Cloud Pricing | Pricing History

Project Definition

Pricing history is a feature of Monsoon Marketplace that allows users to see past pricing events, audit them, and reprice them immediately. This feature is something we need to consider for the cloud pricing project due at the end of Q2 2018. This document outlines the use cases, user stories of the current implementation, and our thoughts and questions. The goal of this process is to help us define the user needs and scope the feature for cloud pricing.

Pricing events happen when the user receives an item and when an item reprices. This is based on a user setting that determines whether or not they want to store pricing events.

The pricing history shows information about:
- Product they're selling
- Pricing settings the product is using

- The offers for that event
- The outcome of repricing and steps pricing took to get to the outcome

Pricing history is tracked by channel.

Use Cases

Pricing history has two primary use cases:
- The user makes a change to their pricing settings, and they want to validate that the changes are working as intended.
- The user finds the price is unexpected and they want to investigate why (i.e. An order was placed at an unexpected price or an item is pricing in an unexpected way).

User Stories

- The ability to view SKU and product information.
- The ability to view the price and the price delta from the previous events.
- The ability to view the pricing settings at the time the SKU was repriced.
- The ability to view the offers from the event.
- The ability to view which offers were used to compute the price, which offers that weren't used to compute the price, and why.
- The ability to view the factors that led the repricing engine to derive the landed price.

Notes

- The pricing history feature will be available in the Monsoon Cloud application. Pricing history will not be available in Monsoon Marketplace.
- Pricing history will only supported for repricing (Amazon offer changed notifications). It will not be supported for receiving (Amazon MWS GetLowestOffersForASIN call)
- The Seller Name feature will not be supported. Amazon no longer provides seller name. All ignored competitors will be based on Merchant ID.
- The user will lose the ability to right-click in the pricing history feature and ignore a seller.
- The user will lose the ability to reprice now.
- The Featured Merchant feature will not be supported.
- Based on conversations with internal and external users, users only look at the most recent, second most recent, and (possibly) the third most recent event. We may not want to store events for a time period (i.e. a week) and instead keep the past three most recent events for a SKU regardless of time period.
- Should we give the user the ability to see the steps repricing took? Even with these steps today, the user has a hard time determining how an item repriced based on the offers in the event and their repricing settings.
- The user needs the ability to lookup SKUs in the pricing history feature.

- We feel like there's a simpler, and better, way to give the users the information they see in the pricing history feature Monsoon Marketplace today. We need to be careful to scope this UX to something doable by the end of Q2 2018 deadline.

Next Steps

- Raja and Dhananjay are meeting today (April 30, 2018) are going to review the pricing history feature and discuss what the next steps are from an implementation expectation.
- August and Jon will meet to define what users need at a low level, sketch out ideas, and prototype those ideas.
- Raja wants to research the potential volume of data that we need to store. We store the most recent Amazon notification in ALOTS for every product and condition. That will serve as a baseline of storage, and we can calculate the volume of data for price history based on that and an estimate of n notifications per seller.
- We need to research integrating the Monsoon Cloud Oauth with the Monsoon System of Record tenants. This will allow them to log into the Monsoon Cloud and retrieve pricing history from the cloud repricing infrastructure.

UX Definition

Workflow

1. log into the monsoon cloud
2. navigate to the pricing space
3. look up a SKU by channel and a fulfillment type
4. view pricing events

Notes
- Fulfillment types will be FBA (Fulfillment by Amazon) or MFN (Merchant-Fulfilled Network)
- The user needs to see all three repricing events (we think there is a big advantage to displaying them in one place since the user can then glean insights by comparing them without having to navigate back and forth)
- When there is no event for a given sku, channel, fulfillment type combination, we'll need to give the user a helpful message that there are no events for that combo.

Information grouping for each event

Event Level (Top Level)

- PublishedTime

SKU and product information

- SKU
- SKU's condition (New, Like New, Very Good, Good, Acceptable, Collectible, Refurbished)
- ASIN
- Channel
- Fulfillment Type

Pricing Settings

Custom Strategy Information

- How will my item price based on my competition? (1)

1. Pricing strategy (1)
- Offer Considerations: (5)
1. Item conditions to consider (1)
2. Only consider competitive listing where (3)
3. Consider Amazon as a competitor (1)
- How high will I let my price get before I cap it? (3)
1. Price Ceiling (3)
- What do I do when there is no competition? (2)

1. Price when there are no competitive listings (2)
- How aggressive should do I want be in ignoring outliers? (1)

1. Ignore Lowball (1)

Notes
- If we display this to users using language, there is a potential of 12 sentences.
- Jon had the best idea. Today the user is reliant on the steps in the pricing history UI to tell the user how we arrived at the price. However, the steps are complicated to follow and the user needs to piece together information from different parts of the UI. We think there is a way to combine the information in a narrative, abstracting the information so a user only needs to follow one information flow to understand exactly what is going on.

