

Deployment & User Guide

KiloLink Bonding Platform (Linux System)

V4-211028

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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
81	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.

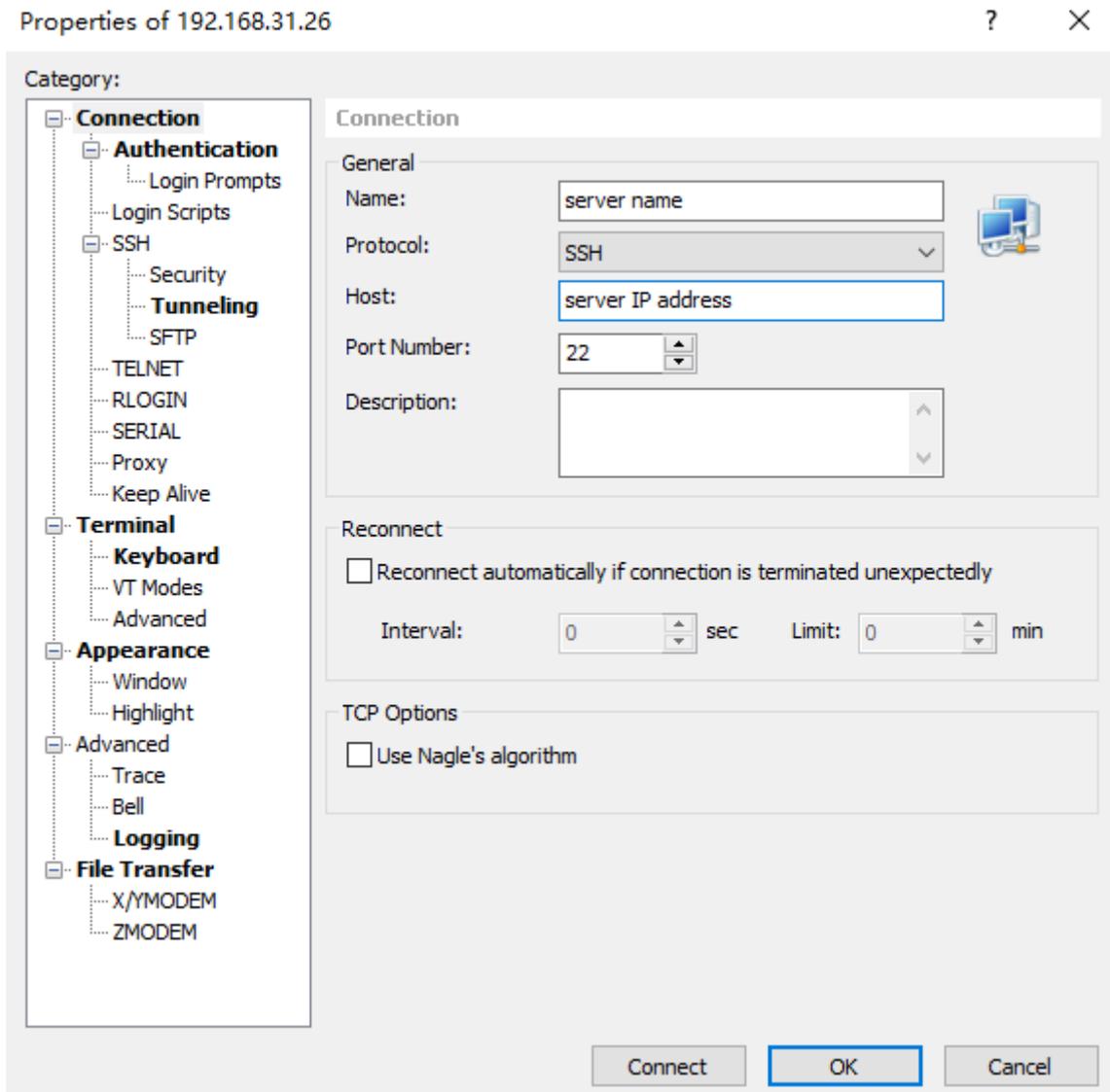
Download link of Xshell:

<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.

