5 (Linux System)

(2021-12)

Content

1 KiloLink bonding platform deployment

1.1 Preparations

(1) Hardware

Processor: Intel Core i3 CPU or higher

Hard disk: 64G hard disk or higher

RAM: 4GB RAM or higher

(2) Software

Operating system: Linux64-bit operating system（Ubuntu 18.04+ / Debian 9+）

(3) Network

IP address: one public IP address

Bandwidth: related to the video encoding rate, e.g.: encoding rate 4Mbps, bandwidth will be 8Mbps.

Port: The server needs to use the following ports. If there is a firewall in the server's network, the related ports need to be opened. Therefore, please make sure below ports are open.

Ports	Protocols
82	TCP
3478	TCP+UDP
60000	UDP
60001	UDP

5000-5100	TCP+UDP
30000-30050	TCP+UDP

Note

(1) Due to the hardware and maintenance costs of the server, as well as the version update of the cloud platform, it is recommended to rent the cloud-based server such as AWS server.

(2) KiloLink Server will use many ports. If there is a firewall during deployment, the related ports need to be opened in the firewall. Kiloview uses AES256 encryption to ensure security during live streaming.

1.2 Server Login

Login to the server by remote terminal software, Xshell and PuTTy are recommended.

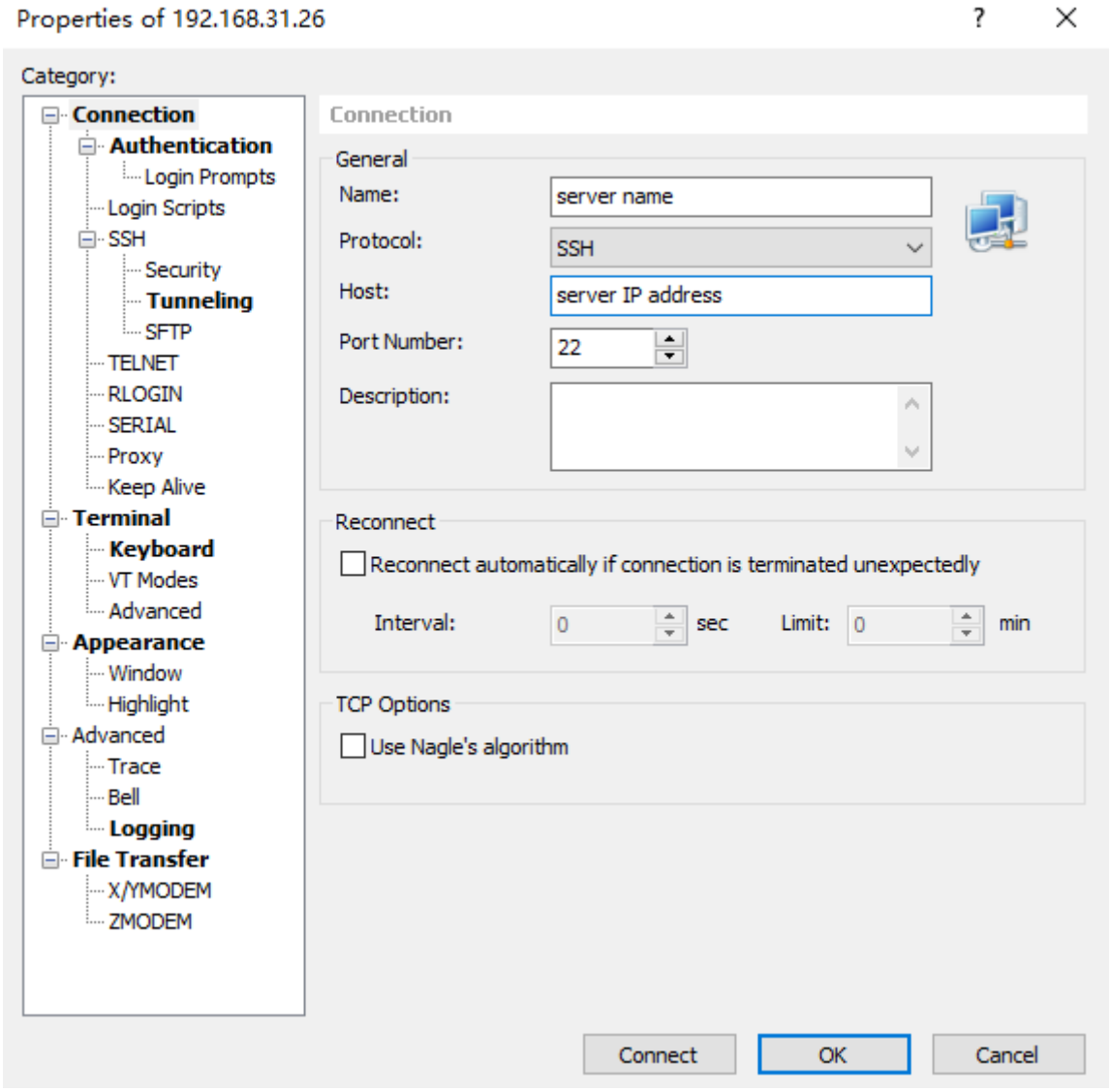
Download link of Xshell:

https://www.netsarang.com/zh/xshell-download/

Download link of PuTTy:

https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

(1) After downloading and installing, enter the server IP address in the new session, and chooses "SSH" protocol. The port number is 22 by default. Click "OK" when finished



(2) Enter the username and password in the pop-up dialog box, the users need "sudo" to obtain management authorization or login as the root user. Enter the following commands in the terminal:

sudo su -

1.3 Deployment steps

Step 1: Install docker

Enter the command in the terminal window: curl -fsSL https://get.docker.com | bash

```
root@kiloview:/# curl -fsSL https://get.docker.com | sh

# Executing docker install script, commit: 93d2499759296ac1f9c510605fef85052a2c32be

+ sh -c apt-get update -qq >/dev/null
+ sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq apt-transport-https ca-certificates curl >/dev/null
+ sh -c curl -fsSL "https://download.docker.com/linux/ubuntu/gpg" | gpg --dearmor --yes -o /usr/share/keyrings/docker-archive-
keyring.gpg
+ sh -c echo "deb [arch=amd64 signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu
focal stable" > /etc/apt/sources.list.d/docker.list
+ sh -c apt-get update -qq >/dev/null
+ sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq --no-install-recommends  docker-ce-cli docker-scan-plugin docker-
ce >/dev/null
+ version_gte 20.10
+ [ -z  ]
+ return 0
+ sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq docker-ce-rootless-extras >/dev/null
+ sh -c docker version
  Client: Docker Engine - Community
   Version:           20.10.11
   API version:       1.41
   Go version:        go1.16.9
   Git commit:        dea9396
   Built:             Thu Nov 18 00:37:06 2021
   OS/Arch:           linux/amd64
   Context:           default
   Experimental:      true

Server: Docker Engine - Community
 Engine:
  Version:          20.10.11
  API version:      1.41 (minimum version 1.12)
  Go version:       go1.16.9
  Git commit:       847da18
  Built:            Thu Nov 18 00:35:15 2021
  OS/Arch:          linux/amd64
  Experimental:     false
 containerd:
  Version:          1.4.12
  GitCommit:        7b11cfaabd73bb80907dd23182b9347b4245eb5d
 runc:
  Version:          1.0.2
  GitCommit:        v1.0.2-0-g52b36a2
 docker-init:
  Version:          0.19.0
  GitCommit:        de40ad0
```