- Is it necessary to include the conditions to consider if the result is already being displayed
- If we're showing the user the reason the competitor is or isn't considered and why then it may not be necessary to show them all the pricing settings. We decided this is not the approach we're going with.
- When we message to the user than an offer is ignored based on their pricing settings, we want to avoid the language sounding robotic (i.e. "Amazon's offer is ignored" and instead use language that's

more conversational, reflects that they've made a choice, and that they're in control of this ("You ignored offers from Amazon.com." and "You ignored offers from seller M20480DE43R").
- We should speak in simple past tense ("You ignored offers from Amazon.com"). If we write in the present tense (i.e. "You are ignoring offers from Amazon.com") or imperfect-past tense (i.e. "You were ignoring offers from Amazon.com"), then it implies that you are still ignoring Amazon (present-tense) or are no longer ignoring offers from Amazon (imperfect-past).

Pricing Group Information

- Cost of goods
- Profit
- Floor modifier
- Use of a price ceiling and it's value
- Promo %

Note
- A profit could be a dollar or a percentage.
- Promo percentage does not get displayed in the product today
- These settings are not displayed in price history today

- The user has the ability to set some of the pricing settings at the item level. When they do, the item level settings always take precedence over the group level settings.
- Based on our knowledge and after talking to Genny, we know that users don't use the promo % feature, so we will not include it in price history.

Offer Information

- Merchant ID
- Seller feedback
- Condition
- Landed Price (Item Price + Shipping Price)
- Item Price
- Shipping Price
- Fulfillment Type
- Total used offers
- Total new offers
- Total offers

Note
- This information is called OfferRole in the Monsoon Marketplace database.

Repricing Information

- The landed price based on your pricing settings, shipping settings, and Amazon notification.
- The item price as computed based on your pricing settings and the Amazon notification.
- The shipping price at the time the price was computed.
- The delta between the landed price of this event and the previous event. This should be in dollars and a %.
  What factors led the repricing engine to derive the landed price?
    What do we need to do to define this?
    - We could use the same steps that are in pricing history today.
    - If we want a different solution that what steps are in pricing history today, then we need to know the logical flow of the repricing engine and what outcomes are possible.
      We need to research what the steps show today to see if this information is helpful to determine whether or not this is in scope.
        - We talked to Noah about this. He said he often recommends that customers look at the steps, but they often never do. They often will send in the same question days after even knowing the steps are there.
        - He also feels like it confuses people more than it helps.
        - From a support perspective, having the pricing settings and the offer information is enough for them to determine what happened.
        - Displaying the outcome is a nice to have, but we feel like all of the information is there for the user to determine why an item priced the way it did.
        - We feel like keeping this simple, and scoped to the information they need, is probably the best route to go.

Information Architecture

We are thinking of using tables to organize the information. Tables follow the pattern of displaying state information in the new cloud app, they provide a flexible framework to display various types of information, and we can easily put allow the rows to expand to display more content. This organization also allows for responsive design, so the design easily translates to different resolutions and is mobile-friendly.

We are thinking of using a top-down strategy from the highest-level information to lowest-level information, so the users have enough information to interpret the next level of information.

Section Roles

- The Outcome section, at the top, displays the landed price and how the pricing engine derived it
- The Products section displays information that identifies the product the user is selling on a channel
- The Offers Summary section displays the number of offers and the sales rank
- The Pricing Settings section displays the state of their pricing settings at the time the item was reprices
- The Offers section displays each seller's offer and whether it was considered or ignored is priced and then repriced

Note: The green check marks below

The Outcome section

- Time : The date and time fo the price change event.
- Price in your currency : The item price as computed based on your pricing settings and the Amazon notification. This is the value in the seller's currency.
- Shipping in your currency : The shipping price at the time the price was computed. This is the value in the seller's currency.
- Price Change in your currency : The delta between the landed price of this event and the landed price of the previous event. This should be in a monetary value and a % value. This is the value in the seller's currency.
- Price in channel currency : The item price as computed based on your pricing settings and the Amazon notification. This is the value in the channel's currency.
- Shipping in channel currency : The shipping price at the time the price was computed. This is the value in the channel's currency.
- Price Change in channel currency : The delta between the landed price of this event and the landed price of the previous event. This should be in a monetary value and a % value. This is the value in the channel's currency.

