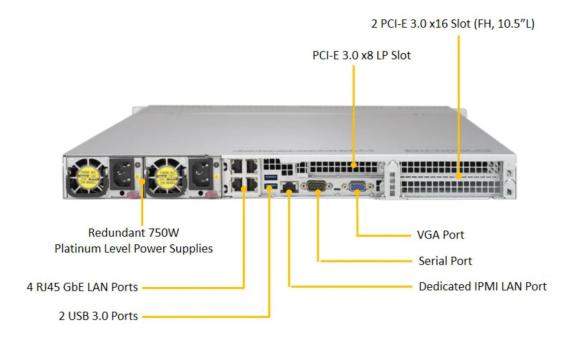


PRODUCT MODEL NUMBER: TL-A1000 LIVE STREAMING TRANSCODER



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CHAPTER 1

INTRODUCTION

1.1 PRODUCT OVERVIEW

TL-A1000 is embedded with a powerful processing module that achieves real time transcoding of video and audio signals with low bit rate and high-quality transcoding. This solution being cost-effective meets demand for video on any screen. The system allows for viewing in a low-latency manner. De-interlace scanning is supported as well.

TL-A1000 supports standard video codecs standard supported by x86 architecture platform that include MPEG-2, H.264 as well as H.265 / HEVC encoding techniques. The audio codec supported standard include MP2, MP3, AMR, AAC, AC3 as well as E-AC3 (Enhanced AC3). The device can support multi-bitrate, multi-resolution and multi-protocol output (TS / RTMP / RTSP / HTTP / HLS / UDP / RTP)

1.2 KEY FEATURES

> AES Encryption

Encryption is one of the most common ways to protect sensitive data. It is found at least six times faster than triple DES. AES uses a SPN block cipher algorithm.

Remote management

Web browser-based system management, parameter configuration, user password setting, remote online upgrade, system log query, alarm information query, and time server synchronization settings.

The system configuration of this device can be imported and exported as needs.



Flow Control Methods:

Supports a variety of flow control modes - according to different needs to adjust the range of code stream bandwidth: CBR, ABR, and VBR. In CBR mode, the change range of code stream can be controlled within 2%. For VBR, the fluctuation range of 5% to 100% can be set.

> Fault Protection Mechanism: (Manual / Automatic switch-over):

A backup source can be set for every main input source, in the case of the main input source being abnormal, the system will automatically switch to the backup flow code output to make sure the encoding/transcoding output is uninterrupted. Once the main input system flow looks normal again, the system will output the transcoded stream from the main stream instead of the backup.

Low Latency:

This solution being cost-effective meets demand for video on any screen. The system allows for viewing in a low-latency manner.

> Alarm:

The transcoder system notifies the system user in the following events: source interruption, abnormal source encoding, abnormal source decoding, interruption on the output source, output storage failure, and abnormal backup source switching.

Delay Play:

Live streams can be set to play with a delayed output of up to 60 seconds. These settings are available to the user in the Web GUI of the transcoder.

> Multi-screen merging:

The transcoder device can receive multiple video program sources and then synthesize a multi-screen video stream output into one stream to display as the output. The layouts supported are: picture-in-picture, and tile mode.



> Support N+1, N+M redundant backup:

N+1 or N+M network management system realizes automatic 1+1 and N+M redundancy protection switch for equipment failure. Redundancy switch scheme includes input backup switch, device redundancy switch and device output.

Key frame alignment:

Supports key frame alignment and consistent DTS timestamp of any frame of multi-bit rate output streams from the same input source. GOP alignment between different bit rates is supported to support various dynamic bit rate switching protocols.

Background Music:

Background music can change the tempo and vibe of a video. If a video has an uninteresting soundtrack (or none at all), a song adds energy and cohesion. For an ad or promotional video, background music engages your audience and emphasizes the mood of your brand. It makes viewers more likely to watch and engage with the video and understand its meaning. The file format supported is MP3.

Logo Insertion:

Support adding subtitles and Logo. The font color, size and position can be set. The device supports BMP and PNG format LOGO overlay, as well as transparent color settings.