1.3 Deployment steps

(1) If your server has not deployed the KiloLink bonding platform, please start from Step

Third, otherwise please follow the below steps to reset the server and enter the following commands in the terminal:

First Stop all dockers: `docker stop $(docker ps -aq)`

Second Delete all dockers: `docker rm $(docker ps -aq)`

Third Delete all images: `docker rmi $(docker images -q)`

Fourth Delete the existing data directory: `rm -rf /data`

(2) Install docker and enter the command in the terminal window:

`curl -fsSL https://get.docker.com | bash`

```
root@VM-4-13-ubuntu:/home# curl -fsSL https://get.docker.com | bash
# Executing docker install script, commit: 93d2499759296aclf9c510605fef85052a2c32be
+ 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-scanner-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:           20.10.8
 API version:       1.41
 Go version:        go1.16.6
 Git commit:        3967b7d
 Built:             Fri Jul 30 19:54:27 2021
 OS/Arch:           linux/amd64
 Context:           default
 Experimental:      true

Server: Docker Engine - Community
 Engine:
  Version:           20.10.8
  API version:       1.41 (minimum version 1.12)
  Go version:        go1.16.6
  Git commit:        75249d8
  Built:             Fri Jul 30 19:52:33 2021
  OS/Arch:           linux/amd64
  Experimental:      false
 containerd:
  Version:           1.4.9
  GitCommit:        e25210fe30a0a703442421b0f60afac609f950a3
 runc:
  Version:           1.0.1
  GitCommit:        v1.0.1-0-g4144b63
 docker-init:
  Version:           0.19.0
  GitCommit:        de40ad0
```

(2) Create a working directory, and enter the command in the terminal

`mkdir /data`

```
root@VM-4-13-ubuntu:/home# mkdir /data
root@VM-4-13-ubuntu:/home#
```

(3) Run the klnkserver docker and enter the command in the terminal:

```
docker run -d --restart=always --name klnkserver \
-e PLATFORMIP=43.129.196.4 \
--privileged --user root \
--network host \
kiloview/klnkserver
```



Note

PLATFORMIP is the public IP of the server, please configure it according to your actual situation.

```
root@VM-4-13-ubuntu:/home# docker run -d --restart=always --name klnkserver \
> -e PLATFORMIP=43.129.196.4 \
> --privileged --user root \
> --network host \
> kiloview/klnkserver
Unable to find image 'kiloview/klnkserver:latest' locally
latest: Pulling from kiloview/klnkserver
all25296b23d: Pull complete
3c742a4a0f38: Pull complete
4c5ea3b32996: Pull complete
1b4be91ead68: Pull complete
8e6fcd5cf9fe: Pull complete
f11054f19bf7: Pull complete
48ecca84458e: Pull complete
6174f548d4d0: Pull complete
02e3594f5e51: Pull complete
527ed309cb91: Pull complete
7238d58ee7d3: Pull complete
591973d08f34: Pull complete
Digest: sha256:2601ee10be5dcfeb41ca782f4e8a4e04a8e6d0c589d989a2ffb1ca44d23ef078
Status: Downloaded newer image for kiloview/klnkserver:latest
d932757e10d0c8ffdd97b05c8164fb89e550a3ef5340b243d5649a176c5ea5a6
root@VM-4-13-ubuntu:/home#
```

