R2TP Relay Server

User Manual

Content

1 Introduction

1.1 Product Overview

RRS (R2TP Relay Server) is a live stream media server based on R2TP (Reliable Real-Time Transmission Protocol) streaming protocol. It serves as a protocol transformer (R2TP to RTMP/HTTP/UDP…) and repeater (R2TP to R2TP). It also distributes one source R2TP stream to multiple destinations.

1.2 Product Features

- Based on Caton R2TP protocol that designed for internet QOS problem
- Very efficient anti-congestion and error-recovery mechanisms
- Broad compatibility, support UDP / HTTP output to the mainstream decoder , RTMP to FMS, Wowza, Red5 and other streaming media server, support broadcast to Youtube, Ustream and other mainstream video publishing platform, support CDNs like Edgecast, and Akamai.
- With building their own RRS node server，automatically select the most appropriate path to achieve high-quality real-time transmission of Internet data
- Support transmission status real-time monitoring
- Support TS real-time recording
- Support Web-UI control

1.3 Application Scenarios

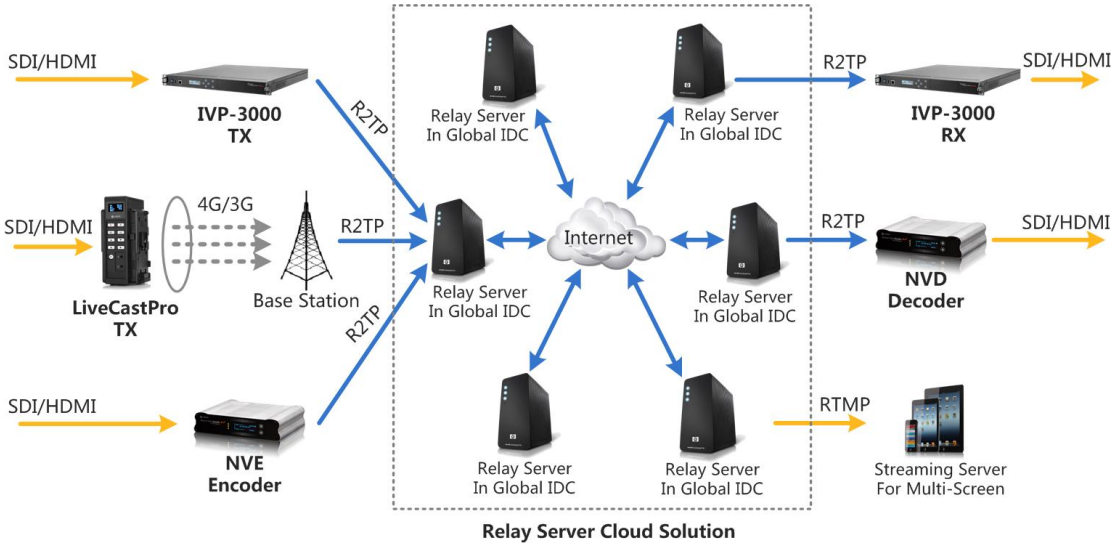

Figure1.1 RRS Application Scenarios

2 Software Installation

How to install RRS on your physical servers?

2.1 System Requirement

Minimum hardware configuration:

Table2.1 Minimum hardware configuration

Type	Minimum Configuration
CPU Type	Intel XEON 4 Cores
CPU Num.	1
RAM	8GBytes
NIC Rate	1Gbps
NIC Num.	2
Hard Disc	500GBytes

Basic software configuration:

Table2.2 Basic Software configuration

Type	Basic Configuration
OS	Cent OS 6.4 64bit minimal (Recommended)
Structure	django
Database	sqlite3
Middleware	Python 2.7

Comment:

Apart from operation system, the other components have been included in RRS installation package.

2.2 RRS Installation

We assume the OS has been installed and you have root permission. The installation of CentOS isn't within the scope of this document. Put the RRS installation package (rrssetup.tar.gz) in any directory, unzip the package, and run the installation script, as follows:

```
[root@localhost home]# tar xf rrssetup.tar.gz
[root@localhost home]# cd rrssetup
```

[root@localhost rrssetup]# sh install.sh

Please reboot the server to finish the installation

Do you want to reboot now? <y/n> y

Type in “y” to finish the installation and the system will reboot automatically.