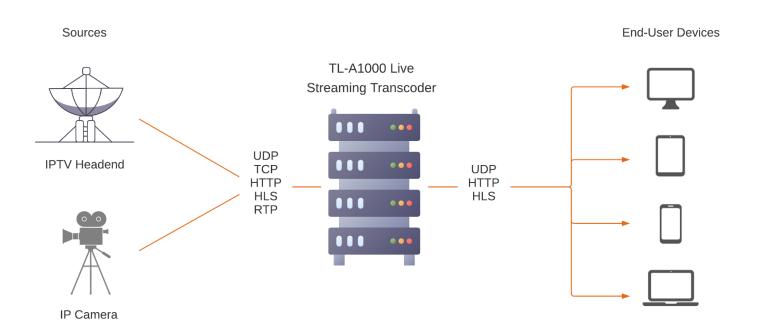
1.3 SPECIFICATIONS

Hardware			
GPU	Supermicro 6018U-TR4+-OTO-30 (Customized)		
Video Specifications			
Video Compression and bitrate	MPEG-2 : 300Kbps ~ 50Mbps		
	H.264 : 300Kbps ~ 50Mbps		
	H.265 : 300Kbps ~ 50Mbps		
Resolutions	576P – 720 x 576 (CPU & GPU)		
	720P – 1280 x 720 (CPU & GPU)		
	1080P – 1920 x 1080 (CPU & GPU)		
	2K – 2560 x 1440 (GPU)		
	4K – 3840 x 2160 (GPU)		
	8K – 7680 x 4320 (GPU)		
Frame Rate	25 fps ~ 60 fps		
Audio Specifications			
Encoding formats	MP2, MP3, AAC, AMR, AC3, E-AC3, WMA		
Operation mode	Stereo, Mono, Dual		
Audio bitrate	8kbps ~ 448kbps (Adjustable)		
Sampling Rate	8kHz ~ 48kHz		
Adjustable Volume	Yes		
Automatic audio gain processing	Yes		
Background Music	Yes		
Certifications	FCC Part 15		
Operating Temperature	0 to 40 C (32 to 104 F)		
Operating Altitude	0 to 4000m		
Operating Humidity	10 to 90 percent noncondensing		



Input and Output Parameters		
Input Streaming Media Protocol	http hls rtmp udp rtp rtsp	
Output Streaming Media Protocol	HTTP HLS RTMP UDP RTP RTSP	
Input Encapsulation Protocol	MP4, 3GP, FLV, ASF, RM, TS, MPTS, SPTS	
Output Encapsulation Protocol	MP4, 3GP, FLV, ASF, TS	

1.4 PRINCIPLE CHART

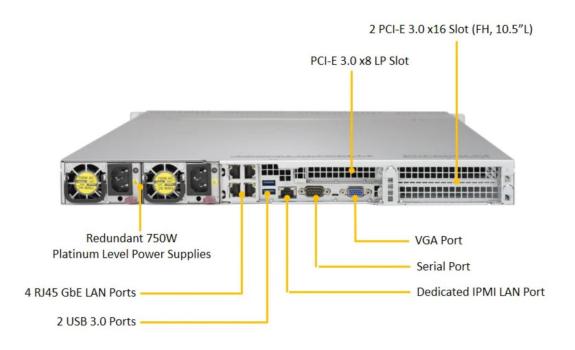




Pair with Translite Global's Large Screen Monitoring System: (TSA-M3600)



1.5 APPEARANCE AND DESCRIPTION





CHAPTER 2

INSTALLATION GUIDE

This section is to explain the cautions the users must know in some case that possibly injure may bring to users when it's used or installed. For this reason, please read all details here and make in mind before installing or using the product.

2.1 ACQUISITION CHECK

When user open the package of the device, it is necessary to check items according to packing list. Normally it should include the following items:

➤ TL-A1000 Live Streaming Transcoder 1PC

Power Cord
1PC

If any item is missing or mismatching with the list above, please contact the local manufacturer.

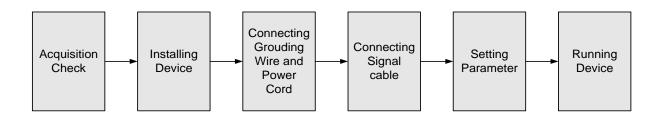
2.2 INSTALLATION PREPARATION

When user installs the device, please follow the steps below:

- Checking the possible device missing or damage during the transportation
- Preparing the relevant and correct environment for installation
- ➤ Installing TL-A1000 Live Streaming Transcoder
- Connecting communication port (if it is necessary)



2.3 DEVICE'S INSTALLATION FLOWCHART



2.4 ENVIRONMENT REQUIREMENT

ltem	Requirement
Machine Hall Space	When user installs machine frame array in one machine hall, the distance between 2 rows of machine frames should be 1.2~1.5m and the distance against wall should be no less than 0.8m.
Machine Hall Floor	Electric Isolation, Dust Free Volume resistivity of ground anti-static material: $1\times10^7\sim1\times10^{10}\Omega$, Grounding current limiting resistance: $1M\Omega$ (Floor bearing should be greater than 450Kg/m^2)
Environment Temperature	5~40°C(sustainable), 0~45°C(short time) installing air-conditioning is recommended
Relative Humidity	20%~80% sustainable; 10%~90% short time
Pressure	86~105Kpa
Door & Window	Installing rubber strip for sealing door-gaps and dual level glasses for window
Wall	It can be covered with wallpaper, or brightness less paint.
Fire Protection	Fire alarm system and extinguisher
Power	Requiring device power, air-conditioning power and lighting power are independent to each other. Device power requires DC 12V. Please carefully check before running.



2.5 GROUNDING REQUIREMENT

- All function modules' good grounding designs are the basis of reliability and stability of devices. Also, they are the most important guarantee of lightning arresting and interference rejection. Therefore, the system must follow this rule.
- Grounding conductor must adopt copper conductor in order to reduce high frequency impedance, and the grounding wire must be as thick and short as possible.
- Users should make sure the 2 ends of grounding wire well electric conducted and be antirust.
- > It is prohibited to use any other device as part of grounding electric circuit
- ➤ The area of the conduction between grounding wire and device's frame should be no less than 25mm².
- > It is prohibited to use any other device as part of grounding electric circuit
- The area of the conduction between grounding wire and device's frame should be no less than 25mm².

