



CTV/OTT RESEARCH REPORT

A Look at Fake CTV Bid-Requests Via the RapidFire Technique: Alchemy or Fool's Gold?

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Executive Summary

As streaming and on-demand video become ubiquitous forms of accessing video entertainment, connected TV—otherwise known as CTV—has emerged as the newest frontier in programmatic advertising. You likely engage with CTV at multiple points in your day, via either a smart TV app, mobile device AOD app, or set-top box app. In contrast to linear television programming, CTV allows advertisers to better identify and directly reach specific audiences. It's no wonder, then, that approximately \$12 Billion USD is being spent on CTV advertising by advertisers in the US.

- Approximately 55% of CTV budgets (\$6.7 B) are spent via programmatic bidding and serve paths (eMarketer).
- 50% (+-3%) of CTV traffic available (made available for auction) in exchanges is counterfeit.
- 80% of counterfeit CTV traffic sellers have 4 or more entry points into exchanges
- 15% of counterfeit CTV traffic sellers have their own operational seller seats on exchanges.

As programmatic has a reputation for being a complex and almost inscrutable ecosystem, it's important that we clarify what is meant by "counterfeit CTV." Since the potential exchange of value between an ad-buyer and an attention-merchant is based on declarations of sellers, it opens up a wide gap for counterfeit ad-space that is either non-human, not on a connected TV device and/or not in a streaming environment. The speed of these transactions, combined with the limited amount of buyer scrutiny (i.e. lack of app-ads.txt enforcement) has enabled half of the supply to be illegitimate. If the market is able to de-monetize this counterfeit traffic sooner rather than later, it will be advantageous in the long run to not allow targeting models or detection algorithms to train on bad data.

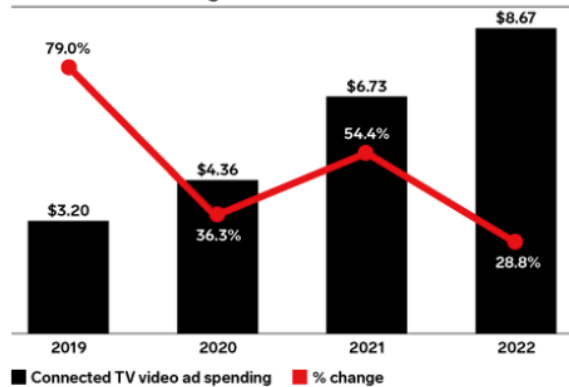
This paper presents the highlights of the RapidFire counterfeit technique and insight into a 5 person traffic operation that generates \$10 Million USD in monthly ad-revenue. **The intention of this report is not to incriminate individual traffic operations, but to demonstrate that the technological and economic barriers to commit ad fraud in the emergent CTV ecosystem are very low.**

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CTV Advertising: the Next Gold Rush