Step 2: Get the deployment guide

Execute the command: wget http://firmware.kiloview.com.cn/Tools/.server/klnkserver.sh -O klnkserver.sh

```
root@kiloview:~# wget http://firmware.kiloview.com.cn/Tools/.server/klnkserver.sh -O klnkserver.sh
--2021-12-14 09:30:47--  http://firmware.kiloview.com.cn/Tools/.server/klnkserver.sh
Resolving firmware.kiloview.com.cn (firmware.kiloview.com.cn)... 104.21.46.201, 172.67.141.173, 2606:4700:3037::6815:2ec9, ...
Connecting to firmware.kiloview.com.cn (firmware.kiloview.com.cn)|104.21.46.201|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 25271 (25K) [application/octet-stream]
Saving to: 'klnkserver.sh'

klnkserver.sh                                       100%
[=============================================================================================================================================
===>]  24.68K  29.7KB/s    in 0.8s

2021-12-14 09:30:49 (29.7 KB/s) - 'klnkserver.sh' saved [25271/25271]
```

Step 3: Provide execute permission to the file "klnkserver.sh"

Execute the command：chmod +x klnkserver.sh

```
root@kiloview:~# chmod +x klnkserver.sh
```

Step 4: Execute the file "klnkserver.sh" to start deploying the KiloLink platform

Execute the command：./ klnkserver.sh

```
root@kiloview:~# ./klnkserver.sh
Docker is running

  Kiloview KlnkServer one-click management script [v0.0.3]
  1. Install KlnkServer
  2. Update KlnkServer
  3. Uninstall KlnkServer

 Current status: Not installed

Enter the number[1-3]: 1
```

Note

Current status: if displays "not installed", select the number "1" to start the installation; if displays "installed and started", but not use this installation method, you need to delete the previous deployment, and then follow this Method for deployment. If you used this method for deployment, please select the number "2" to update, and all configurations of the KiloLink server will still be kept after the update.

Step 5: Configure the public IP address

Select the number "1" to start the installation, and choose Network mode as "host/bridge" to next step; fill "IP or domain name" in the server's public IP or domain name, then enter the next step to automatically pull the image file for installation .

When "container creation is successful" and "container running is successful" appears, it means that you can log in to the bonding platform.

```
root@kiloview:~# ./klnkserver.sh
Docker is running

  Kiloview KlnkServer one-click management script [v0.0.3]
  1. Install KlnkServer
  2. Update KlnkServer
  3. Uninstall KlnkServer

 Current status: Not installed

Enter the number[1-3]: 1
 Start installing
/data/The directory already exists
[Information] Start setting the container mode...
please enter container network mode: (host/bridge): host


        Container network mode : host


[Information] Start Setting up the Server Public Network IP (Device connection)...
Enter the server IP or domain name to display in the user configuration (when the server has multiple IP, you can specify the IP
or domain name displayed in the user configuration)
(The platform IP is automatically detected by default):192.168.22.216


        IP or domain name : 192.168.22.216


If to use default configuration: (Y/n): Y
[Information] Select configuration by default
----------------------------------------
Web port: 82 TCP
Kilolink platform IP: 192.168.22.216
Kilolink working port: 60000 UDP
```

If use default configuration: It is recommended to select "Y" to use the default port and configuration for installation. If select "N", please manually enter each port and configuration according to the prompts.

```
If to use default configuration: (Y/n): Y
[Information] Select configuration by default
----------------------------------------
Web port: 82 TCP
Kilolink platform IP: 192.168.22.216
Kilolink working port: 60000 UDP
Kilolink forwarding server port: 60001 UDP
Forward /stream service minimum port: 30000 TCP+UDP
Forward /stream service maximum port: 30050 TCP+UDP
The TUN server working minimum port: 5000 TCP+UDP
The TUN server working the maximum port TUN: 5100 TCP+UDP
TUN server port: 3478 + 3479 TCP+UDP
TUN server username: admin
TUN server password: kiloview123456
TUN server REALM: demo
```

1.4 Login verification

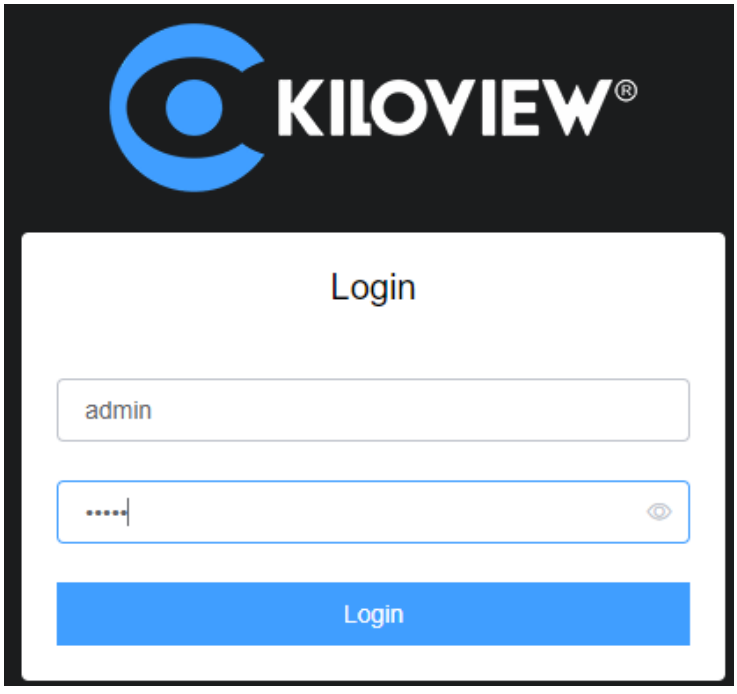
Enter "Server IP address: 82" in the browser (Google is recommended) to enter the login webpage of the bonding platform. The username and the password both are admin by default.