After system rebooted, users can type in the server IP address in a web browser, to log in the RRS web control page, as follows:

Figure2.1 Log In

The default username/password is admin/admin123, users can modify it after logged in.

3 Initialization

3.1 System Settings

After logged in for the first time, users need to configure the system setting, and then applies for the authorization.

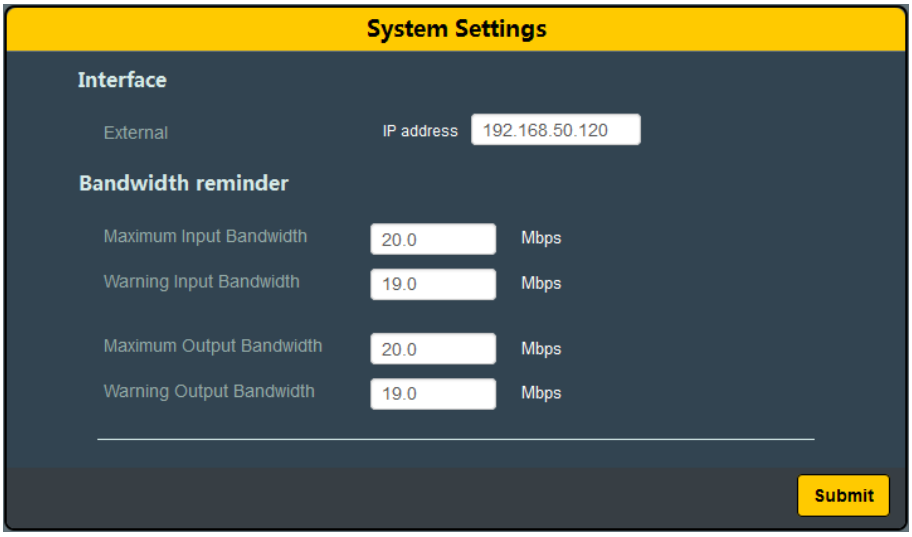

Figure3.1 System Settings

Table3.1 System Settings

Item	Configuration
External	External IP address of RRS
Maximum Input Bandwidth	Max data bandwidth that RRS server can input
Warning Input Bandwidth	Web page will displays warning when the input is beyond the bandwidth
Maximum Output Bandwidth	Max data bandwidth that RRS server can output
Warning Output Bandwidth	Web page will displays warning when the output is beyond the bandwidth

Comment:
RRS do not limit the bandwidth, however users can set the Max Input/Output Bandwidth in case the data traffic would beyond the bandwidth limitation of local operators.

3.2 Authorization

RRS is licensed by features. Users need to apply for an authorization code depending on their purchased features before starting RRS.

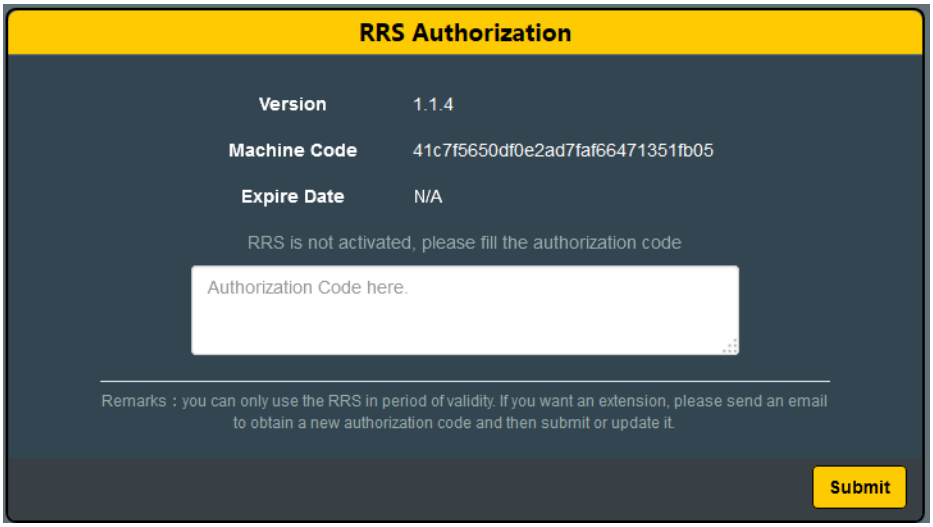

Figure3.2 RRS Authorization Apply

Please offer the following information to the sales/dealers, to apply for the authorization code.

