



Automating an End to Ad Network Defaulting

Technology Outlined:

Default Revenue Optimization

Technology Benefits:

- Dramatically increases publisher eCPMs up to 300%
 - Ends publisher reliance on ineffective ad network daisy chains
 - Automatically chooses the next highest paying ad network should one default
 - Optimizes every single impression in real-time
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Technical Level of White Paper:





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Executive Summary

Up to 80% of online ad space goes unsold from direct sales¹. Online publishers that want to maximize the revenue they get from their unsold ad space generally work with ad networks to fill that space. Savvy publishers typically choose to work with multiple networks in part because of a problem known as defaulting. Defaulting, sometimes referred to as pass-backs, occurs when an ad network is unable to fill an ad impression on a website with a paying ad. Often, a non-paying public service announcement or a blank spot is shown. Many web publishers chain several ad networks together to reduce the chances that a non-paying ad is served, but these methods are far from perfect.

This white paper describes in detail what defaulting is, why it happens, why the current method of daisy chaining is inefficient, and how to solve the problem. The information in this white paper is based on over two years of data collected by PubMatic's team of 30+ engineers that have worked towards solving this problem; defaulting leaves billions of dollars in revenue on the table each year that could have otherwise been collected by publishers and ad networks.

Defining Ad Network Defaulting

The Fact – Ad Networks Default!

Ad networks are becoming increasingly selective about the type of impressions they monetize. If an impression doesn't match the desired criteria of an ad network's advertising campaigns, then it either shows a public service announcement, a blank spot, or returns the impression to the publisher. All three of these actions are known as defaulting, as the ad network has chosen not to display an ad for which the publisher will be paid.

By working with over 5,500 publishers and 300 ad networks, PubMatic has found that ad networks default 56% of the time on average and as much as 87% of the time².

¹ Interactive Advertising Bureau / Bain Digital Pricing Research, August 2008.

² PubMatic study of online publishers conducted in April 2008.



Why Ad Networks Default

An ad network's campaign mix can vary significantly depending on the type of advertisers it has relationships with and gets campaigns from. The goals of these advertisers' campaigns could themselves vary significantly from simple brand awareness, to lead generation, to converting into a sale on the other side of the click. Therefore, it is normal for an ad network to have a mix of campaigns running at any given time, including CPM, CPC and CPA³ campaigns. To ensure that these campaign goals are met, advertisers typically have specific criteria associated with their campaigns, including:

User Targeting Criteria – Some of these include having frequency capping limits per user or per site, geographic targeting, and demographic targeting. With more and more user information available for targeting, advertisers are also looking at retargeting⁴ and behavioral targeting tools.

Website Targeting Criteria – Many advertisers choose to target contextually, that is finding web-sites that have content they believe is attractive to the audience they are trying to reach. In these cases the advertiser cares more about the website content than the user and their criteria often includes editorial control such as avoiding adult content or websites with user generated content.

Performance Criteria – For performance-oriented campaigns, such as CPC or CPA campaigns, advertisers would also have measurable performance goals like target click through rates and conversions rates.

Temporal Pacing Criteria – Depending on the duration of the advertiser's campaign and any specific event associated with it, advertisers would like to ensure that the user's attention and corresponding campaign's spend is spread out over the desired time period. Advertisers ensure this by pacing out the impressions and imposing hourly, daily, weekly or even monthly impression limits on their campaigns.

It is due to these specified criteria, among others, that ad networks default on a particular impression from a particular user on a particular website at a particular time.

³ CPM, CPC, & CPA are three common methods of purchasing online advertising. CPM is cost-per-thousand ad impressions, CPC is cost-per-click, and CPA is cost-per-action or acquisition (the action/acquisition is defined by the advertiser). The latter two are often referred to as "performance advertising" because the advertiser pays based on how users interact with the ad regardless of the number of impressions shown.

⁴ Retargeting and Behavioral targeting uses information collected on an individual's web-browsing behavior, such as the pages they have visited or the searches they have made, to select which advertisements to display to that individual.



Current Online Advertising Trends Indicate Even More Defaulting to Come

Prevailing industry trends clearly underscore publishers' growing need to work with many ad networks and find a better way of dynamically managing their default impressions in order to realize the full revenue potential of their inventory. These trends include the following:

Growing supply of inventory but quality inventory is hard to find – With ever-increasing online content and growing Internet usage, online inventory has been growing tremendously and is expected to continue to grow at a rapid pace. Additionally, the level of user engagement associated with the inventory has changed as well. It is becoming even harder for advertisers to find quality inventory that matches their advertising goals.

Increasing number of ad networks – With the continuing shift of offline advertising spend to online advertising, more and more ad networks have emerged (currently 300+). Those Ad networks expanded from 5% of inventory monetized in 2006 to 30% in 2007. In order to compete, these ad networks must differentiate their focus area and the type of advertisers they have relationships with. The display advertising landscape has become increasingly fragmented and will continue to do so for some time to come.