Note

(1) The default port number for server login has been adjusted to 82

(2) P series bonding encoders need to be updated to version 4.7.2519

(3) The port number of the device is still 60000



1.5 Update and uninstall of KiloLink server

Execute the command: ./klnkserver.sh, select the number "2" to pull the new image file for update. The old container will be deleted automatically when updating, and the new image file will be used to reinstall the docker. The configuration on the server will not be deleted after the update.

```
root@kiloview:~# ./klnkserver.sh
Docker is running

  Kiloview KlnkServer one-click management script [v0.0.3]
  1. Install KlnkServer
  2. Update KlnkServer
  3. Uninstall KlnkServer

 Current status: Installed and Started

Enter the number[1-3]: 2
[Information] Pull up the latest version of kiloview/klnkserver mirror ...
Using default tag: latest
latest: Pulling from kiloview/klnkserver
Digest: sha256:72c741356f8f5a61f490f50639ca0ac0bf13336d11f06ac57e3b0f6567989feb
Status: Image is up to date for kiloview/klnkserver:latest
docker.io/kiloview/klnkserver:latest
[Information] Delete the old container...
klnkserver
[Information] Rerun the mirror...
4ec029c21b0866092b0dba8c8f4ae9b07452969495a804a322b8327d8a4f9f74
[Information] Success to create container
klnkserver
[Information] Success to run container
```

Execute the command: ./klnkserver.sh, select the number "3" to uninstall the container. After uninstalling, all the configurations of the KiloLink server will not be deleted. And all settings will be automatically restored to the new server page.

```
root@kiloview:~# ./klnkserver.sh
Docker is running

  Kiloview KlnkServer one-click management script [v0.0.3]
  1. Install KlnkServer
  2. Update KlnkServer
  3. Uninstall KlnkServer

 Current status: Installed and Started

Enter the number[1-3]: 3
Success to delete container
```

Note

Whether it is an update or uninstallation, the configuration of the KiloLink server will not be deleted, and it will be automatically restored after reinstalling.

2 Common questions and solutions

2.1 Cannot login to the server after deploying the new version

Solution:

Use server IP + port number, that is "server IP: 82" to login (the previous login port was 81)

The port is still 60000 for device registration.

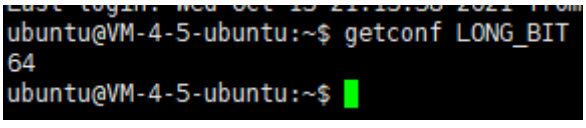
It is recommended to use the history command to view the executed commands to analyze the problem and check specific commands. You can check by history |grep command.

2.2 An error hint during the deployment

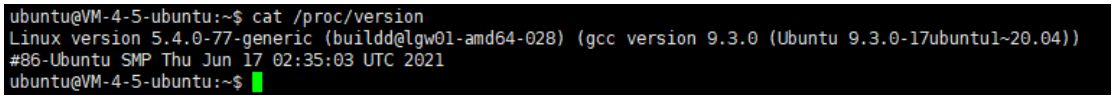
Solution:

Please check the version of your operation system, currently only support Linux64-bit operating system（Ubuntu 18.04+ / Debian 9+）

（1）Linux bit： getconf LONG_BIT



（2）Linux version：cat /proc/version



2.3 Installing docker did not respond for a longtime during deployment

Solution:

The docker installation is slow, please be patient. You can use the command "docker version" to check and confirm whether the docker installation is successful.

2.4 After finished the deployment, using the IP and port number cannot login to the server's web

Solution:

Please check whether the configured IP address is correct when deploying

PLATFORMIP=103.134.224.34

Step A: enter to the docker: docker exec -it klnkserver bash

Step B: open the configuration file: vi /data/configs/platform.conf

Step C: change the server IP to the correct server IP address

Step D: restart Nginx: /usr/local/openresty/nginx/sbin/nginx -s reload

```
{
    serverip = "192.168.22.230",
    klnkport = 60000,
    klnkfwdport = 60001,
    fwd_minport = 30000,
    fwd_maxport = 30050,
    tunip= "192.168.22.230",
    tunport = 3478,
    tunuser = "amin",
    tunpass = "kiloview123456",
    tunrealm = "demo",
}
~
~
~
```

2.5 After upgraded to the new version of KiloLink and the P1/P2 upgrade to the latest firmware (4.7.2519) still cannot connect to KiloLink.

Solution:

It is recommended to redeploy after deleting the docker and image. (The configuration file of the old version exists in /data by default, so delete/data directly).

2.6 After the installation, login to the server and prompt the following error: Invalid request method!

Solution:

(1) Reload the sbin directory of nginx::

docker exec -it klnkserver /usr/local/openresty/nginx/sbin/nginx -s reload

(2) Exit the docker: exit

(3) Restart the docker：docker restart klnkserver（check the name of the docker by docker ps -a）

2.7 After successfully deploying the new version of KiloLink, it can be login with the IP + port, but P1/P2 cannot connect to the KiloLink server correctly.

Solution：

(1) Check whether the firmware version of P1/P2 is the latest one 4.7.2519 (download link：https://www.kiloview.com/cn/support/download/)

(2) Check whether the device information is correct, the port of the P1/P2 encoder connect to KiloLink is 60000. Check whether the server information and registration code are correct

(3) Try to delete the registration information on KiloLink and re-register.

(4) Check whether the corresponding ports of the server is open.

The server needs to use the following ports. If there is a firewall in the server's network, the related ports need to be open.