Table3.2 RRS Authorization Apply

Item	Description
Machine Code	The Machine Code in RRS Authorization page
Expire Date	The expiration date of formal authorization that users have purchased
Official/Trial	Whether it is for trial use
R2TP Push Input	Input channel number of R2TP Push streams
R2TP Pull Input	Input channel number of R2TP Pull streams
UDP Input	Input channel number of UDP streams
R2TP Output	R2TP output channel number for each input
HTTP Output	HTTP output channel number for each input
UDP Output	UDP output channel number for each input
RTMP Output	RTMP Push output channel number for each input

After submitting correct authorization code, users can view the detailed authorized function information in the RRS Authorization page.

Figure3.3 RRS Authorization Activated

4 Web Control

After logged in and system configuration, click **Streams** to enter the Streams page, as follows:

Figure4.1 Streams

The top right side will display the general setting and status of RRS.

Table4.1 General

Item	Description
Change Password	Type in the new password to modify. At least 8 characters in required for a valid password.
Logout	Click to re-log in the RRS
Server Input	Real-time statistics of input channel number
Bandwidth	Real-time statistics of total input bit rate
Server Output	Real-time statistics of output channel number
Bandwidth	Real-time statistics of total output bit rate

In the Streams page, users can manage the input and output of each stream. Top left side is the input stream list of RRS, click the list to configure the input info and output info for each input streams.

After the configuration, click **Save** to save the modification.

4.1 Input Settings

The type of RRS input streams includes:

1) R2TP Push: R2TP stream pushing from the encoders which support R2TP protocol, e.g. LCP/IVP Encoders.
2) R2TP Pull: R2TP stream pulling from other RRS server.
3) UDP: UDP TS stream from standard encoders.

The max input channel number is determined by the RRS authorization.

Table4.2 Input Configuration

Item	Description
Protocol	Input stream protocol: R2TP Push, R2TP Pull, UDP
IP	R2TP Push / UDP: IP address of local RRS R2TP Pull: IP address of RRS that R2TP Pulling from
Port	R2TP Push / UDP: IP port of local RRS R2TP Pull: IP port of RRS that R2TP Pulling from
Stream Name	Name the stream to identify it. It should be no more than 14 characters
Description	Describe more information of the stream
Enable Stream	Click to enable this stream
Record	Click to enable the video recording of this stream to RRS server
Stream Status	The status of input stream. Click “Connected” to enter the Input Status page
Bitrate	Real-time bit rate of input stream
Device Type	Choose the type of input device
SN	Display the SN number of input device
Device Status	The status of input device: click to control / offline Click “click to control” to enter the LCP web page for remote control

Comment:
LCP-300 support remote control via RRS over public Internet, for more information, please refer to *LCP-300 User Manual Chapter 5.1.2*.

RRS support real-time statistics of transmission status. When the Stream Status of Input Info displays “Connected”, click it to view the real-time statistic of input status, as follows:

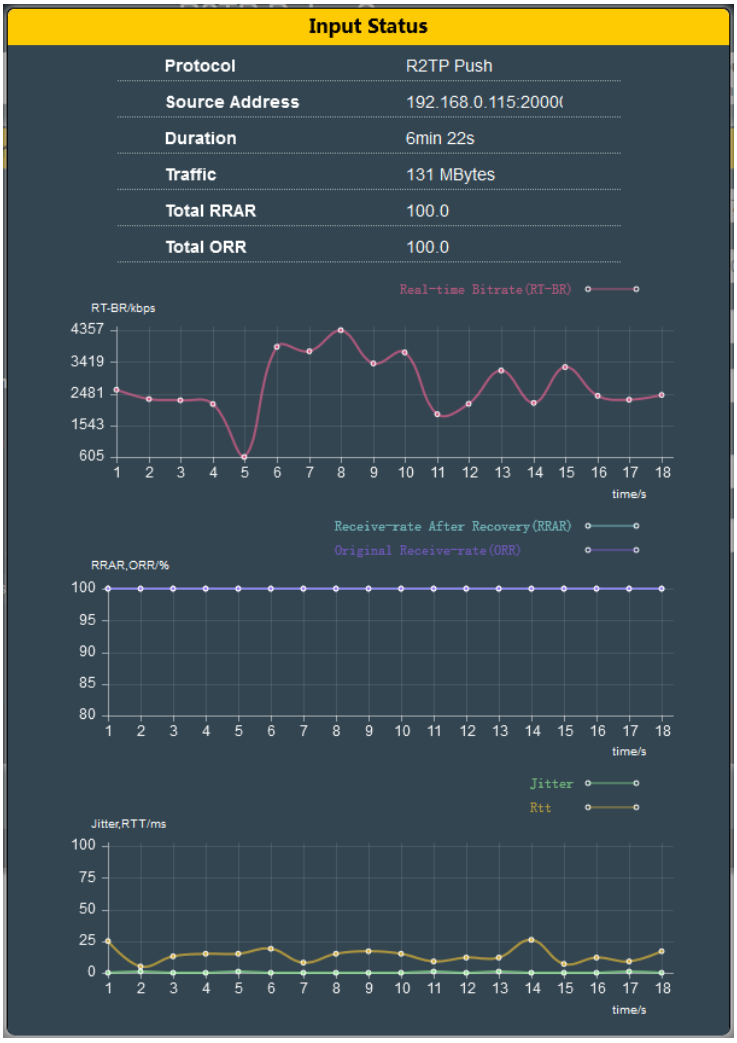

Figure4.2 Input Status

Table4.3 Input Status

Item	Description
Protocol	Input stream protocol: R2TP Push, R2TP Pull, UDP
Source Address	R2TP Push / UDP: IP address of local RRS R2TP Pull: IP address of RRS that R2TP Pulling from
Duration	The duration of current connection
Traffic	The total data received of current connection
Total RRAR	Total receiving ratio after recovery of current connection
Total ORR	Total original receiving ratio of current connection

RT-BR	Real-time bit rate of input stream
RRAR	Receiving ratio after recovery in recent 30 seconds.
Jitter	The difference value of transmission delay between adjacent packets

4.2 Output Settings

The type of RRS output streams includes:

1) R2TP: R2TP stream pulling by decoders which support R2TP protocol: IVP decoder or pulling by other RRS server.
2) HTTP: TS over HTTP Pull stream.
3) UDP: UDP TS stream to standard decoders.
4) RTMP Push: RTMP Push stream to CDN or streaming server that support RTMP protocol.

The max output channel number is determined by the RRS authorization.

Table4.4 Output Configuration

Item	**Description**
HTTP	The address of HTTP Pull stream. The yellow button in the right shows the current link number of HTTP Pull stream. Click the button to enter the status statistic page.
R2TP	The address of R2TP Pull stream. The yellow button in the right shows the current link number of R2TP Pull stream. Click the button to enter the status statistic page.
UDPn	To set the UDP stream address of each UDP stream Click “more udp” to increase the UDP output
RTMP Pushn	To set the RTMP Push address of each RTMP Push stream Click “more rtmp” to increase the RTMP output
Stream Outputs	The total channel number of output streams
Bitrate	The total bit rate of output streams

RRS support output status statistics of R2TP Pull stream and HTTP Pull stream, users can view the real-time statistics after the target receiver has connected RRS.

