# CS305-2022Spring Lab6 Report

Name：Yitong WANG 11910104@mail.sustech.edu.cn

Student ID：11910104

Lab Time：Thursday 10:20 a.m. to 12:10 p.m.

Lab Teacher：Qing WANG wangq9@mail.sustech.edu.cn

Lab SA:

- Siyu LIU 11912935@mail.sustech.edu.cn
- Xingying ZHENG 11912039@mail.sustech.edu.cn

## Practice6-1: DASH

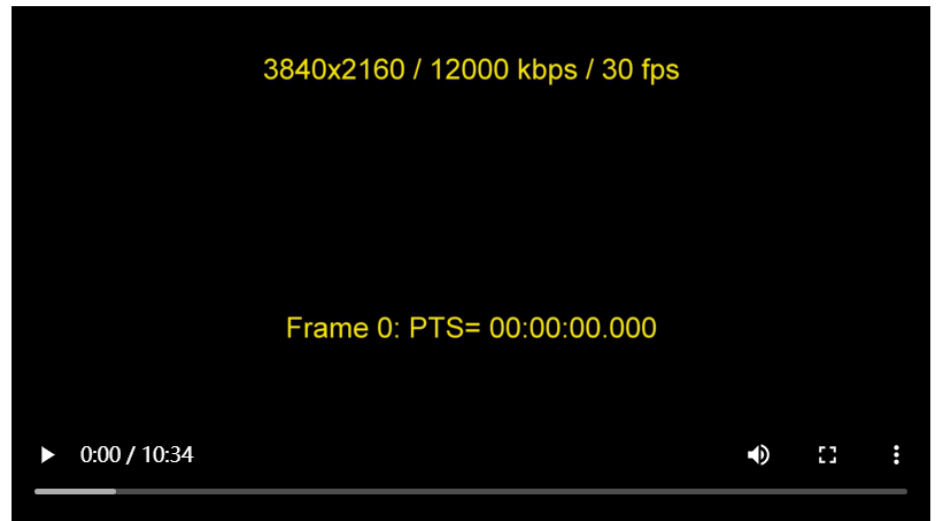## Step 1: Open Microsoft Edge browser and goto the following link:

```
https://reference.dashif.org/dash.js/nightly/samples/getting-started/auto-load-single-video-src.html
```

Use Microsoft Edge because my Chrome browser cannot see the network activities.

And we can see this page:

# dash.js

## Auto load single video src

The simplest means of using a dash.js player in a web page. The mpd src is specified within the @src attribute of the video element. The "auto-load" refers to the fact that this page calls the Dash.createAll() method onLoad in order to automatically convert all video elements of class 'dashjs-player' in to a functioning DASH player.

3840x2160 / 12000 kbps / 30 fps

Frame 0: PTS= 00:00:00.000

▶ 0:00 / 10:34    🔊  ⛶  ⋮

**Source code**                                                        Copy to clipboard

```
<div>
    <div class="code">
        <video data-dashjs-player="" autoplay="" src="https://dash.akamaized.net/akamai/bbb_30fps/bbb_30fps.mpd" controls
    </div>
</div>
<div>
    <video data-dashjs-player="" autoplay="" src="https://dash.akamaized.net/akamai/bbb_30fps/bbb_30fps.mpd" controls="tr
</div>
```

© DASH-IF

# Step 2: Open the developer tool and see the network activities

## `mpd` files

We can see that there are some `mpd` files:

Their name is `bbb_30fps.mpd`. Their mime type information is `audio/mp4`.