US Programmatic Connected TV Video Ad Spending, 2019-2022
billions and % change

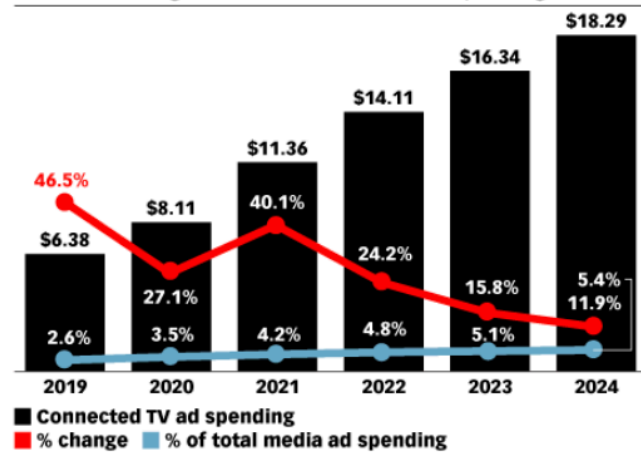


Note: digital display ads transacted or fulfilled via automation, including everything from publisher-erected APIs to more standardized RTB technology; includes in-stream video such as those appearing before, during, or after digital video content in a video player (pre-roll, mid-roll, post-roll video ads) and video overlays; includes social network in-stream video advertising in platforms such as Facebook Watch and Snapchat Shows; includes outstream video ads such as native, in-feed (including video ads in Facebook's News Feed and Twitter's Promoted Tweets), in-article, in-banner, and interstitial video ads; includes advertising that appears on connected TV (CTV) devices; excludes network-sold inventory from traditional linear TV and addressable TV advertising
Source: eMarketer, Oct 2020

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eMarketer | InsiderIntelligence.com

US Connected TV Ad Spending, 2019-2024
billions, % change, and % of total media ad spending



Note: digital advertising that appears on connected TV (CTV) devices; includes display ads that appear on home screens and in-stream video ads that appear on CTVs from platforms like Hulu, Roku, and YouTube; excludes network-sold inventory from traditional linear TV and addressable TV advertising
Source: eMarketer, Oct 2020

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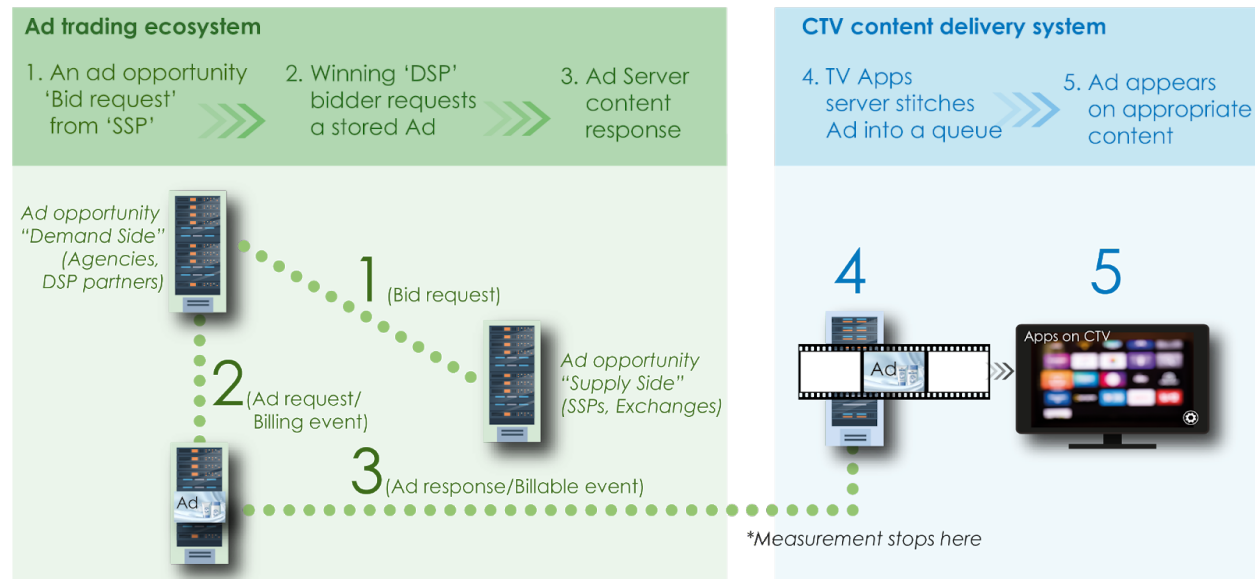
www.eMarketer.com

With so much revenue at play, CTV advertising has been referred to as ad-tech's latest Gold Rush. This is a new environment for the industry, with an abundance of promise and perceived potential.

