DYNAMIC PRICING

Optimized Pricing via Dual RBD Validation

Implementation Guide

Version 3
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Contents

Introduction

1. Overview of Dynamic Pricing Mechanisms

The airline industry is developing new mechanisms for pricing and revenue management to improve an airline's capabilities for dynamic pricing. ATPCO has worked with the industry to identify and define three dynamic pricing mechanisms: Optimized Pricing, Adjusted Pricing, and Continuous Pricing. The agreed-upon definitions of these mechanisms are listed in the ATPCO Glossary of Terms.

1.1. Simplified model for dynamic pricing

Wherever you are in your pricing strategy, ATPCO is building tools to make it easier for any airline to adopt dynamic pricing.

Our new model allows you to implement different dynamic pricing approaches that match your individual infrastructure and strategy—and keep all your fares interoperable, no matter how they were built.

	Predefined price points with dynamic availability			Predefined price points with dynamic price adjustments		Fully dynamic price determination	
	Static Pricing	**Dual RBD**	**Quantum Pricing**	**DPE Predefined Pricing**	**DPE Generated Pricing**	**Min/Max Pricing**	**Bid Pricing**
	Airlines pre-distribute all prices using standard toolsets	Capability to increase price points by requiring inventory in 2 different RBD	Frequent updates on automated price determination and upload APIs	DPE determines optimal price from a set of defined (pre-distributed) prices	DPE determines optimal price and adjusts pre-distributed price	Airlines distribute a min/max range, eliminating the need to pre-distribute individual prices	Airlines link their Revenue Management systems directly to price determination
Usage	Used by most airlines	Used by many airlines		Airlines participating in trials and pilots		Industry discovery (establishing requirements)	
Capabilities							
Number of price points	26	182	182	Unlimited	Unlimited	Unlimited	Unlimited
Prices set in real time				✓	✓	✓	✓
Criteria to Implement Strategy							
Airlines need to update prices multiple times a day	✓	✓	✓	✓		✓ (min/max levels)	
Airlines need to implement API				✓	✓	✓	✓
Airlines need own Dynamic Pricing Engine				✓	✓	✓	✓
ATPCO tools to get you there	Fare filing	Dual RBD standards and Implementation Guide		DPE schema, standards, and Implementation Guide		Coming soon: ATPCO pilots	
Engage with the Community		Try it, you will like it		Join us for trials and pilots		Help us build the future	

Each mechanism offers improvements, listed below, that aim to increase the number of price points available in any given market, to increase the velocity at which these price points are updated, and/or to increase the frequency at which prices are changed from transaction to transaction.

The dynamic pricing capabilities may be used by an airline within an airline's direct (e.g., offer management system, airline website) or indirect (e.g., GDS) channels. This guide will describe the processing changes required to accurately process the dynamic pricing mechanism for any of the channels that an airline wishes to utilize.

These are the improvements in the mechanisms being pursued:

Optimized Pricing

- **More frequent updating of fare structures**, typically through automation technologies to file fares more rapidly with ATPCO. With these technologies, each airline could create unique fare structures for each market for each departure day.
- **Dynamic availability of fare products**, in which the revenue management availability of fare products could be adjusted for specific customers or in specific situations.
- **Additional RBD capabilities,** which could increase the current limit of 26 possible price points available to airlines in each market.

Adjusted Pricing

- **Dynamic pricing engines**, which apply dynamic price adjustments (increments or discounts) to filed fares in certain situations.

Continuous Pricing

- **Continuous pricing**, in which each airline would select prices from a continuous range of possible values instead of from a small number of pre-filed price points.
- **Dynamic offer generation**, which merges the product creation process and the price selection process into a single step. An airline would dynamically create and price bundles of itineraries and ancillary services, potentially at a transactional level.

1.2. Which Dynamic Pricing solution is right for you?

Through the Dynamic Pricing Working Group, solutions have been defined that support Optimized Pricing and Adjusted Pricing via a dynamic pricing engine (DPE).

1.2.1. Optimized Pricing: Dual RBD Validation

Dual RBD Validation is an Optimized Pricing improvement that provides additional RBD capabilities. It increases the number of price points available by indicating that inventory availability is required in two booking classes for a fare to be valid.

1.2.2. Use this solution

Use this solution when you have too many price points in the same RBD (class compression) by increasing the number of price points within a cabin.

Additionally, this solution should be used when you want to synchronize your prices across fare products/brands. By using Dual RBD validation, you can ensure your prices remain in lockstep with a consistent price difference across products/brands.

This solution can be used alone or in addition to an Adjusted Pricing solution.

1.2.3. Adjusted Pricing via DPE

The DPE solutions provide each airline the flexibility to review potential offers (solutions) and prices created from distributed fare data, determine the optimal price (e.g., determine a contextual pricing value), and adjust the fare amount (as applicable) before a response is returned to the customer.

