

Investigation of vulnerabilities found in the Funimation platform

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Demonstration of vulnerabilities found at the time of accessing the data of each anime. Part of the vulnerabilities found are related to the urls of the APIs used, which can be freely accessed without the need for an API KEY.

In this report I try to check and alert about the need to protect the URLs of the APIs with a secret API KEY or some other method of protection of access to the URLs.

I was able to verify in the network activities, provided by google chrome dev tool that when loading the main route and other routes related to the Funimation page, the URLs of the APIs used by the platform were visible, which served as an entry point for access the data of each anime.

Entry Point URL

- <https://www.funimation.com/>

Used technology

- typescript: is an open-source language which builds on JavaScript,
- cheerio: Fast, flexible lean implementation of core jQuery designed specifically for the server.
- puppeteer: is a Node library which provides a high-level API to control Chrome or Chromium over the DevTools Protocol.

I hope this information provided is useful to you!

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1 Alternative #1 Access to videos

```
/**
 *
 * @description access to the video iframe with all the options for selecting subs,
 * and resolutions.
 *
 * @param experience
 *
 */
const getIframeVideo = async(experience: string = '847568') =>{
  const url = `https://www.funimation.com/player/${experience}/?bdub=0&qid=`;
  const data: IVideoAlternative1RootObject = {
    iframe: url
  }
  return data;

  // The content can be viewed without any problem using The <iframe> tag,
  // or directly in the browser. Technically, the ifram that loads is the player
  // that the platform uses by default, which allows options such as being able
  // to change resolutions and subs to English for what I have investigated.

  // output
  https://www.funimation.com/player/847568/?bdub=0&qid=
}
```

2 Alternative #2 Access to videos

```
/**
 *
 * @description returns a JSON structure with access to the videos, available with
 * type mp4 and m3u8.
 * The types of resolutions used are unknown, apparently low resolution
 *
 * @param experience
 *
 */
const getVideos = async(experience: string = '847568') =>{
  const browser = await puppeteer.launch();
  const page = await browser.newPage();
  await page.goto(`https://www.funimation.com/api/showexperience/${experience}/?
  pinst_id=JbflQ00f`);

  const html = await page.content();
  const h = cheerio.parseHTML(html);
  const children = _.map(h, 'children')[0];
  const childrenData = children && _.map(children, 'data').toString();
  const data = childrenData && JSON.parse(childrenData);
  const res = data && _.map(data.items, (props) => _.pick(props, 'src', 'videoType'))

  const videos: IVideoAlternative2RootObject[] = res;
  await browser.close();

  return videos;
}

// The mp4 content can be viewed without any problem using The HTML <video>,
// and for the M3U8 it can be played with some hlsplayer (allowing to view the content at
// low resolutions or up to 1920x1080p), in the case of M3U8.

// output
[
  {
    src: 'https://10fad4b4a7894c10a47117386cbbce08.dlvr1.net/FunimationStoreFront/1959560/Ja
    videoType: 'mp4'
  },
  {
    src: 'https://10fad4b4a7894c10a47117386cbbce08.dlvr1.net/FunimationStoreFront/1959560/Ja
    videoType: 'm3u8'
  }
]
```