It's important to clarify how CTV advertising works under ideal (and legal) circumstances. When an individual or household begins streaming an episode of ad-supported programming, the app sends out bid-requests for all designated ad-breaks for the entirety of the programming. For example, if you are using a streaming app, and you are watching a 30 minute television show, that's 22 minutes of content, with 8 minutes of advertisements broken into 4 ad-breaks, for a total of 16 thirty-second video ads. In this scenario, the app will send out ad-requests for all 16 ad impressions at the beginning of the stream. All filled impressions will have the video ad creatives delivered to the ad-stitching server (SSAI) before the first ad break. This helps the streaming app ensure a seamless viewing experience for the user, with little to no lag between the content, the ads, and back to the content. And this all ideally happens within 300-500 milliseconds.

While this dynamic is great for users, and convenient for content owners, it is not advantageous for advertisers who are restricted from proper measurement and can get no value if a user stops their content viewing half way through, but there were 8 more ads left to be played during the episode.

CTV advertising; the trading and delivery mechanism WHEN IT WORKS (*EVEN WITH CURRENT MEASUREMENT LIMITATIONS)



The new and rapidly expanding frontier of CTV is a boon for advertisers and brands looking to expand their reach. But, much like the Gold Rush of 1848, it's all happening within an essentially lawless landscape. The lack of scrutiny regarding quality is likely tied to the fear of missing out on an emerging opportunity.

In 2021, buying programmatic CTV is as reliable as buying gold by post mail during the 1860's. Counterfeit CTV is the modern fool's gold - it just has to look heavy and shiny, no chemical analysis required. As you'll see, the bar for regulating video bid requests is set so low, the CTV equivalent of a painted pebble would pass inspection.

Why are Traditional Verification Approaches Missing This?

Traditional ad-verification technology approaches have not been able to catch this because [they rely on being able to flag invalid user-agents and IP addresses via the bid-stream](#). Since the growth of CTV is undeniable, it is vital for the industry to move away from using web based checks that do not translate to the CTV SSAI environment. IP addresses in bid-requests will be of the user, but the IP seen by the ad-server will be of the SSAI server. We must stop relying on IP addresses in order to ensure proper measurement in CTV.

The HyperCast Operation

HyperCast (real name OMITTED) is one such traffic operation that has capitalized on CTV advertising. This non-US-based team of five generates up to \$10 Million USD in monthly ad-revenue. Their professional background varies from adops, ad-tech account management, open-RTB, and publisher on-boarding and management. Their revenue sources are a mix of Display, Web Video, and CTV monetization. The average monthly numbers are outlined below:

Type & Monthly Volume:	Display - 2 B Bid Requests	Web Video - 1 B Bid Requests	CTV - 1 B Bid Requests
Revenue per mille (RPM):	\$1.50	\$4.00	\$6.00
Fill Rate:	60% = 1.1 Billion Imps	60% = 600 Million Imps	50% = 500 Million Imps
Monthly Revenue:	\$1,650,000	\$2,400,000	\$3,000,000
Traffic & Transaction Costs:	\$1,000,000	\$1,000,000	\$1,500,000
Total Monthly Income:	\$650,000	\$1,400,000	\$1,500,000

HyperCast started in 2019 with <20% fill rate on all traffic. The team consists of:

- One owner and manager
- One Finance Operations Head
- One Engineer - Adops
- Two Business Development Managers - Adops

HyperCast's Adops team uses sophisticated transaction data analysis to optimize selling (see page 6's RTB API Protocol).

Interestingly, managing their cash flow is more complex and more work intensive for HyperCast than the traffic selling process. The use of invoice factoring services is prevalent and needed to ensure smooth operations. The key is to operate as a "network" or "aggregator" to provide a degree of separation from the traffic source. HyperCast's main "clients" are western ad-exchanges where they provide US, CA, UK, AU traffic.

The knowledge and experience required to identify this opportunity has come from running adops processes at larger, established ad-tech companies.