Increasing preference for targeted performance advertising – With the current economic down-turn, advertisers are increasingly motivated to seek measurable return on investment (ROI) on their advertising spend. As a result, there is a significant shift towards performance-oriented advertising, in which ad networks selectively monetize specific impressions that they believe will perform for advertisers.

How Publishers are Currently Dealing with Defaults

It's common to see medium or large US publishers working with 10 or more ad networks. These publishers might use 3-5 major US ad networks, 3-5 international ad networks, and several vertical ad networks.

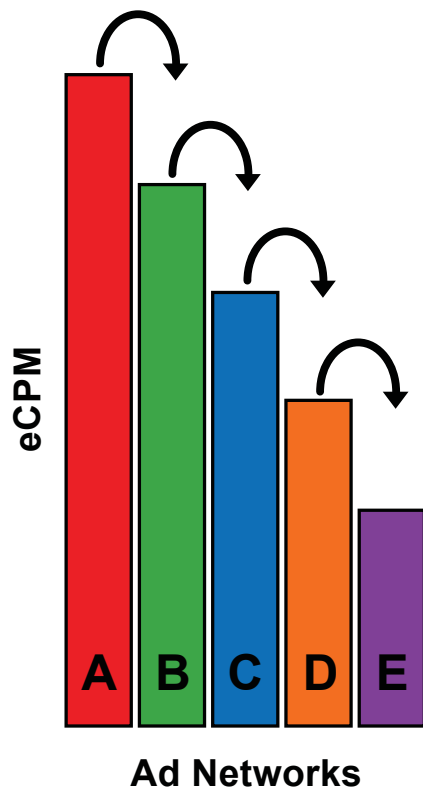
⁵ Interactive Advertising Bureau / Bain Digital Pricing Research, August 2008.

⁶ PubMatic defines medium publishers as having between 1 million and 100 million page views per month, and large publishers as having more than 100 million page views per month.



Currently most publishers with significant inventory manage their ad networks' default impressions by setting up a 'static' daisy chain of ad networks based on expected eCPM from these ad networks. However, setting up a static daisy chain is a very manual and cumbersome process that consumes a lot of a publisher's time and resources. More importantly, the daisy chain is far from optimal because it is static in nature and is based on historical, not real-time, data. A daisy chain is usually set up once a week, or at most, once a day depending on how frequently publishers monitor their ad network earnings. Furthermore, most publishers cannot afford to spend that much time and resources on optimizing this manually and end up getting blank ads and losing significant revenue.

Static Ad Network Daisy Chain



A publisher sets up a daisy chain by guessing which ad networks will pay them the most and orders them accordingly, so when one defaults, the next highest paying ad network can deliver an impression. The problem is that ad networks change their pricing frequently, but the chain remains static.

The Ideal Approach to Default Management - Dynamic Default Optimization

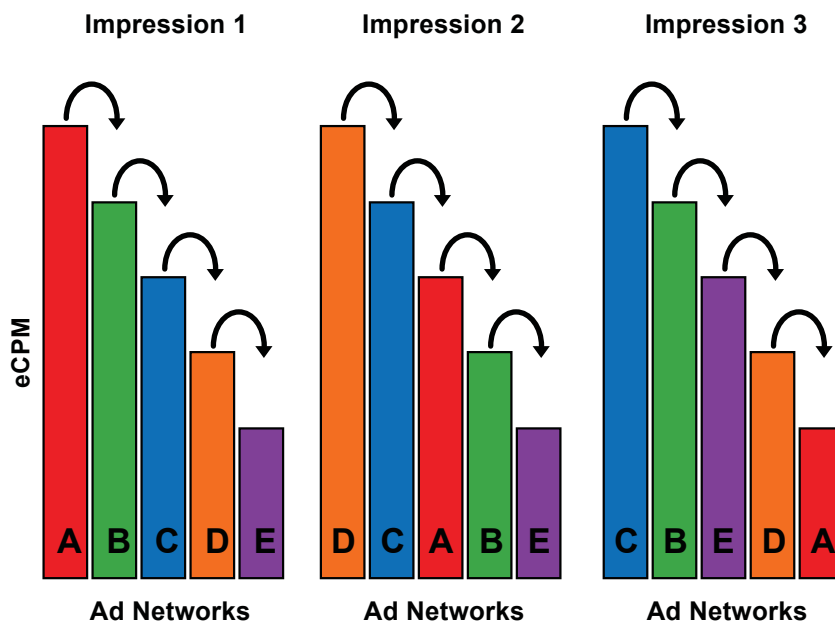
An ideal approach to solving this problem and to maximizing publishers' advertising revenue would be to implement dynamic management of defaults across multiple ad networks in real-time. To make this a reality, the following would need to be monitored and measured in real-time:

Default characteristics of ad networks – Default characteristics of ad networks vary significantly depending on the type of ad network. For example, one ad network may default 60% of the time based on its mix of advertising campaigns and network of websites, while on the flipside there are ad networks that are almost always guaranteed to serve an ad impression such as Google AdSense.

eCPM trends of ad networks – Ad networks' eCPM trends vary significantly depending on the type of user, nature of the website, and demand from the ad network's advertising clients. Even for a given publisher, the eCPM it receives from an ad network could change significantly throughout the day.