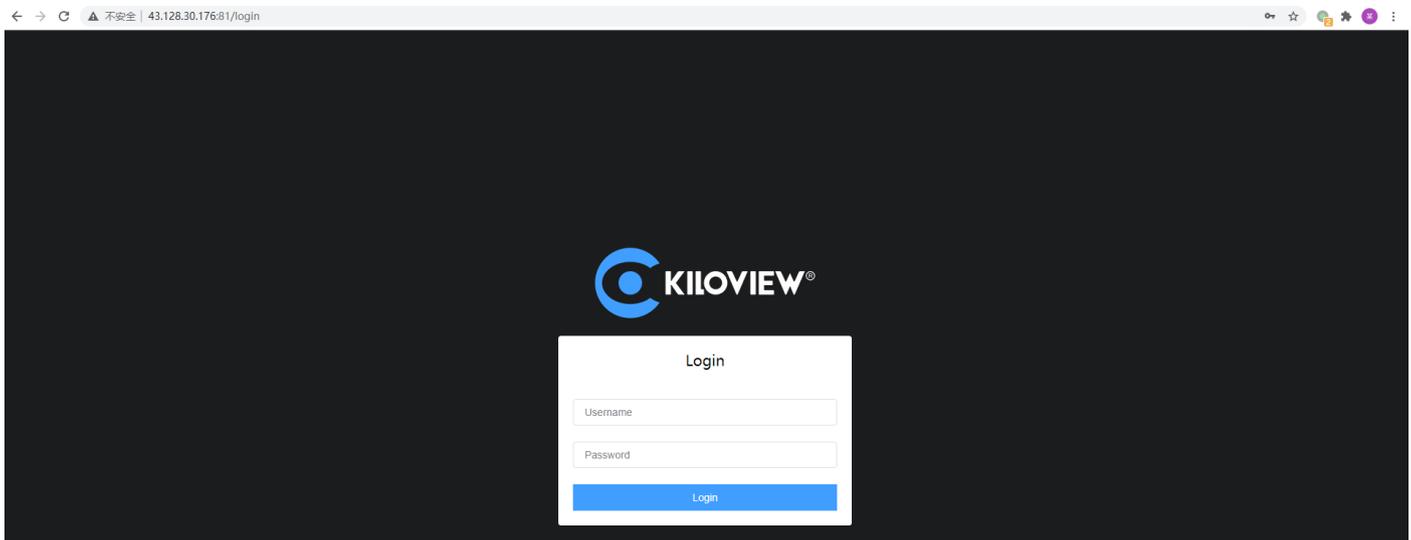
1.4 Login verification

Enter "Server IP address: 81 " 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 81
- (2) P series bonding encoders need to be updated to version 4.7.2515
- (3) The port number of the device is still 60000



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: 81" to login (the previous login port was 81)

The port of the device is still 60000

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`

```
Last login: Wed Oct 13 21:13:00 2021 from  
ubuntu@VM-4-5-ubuntu:~$ getconf LONG_BIT  
64  
ubuntu@VM-4-5-ubuntu:~$
```

(2) Linux version: `cat /proc/version`

```
ubuntu@VM-4-5-ubuntu:~$ cat /proc/version  
Linux version 5.4.0-77-generic (buildd@lgw01-amd64-028) (gcc version 9.3.0 (Ubuntu 9.3.0-17ubuntu1~20.04))  
#86-Ubuntu SMP Thu Jun 17 02:35:03 UTC 2021  
ubuntu@VM-4-5-ubuntu:~$
```

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,
  klnkfdport = 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 (4.7.2515) 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 -s reload
```

- (2) Exit the docker: ctrl+q+p

- (3) Restart the docker: docker restart \$(docker ps -aq)

2.7 Run the following commands according to the KiloLink deployment guide, prompting invalid commands:

```
docker run -d --restart=always --name klnkserver \  
-e PLATFORMIP=43.129.196.4 \  

```

```
--privileged --user root \
```

```
--network host \
```

```
kiloview/klnkserver
```

Solution:

If copy the information of the deployment guide directly, some formats attached may be copied as well, causing the command to be executed incorrectly. Therefore, it is recommended to copy the command to the text (.TXT format) to adjust the command format to avoid the error caused by incorrect command format.