- US Corporate entity registered in Nevada. Exchange AR payments come into this account via a factoring company. Traffic source AP payments go from this account.
- Monthly operations capital paid to out-of-country (OMISSION) account for payroll and bonuses
- Quarterly profit transferred to an out-of-country account (OMISSION)

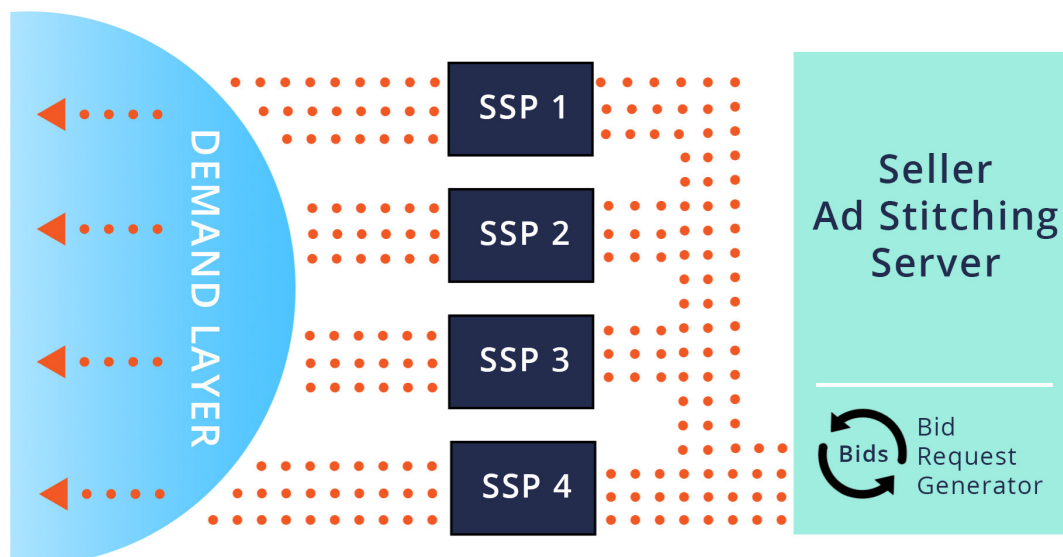
How it Works

To be clear, there is no “bot” or “app” necessary for monetizing the traffic. Since exchanges have API’s for sellers to pass the bid-requests in JSON format, the most efficient, while highly unethical, way to generate ad-revenue is to automate the sending of JSON bid-requests with a Python script that systematically alternates the parameters passed. These have often been referred to as “Phantom Ad-Requests.”

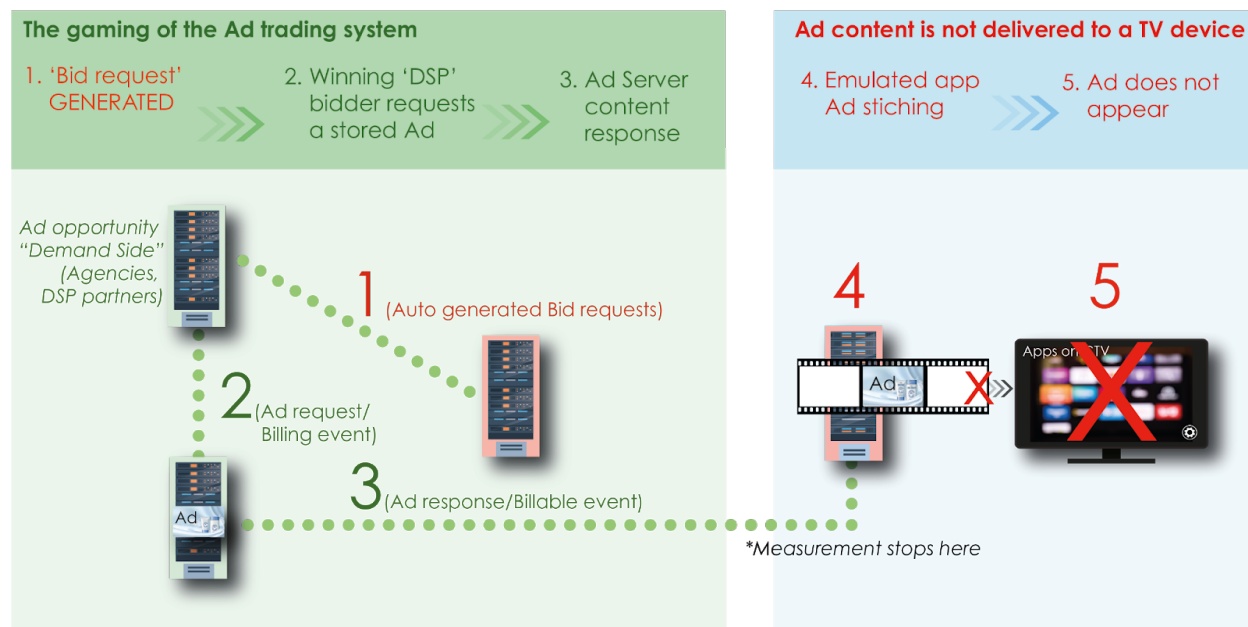
Since the ad-creative is not intended to be delivered to a consumer device, but rather an ad-stitching server, there is no clear signal back required to confirm render or pixel display viewability (no-client side measurement or confirmation).