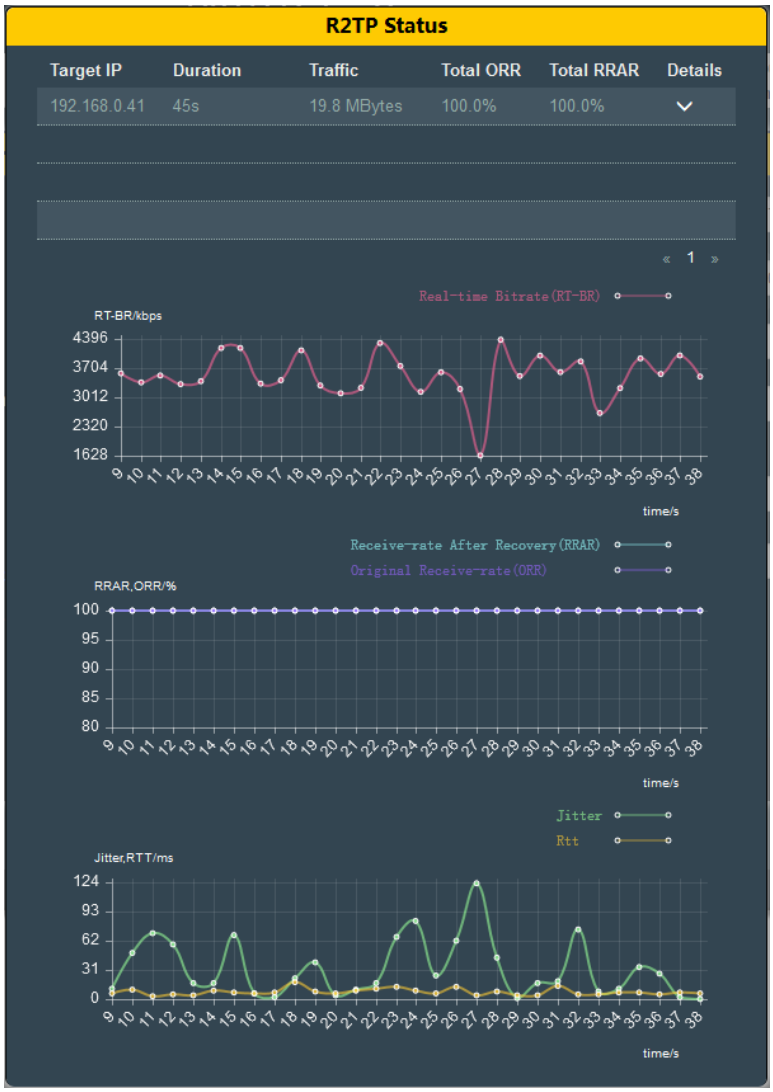

Figure4.3 Output Status

Table4.5 Output Status

Item	Description
Target IP	IP Address of target receiver
Duration	The duration of current connection
Traffic	The total data received of current connection
Total RRAR	Total receiving ratio after recovery of current connection
Total ORR	Total original receiving ratio of current connection
RT-BR	Real-time bit rate of input stream
RRAR	Receiving ratio after recovery in recent 30 seconds.
Jitter	The difference value of transmission delay between adjacent packets
Details	Click to display the real-time status of current output stream

4.3 File Download

4.3.1 Download Record File

RRS support TS file recording from R2TP transport stream, user can download the recording file to local computer.

Click the **Record Files** in **Download** menu, as follows:

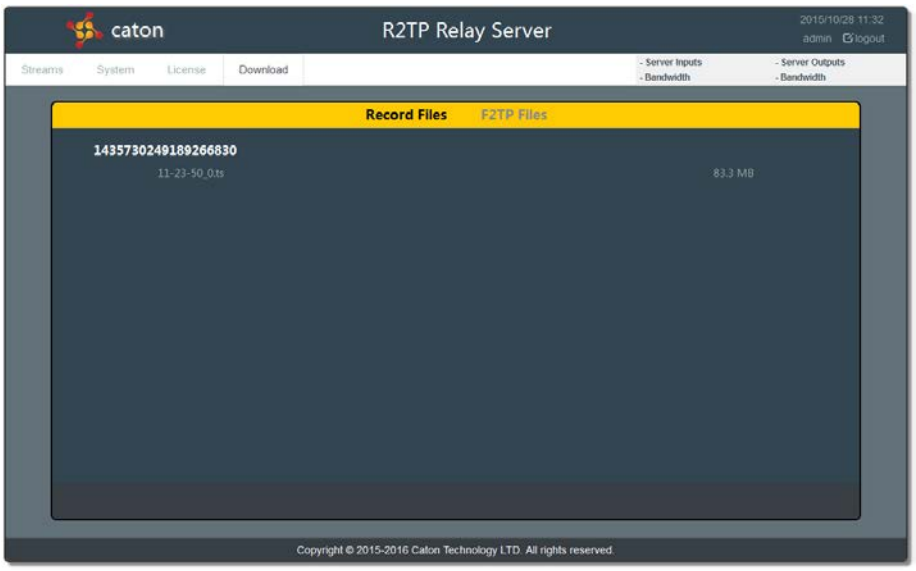

Figure4.4 Record Files

User can choose the recording file and click the file name to download it to local computer.