Ports	Protocols
82	TCP
3478	TCP+UDP
60000	UDP
60001	UDP

5000-5100	TCP+UDP
5000-5100	TCP+UDP
30000-30050	TCP+UDP

2.8 How to change the KiloLink default login web port?

Solutions: change the KiloLink login port

Step 1: enter the docker: docker exec -it klnkserver bash

Step 2: open the file: vi /usr/local/openresty/nginx/conf/nginx.conf

Change the server-listen to 8081, then save and exit

Step 3: restart Nginx: /usr/local/openresty/nginx/sbin/nginx -s reload

```
    keepalive_timeout  65;
    charset utf-8,gbk;
    #gzip  on;

    lua_package_path "/usr/local/openresty/lualib/?.lua;/usr/local/openresty/nginx/lua/?.lua;/data/web/api/?.lua;/usr/share/lua/5
a;";

    server {
        listen       8081;
        server_name  localhost;
        client_max_body_size 50m;


        location ~* /QuickBoard/([0-9\.:]*)/(.+) {
            proxy_set_header Host $http_host;
            proxy_set_header X-Forward-For $remote_addr;
            proxy_set_header platform this-is-made-by-kiloview-for-platform-login;
            proxy_pass http://$1/$2?$args;
            add_header Access-Control-Allow-Origin *;
        }
        location ~* /SettingPage/([0-9\.:]*)/(.+) {
            proxy_set_header Host $http_host;
            proxy_set_header X-Forward-For $remote_addr;
            proxy_set_header platform this-is-made-by-kiloview-for-platform-login;
            proxy_pass http://$1/$2?$args;
            add_header Access-Control-Allow-Origin *;
        }

        location / {
            root /data/web/html;
            try_files $uri $uri/ @router;
            index index.html index.htm;
            add_header Access-Control-Allow-Origin *;
        }

        location @router {
            rewrite ^.*$ /index.html last;
        }

        location ^~ /firmwares/ {
            root    /data;
:wq
```

```
root@kiloview-virtual-machine:/# docker exec -it klnkserver bash
root@kiloview-virtual-machine:/# cd /usr/local/openresty/nginx/conf
root@kiloview-virtual-machine:/usr/local/openresty/nginx/conf# vi nginx.conf

[1]+  Stopped                 vi nginx.conf
root@kiloview-virtual-machine:/usr/local/openresty/nginx/conf# vi nginx.conf
root@kiloview-virtual-machine:/usr/local/openresty/nginx/conf# /usr/local/openresty/nginx/sbin/nginx -s reload
root@kiloview-virtual-machine:/usr/local/openresty/nginx/conf#
```

Note

After the change, the login method of KiloLink is: IP+8081 port

3 KiloLink Bonding Platform User Guide

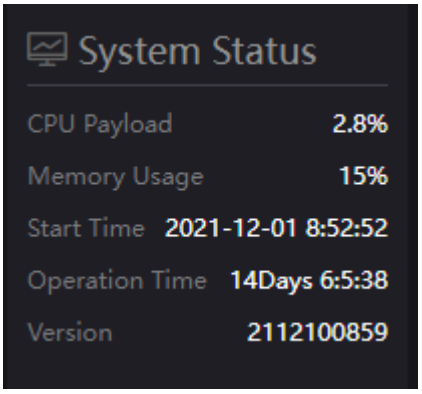
3.1 Login the bonding platform

Enter http://server IP: 82/ in the browser to login to the bonding platform. The default username is admin, and the password is admin.

Note

- To ensure information security, we recommend you change the password immediately after your first login.
- The default port of the server login is 82

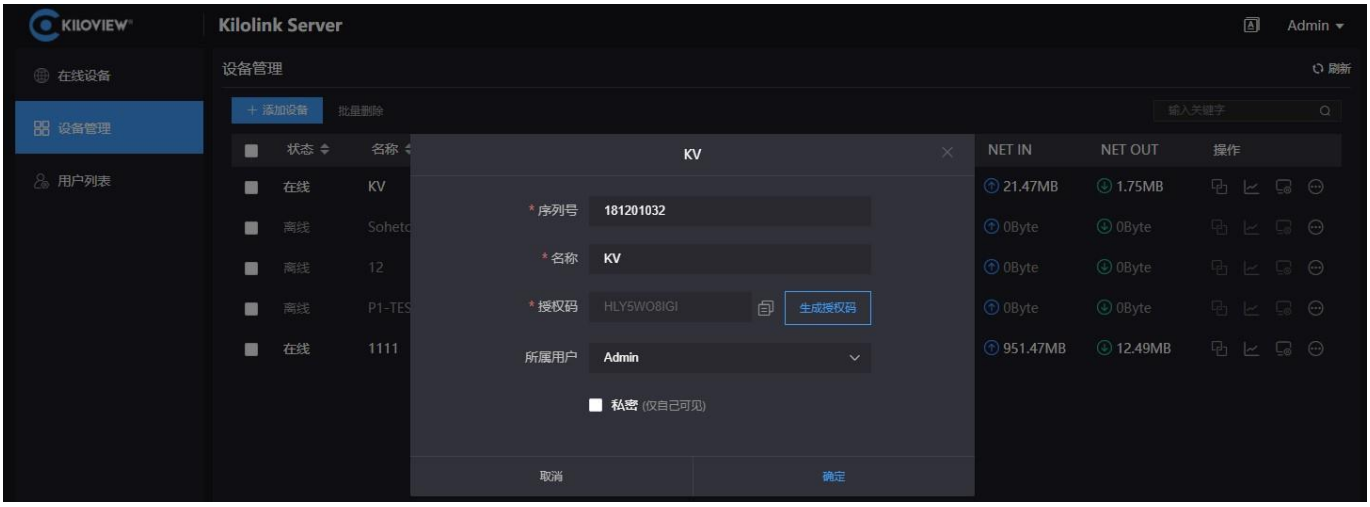
Check the "Version" information in the "System Status" in the lower left corner of Web page to ensure that the KiloLink is updated to the latest version.



3.2 Device connection

Step 1: Add the device to the platform and generate an authorization code.

Click “Device management” - “Add device”, configure the parameters and generate an authorization code.



Introductions:

- **Serial Number:** Login to the device Web page to get the Serial Number in the lower left corner of “System Information”, which consists of 9 figures.
- **Name**: Any combinations of alphabets, numbers and symbols.
- **Authorization Code**: Click “Generate Auth Code”, then an authorization code combining with letters and numbers will be generated automatically, which will be used for device registration.
- **Owned User**: The added devices can be visible to a certain user you assigned. All devices will be displayed under the management account.
- **Private:** After selected private, the added device will only be visible to yourself and the management account (admin).