3 Anime Episodes Data

```
/**
 *
 * @description Returns a JSON structure with the series data and information
 * about each episode. Each episode provides the `experience` property that
 * will be used to access the videos, either using the function `getIframeVideo`
 * or `getVideos`.
 *
 * @param titleId anime unique id
 */
const getEpisodesData = async(titleId: string = '847520') =>{
  const browser = await puppeteer.launch();
  const page = await browser.newPage();
  await page.goto(`https://www.funimation.com/api/episodes/?title_id=${titleId}&season=1&sort=asc`);

  const html = await page.content();
  const h = cheerio.parseHTML(html);
  const children = _.map(h, 'children')[0];
  const childrenData = children && _.map(children, 'data').toString();
  const json = childrenData && JSON.parse(childrenData);
  const data: IEpisodesDataRootObject = json;
  await browser.close();
  return Promise.resolve(data);

  //output
  [
    count: 26,
    limit: -1,
    offset: 0,
    items: [
      {
        "synopsis": "It is the Taisho Period. Tanjiro Kamado is living a modest but blissful life with his family in a peaceful village. One day, his family is slaughtered by a demon, and he is the only survivor. He is then taken in by a kindhearted blacksmith and his wife, who raise him as their own son. Tanjiro's life takes a turn when he discovers that his sister Nezuko has been turned into a demon. He vows to become a demon slayer to protect his sister and avenge his family. He joins the Demon Slayer Corps and meets other talented slayers. Together, they fight against the demons that threaten humanity. Tanjiro's journey is one of growth, friendship, and the pursuit of justice. He learns the importance of family and the strength of his friends. He also discovers his own unique abilities and the true meaning of being a demon slayer. The story is a heartwarming tale of a young man's quest for revenge and redemption, set against a backdrop of a world filled with demons and a corrupt government."
        "mostRecentAvodEngUsEndTimestamp": 0,
        "mostRecentAvodJpnUs": {
          "image": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFront/2019/09/26/847520.jpg",
          "siblingStartTimestamp": "1554566400",
          "experience": 847568,
          "purchased": false,
          "availId": 397381,
          "distributor": "FunimationVenue",
          "quality": "HD 1080",
          "endTimestamp": "2145916800",
          "mediaCategory": "episode",
        }
      }
    ]
  ]
}
```

```

"isPromo": true,
"siblingType": "SVOD",
"version": "Simulcast",
"territory": "USA",
"startDate": "2020-07-27 20:00:00+00:00",
"endDate": "2038-01-01 00:00:00+00:00",
"subscriptionRequired": false,
"versionId": 23406,
"tier": "All",
"purchase": "A-VOD",
"startTimestamp": "1595880000",
"language": "Japanese",
"itemTitle": "Cruelty",
"ids": {
  "externalSeasonId": "DSL-S1-1",
  "externalAsianId": "DSLJPN0001",
  "externalShowId": "DSL",
  "externalEpisodeId": "DSL0001",
  "externalEnglishId": null,
  "externalAlphaId": "DSLSIM0001"
},
"devices": [
  "All"
],
"siblingEndTimestamp": "2145916800",
"item": {
  "seasonTitle": "Season 1",
  "seasonId": 847521,
  "episodeOrder": 1,
  "created": "2019-04-05",
  "titleSlug": "demon-slayer-kimetsu-no-yaiba",
  "episodeNum": "1",
  "episodeId": 847522,
  "titleId": 847520,
  "seasonNum": "1",
  "ratings": [
    [
      "12",
      "zw-movies"
    ],
    [
      "14",
      "CBSC"
    ],
    [
      "14",

```

```

        "TV-US"
    ],
    [
        "PS",
        "RTE"
    ]
],
"showImage": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
"episodeSlug": "cruelty",
"runtime": "23:39",
"seasonOrder": 1,
"episodeName": "Cruelty",
"titleName": "Demon Slayer: Kimetsu no Yaiba",
"titleExternalId": "DSL"
}
},
"contentType": "episode",
"mostRecentAvodJpnUsStartTimestamp": 1595880000,
"quality": {
    "quality": "HD",
    "height": 1080
},
"mediaCategory": "episode",
"genres": [
    "Action/Adventure",
    "Fantasy",
    "Shounen"
],
"titleImages": {
    "showThumbnail": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "showBackgroundSite": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "showDetailHeaderDesktop": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "continueWatchingDesktop": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "showDetailHeroSite": "",
    "appleHorizontalBannerShow": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "backgroundImageXbox_360": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "applePosterCover": "",
    "showDetailBoxArtTablet": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "backgroundImageAppletvfiretv": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "newShowDetailHero": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "showDetailHeroDesktop": "",
    "showKeyart": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "continueWatchingMobile": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "featuredSpotlightShowPhone": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
    "appleHorizontalBannerMovie": "",
    "featuredSpotlightShowTablet": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore"
}
}