```
docker run -d --restart=always --name klnkserver -e PLATFORMIP=103.134.224.34 --privileged --userroot --network host kiloview/klnkserver
```

2.8 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 4.7.2515 (download link: <https://www.kiloview.com/en/support/docs/KiloLink-bonding-platform/download-center/>)

(2) Whether the device configuration is correct, the P1/P2 connection port 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.

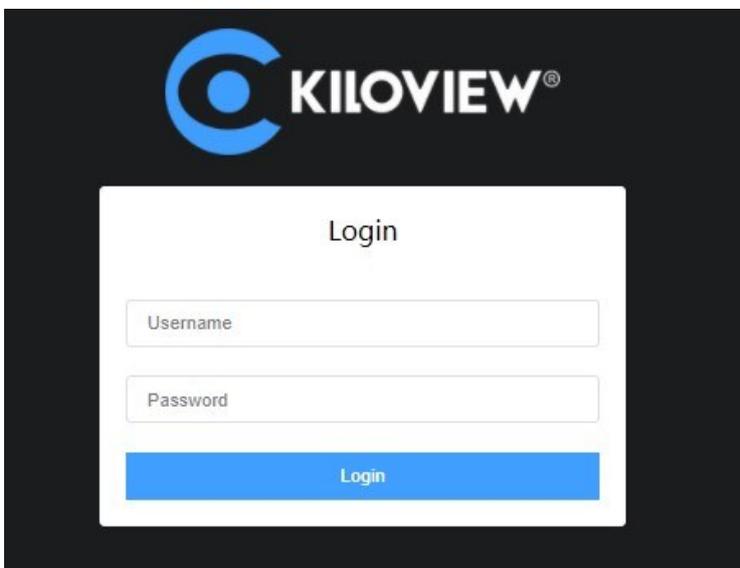
Ports	Protocols
81	TCP
3478	TCP+UDP
5000-5100	TCP+UDP
5000-5100	TCP+UDP
30000-30050	TCP+UDP



3 KiloLink bonding platform user guide

3.4 Login the bonding platform

Enter `http://server IP: 81/` in the browser to login to the bonding platform. The default username is **admin**, and the password is **admin**.



Note

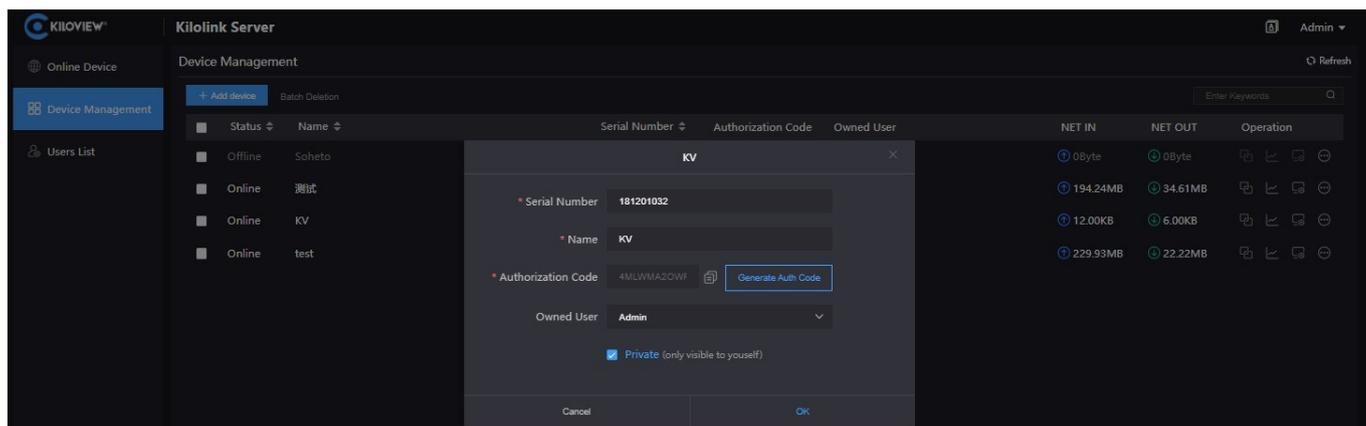
- To ensure information security, we recommend you change the password immediately after your first login.
 - The default port of the server login is 81
-



3.5 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/en/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.

ork & Service Settings —

hostname

ork Manager

Management Services

Service

Service

t Service

Resolution Setting

routing setting

ect KiloLink Server

Port and PTZ +

Intercom

Connect Status: Disabled

Bonding Service

Enable Bonding Service: Yes

Server Address: 43.128.30.176

Port: 60000

Auth Code: 4MLWMA2OWP

Interface:

- Default Ethernet
- 3G/4G Modem 1
- 3G/4G Modem 2
- Default WIFI

SAVE



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.

Connect KiloLink Server



KiloLink Server Status

- Connect Status: **Conncted**