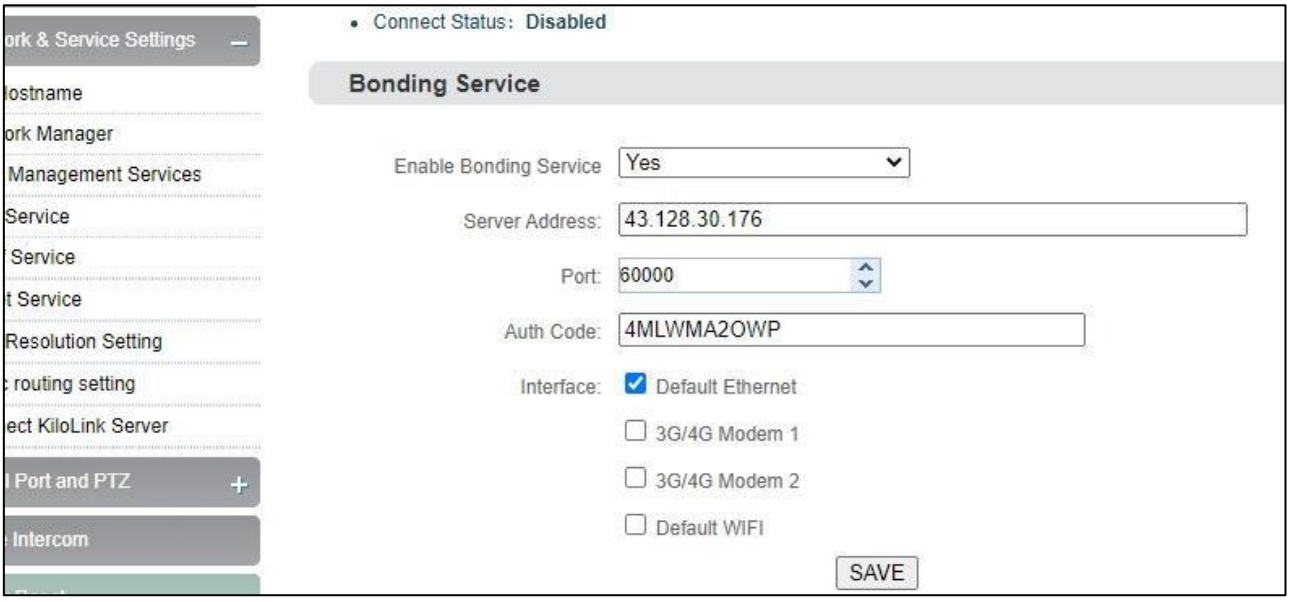
Step 2: Device registration

Login to the device Web page, click "Network & Service Settings" – "Connect Bonding Server", and configure the parameters to start the bonding service.

Introductions:

Please make sure that your device firmware and the KiloLink Server have been updated to the latest version. To download the latest firmware, please visit our website: https://www.kiloview.com/en/support/download/, select "Video Encoder"> "P1/P2", and click "Firmware" to get the latest firmware download.
For the latest KiloLink Server version, please refer to: https://www.kiloview.com/cn/support/docs/p2/4g_aggregation/

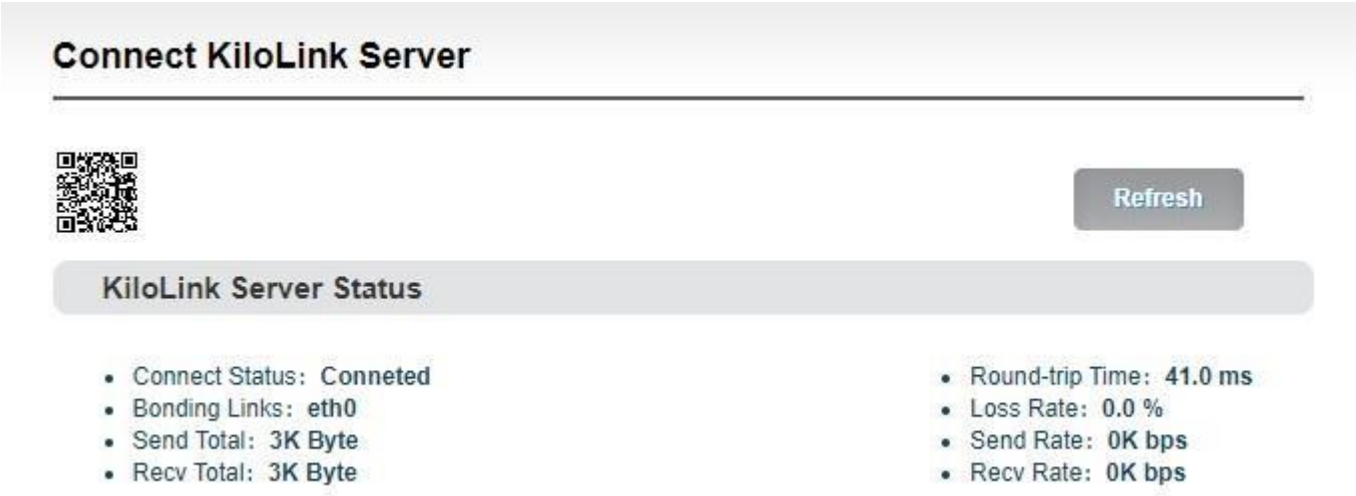
- **Server address:** The IP address of the bonding server, which support domain names.
- **Port:** The port that used to login to the Web page of the bonding server. The default port is 60000.
- **Auth Code:** Generated when adding the device to the bonding platform.



Note

There are four default options of bonding ports: Default WIFI, 3G/4G Modem 1, 3G/4G Modem 2 and Default Ethernet. When inserting 4G USB modems, there are two modes: one is "MODEM" mode, the other is "ETHERNET CARD" mode. In the MODEM mode, it will be recognized as 3G/4G Modem 3 or 3G/4G Modem 4. In the ETHERNET CARD mode, it will be recognized as USB network connection 1 or USB network connection 2. And the options will be increased in the port.

If it shows "Connected" in the bonding status, which means that the device has successfully registered to the bonding server and you can use the aggregated links for streaming. And you can log into the bonding platform through the QR code in the upper left corner to disable and configure the parameters.



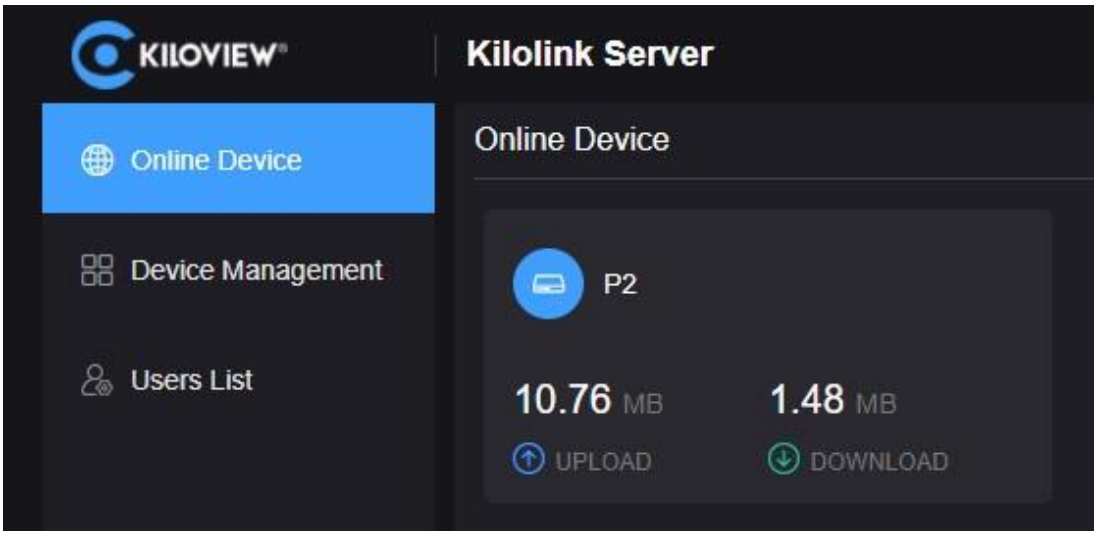
Introductions:

- **Bonding links:** Display all selected bonding network links
- **Sending statistics**: Calculate the data transmitted by each network link
- **Round-trip time**: The round-trip time at both ends of each network link. The longer the time, the higher the delay after aggregation.
- **Packet loss rate**: The packet loss of each network link. When the packet loss rate is too high, it may cause abnormalities such as unsmooth video transmission.
- **Transmission rate**: The transmission rate of each network link. The total rate is equal to the actual configured encoding rate.