2.5.1 FRAME GROUNDING

All the machine frames should be connected with protective copper strip. The grounding wire should be as short as possible and avoid circling. The area of the conduction between grounding wire and grounding strip should be no less than 25mm².

2.5.2 DEVICE GROUNDING

Connecting the device's grounding rod to frame's grounding pole with copper wire



2.6 WIRE'S CONNECTION

The power switch is located at the left of the front panel, and the power socket and grounding pole is located at the right end of the rear panel, whose order goes like this, power socket and grounding pole, and users can refer 1.4 for details.

Connecting Power Cord

User can insert one end into power supply socket, while insert the other end to AC power.

Connecting Grounding Wire

When the device solely connects to protective ground, it should adopt independent way, say, share the same ground with other devices. When the device adopts united way, the grounding resistance should be smaller than 1Ω .



Caution:

Before connecting power cord to TL-A1000 Live Streaming Transcoder, user should set the power switch to "OFF".

2.7 SIGNAL CABLE CONNECTION

Before operating, user should connect all devices requiring cables.

CHAPTER 3

DEVICE ACCESS AND LOGIN

The default login address for the live streaming transcoder is http://ip/webtrans, where ip is changed into the real IP address of the device.



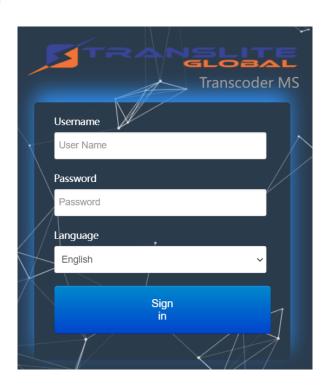


3.1 LOGIN

When accessing the management system page, enter your user name and password

Default Username: admin

Default Password: 123





CHAPTER 4

DEVICE MANAGEMENT

4.1 HOST MANAGEMENT

The Host Management option allows you to centrally manage multiple hosts if required and is used if the user needs to add and manage multiple hosts or need to troubleshoot. Otherwise, the general user does not need to operate this interface.

The Host Management option allows you to Add new host and then reboot or shutdown the host if required. It also indicates the status of the host server.



Name: The descriptive name of the host (specified as 'TASK' in the above screenshot) can be customized.

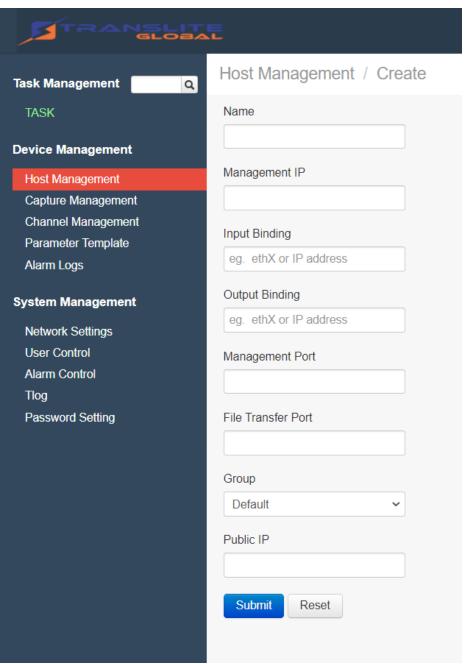
IP address: 127.0.0.1:2030, the default IP address of this machine is 127.0.0.1 (other machines need to fill in the real IP address of the machine), the default port number is 2030.

State: If the status is displayed as online, it means the machine is working normally. If the status is displayed as "Leave String", indicating that the host is abnormal.



4.1.1 ADD NEW HOST







Click on the Add Host button to enter the "Host Management/Create" interface

Host name: Required, can be customized.

Management IP: Required, fill in the real IP address of the host to be managed

Input binding: Optional, you can fill in the bound network port of the input source, for example, the machine has two network ports eth0 and eth1 and you need to get the signal source from eth0, then you can fill in eth0 here.

Output binding: Optional, the network port binding of the output source.

Management port: Required, if there is no special description, fill in 2030 uniformly.

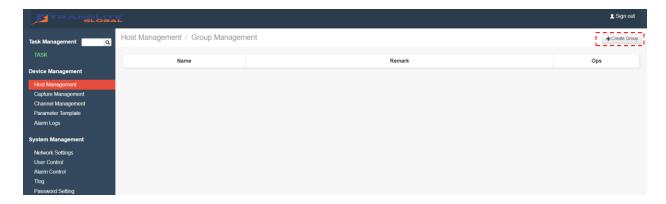
File transfer port: Optional, generally not required.

Group: You can divide multiple hosts into multiple different groups.

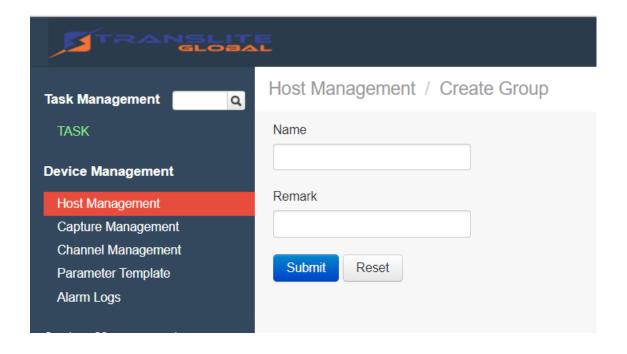
After the host is successfully added, refresh the web page, and you can go to "Task Management" in the menu bar on the left side of the page. The newly added host is seen in the tab.