This technique is dubbed “RapidFire” to signify the technique’s foundation: the speed at which requests are sent to the exchange. Operators in this space use this technique increasingly for CTV because of the prevalence of SSAI.

RAPIDFIRE TECHNIQUE



CTV advertising; the mechanism WHEN ITS BEING GAMED (no 'bot' required)



The Transaction Process

Bid Request protocols are openly available to the public ([Example A](#), [Example B](#), [Example C](#)).

The HyperCast team, and other RapidFire practitioners, study and utilize the transaction mechanics to their advantage. Their adops and data analysts diligently study the server latency, compatibility of OpenRTB requests and responses, lost bid opportunities, and bid level data, to improve RPM's and fill rates.

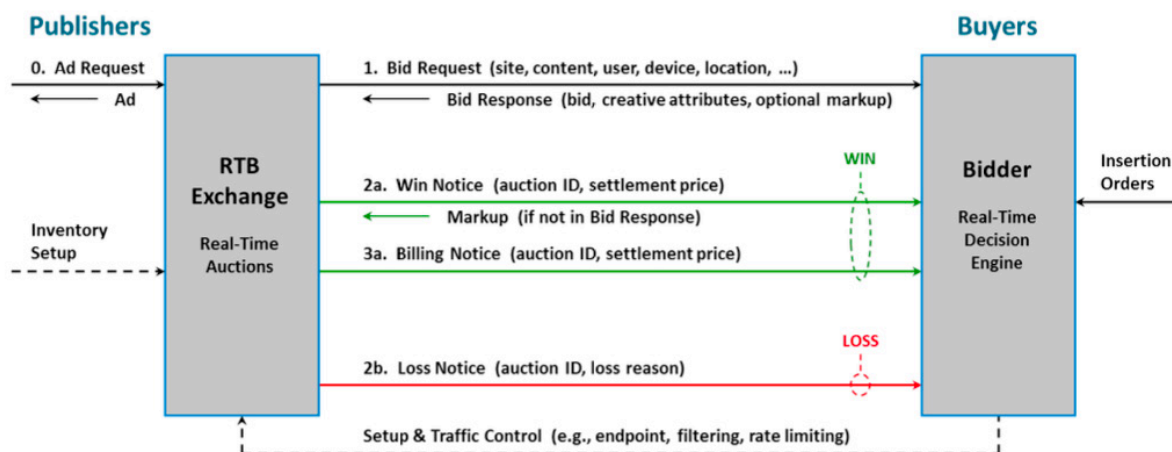


Figure 2: Reference Model - Request Sequence.