3.3 KiloLink platform management

3.3.1 Online devices

The list shows all the online devices that connected to the bonding platform successfully and calculate the data transmitted by each network link.

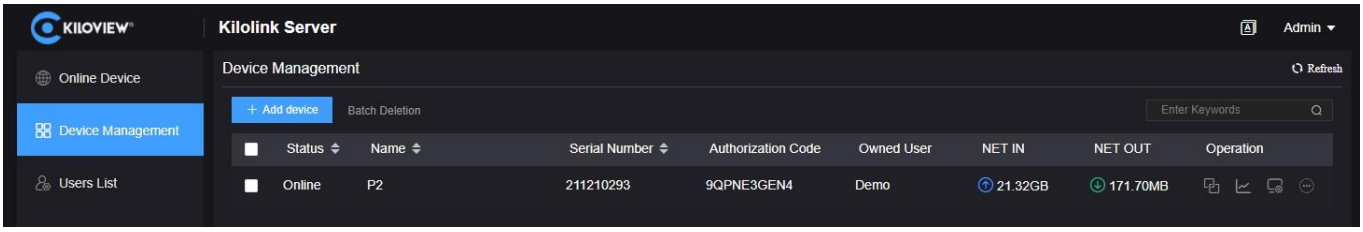


Introductions:

Devices that are not in the list are offline devices, which means that the device has not been registered successfully or the device has not been turned on to register to the bonding platform. All the added devices will be displayed in the "Device Management"

3.3.2 Device Management

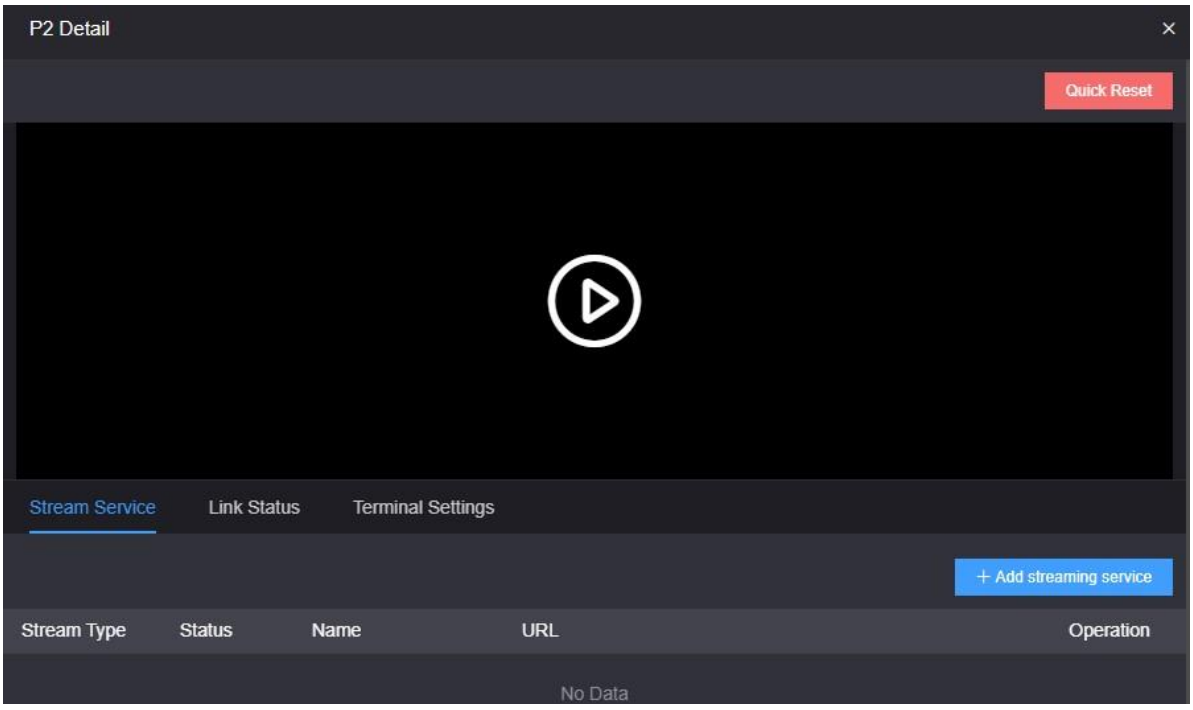
The device management list contains all the added devices, including online and offline devices. The online devices can do image preview, port forwarding, encoding and streaming configuration.



① Video preview

Click any area in the line of the device located, and the video preview box will pop up. You

can preview the device's real-time video images, configure streaming service, check link status, and configure terminal settings.



Note

- The video preview is for the sub-stream of the video, please make sure that the sub-stream is enabled in your device, otherwise the images cannot be previewed.
- The preview image is stopped by default, click the play button to start the video preview.