4.1.2 GROUP MANAGEMENT

Group Management button is used to create a new group or edit an existing group. Users can create multiple groups to manage hosts according to their category, performance, etc.



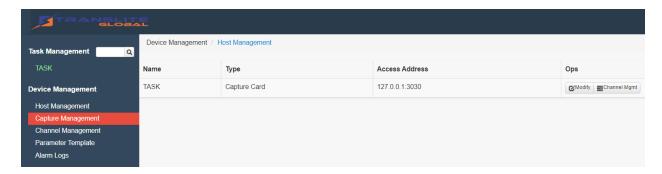




4.2 CAPTURE MANAGEMENT

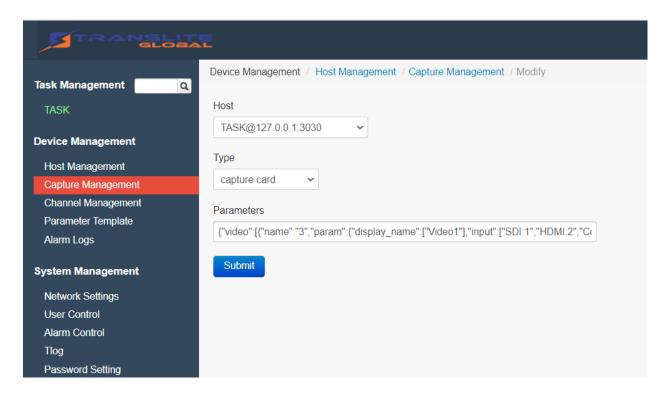
For ordinary users, this option generally does not need to be modified.

If the machine is equipped with an SDI capture card device, the information of the corresponding capture card will be listed in the address interface as shown below



Click the "Modify" button to display the editing interface of the capture card





Host: The host is the machine corresponding to the capture card

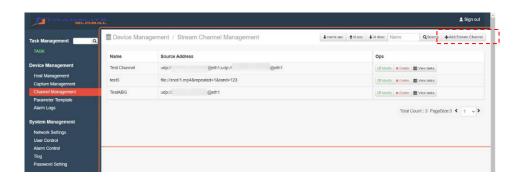
Type: Capture card

Parameters: These are parameters of the acquisition card loaded by the system in a standard format and do not need to be modified.

4.3 CHANNEL MANAGEMENT

The Channel Management tab lets you to add the stream channel by specifying the Channel name, Protocol type, the source and the deinterlace option.

Click on Add Stream Channel to add a new channel as indicated below





Channel name: Fill in as desired.

Protocol type: The default is generally a default protocol.

Source setting: Enter the address information of the media source. Generally, the media source provider will provide the detailed information of the source address. Just paste the source address here

The supported media source formats are: RTMP, RTSP, HLS, HTTP, UDP, FILE, etc.

The relevant input source address format is as follows:

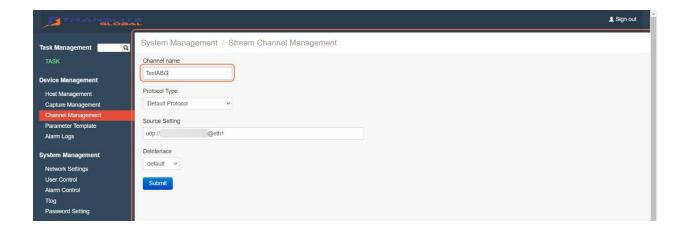
rtmp://192.168.1.100:1935/live/stream

rtsp://192.168.1.100:554/live/stream

http://192.168.1.100:8000/live/stream.m3u8

http://192.168.1.100:8000/live/stream

udp://223.0.0.1:6666 file:///usb/testfile.mp4&repeated=1

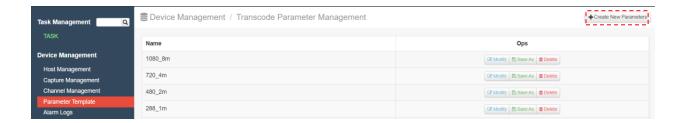


4.4 PARAMETER TEMPLATE

The Webtrans management system provides users with a customizable transcoding parameter template. Under the Parameter template, different types of parameters can be defined to apply the different and required number of profiles to a channel.



The system generally provides several commonly used templates by default. Users can click the "+ Create New Parameter" to create a new parameter to define the custom template you need



The required Video, Audio and Advanced settings can be specified.

Encode format: Supports h263, h264, h265, mpeg4, mpeg2, transparent etc., where transparent is transparent transmission, that is, the video source is not transcoded. The current mainstream h264 encoding format is used. Generally, there are no special requirements, and the h264 format is selected by default.

Encoding level: When the encoding format is h264, it is generally set to 51 by default

B frame: The interval of B frames in a frame sequence, generally does not need to be modified

Multiple reference frames: The interval of multiple reference frames in a frame sequence generally does not need to be modified.

Key frame interval: The unit is second(s), you can set a key frame every few seconds, generally not required to be modified.