`m4s`，`m4v`，`mp4` **files**

We can see that there are some `m4a` files, and some `m4v` files, but we did not find the `mp4` or `m4s` files.

| 名称 | 状态 | 类型 | 发起程序 | 发起程序地址空间 | 大小 | 时 | 时间线 |
|---|---|---|---|---|---|---|---|
| auto-load-single-video-src.html | 200 | document | 其他 | | 830 B | 8... | |
| dash.all.debug.js | 200 | script | auto-load-single-vid... | | (内存缓存) | 0... | |
| bootstrap.min.css | 200 | stylesheet | auto-load-single-vid... | Public | (磁盘缓存) | 2... | |
| main.css | 200 | stylesheet | auto-load-single-vid... | Public | (磁盘缓存) | 1... | |
| dashjs-logo.png | 200 | png | auto-load-single-vid... | | (内存缓存) | 0... | |
| highlighter.js | 200 | script | auto-load-single-vid... | | (内存缓存) | 0... | |
| bbb_30fps.mpd | 200 | media | auto-load-single-vid... | Public | 3.6 kB | 4... | |
| bbb_30fps.mpd | 200 | media | auto-load-single-vid... | Public | 3.1 kB | 5... | |
| bbb_30fps.mpd | 206 | media | auto-load-single-vid... | Public | 0 B | 5... | |
| tomorrow.min.css | 200 | stylesheet | highlighter.js:9 | Public | (磁盘缓存) | 2... | |
| highlight.min.js | 200 | script | highlighter.js:10 | Public | (磁盘缓存) | 5... | |
| bbb_30fps.mpd | 200 | xhr | XHRLoader.js:90 | Public | 1.5 kB | 2... | |
| bbb_30fps_480x270_600k_0.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_a64k_0.m4a | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_30fps_480x270_600k_1.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 8... | |
| bbb_a64k_1.m4a | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 6... | |
| bbb_30fps_3840x2160_12000k_0.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_30fps_3840x2160_12000k_1.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 9... | |
| bbb_30fps_3840x2160_12000k_2.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 4... | |
| bbb_30fps_3840x2160_12000k_3.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 2... | |
| bbb_30fps_3840x2160_12000k_4.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_a64k_2.m4a | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 5... | |
| bbb_a64k_3.m4a | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 3... | |
| bbb_a64k_4.m4a | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 3... | |
| bbb_a64k_5.m4a | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_30fps_3840x2160_12000k_5.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_30fps_3840x2160_12000k_6.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 1... | |
| bbb_30fps_3840x2160_12000k_7.m4v | 200 | xhr | XHRLoader.js:90 | Public | (磁盘缓存) | 9... | |

47 次请求 已传输9.1 kB 90.5 MB 条资源 完成：4.08 s DOMContentLoaded: 1.13 s 加载：1.73 s

And the rate is changing from 600k to 12000k.

# Practice6-2: CDN

## Step 1: Access a website using CDN

```
curl https://d4.sina.com.cn/202110/15/1581703.jpg --head
```

We can see this is using CDN:

```
C:\Users\16011>curl https://d4.sina.com.cn/202110/15/1581703.jpg --head
HTTP/1.1 200 OK
Server: Tengine
Content-Type: image/jpeg
Content-Length: 86080
Connection: keep-alive
Date: Tue, 29 Mar 2022 16:49:50 GMT
Etag: "96292990b34d783193938a31187d892c"
Expires: Tue, 05 Apr 2022 16:49:50 GMT
Cache-Control: max-age=604800
Via: https/1.1 cmcc.guangzhou.union.94 (ApacheTrafficServer/6.2.1 [cMsSfW]), cache51.l2cn3007[0,0,200-0,H], cache56.l2cn3007[1,0], cache3.cn2541[0,0,200-0,H], cache2.cn2541[3,0]
X-Via-CDN: f=alicdn,s=cache2.cn2541,c=2001:da8:201d:1109::a0ab;
X-Via-Edge: 1648572589488a39b4d7d51ae10ac3e3e0aab
X-RequestId: 5ab42bc2-2110-1809-0009-6c92bf4c9fd4
X-Requester: GRPS000000ANONYMOUSE
Last-Modified: Fri, 15 Oct 2021 07:16:45 GMT
X-Filesize: 86080
x-amz-meta-crc32: 12D0DBA9
x-amz-meta-uploadlocation: /ad4
Access-Control-Allow-Headers: Origin, Content-Type, Accept, Range, Content-Length
Access-Control-Allow-Methods: GET, PUT, POST, DELETE, OPTIONS, HEAD
Access-Control-Max-Age: 31536000
Access-Control-Allow-Origin: *
X-Via-SSL: ssl.23.sinagl.qxg.lb.sinanode.com
Edge-Copy-Time: 1634518809743
Ali-Swift-Global-Savetime: 1648572590
Age: 129104
X-Cache: HIT TCP_HIT dirn:3:392323394
X-Swift-SaveTime: Wed, 30 Mar 2022 08:01:44 GMT
X-Swift-CacheTime: 550086
Timing-Allow-Origin: *
EagleId: b73c8a8e16487016946045858e
```