NOTE : The maximum length below includes any comma, percentage sign, currency symbol, and decimal point in the count.

The Products section

SKU
- There is one option.
- The maximum length of the SKU field in Monsoon Marketplace is 63.
- The "mon" SKUs are 13 characters long.
- For Sports Unlimited's active SKUs, they have SKU length of 18 and a maximum SKU length of 37.
- The maximum length of the SKU field will be 25.

Condition
- There is one option.
- The maximum length of the condition field is 11.
  The possible values are:
  - New
  - Like New
  - Very Good
  - Good
  - Acceptable
  - Collectible
  - Refurbished

ASIN
- There is one option.
- The maximum length of the ASIN field is 10.
- The value is defined by Amazon.

Channel
- There is one option.
- The maximum length of the Channel field is 12.

The possible values are:
- Abebooks.com
- Alibris.com
- Amazon.ca
- Amazon.de
- Amazon.es
- Amazon.fr
- Amazon.it
- Amazon.co.uk
- Amazon.com
- eBay.com
- eBay.co.uk
- Rakuten.com
- Walmart.com

Fulfillment type
- There is one option.
- The maximum length of the Fulfillment type field is 3.
  The possible values are:
  - MFN
  - FBA
- Min fields : 5
- Max fields : 5

The Offers Summary sections

Total offers (Total Used Offers + Total New Offers + Total Collectible Offers + Total Refurbished Offers)
- There is one option.
- We looked at some saturated BMVD and GM items and the maximum total offers was around 1,000.
- The maximum length of the total offers field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

New offers
- There is one option.
- We looked at some saturated BMVD and GM items and the maximum new offers was less than 1,000.
- The maximum length of the new offers field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

Used offers
- There is one option.
  We looked at some saturated BMVD and GM items and the maximum used offers was less than 1,000.
- The maximum length of the used offers field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

Collectible offers
- There is one option.

- We looked at some saturated BMVD and GM items and the maximum collectible offers was less than 1,000.
- The maximum length of the collectible offers field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

Refurbished offers
- There is one option.
- We looked at some saturated BMVD and GM items and the maximum refurbished offers was less than 1,000.
- The maximum length of the refurbished offers field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

Sales rank
- There is one option.
- The maximum length of the sales rank field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647
- Min fields : 6
- Max fields : 6

The Pricing Settings section

Pricing strategy name
- There is one option.

Pricing strategy
- There is one option.
  Possible values are:
  - "Match my competitor" when "Match the lowest price" is selected.
  - "N% of my competitor" when "Price at N% of the lowest price" is selected.
  - "$N below my competitor" when "Price at $N above the lowest price is used" is selected and the value the user entered is negative. The value should be displayed as a positive value.
  - "$N above my competitor" when "Price at $N above the lowest price is used" is selected and the value the user entered is zero or positive.
  - "Average my N competitor" when "Price at the average of the N lowest competitive prices" is selected and N equals one.
  - "Average my N competitors" when "Price at the average of the N lowest competitive prices" is selected and N is greater than one
- The maximum length of the pricing strategy field is 25 characters.

Hold time
- There is one option.
- The hold time only displays when the SKU is using a pricing strategy with "Price at % of the lowest price" or "Price at $ above the lowest price".
- The maximum length of the hold time field is 13 characters. The values will be:

- ## N hour when N equals one
- ## N hours when N greater than one or equal to zero

Conditions Considered

- There is one option.
  The values will be:
  - "All" when the "Consider ALL item conditions" is selected.
  - "Used" when "Only consider USED items if my item is USED, NEW items if my item is NEW" is selected" and the Sku is in used condition.
  - "New" when "Only consider USED items if my item is USED, NEW items if my item is NEW" is selected" and the Sku is in new condition.
  - "Same or better" when "Only consider items in SAME or BETTER condition" is selected.
  - "Same" when "Only consider items in the SAME condition as my item.
  - "Ignore Acceptable" when "Ignore item in ACCEPTABLE condition, except where my item is in ACCEPTABLE condition" and the Sku is not in acceptable condition.
  - "All" when "Ignore item in ACCEPTABLE condition, except where my item is in ACCEPTABLE condition" and the Sku is in acceptable condition.

Feedback greater than

- This field is optional. The user may not have this selection.
- There is one option.
- ## The maximum length of the seller feedback field is 13 characters.
- ## The possible values will be between -2,147,483,647 and 2,147,483,647

MFN considered

- This field is optional. The user may not have this selection.
- There is one option.
  The values are:
  - "Yes" when "When my item is an FBA item and there are other competitive FBA listings, use ONLY those. Otherwise, compete against ALL available listings." is not selected.
  - "No" when "When my item is an FBA item and there are other competitive FBA listings, use ONLY those. Otherwise, compete against ALL available listings." is selected and there are FBA offers.