Aspect ratio: The default is Auto, the system will automatically determine the aspect ratio of the input source, so that the output is be consistent. Can be customized to 4:3 or 16:9, at this time the output picture will be stretched or compressed is the corresponding aspect ratio.

Field encoding: Off by default;

Profile: Different encoding formats correspond to different type selections. For h264 encoding, there are baseline, main_profile and high_profile. Use high_profile to get the best encoding quality in h264 encoding format.



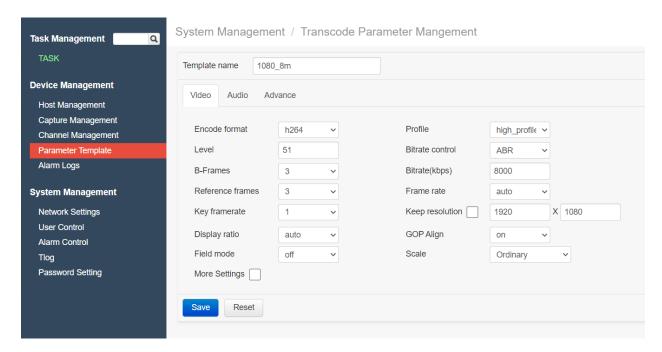
Bit rate control: ABR (Average BitRate, average bit rate), VBR (Variable BitRate, dynamic bit rate), NearCBR (Near Constant BitRate, near constant bit rate), CBR (Costant BitRate, constant bit rate)

Bit rate (Kbps): Video encoding bit rate.

Keep Resolution: If the checkbox after "Keep Resolution" is checked ✓, then the following input box need not be filled, the system will keep the source resolution unchanged when transcoding, otherwise you need to customize and fill in the desired resolution.

GOP: It is mainly used in the case of HLS multi-rate output stream, generally set to off.

Scale: When you need to stretch the source video from 4:3 to 16:9, you can choose to automatically add black borders or intelligent stretching, the proportion of the source video has been guaranteed.



Audio codec: Supports aac, amr, ac3, mp2a and transparent, among which transparent is transparent transmission, that is, no transcoding is performed on the input audio, and the default format is commonly used.

Sampling rate: The default is automatic, the system automatically obtains the audio sampling rate of the source, and the supported sampling rate Rates 48000, 44100, 32000, 24000, 22050, 16000, 11025, 8000 etc.



Audio Channel: The default is Auto, the system will automatically obtain the first channel of the audio source.

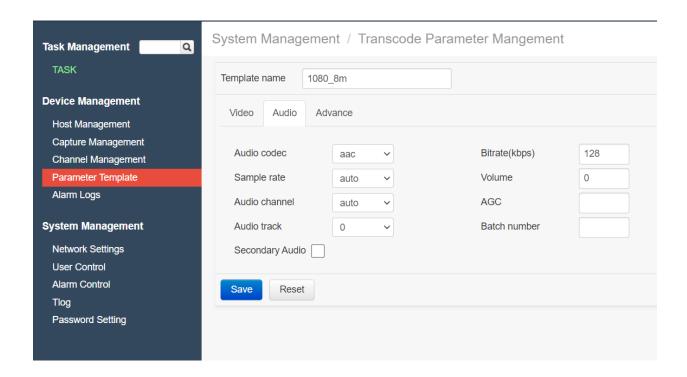
Audio track: The default is 0, the system will automatically select, supports three optional audio tracks

Bit rate: Audio transcoding bit rate;

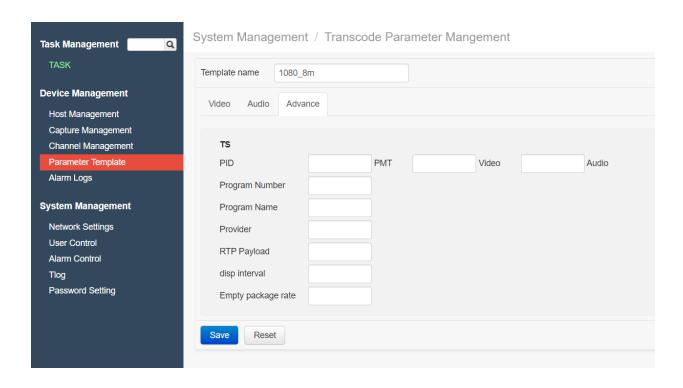
Volume(optional): Can appropriately expand the volume of the source, the default is 0, there are strengths 1, 2, 3, etc.

Automatic gain control; default is 0;

Second audio track: If the audio source has two audio tracks, you can check this option for the second audio track and edit accordingly.

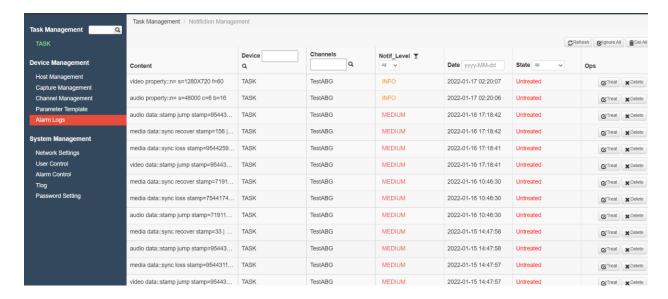






4.5 ALARM LOGS

The Alarm Logs shows the list of alarm notifications received for all the channels along with the Notification level, timestamp and the current state.