```

```

"showDetailBoxArtPhone": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/Fun
"appleSquareCover": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/Funimatio
"backgroundVideo": "",
"showMasterKeyArt": "",
"newShowDetailHeroPhone": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/Fun
"showDetailBoxArtXbox_360": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/F
"showDetailHeaderMobile": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/Fun
"showLogo": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFr
},
"engAllTerritoryAvail": "most_recent_avod_eng_all_terr",
"thumb": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFront/
"title": "Cruelty",
"starRating": 4.654052603327965,
"primaryAvail": "most_recent_avod_eng_us",
"access": [
  "A-VOD_Simulcast_Japanese",
  "SVOD_Simulcast_Japanese"
],
"mostRecentAvodJpnUsEndTimestamp": 2145916800,
"version": [
  "Simulcast"
],
"mostRecentAvodEngUs": {},
"itemId": 847522,
"versionAudio": {
  "Simulcast": [
    "Japanese"
  ]
},
"mostRecentAvodJpnAllTerrStartTimestamp": 0,
"poster": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFront/
"mostRecentAvodJpnAllTerrEndTimestamp": 0,
"mostRecentAvodEngUsStartTimestamp": 0,
"mostRecentSvod": {
  "image": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFront/
  "siblingStartTimestamp": "1595880000",
  "devices": [
    "All"
  ],
  "availId": 397379,
  "distributor": "FunimationVenue",
  "quality": "HD 1080",
  "endTimestamp": "2145916800",
  "mediaCategory": "episode",
  "isPromo": true,
  "siblingType": "A-VOD",

```

```

"version": "Simulcast",
"territory": "USA",
"startDate": "2019-04-06 16:00:00+00:00",
"endDate": "2038-01-01 00:00:00+00:00",
"subscriptionRequired": false,
"versionId": 23406,
"tier": "All",
"purchase": "SVOD",
"startTimestamp": "1554566400",
"language": "Japanese",
"itemTitle": "Cruelty",
"ids": {
  "externalSeasonId": "DSL-S1-1",
  "externalAsianId": "DSLJPN0001",
  "externalShowId": "DSL",
  "externalEpisodeId": "DSL0001",
  "externalEnglishId": null,
  "externalAlphaId": "DSLSIM0001"
},
"experience": 847568,
"siblingEndTimestamp": "2145916800",
"item": {
  "seasonTitle": "Season 1",
  "seasonId": 847521,
  "episodeOrder": 1,
  "episodeSlug": "cruelty",
  "created": "2019-04-05",
  "titleSlug": "demon-slayer-kimetsu-no-yaiba",
  "episodeNum": "1",
  "episodeId": 847522,
  "titleId": 847520,
  "seasonNum": "1",
  "ratings": [
    [
      "12",
      "zw-movies"
    ],
    [
      "14",
      "CBSC"
    ],
    [
      "14",
      "TV-US"
    ],
    [

```



```

        "PS",
        "RTE"
    ]
  ],
  "showImage": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
  "titleName": "Demon Slayer: Kimetsu no Yaiba",
  "runtime": "23:39",
  "episodeName": "Cruelty",
  "seasonOrder": 1,
  "titleExternalId": "DSL"
}
},
"altAvail": "most_recent_avod_jpn_us",
"mostRecentAvodEngAllTerrEndTimestamp": 0,
"ids": {
  "externalShowId": "DSL",
  "externalSeasonId": "DSL-S1-1",
  "externalEpisodeId": "DSL0001"
},
"mostRecentAvodEngAllTerrStartTimestamp": 0,
"item": {
  "seasonTitle": "Season 1",
  "seasonId": 847521,
  "episodeOrder": 1,
  "episodeSlug": "cruelty",
  "created": "2019-04-05",
  "titleSlug": "demon-slayer-kimetsu-no-yaiba",
  "episodeNum": "1",
  "episodeId": 847522,
  "titleId": 847520,
  "seasonNum": "1",
  "ratings": [
    [
      "12",
      "zw-movies"
    ],
    [
      "14",
      "CBSC"
    ],
    [
      "14",
      "TV-US"
    ],
    [
      "PS",