- Bonding Links: **eth0**
- Send Total: **3K Byte**
- Recv Total: **3K Byte**
- Round-trip Time: **41.0 ms**
- Loss Rate: **0.0 %**
- Send Rate: **0K bps**
- Recv Rate: **0K bps**



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



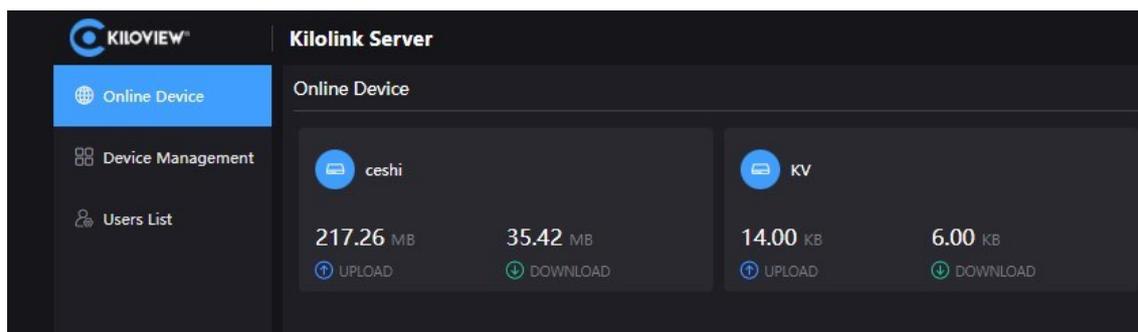
transmission.

- **Transmission rate:** The transmission rate of each network link. The total rate is equal to the actual configured encoding rate.

3.6 KiloLink platform management

3.6.1 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"

3.6.2 Device Management

The device management list contains all the added devices, including online and offline

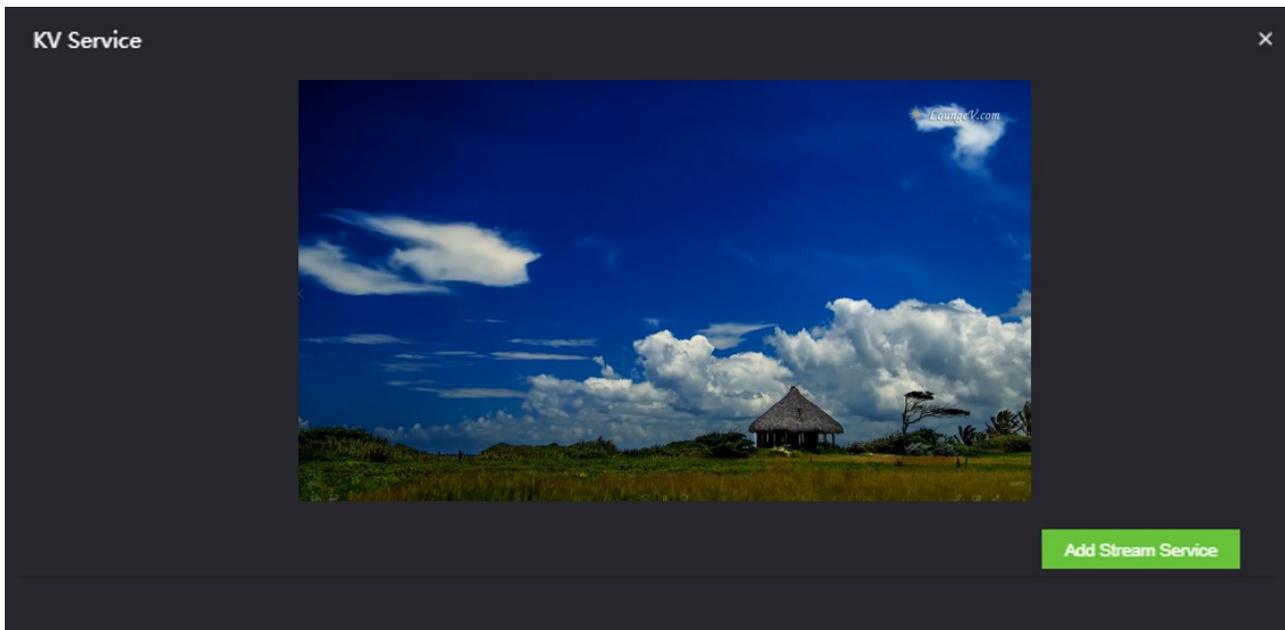


devices. The online devices can do image preview, port forwarding, device and streaming configuration.

Status	Name	Serial Number	Authorization Code	Owned User	NET IN	NET OUT	Operation
Offline	Soheto	201230057	TVONX8EWLK	Nepal	0Byte	0Byte	[Icons]
Online	ceshi	211110053	7C1JYAJBQX	ranxiang	217.91MB	35.56MB	[Icons]
Online	KV	181201032	4MLWMA2OWP	admin	22.00KB	9.00KB	[Icons]
Online	test	202154621	LXHV5JM74F	admin	238.22MB	23.18MB	[Icons]

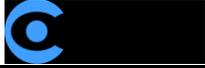
① Video preview

Click any area in the line of the online device, a video preview window will pop up to preview the real-time image of the device.



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.



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.



Add Stream Service

* Name: SRT

* Source: Main Stream

Service Type: SRT

Push Service: Enable

Handshake Mode: Listener

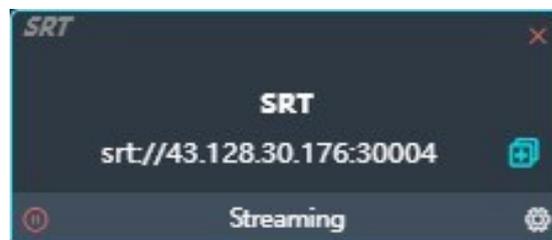
Listener Port: 30004

Latency(ms): 500 (0~5000)

Show Advanced Setting: Disable

Buttons: Cancel, OK