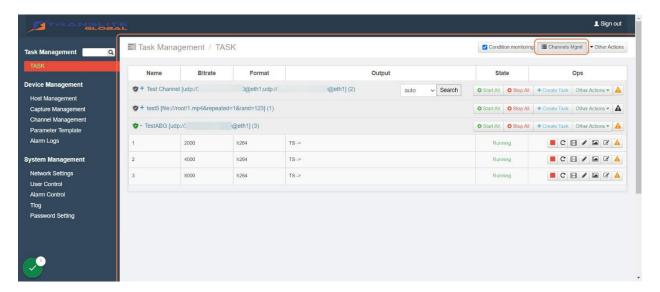


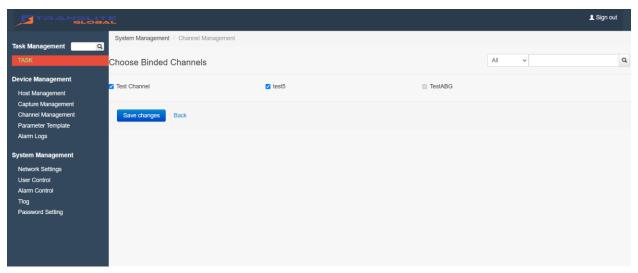
CHAPTER 5

TASK MANAGEMENT

The Task Management tab contains the details of the task associated with each channel. This tab is used to create new task for each channel, start or stop the task related to a channel and view the notifications that arises for each task related to a channel.

Under 'Channels Mgmt', the required channels that are to be binded can be chosen. Ensure to enable all the required channels.

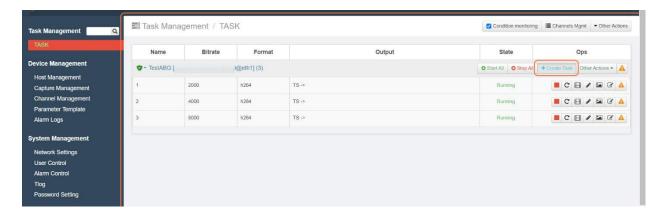




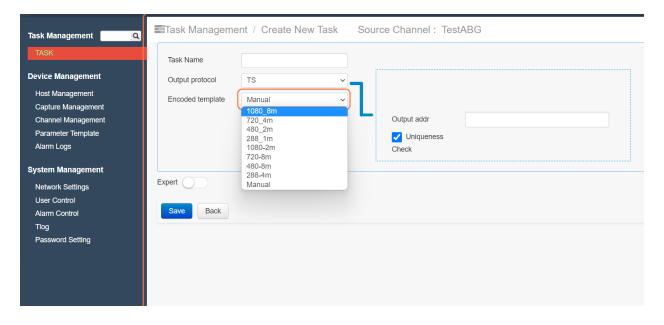


Once the channels are enabled under 'Channels Mgmt', tasks can be created for those channels to link the required profiles to each channel.

Click on 'Create Task' for the required channel.



Choose the required template that was earlier created under Parameter Template. This is indicated in the screenshot below.



The supported output protocols are TS, TS over HTTP, HLS over HTTP, RTP, RTP over HTTP, RTMP, FLV over HTTP, MP3 over HTTP, FLV, ASF, etc. If 'NULL' is selected, it means no output, and if 'PLAYBACK' is selected, it will be output to the local preview.



An example of the output address filling specification is as follows:

o TS

Unicast: 192.168.1.100:6666

Multicast: 223.0.0.1:5555

TS over HTTP

Output address: 192.168.1.100:8000/live

Channel name: stream

HLS over http

Output address: 192.168.1.100:8000/live

Channel name: stream

o RTP

Output address: 192.168.1.100

SDP file name: test.sdp

RTP over HTTP

Output address: 192.168.1.100:554/live

Channel name: stream

o RTMP

Output address: 192.168.1.100:1935/live

Channel name: stream

FLV over HTTP

Output address: 192.168.1.100:8000/live

Channel name: stream

Multithreaded transmission

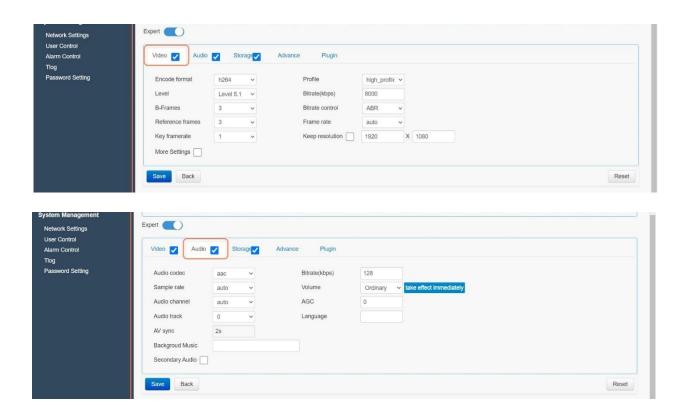
Server address: 192.168.1.100:3066

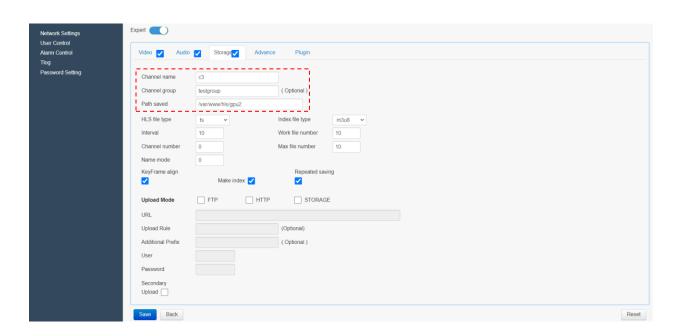
Output address: 127.0.0.1:8000

Output cache: 5



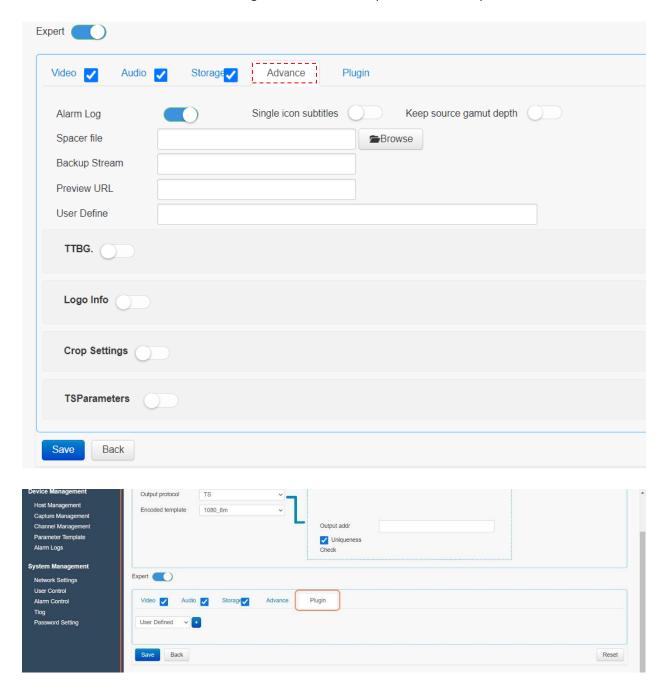
Click on Expert/Advance for further settings.





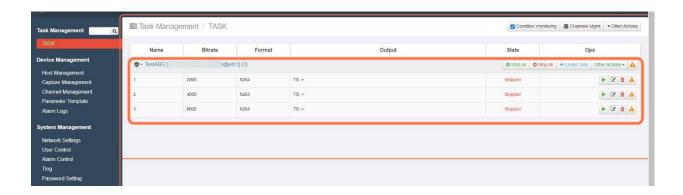


Note: The 'Channel name' under Storage tab should be unique for each task/profile of the channel.



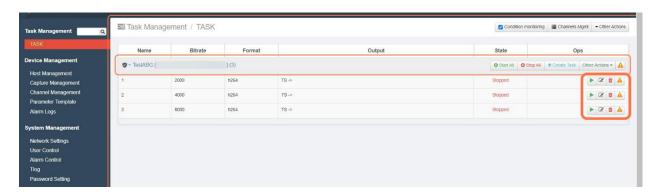
Likewise, the required number of tasks can be created for each channel. In the below given screenshot, 3 tasks with 3 different parameter templates are created



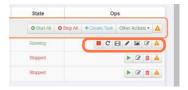


For each task, the below actions can be performed:

Start; Modify Parameter; Delete; Notification



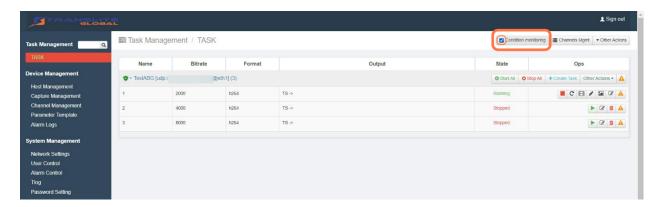
Clicking on 'Start' for a particular task further expands and gives below options for that task as indicated below



- > Stop
- > Take effect immediately
- Preview
- Edit Subtitles
- Edit logo
- Modify parameters
- Notifications



After the tasks for the channels are created, the status of these tasks can be viewed by clicking on 'Condition Monitoring' icon as indicated in the below screenshot.



When all tasks under a channel are not started, the condition monitoring icon in front of the channel is grey.



When there are tasks running under the channel and all running tasks are normal, the condition monitoring icon will be displayed in green.



When there are tasks running under the channel, and there are tasks that are not being checked in all running tasks, the condition monitoring graph will change to red





CHAPTER 6

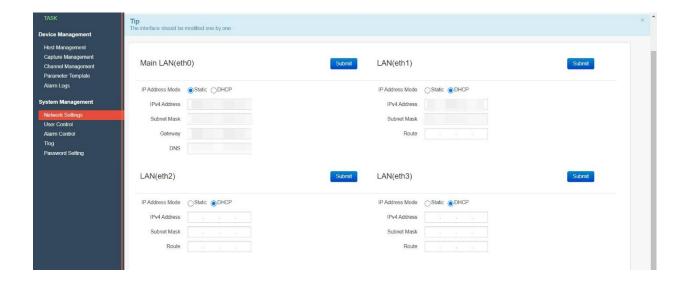
SYSTEM MANAGEMENT

6.1 NETWORK SETTINGS

You can configure the network card information of the device. Click the "Network Settings" button in the main menu on the left to enter the network settings page

Under the Network Settings tab, the IP Address mode, IPV4 Address, Subnet Mask, Gateway and DNS values area to be specified for each of the ethernet ports. The 4 ethernet ports present in the transcoder are designated as eth0, eth1, eth2 and eth3.