```

```

        "RTE"
    ],
    "showImage": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFront",
    "titleName": "Demon Slayer: Kimetsu no Yaiba",
    "runtime": "23:39",
    "episodeName": "Cruelty",
    "seasonOrder": 1,
    "titleExternalId": "DSL"
},
"mostRecentSvodStartTimestamp": 1554566400,
"audio": [
    "Japanese"
],
"mostRecentAvod": {
    "image": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStoreFront",
    "siblingStartTimestamp": "1554566400",
    "devices": [
        "All"
    ],
    "availId": 397381,
    "distributor": "FunimationVenue",
    "quality": "HD 1080",
    "endTimestamp": "2145916800",
    "mediaCategory": "episode",
    "isPromo": true,
    "siblingType": "SVOD",
    "version": "Simulcast",
    "territory": "USA",
    "startDate": "2020-07-27 20:00:00+00:00",
    "endDate": "2038-01-01 00:00:00+00:00",
    "versionId": 23406,
    "tier": "All",
    "purchase": "A-VOD",
    "startTimestamp": "1595880000",
    "language": "Japanese",
    "itemTitle": "Cruelty",
    "ids": {
        "externalSeasonId": "DSL-S1-1",
        "externalAsianId": "DSLJPN0001",
        "externalShowId": "DSL",
        "externalEpisodeId": "DSL0001",
        "externalEnglishId": null,
        "externalAlphaId": "DSLSIM0001"
    },
    "experience": 847568,

```

```

"siblingEndTimestamp": "2145916800",
"item": {
  "seasonTitle": "Season 1",
  "seasonId": 847521,
  "episodeOrder": 1,
  "episodeSlug": "cruelty",
  "created": "2019-04-05",
  "titleSlug": "demon-slayer-kimetsu-no-yaiba",
  "episodeNum": "1",
  "episodeId": 847522,
  "titleId": 847520,
  "seasonNum": "1",
  "ratings": [
    [
      "12",
      "zw-movies"
    ],
    [
      "14",
      "CBSC"
    ],
    [
      "14",
      "TV-US"
    ],
    [
      "PS",
      "RTE"
    ]
  ],
  "showImage": "https://derf9v1xhwwx1.cloudfront.net/image/upload/oth/FunimationStore",
  "titleName": "Demon Slayer: Kimetsu no Yaiba",
  "runtime": "23:39",
  "episodeName": "Cruelty",
  "seasonOrder": 1,
  "titleExternalId": "DSL"
}
}
}
// .... more episodes
],
facets: {
  txDate: [ [ '2019', 26 ] ],
  gbAccess: [
    [ 'vod_japanese', 26 ],
    [ 'svod_japanese', 26 ],

```

```

        [ 'dfov_japanese', 26 ],
        [ 'a', 26 ]
    ],
    genres: [ [ 'Shounen', 26 ], [ 'Fantasy', 26 ], [ 'Action/Adventure', 26 ] ],
    ieAccess: [
        [ 'vod_japanese', 26 ],
        [ 'svod_japanese', 26 ],
        [ 'dfov_japanese', 26 ],
        [ 'a', 26 ]
    ],
    nzAccess: [],
    usAccess: [
        [ 'vod_japanese', 26 ],
        [ 'svod_japanese', 26 ],
        [ 'dfov_japanese', 26 ],
        [ 'a', 26 ]
    ],
    auAccess: [],
    caAccess: [
        [ 'vod_japanese', 26 ],
        [ 'svod_japanese', 26 ],
        [ 'dfov_japanese', 26 ],
        [ 'a', 26 ]
    ],
    audio: [],
    type: [ [ 'episode', 26 ] ]
},
total: 26
]
};

```