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/en/support/docs/p2/user/config/encode-and-stream/>

③ 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`



The screenshot shows a dark-themed dialog box titled "Add Port Forwarding". It contains the following fields:

- Device Port:** A numeric input field with the value "554" and a range "(0~65535)".
- Server Port:** A dropdown menu with the value "30005".
- Port Type:** A dropdown menu with the value "TCP".
- Describe:** A text input field with the value "rtspl".

At the bottom of the dialog, there are two buttons: "Cancel" and "OK".

④ 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.

⑤ 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 website:

<https://www.kiloview.com/en/support/docs/p2/user/employ/>



3.6.3 User List

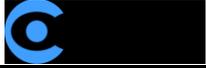
In the user list, you can add users and delete or modify the added users. There is an “admin” account by default.

The screenshot shows a dark-themed dialog box titled "Add User" with a close button (X) in the top right corner. The dialog contains four input fields, each with a red asterisk indicating a required field and a "Please Enter" placeholder. The fields are: "* User name", "* Alias", "* New Password", and "* Confirm Password". At the bottom of the dialog, there are two buttons: "Cancel" on the left and "OK" on the right.



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.



3.7 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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Address: B4-106/109, Jiahua Intelligence Valley Industrial Park, 877 Huijin Road, Yuhua District, Changsha City, Hunan Province, China.