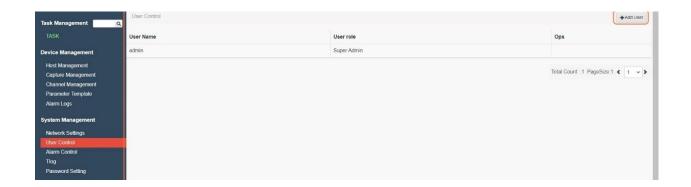
This interface will list the physical network card devices of the current device.

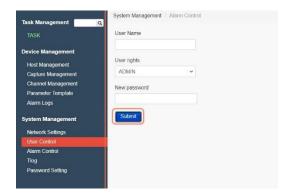




6.2 USER CONTROLS

The User control tab allows you to create new users and assigning a specific set of user rights to that user. The user can be classified as either 'Admin' or 'Ordinary user' or 'System Management' user as indicated in the below screenshot.





6.3 ALARM CONTROL

Under the Alarm Control tab, new user alarms can be created. When a new user alarm is created, the user phone number and email id is provided which receives the alarm.

Different alarm range can be set as per requirement. Below are the alarm range options:



STOP_INP →Stop Input

STOP_DEC → Stop Decoding

STOP_ENC → Stop Encoding

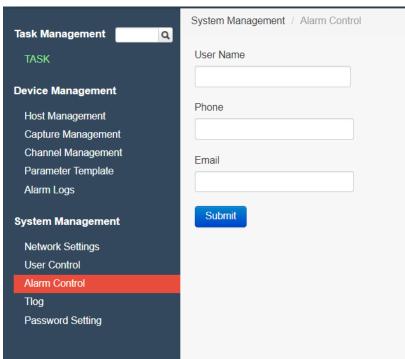
STOP_SND → Stop Sending

STOP_WRI → Stop Writing

BACKUPSWITCH → Backup Switch

The Alarm switch options can be chosen among Email Alarm, SMS Alarm and Page alert

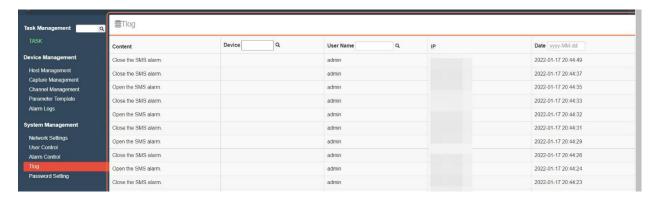






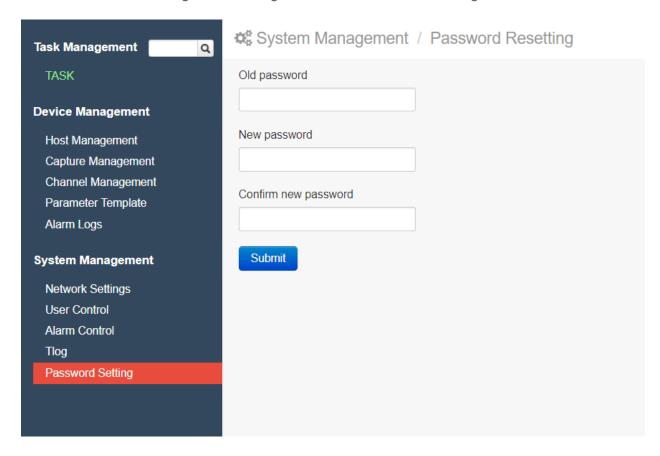
6.4 TLOG

The Tlog tab maintains system logs along with the username, IP and timestamp details.



6.5 PASSWORD SETTINGS

Passwords can be managed and changed under the Password Settings tab





CHAPTER 7

TROUBLESHOOTING

All Translite Global products have been passed the testing and inspection before shipping out from factory. The testing and inspection scheme already covers all the Optical, Electronic and Mechanical criteria which have been published by TRANSLITE. To prevent potential hazard, please strictly follow the operation conditions.

Prevention Measure

- > Installing the device at the place in which environment temperature between 0 to 45 °C
- Making sure good ventilation for the heat-sink on the rear panel and other heat-sink bores if necessary
- Checking the input AC within the power supply working range and the connection is correct before switching on device
- Checking the RF output level varies within tolerant range if it is necessary
- Checking all signal cables have been properly connected
- Frequently switching on/off device is prohibited; the interval between every switching on/off must greater than 10 seconds.

Conditions need to unplug power cord

- Power cord or socket damaged.
- Any liquid flowed into device.
- Any stuff causes circuit short
- Device in damp environment
- Device was suffered from physical damage
- Longtime idle.
- After switching on and restoring to factory setting, device still cannot work properly.
- Maintenance needed



CHAPTER 8

APPLICATIONS

For Sales

North America:

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Asia:

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Rest Of The World:

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For Support

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