② Stream service

Introduction

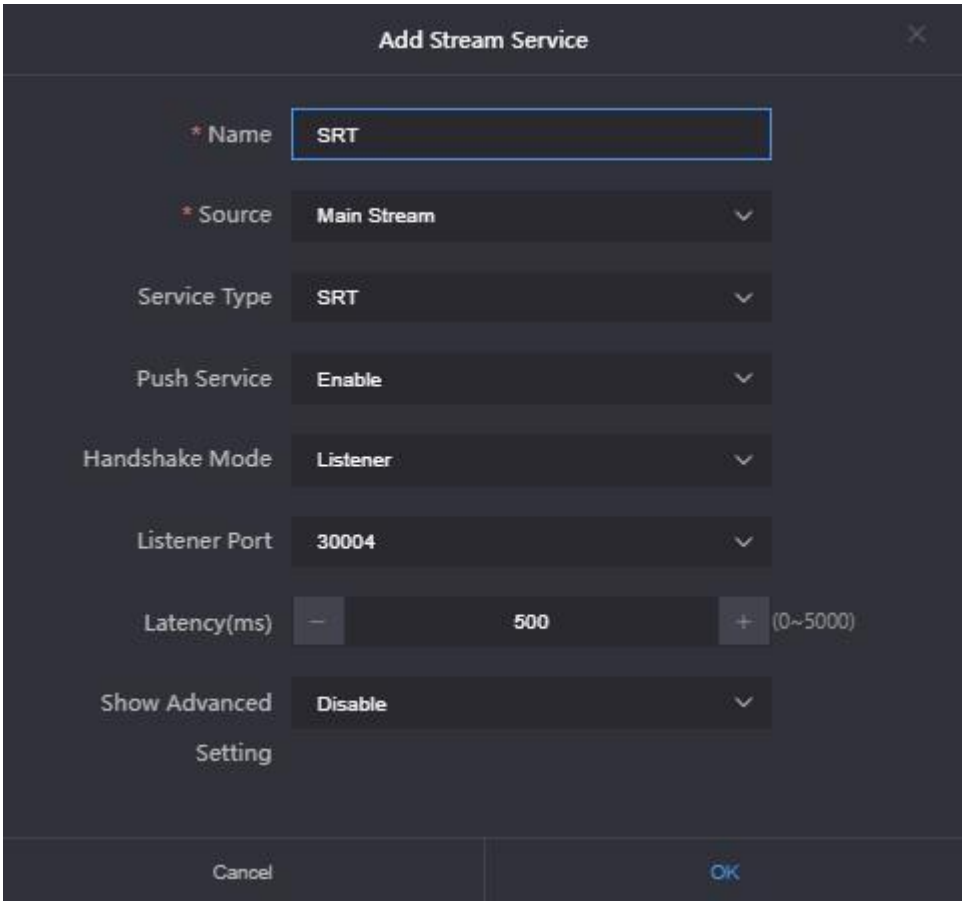
- Streaming by this stream service, all traffic will be transmitted through the bonding links. If the streaming service is enabled on the WEB page of the device, it will only be transmitted through a single network, and the network link is not selectable.
- The maximum code rate of the streaming cannot exceed the code rate configured on the encoder. When the bandwidth is not enough, the streaming service will adaptively reduce the output code rate.

In the preview page, click "Add Stream Service", and select the "Service Type" that needs to be pushed on the pop-up streaming service configuration page. Take SRT pushing as an

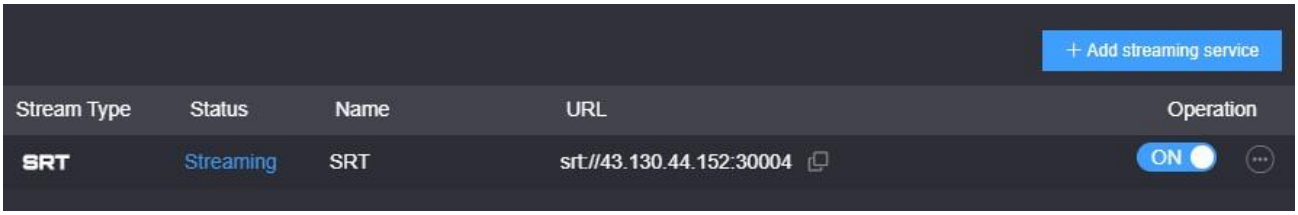
example:

SRT handshake mode: Listener and Caller modes are supported. The bonding server is deployed on the cloud server with public IP. The handshake mode can be directly selected as Listener. The range of the bonding server port is 30003-30050, for example, port can be 30004.

The transmission delay is configured with the current network RTT delay of the sending and receiving ends, and it is generally recommended to be 2.5-4 times of RTT.



After configuration, click "OK" and the added service will be displayed under the stream service list. The receiving end can pull the stream by copying the full address of the SRT. Or in the Caller mode, fill in the IP and port number (30004) of the aggregation server to pull the stream, the other parameters of the send and receive end are the same

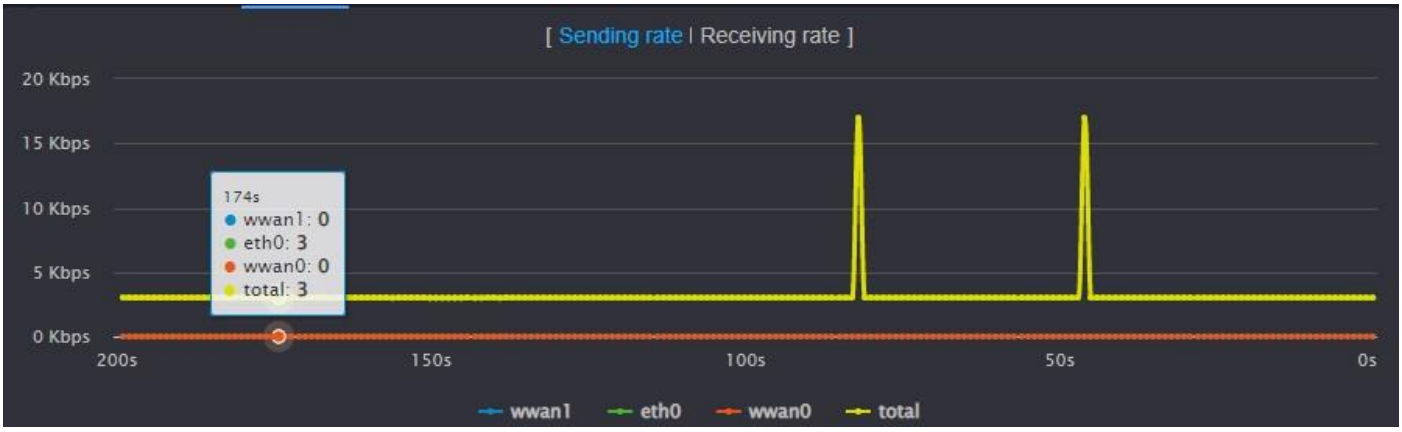


For more information about P series configuration, please visit our website:

https://www.kiloview.com/cn/support/docs/p2/user/config/encode-and-stream/

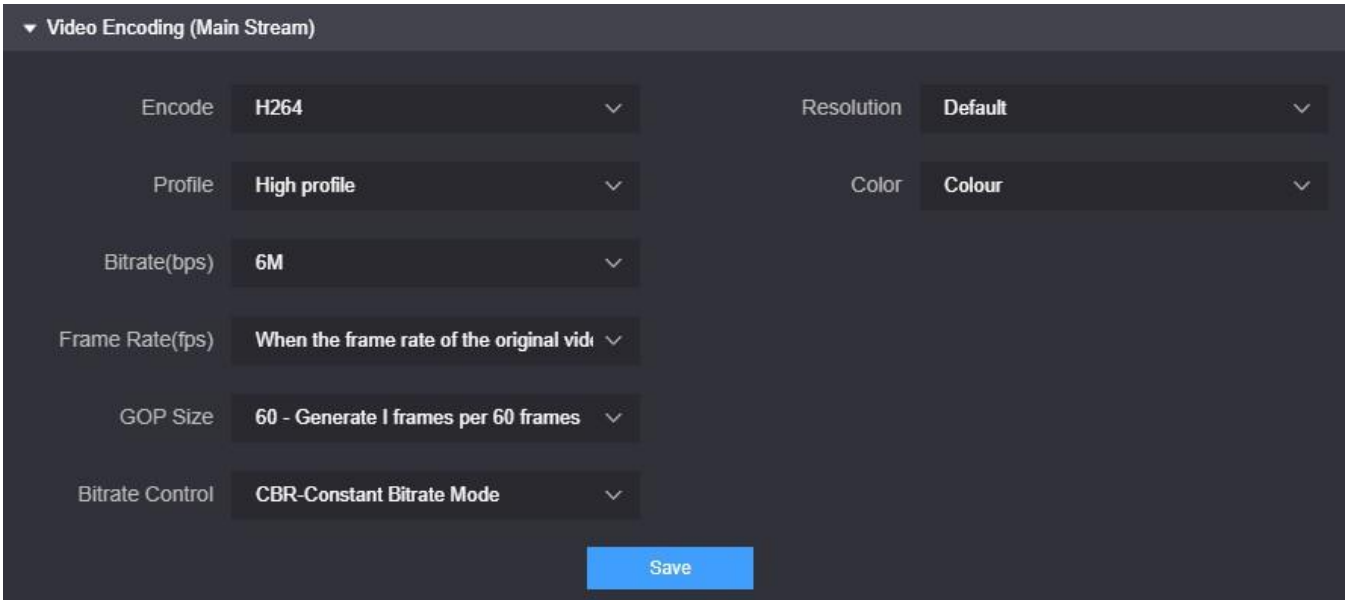
③ Link Status

In the link status, you can check the real-time data sent and received by each link.



④ Terminal Settings

Configure the parameters of encoding and audio parameters of main stream, and the information will be updated to the device in real time, which is equivalent to configuring the parameters on the device Web UI.

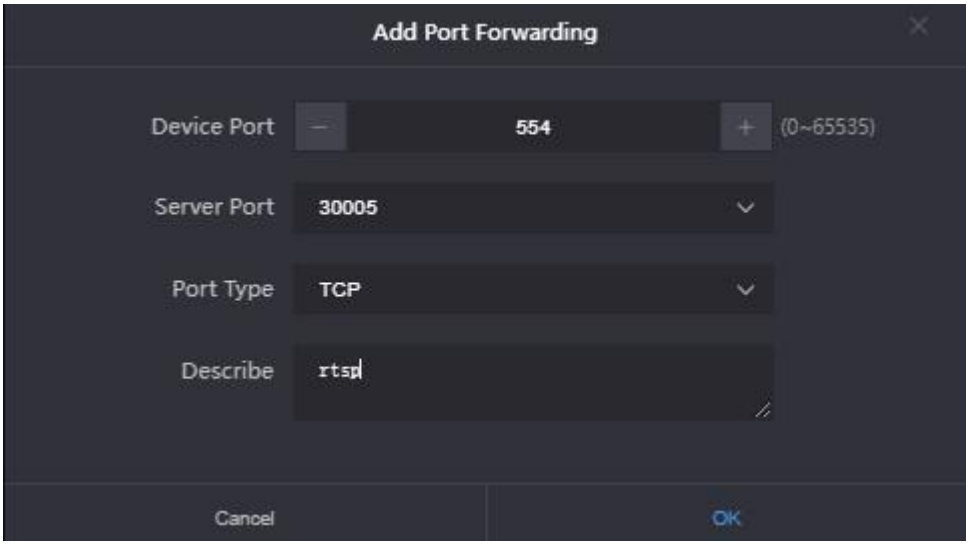


⑤ Port forwarding

Click to enter the port forwarding page, and forward the internal network port of the device to the Internet through port forwarding, allowing other users to access the device or for streaming.

Click "Add Port Forwarding" and configure the parameters. Here take RTSP streaming as an example for configuration. The default port is 554 and the server port is 10240. Select the port type and save.

Other users in the network can use rtsp: //server IP: 30005/ch01 to get the RTSP stream transmitted by the bonding device, for example: rtsp://43.128.30.176:30005/ch01



⑥ Bonding Status

Click to enter the bonding status page to check the real-time bonding status and data statistics status.

The real-time status displays the real-time sending/receiving and packet loss rate of each network link, and the statistics status displays the total amount of sending/receiving and packet loss retransmission rate.

⑦ Device Web page

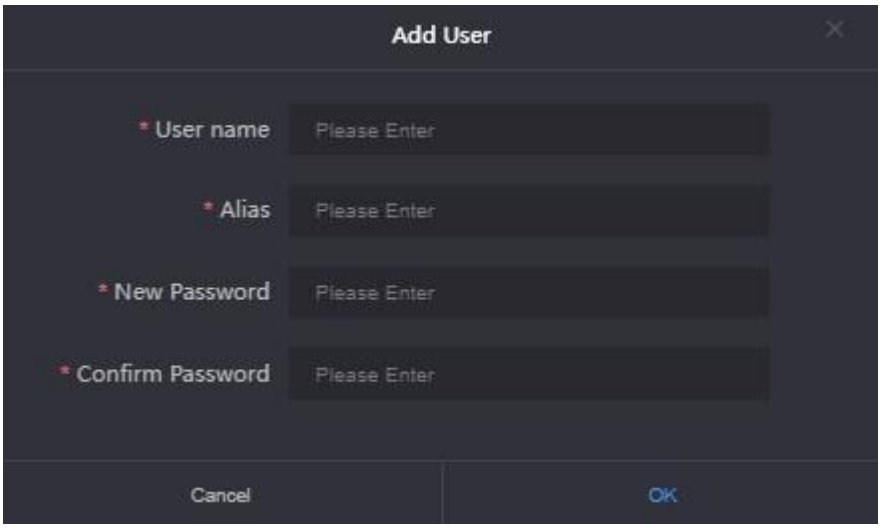
Click to enter to the device Web page, and you can configure the parameters.

For more information about P series configuration, please visit our

websitehttps://www.kiloview.com/cn/support/docs/p2/user/employ/

3.3.3 User List

In the user list, you can add users and delete or modify the added users. There is an "admin" account by default.



Introduction:

- **Management account:** The management account is **admin**, log in with the management account, the device list displays all the added devices. The devices in the list can be managed.
  The management account can add new users, manage and delete all users. The password and name of the management account can be changed, but cannot be deleted.
- **Common users**: Except for the management account, all added accounts are common users. Login as a common user, and the device list only displays the device information assigned to the user.
  Common users only can change the password and name of the current user.

3.4 Others

When the device is not used for bonding transmission, please disable the bonding service to make the device offline. Otherwise, the bonding server will continue to use the traffic, resulting in a waste of traffic.

For more questions, please contact us via:

https://www.kiloview.com/en/support

Please scan with browser.

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