What a Bid-Request Looks Like

Only three fields are required to pass as a valid bid-request: Minimum Duration, Maximum Duration, and Media Type (MIME). All remaining fields are typically marked as optional:

```
{
  "id": "1",
  "bidfloor": 0.03,
  "video": {
    "w": 640,
    "h": 480,
    "pos": 1,
    "startdelay": 0,
    "minduration": 5,
    "maxduration": 30,
    "maxextended": 30,
    "minbitrate": 300,
    "maxbitrate": 1500,
    "skip": 1,
    "api": [
      1,
      2
    ],
    "protocols": [
      2,
      3
    ],
    "mimes": [
      "video/x-flv",
      "video/mp4",
      "application/x-shockwave-flash",
      "application/javascript"
    ],
    "linearity": 1,
    "boxingallowed": 1,
    "playbackmethod": [
      1,
      3
    ],
    "delivery": [
      2
    ],
    "battr": [
      13,
      14
    ],
    "companionad": [
      {
        "id": "1234567893-1",
        "w": 300,
        "h": 250,
        "pos": 1,
        "battr": [
          13,
          14
        ],
        "expdir": [
          2,
          4
        ]
      }
    ],
    "companiontype": [
      1,
      2
    ]
  }
}
```

Consequences & Impact: Financial Waste & Data Pollution

How widespread is RapidFire?

- RapidFire is becoming increasingly prevalent across the traffic seller market, as word spreads (like a fire).
- As more unscrupulous sellers realize the low overhead technique, adoption is following suit.
- While it is impossible to quantify the scale of this to an exact point, we can confidently state that 50% of CTV bid requests in RTB exchanges are counterfeit.

Who does this affect and how?

- Media Buyers (Brands & Agencies):
 - Financial waste in an environment intended for more investment
 - Lack of clarity on the performance of an emergent type of media
 - Loss of faith in the TV medium as it moves increasingly online
- DSP's:
 - Infrastructure cost of facilitating transactions on counterfeit ad-requests
 - Polluted data sets on the characteristics of CTV traffic
 - Payment to traditional verification partners on impressions improperly validated
- SSP's:
 - Reputation harm in market from facilitating counterfeit bid-requests
 - Infrastructure cost of facilitating counterfeit ad transactions
 - Polluted data sets on the characteristics of CTV traffic
- Legitimate Publishers & Media Owners:
 - The money intended for legitimate streaming inventory is being consumed by counterfeit suppliers. Correcting these issues will ensure that legitimate creators and owners of content are compensated properly.

Conclusion

For all parties involved, we suggest approaching the OTT/CTV space with eyes wide open. We hope that this research piece helps illuminate some of the problems in this space. The solutions to this problem necessitate everyone in the ecosystem doing their part. The following are our recommendations for each of the stakeholders involved.

Marketers & Agencies:

- You can continue to prioritize direct deals, but don't just discount programmatic.
- Ensure that your buying platforms and bidding software require a robust set of transaction parameters to complete an auction.
- Know who you are buying from. Measure and analyze supply paths!
- Ask your DSP's to reduce your exposure to inventory resellers
- If it looks like a bargain, it is worth doing extra due diligence via supply path mapping
- Marketers need to push the vendors to enforce some of these suggested best practices.

DSPs:

- Ensure that RTB sellers of CTV inventory provide sufficient information in bid-requests to validate legitimate supply.
- Only transact and submit bids on requests that show comprehensive information about the supply and content being monetized
- De-prioritize sellers with incomplete bid-requests
- Ensure enforcement of app-ads.txt

SSPs/Exchanges (supply side, owned and operated):

- This could have been YOUR revenue! The vendors are labeling it to sneak into the ecosystem with your name on it. The marketers intent is to spend money in this channel.
- If a supplier doesn't show you their channel in a live environment, question it.
- If a supplier does show you their channel in a live environment, question it.
- Create, communicate, and enforce penalties for platform sellers facilitating counterfeit CTV traffic re-selling.

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