Request for Comments: 3251 Violet Team
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Violet Video Protocol

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1. Introduction

The protocol is based on TCP and request the video file from the server. Depending on the requests sent by the client to the server, the server will respond accordingly. The videos will be stored on the server and broken into “chunks”. When the client wants to play a video it will begin requesting the chunks in order and the server will respond by sending the chunks. The chunks are numbered such that the first chunk is number 0.

2. Server Behavior

The server will respond to the following commands. The end of a command or response to a command should be designated by a double new line.

LIST

The server will return a list of the files it has to stream with each file name on a new line.

REQUEST

The client will send a request to the server with the following information. The requested video chunk will then be transferred to the client via TCP:

- Video name
- Number of chunk
- Encoding type

INFO

The server will return relevant file info such as :

- Chunk size in seconds
- Number of chunks
- URLs for header chunk
- Encoding type

Upload Date
Owner
Tags

3. Client Behavior

The client will need to know the IP address of the server that it wants to stream videos from.

When the video is playing:

The client will continue to request the next video chunks from the server as long as the video is playing keeps playing. The client has a buffer with the size depending on the specifications of the machine and the connection speed.

When the video is paused

If the video is paused, the client will request a set number of chunks from the server and then stop.

When the video is resumed

The client will resume sending requests for chunks to the server from where it left off.

When the video is stopped:

The client clears the buffer and request for the first few chunks of the video in case the video gets restarted.

Reliability

The video chunks shall be transferred through TCP so all of the data should arrive in order to the application

Congestion

To control congestion, a large enough buffer will be used. When the client requests the video chunks, it will also send the current available space in the buffer.

Quality

The client may request videos of any quality available on the server, but it is up to the client to specify the desired video quality.

Jitter

The client will request video of lower quality if the connection speed is too slow. If the client realizes that its buffer is emptying faster than it's receiving from the server, it will know the connection speed is slow. Buffer size will increase and video will be paused until buffer is filled up, before resuming. If the video reaches the bottleneck and the next chunk has not arrived yet, the buffer size will double itself.

4. Messages

4.1 Sample Messages

Client Request

LIST

Server Response

VIOLETP/1.0 200 LIST
Video1_480p
Video1_720p
Video2_1080p

Client Request
INFO Video1_480p
Server Response
VIOLETP/1.0 300 INFO
Chunk size: 10
Number of chunks: 100
URLs for header chunk: /Video1_480p
Encoding type: 480p
Upload Date: 7/12/2015 22:22
Owner: Violet
Tags: Network, Tutorial, Protocols

Client Request
REQUEST Video1_480p/0
Server Response
VIOLETP/1.0 400 REQUEST]
Sends Video1_480p chunk 0

4.2 Possible error messages:
101 - Server down
102 - Invalid video name
103 - Chunk not found
104 - Unrecognized command
4.3 Response messages:
200 - LIST
300 - INFO
400 - REQUEST

5. Security:
The server will limit the number of requests that it will recognize from the same IP in a specific time frame if the contents of the requests are similar. For example: If REQUEST Video1_480p/0 is received by the server ten times in a row, it will deny any request for a minute before allowing a request from that client again.