Ad Exchange: What is it?

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Classical Advertising

• Publisher:
  – TV, radio, newspaper, magazine, ...

• Advertiser
  – selling goods, services, candidates, ...

• Ad Agency
  – Handles the Advertiser advertising
Advertising Agency

• **Accounting Services**
  – Receives a budget, and deals with the accounting side of advertising

• **Creative**
  – content to the advertisements

• **Media Buying**
  – where to advertise and for how much

• **Production**
  – making the actual advertisements
Measuring Success

• Target attributes:
  – **Reach**: how many people saw the campaign
  – **Frequency**: how many times a user saw the campaign
    • target numbers: 3-7 times
  – **Demographics**: who saw the campaign
    • gender
    • income
    • geographic
Internet Display Advertising

Mainstream Ads:
• Publishers:
  – Pre-sell impression
    • In bulk
    • Pay per impression
  – General categories
    • Demographics
    • Geography
• Advertiser

Alternative technology
• Sell in real time
  – “Stock market”
• Perform auction
  – Matching advertisers to impression slots
• Negligible end-to-end latency
AdExchange (AdX)

- **Two-sided market:**
  - buyers and sellers
  - Perishable inventory:
    - display ad slots (impressions)
- **Sellers: publishers sell impressions on their webpages**
  - Such as: Youtube, New York Times, CNN

- **Buyers: ad-networks**
  - Ad-network runs campaigns of multiple advertisers
  - Each ad-network can be viewed as a single advertiser with complex interests
AdX real-time information flow

Publishers

Page info, minCPM

User requests webpage

Ad Info

AdX auction

Call Out

Bid

User

Bid

Recipient

Bid

Winner

Recipient

Winner

Recipient
Real Time Bidding

Advantages
• Advertiser
  – User targeting
    • Geographic
    • Advertiser Cookie
    • Web page
  – Better control on ROI
• Publisher
  – Inventory utilization
  – Utilize user info

Challenges
• Real time
  – Latency of 100-200 ms
• Infrastructure
  – Scale
    • Larger than search
• Efficiency
  – Publisher revenue
  – Advertiser ROI
users

• view content

• no clear intent
  – unlike search

• potential consumers

• User Attributes
  – location
    • IP address
  – Behavior
    • Cookies
    • user lists
  – Implicit attributes
    • Gender
Advertisers

• Types
  – Direct Sells Advertisers: specific product sell
    • Maximize Return on Investment (ROI)
  – Brand advertisers:
    • Hard to measure ROI

• Limitation:
  – Budget

• Mode of Operation:
  – Hire an Ad Agency (can be more than one)
Ad Agencies

• Plan Ad campaigns for advertisers
  – budget, goals, creative, media, production

• Aggregate multiple advertisers

• Have trading desks
  – actual low level purchasing decisions.

• Ad serving
  – rare
Demand Side Platforms (DSP)

• Input
  – Multiple Ad agencies
    • large demand

• Output
  – Multiple Ad Exchanges
    • large inventories

• Function:
  – real time bidding
  – Ad Serving
  – Optimization
  – Ad statistics

• Infrastructure
  – Ad servers
Ad Exchange

• Input:
  – user page requests

• Output:
  – Allocation of Ads

• Infrastructure

• Auction:
  – Second price
    • reserve price
  – Clearing house

• Neutrality

• Fees
Supply Side Platforms (SSP)

- Managing Publisher Inventory
- Keep track of user attributes
  - cookies
  - geographic
    - IP address
  - device
    - mobile, PC,
- Optimize prices
- Merge reservation and real time
Publishers

• Own the web site

• Provide the content
  – what the users want to see

• Sells impressions:
  – reservations vs. real time

• Controls Ads content and media types
Ad media types

• text
  – can be multiple ads together
• display
  – banner
  – size of Ad
• video
• flash
• overlay
Payment charge

• per impression
  – CMP

• per click
  – online search

• per action
  – need to define “action”
Summary

• This week:
  – Ad Exchange in the real world

• Next week
  – The game

• To do:
  – start thinking about group formation
  – 3-4 students.