4.3.2 Download F2TP File

RRS support file recording, which is transferred from LCP via F2TP protocol.

Click the **F2TP Files** in **Download** menu, as follows:

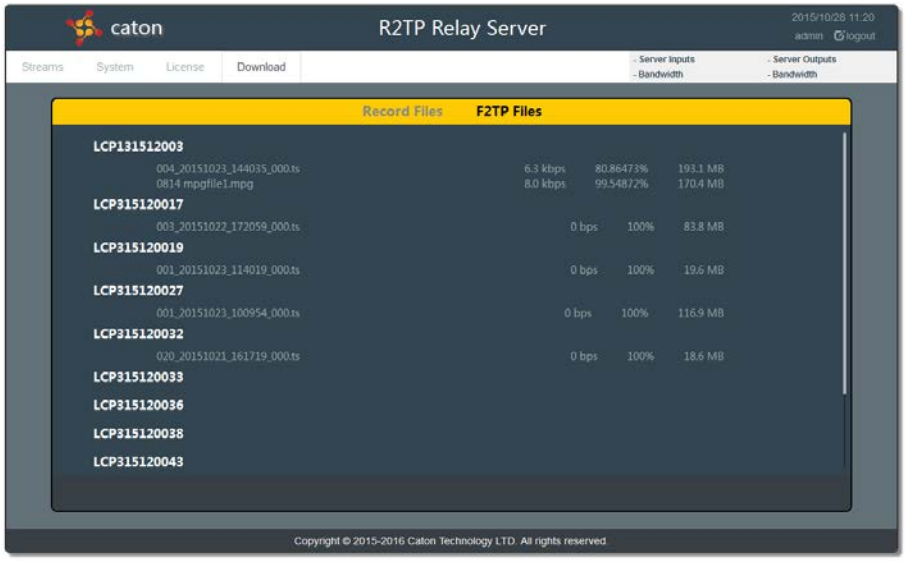

Figure4.5 F2TP Files

User can choose the file name based on LCP SN, and download it to local computer.

5 Q&A

Q1:

——What is the concurrent capability of HTTP/UDP of RRS?

A:

RRS is not defined as a general streaming server for large number of client to access. The HTTP/UDP output of RRS is only for monitoring or connecting to standard decoder. Therefore, RRS will restrict the HTTP/UDP output number by authorization. For large scale concurrent output application, it is recommended to deploy a live streaming server connecting to RRS, such as Live Media Server.

Q2:

——I can't use VLC to play the RTMP stream output from RRS, why?

A:

The RTMP stream output from RRS is RTMP Push, which can be pushed to CDN or streaming server that support Adobe RTMP Flash, not flash player. Flash player can play RTMP Pull streams.

Q3:

——How can I reboot RRS?

A:

Enter the System Settings page, and click "Submit" to reboot RRS service

6 Technical Specifications

Category	Function	Configuration
Input	R2TP	Real-Time Reliable Transport Protocol
	UDP	TS over UDP
	Channel	Iutput Channel Number is Defined by License
	Bitrate	Up to 20Mbps/channel
Transfer	R2TP	Relay to IVP With SDI/HDMI Output or other RRS server
	UDP/HTTP	Multiple Screens View with Relay to Live Media Server or Monitor by IP Decoder
	RTMP	Multiple Screens View with Relay to Live Media Server or CDN
	Channel	Output Channel Number is Defined by License
Stability	Fore-end	IVP Encoder / LiveCastPro Mobile Video Uplink Pack
	Tag-end	IVP Decoder / Popular Live Media Server / Popular IP Decoder
System Requirement	Hardware	2GHz Intel Pentium 4 processor 4G Memory (Recommend 8GB) 2 x Giga Ethernet
	Software	CentOS 6.4 64-bit Minimal (Recommend)
Control	Web Management	Web-Based User Interface
Other	Transport Statistics	Real-time Transport Data Statistics
	Stream Recording	Real-time TS file Recording
	File Transfer	File Transfer Receiving and Recording for LiveCastPro
	Reverse Control	Remote Control for LiveCastPro