Amazon considered

- There is one option.
  The values are:
  - "Yes" when "Include Amazon" is selected.
  - "No" when "Do NOT include Amazon" is selected.

5th lowest price ceiling

- This field is optional. The user may not have this selection.
- There is one option.
  The values are:
  - "Yes" when "Price should be no higher than the 5th lowest competitive listing" is selected.
  - "No" when "Price should be no higher than the 5th lowest competitive listing" is not selected.

Used price ceiling

- This field is optional. The user may not have this selection.
- There is one option.
  The values are:
  - When the user is using this option and the condition is used, the value will be, "N% of lowest new".
  - When the user is using this option and the condition is new, this field won't be displayed in the price change details.
- This field will never display when the SKU is in new condition.

New price ceiling
- This field is optional. The user may not have this selection.
- There is one option.
  The values are:
  - When the user is using this option and the condition is new, the value will be, "N% of Amazon".
  - When the user is using this option and the condition is used, this field won't be displayed in the price change details.
- This field will never display when the SKU is in used condition.

No offers considered

- There is one option.
- The value is, "N% of Amazon"
- The possible values for N will be between -2,147,483,647 and 2,147,483,647. However, the user can only set five characters in the UI.

No Amazon offer
- There is one option.
- The value is, "N% of MSRP"
- The possible values for N will be between -2,147,483,647 and 2,147,483,647. However, the user can only set five characters in the UI.

Group cost of goods
- There is one option.
- The maximum length of the group cost of goods field is 15 characters.

Group profit
- There is one option.
- This will either be displayed as a percentage or monetary amount (i.e. 3% or $3.00) depending on the option the user has chosen.
- The maximum length of the group profit field is 15 characters.

Group floor modifier
- There is one option.
- The maximum length of the group floor modifier field is 15 characters.

Group price ceiling
- There is one option.
- The maximum length of the group price ceiling is 15 characters.

Group default price
- There is one option.
- The maximum length of the group default price is 15 characters.

SKU cost of goods
- There is one option.
- The maximum length of the Item cost of goods field is 15 characters.

SKU profit
- There is one option.
- This will either be displayed as a percentage or monetary amount (i.e. 3% or $3.00) depending on the option the user has chosen.
- The maximum length of the Item profit field is 15 characters.

SKU price ceiling
- There is one option.
- The maximum length of the Item price ceiling is 15 characters.

SKU default price
- There is one option.

- The maximum length of the Item default price is 15 characters.
- Min fields : 14
- Max fields : 16

The Offers section

Merchant ID
- There is one option.
- The maximum length of the merchant ID field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

Feedback

- There is one option.
- The maximum length of the seller feedback field is 13 characters.
- The possible values will be between -2,147,483,647 and 2,147,483,647

Condition
- There is one option.
- The maximum length of the condition field is 11.
  The possible values are:
  - New
  - Like New
  - Very Good
  - Good
  - Acceptable
  - Collectible
  - Refurbished

Fulfillment Type
- There is one option.
- The maximum length of the Fulfillment type field is 3.
  The possible values are:
  - MFN
  - FBA

Price + Shipping

- There is one option.
- The maximum length of the price + shipping is 15 characters.

Price
- There is one option.
- The maximum length of the price is 15 characters.

Shipping
- There is one option.
- The maximum length of the shipping is 15 characters.

Competitor

- There is one option.
  The possible values are:
  - Yes
  - No

Notes
- There is one option.

Monsoon Cloud | Offer Role Codes, Values, and Language for the "Notes"

Role Code	Display Name in pricing history table
0	Unknown
1	Used For Ceiling
2	Not Considered
4	Ignored Competitor
8	Ignored Condition
16	Low Feedback
32	Ignored US Seller
64	Ignored Amazon
256	Ignored Self
512	Ignored Price Unavailable
1024	Ignored Merchant Fulfilled
2048	Self
8192	Competitor
16384	Not Considered

Price Ceiling
- A new JSON field was added to each offer to tell us whether or not an offer was used as a price ceiling.
  There are several conditions to showing the price ceiling note.