Based upon these two observations, a real-time mechanism is needed to dynamically figure out the most optimal daisy chain of ad networks for each impression.

Dynamic Default Optimization



Ad network pricing changes constantly, therefore adjusting static daisy chains weekly, or even daily, isn't enough to maximize yield. Dynamic Default Optimization updates the daisy chain in real time, for every impression, which ensures that the impression goes to the highest paying ad network.

Benefits from Implementing Dynamic Default Optimization

Increased revenue for publishers – Dynamic Default Optimization ensures that the publisher can maximize the value of every impression.

Reduced complexity and ease of management for publishers – It would remove the need for extra resources publishers allocate to manually managing a static ad network daisy chain so that they can focus on their core business of providing online content to the user.

Cost reduction and more access to good inventory for ad networks – Ad networks would save on ad serving costs by getting quality impressions and filling more of the impressions they receive with ads.

Better user experience – Users would be shown more relevant and better ads that load on a Web page in a more timely fashion, and will therefore enjoy a better user experience.

Examples of Publishers that Have Used Dynamic Default Optimization

Over the last year, PubMatic has developed, tested, and fully deployed a Dynamic Default Optimization solution for its publishers. There are numerous examples of publishers of varying sizes and verticals that have enjoyed demonstrated success with PubMatic’s Dynamic Default Optimization feature. Our publishers have achieved revenue increases of 30% to 300% over their pre-Dynamic Default Optimization eCPMs.

Publisher Vertical	Percentage Increase in eCPM
Entertainment	+ 51.4 %
Gaming	+ 148.3%
Men’s Interests	+ 148.4 %
Music	+ 121.8 %
Real Estate	+ 138.6 %
Reference	+ 177.9 %
Social Network	+ 215.7 %



Fitting Dynamic Default Optimization into the Overall Framework of Ad Revenue Optimization

An overall ad revenue optimization framework that would optimize revenue for each impression in real-time would be composed of the following key components:

Ad network selection for each impression – First, given a set of ad networks with which a publisher has relationships, the eligible ad networks need to be selected that match the impression characteristics such as geography, vertical, type of content, and user frequency among other factors.

Real-time decision-making for each impression – Second, based on the eligible ad networks, PubMatic makes a real-time decision for the specific impression and routes the impression to the appropriate ad network.

Dynamic Default Optimization – If the ad network defaults then the Dynamic Default Optimization solution ensures that at runtime this impression is given to the next appropriate ad network in the dynamic daisy chain. Within the dynamic daisy chain, an ad network that is guaranteed to fill every impression is utilized to ensure that an infinite chain is not created.

The aforementioned framework, when executed in real-time for each publisher impression, ensures optimal overall revenue to the publisher for their inventory.



Conclusion

The status quo for how publishers deal with the problem of ad network defaulting is by setting up a static daisy chain of ad networks; that should be viewed only as a temporary solution because it doesn't fix the inherent problem of protecting and increasing the value of a publisher's ad space. Although static daisy chains help to reduce the number of blank impressions, they are cumbersome to setup and manage and they are based on historical, not real-time data. As a result, publishers leave billions of dollars in ad revenue uncaptured every year.

Due to the volatility of online ad pricing, and because no single ad network can guarantee the highest price for a publisher's ad space all of the time, creating a dynamic "chain" of ad networks, rather than a static one, is the only way for a publisher to ensure that they can get the best price possible for their ad space. This dynamic chain must be created in real time and uniquely for each and every ad impression. Ad networks also suffer from excessive defaulting. Their ad serving costs are significantly higher because they have to serve unpaid ad impressions, and they may suffer from increased ad serving latency.

Dynamic Default Optimization is the biggest step to date for solving the current static daisy chain solution. More and more savvy publishers are making the move towards utilizing Dynamic Default Optimization as a solution, with over 5,500 publishers currently using this propriety technology developed by PubMatic. Publishers who utilize Dynamic Default Optimization can see anywhere from 30-300% increase in ad prices (eCPM) as a result.



About PubMatic

PubMatic is global ad revenue optimization service. PubMatic's real-time ad price prediction technology and dedicated team service drive significantly higher revenues and simplify ad network management for more than 5,500 online publishers.

PubMatic is located at:

706 Cowper St., Lower Ground Floor, Palo Alto, CA 94301

Publishers interested in working with PubMatic should contact Josh Wetzel, Vice President, Publisher Group, Josh.Wetzel@PubMatic.com

Ad Networks interested in working with PubMatic should contact Jeanne Houweling, Vice President of Business Development, Jeanne@PubMatic.com.

Press inquires should be addressed to Ben Billingsley of the Horn Group, BBillingsley@HornGroup.com