# Step 2: Find IP address

Command:

```
dig d4.sina.com.cn
```

```
D:\计算机\计算机网络\assignment\PA1>dig d4.sina.com.cn

; <<>> DiG 9.16.27 <<>> d4.sina.com.cn
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 39603
;; flags: qr rd ra; QUERY: 1, ANSWER: 19, AUTHORITY: 3, ADDITIONAL: 8

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 4096
;; QUESTION SECTION:
;d4.sina.com.cn.                          IN      A

;; ANSWER SECTION:
d4.sina.com.cn.              139    IN      CNAME   adiwlbs.gslb.sinaedge.com.
adiwlbs.gslb.sinaedge.com.   435    IN      CNAME   kln.grid.sinaedge.com.
kln.grid.sinaedge.com.       25     IN      CNAME   ww1.sinaimg.cn.w.alikunlun.com.
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       183.60.138.230
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       119.147.70.231
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       59.37.80.225
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       59.37.80.224
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       119.147.70.220
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       183.60.138.228
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       59.37.80.226
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       119.147.70.217
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       183.60.138.227
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       59.37.80.227
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       119.147.70.221
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       119.147.70.216
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       183.60.138.229
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       183.60.138.231
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       119.147.70.230
ww1.sinaimg.cn.w.alikunlun.com. 16 IN      A       59.37.80.228

;; AUTHORITY SECTION:
w.alikunlun.com.            606    IN      NS      ns4.alikunlun.com.
w.alikunlun.com.            606    IN      NS      ns5.alikunlun.com.
w.alikunlun.com.            606    IN      NS      ns3.alikunlun.com.

;; ADDITIONAL SECTION:
ns5.alikunlun.com.          968    IN      A       203.107.0.200
ns5.alikunlun.com.          968    IN      A       205.204.111.222
ns5.alikunlun.com.          968    IN      A       47.89.91.91
ns5.alikunlun.com.          991    IN      AAAA    2408:4005:1010::1111
ns4.alikunlun.com.          1022   IN      A       101.200.28.73
ns4.alikunlun.com.          1022   IN      A       120.25.118.73
ns4.alikunlun.com.          1022   IN      A       203.107.0.200

;; Query time: 2 msec
;; SERVER: 172.18.1.92#53(172.18.1.92)
;; WHEN: Thu Mar 31 14:42:19 ;; MSG SIZE  rcvd: 580
```

We can see the ip is `183.60.138.230`

## Step 3: Find again in another province

Thanks to Haobo LI, who is in Hubei Province to give a hand to the experiment.

```
os11910117@ubuntu:~/Desktop$ dig d4.sina.com.cn

; <<>> DiG 9.16.1-Ubuntu <<>> d4.sina.com.cn
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 2115
;; flags: qr rd ra; QUERY: 1, ANSWER: 3, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;d4.sina.com.cn.                          IN      A

;; ANSWER SECTION:
d4.sina.com.cn.             5       IN      CNAME   adiwlbs.gslb.sinaedge.com.
adiwlbs.gslb.sinaedge.com. 4       IN      CNAME   kln.grid.sinaedge.com.
kln.grid.sinaedge.com.  4          IN      A       111.48.132.35

;; Query time: 12 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Wed Mar 30 23:53:35 PDT 2022
;; MSG SIZE  rcvd: 121

os11910117@ubuntu:~/Desktop$
```

And his IP address found is `111.48.132.35`, which is different from the one found in my computer.