



Real Time Monitoring for Protected Audience



Requesting AdTech Requirements & Feedback

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Ad Tech needs real-time monitoring for PA auctions

[Issue #430](#): For effective use of Protected Auction at and beyond 3PCD, ad tech needs a near real-time monitoring and alerting solution for detection use cases with tight SLA requirements, such as:

- 1) When **buyers start losing auctions** or start experiencing other worrisome anomalies in the bid process in unexpected volumes (e.g. bug introduced in new generateBid logic)
- 2) When **sellers start seeing an unexpected drop of auctions with winning bids** (e.g. bug introduced in new scoreAd logic)

Protected Audience Production Bug Detection

Production Bug Detection	
Use Case	
	<div>Detection Step</div> <div>Root Cause Analysis Step</div>
Pre-3PCD	<div>1. Event-level win reporting 2. Private Agg (longer SLA)</div> <div>Access forDebuggingOnly events as needed when/if escalation happens</div>
Post 3PCD	<div>1. Event-level win reporting 2. Private Agg (longer SLA) 3. Real Time Monitoring API* (tighter SLA)</div> <div>Access samples of forDebuggingOnly events as needed when/if escalation happens</div>

*name subject to change

Real-time monitoring potential solution

- A differentially private monitoring solution that generates **histograms from noised, event-level data** from PA worklets
- v1 solution will be scoped to monitoring in **generateBid and scoreAd worklets** only
- Adtech would be able to group contributions by **adtech-defined buckets** (combinations of dimensions), examples shared in subsequent slides
- Adtech can get **one contribution per top-level auction**, would need adtechs to pre-declare bucket priority where multiple monitored events occur, or receive randomized contributions if multiple buckets have the same priority

Current goal: Seek feedback from your teams on monitoring requirements to inform proposal

Illustrative Report Fields - Buyer

Dimensions:	Metric	Seller	Environment	Creative size
Values:	bidding model1 error bidding model2 error	Seller1 Seller2	desktop mobile web	200 × 200 Small square 240 × 400 Vertical
Cardinality of dimension:	2	2	2	2
Number of buckets possible:	16			

Bucketed, noised histogram contributions

Example: bucket 13 = bidding model2 error + Seller1 + 200x200 small square

Example: bucket 12 = bidding model2 error + Seller1 + desktop

Example: bucket 11 = bidding model2 error + Seller1

...

Example: bucket 1 = bidding model1 (will not report any other dimensions)

Illustrative Report Fields - Seller

Dimensions:	Metric	Buyer	Environment	Creative size
Values:	scoreAd worklet error	Buyer1 Buyer2	desktop mobile web	200 × 200 Small square 240 × 400 Vertical
Cardinality of dimension:	1	2	2	2
Number of buckets possible:	8			

Bucketed, noised histogram contributions

Example: bucket 8 = scoreAd worklet error + Buyer1 + 200x200 small square

Example: bucket 7 = scoreAd worklet error + Buyer2 + desktop

Example: bucket 6 = scoreAd worklet error + Buyer2 + mobile web

...

Exmaple: bucket 1 = scoreAd worklet error (will not report any other dimensions)

Request Feedback on Requirements

Requirements - discuss on Github ([issue #430](#))

1. What is the **desired SLA** for issue detection (expressed in O mins)? By SLA, we mean the time between (a) an issue starting to occur on the client (browser) and (b) the adtech being able to detect the issue.
2. What are the **critical metrics** that require detection within the desired SLA window and can not be detected with event-level win reporting? Note: scope to generateBid and scoreAd only.
3. How many **buckets** would be monitored? A bucket here is defined as the adtech-denoted combination of dimensions that gets reported. e.g. bucket X = crash in generateBid + banner.
4. (optional) Could you share directional estimates of the **volume of generateBids (buyers) or scoreAds (sellers)** you are currently seeing? What size of changes are you trying to detect within this SLA, given there is noise injected? E.g. x% of auctions are seeing an unexpected trend.
5. Should the API be configurable to **opt-in** to receiving reports? Key considerations: high QPS (no opt-in) vs. leak that a report was sent (with opt-in)
6. What are your requirements for **reporting endpoints** - is a .well-known file off the IG owner origin okay?

Appendix

Glossary of Real Time Monitoring API Terminologies

Dimension

Definition of what type of slice to track (e.g. creative type, user environment). Note that measures such as "Crash", "Failure" etc. are also represented as a dimension in this design.

Value

Specific value of a dimension (e.g. banner for creative type, or Mobile for user environment)

Bucket

Adtech-denoted combination of dimensions that gets reported at the end of the auction (e.g. bucket 52 = desktop + banner + small square + crash)

Cardinality

Cardinality of a dimension is the number of values the dimension can take on (e.g. banner, mobile = 2)