  - When an offer was not considered and the offer was used to determine the price ceiling, then the Notes for that offer will display the value of the offer role field and the price ceiling note. For example, "This offer was not needed to determine the price. This offer was used to determine the price ceiling."
  - When an offer was considered and the offer was used to determine the price ceiling, then the Notes for that offer will display the value of the offer role field and the price ceiling note. For example, "This offer was used to determine the price. This offer was used to determine the price ceiling."
  - When an offer was not considered and the offer was not used to determine the price ceiling, then the Notes for that offer will display the value of the offer role field only. For example, "Merchant fulfilled offers were not considered."
  - When an offer was considered and the offer was not used to determine the price ceiling, then the Notes for that offer will display the value of the offer role field only. For example, "This offer was used to determine the price."
- Min fields : 9
- Max fields : 9

UX Design

There are two design directions we want to flesh out with a rough mockup.

The first direction is to show all of the sections at once for a SKU, channel, and fulfillment type. This direction allows the user to get their insight without multiple clicks.

The second direction is to show the user the Outcome section with the delta displayed between them, and the user will be able to reveal the other sections. This direction will allow the user to quickly scan to the anomaly they want to focus on and get additional information when needed.

Project Scope

This section outlines the scope and requirements of viewing price changes. We'll refer to the Amazon Offer Changed Notifications as notifications and Monsoon cloud infrastructure price changes as price change events.

We will only store events when an item is repriced and a price changes. We will not store events when an item is repriced and the price stays the same.
- Based on user feedback and the use cases, the users care about price changes.
- This will reduce the amount of storage of price change events and also allow us to surface the events the user cares about instead of events they don't care about.
- We may want to collect metrics about the number of SKUs where the price changed and the number of SKUs where the price didn't change.

We will store the last five price change events for a SKU, channel, and fulfillment type.
- We could store based on the number of price change events, a period of time, or a combination of both number and time period. Based on user feedback and the use cases, we feel like a number is the best way to go. The user will use this feature to track down pricing anomalies. If we use a time period, we may remove price change events that the user needs to see to track down why a SKU priced a specific way.
- If there are more than five events, we will remove the oldest event.
- We're not going to archive the events when they are removed.

We will log key pricing calculations, so support has a trail to follow when the customer reports a pricing issue and there is no price change event.

- We need to determine what key things we should log based on engineering, QA, and support feedback.
- This may be configurable by customer and channel.
- The logs will be kept for two weeks.
- The logs will be archived after two weeks.
- The logs will be removed after four weeks.

All monetary values will be displayed in market currency.

Abebooks.com is dependent on the customer's location:
- US dollars for US customers that sell on Abebooks.
- UK pounds for UK customers that sell on Abebooks.

Alibris.com is dependent on the customer's location:
- US dollars for US customers that sell on Alibris.
- UK pounds for UK customers that sell on Alibris.

- Amazon.ca is in CA dollars.
- Amazon.de is in Euros.
- Amazon.es is in Euros.
- Amazon.fr is in Euros.
- Amazon.it is in Euros.
- Amazon.co.uk is in UK pounds.
- Amazon.com is in US dollars.
- Rakuten.com is in US dollars.
- eBay.com is in US dollars.
- eBay.co.uk is in UK pounds.
- Walmart.com is in US dollars.

The price change events will need following information for each SKU:

- SKU and Product Information
1. SKU
2. Condition (New, Like New, Very Good, Good, Acceptable, Collectible, Refurbished)
3. ASIN
4. Channel
5. Fulfillment type
- Pricing settings

1. Pricing strategy
2. Item conditions to consider
3. Only consider competitive listing where
4. Consider Amazon as a competitor
5. Price Ceiling
6. Price when there are no competitive listings
7. Ignore Lowball
8. Group-level Cost of goods
9. Group-level Profit
10. Group-level Floor modifier
11. Group-level price ceiling and it's value
12. Item-level Cost of goods
13. Item-level Profit
14. Item-level price ceiling and it's value
- Offer information
1. Merchant ID
2. Seller feedback
3. Condition
4. Fulfillment Type
5. Landed Price (Item Price + Shipping Price)
6. Item Price
7. Shipping Price
8. Was the offer ignored or considered? If the offer was ignored, why was it ignored?
9. Total offers (Total Used Offers + Total New Offers + Total Collectible Offers + Total Refurbished Offers)
10. Total used offers
11. Total new offers
12. Total collectible offers
13. Total refurbished offers
14. Sales Rank
- Repricing information
1. The landed price based on your pricing settings, shipping settings, and the Amazon notification.
2. The item price as computed based on your pricing settings and the Amazon notification.
3. The shipping price at the time the price was computed.

4. The delta between the landed price of this event and the landed price of the previous event. This should be in a monetary value and a % value.