1.2.4. Use this solution

Use this solution to identify and create the optimal price at shopping based on real-time data. Further, this solution allows each airline to potentially expand existing business rule capabilities within a DPE environment (e.g., innovative availability processes using two-position RBDs), to implement new items like search behavior, and to introduce new, proprietary business rules for determining the optimal price.

This solution can be used alone or in addition to an Optimized Pricing solution.

2. Dual RBD Validation

Dual RBD Validation is an Optimized Pricing improvement targeted to provide additional RBD capabilities. It provides the ability to increase the number of price points available by indicating that inventory availability is required in two booking classes for a fare to be valid.

2.1. Problem Statement

In today's environment, an airline must convey both price and product attributes through 26 reservation booking designators (RBDs). For some airlines, the 26 booking designators are distributed among four cabins, further diluting the number of available RBDs within a cabin. As a result, multiple airlines have reported the number of available RBDs is not enough to accommodate the growing number of fare products they offer, including mileage reward fares, private fares, and the increasingly popular branded fares and the creation of premium economy fares, among others. This results in "fare compression," where several different fare products with similar attributes are forced to share the same RBD. This makes product differentiation difficult, especially with pricing logic choosing the lowest fare, when an

airline would have preferred selling a different fare within the same RBD (assuming the passenger qualifies for both).

2.2. Solution Overview

Each airline would manage its fares by using a subset of the 26 RBDs for secondary discount RBD validation.

For a fare to be validly priced, availability would be required in two booking classes: one the class where the booking is made (primary) and the other the secondary availability. Both would have to be available for the fare to be sold.

This method would effectively allow for an airline to utilize optimized pricing by first closing the discount secondary RBD(s) while leaving the main RBD open. Then moving to the next main RBD with secondary RBD open, then closing these discount secondary RBDs and so forth. Managing this in a one-cabin process would theoretically allow for as many as 182 RBD combinations of primary and secondary RBDs, which is 156 more assortment options than what exists today in the 26 RBD constraint. The number of possible permutations vary based on the number of cabins and prime RBDs versus discount RBDs an airline allocates. The increase in assortment options listed above go beyond the creation of separate product segmentation rules that can be done with rule restrictions attached to the fare products.

If the airline has more than one cabin and does not manage a seamless inventory across cabins the airline would decide how to divide the 26 RBDs across cabins. The more cabins an airline has, the fewer the total number of fare levels available. To determine the number of total number price points available, multiply the number of primary RBDs by the number of secondary RBDs. This result is the number of price points using dual validation. Then add the number of primary RBD, which can be used independently, to find the total number of available price points.

Cabins	Possible Price Points	Cabin	RBDs	Primary RBDs	Secondary RBDs	Calculation
One	182	Y	26	13	13	(13 × 13) + 13 = 182
Two	110	F	8	4	4	(4 × 4) +4 = 20
		Y	18	9	9	(9 ×9) + 9 = 90
Three	72	F	6	3	3	(3 × 3) + 3 = 12
		C	8	4	4	(4 × 4) + 4 = 20
		Y	12	6	6	(6 × 6) + 6 = 42

2.3. Stakeholders and Impact Summary

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3. Definitions

The following terms and definitions are relative to the concepts defined in this document. Refer to ATPCO's Glossary of Terms and/or applicable Data Application documentation for all other definitions.

Term	Definition
Primary RBD	The RBD where the fare is booked and appears on the passenger ticket.
Secondary RBD	An RBD validated along with the primary RBD as available to differentiate fare levels within the primary RBD. This RBD is not booked but rather used as a reference.

4. Use cases

Any airline may choose to implement one or more of the following use cases.

4.1. Use case 1: Lower cabin fare books into higher cabin (Upsell)

This is the original use case that initiated the implementation of dual RBD validation. It allows an airline to offer a fare in a lower cabin where the passenger actually books into and sits in a higher cabin.

4.2. Use case 2: Synchronized pricing within a cabin

This is a commonly applied solution for an airline that has implemented dual RBD validation and wants to increase the number of price points within a cabin as well as align fare levels across brands/products within the same cabin. This solution offers more efficient inventory management for the airline and ensures fare levels move in lockstep across brands/products within a cabin.

4.3. Use case 3: Synchronized pricing across cabins

This solution is for any airline that has implemented dual RBD validation and wants to increase the number of price points as well as align fare levels for brands/products across multiple cabins. This solution offers more efficient inventory management for the airline and ensures fare levels move in lockstep across brands/products in differing cabins.

4.4. Use case 4: Additional price point within cabin, trigger class is reserved

This is the original use case from the first version of the Implementation Guide for any airline that wants to take Dual RBD validation to the next level. This use case focuses on the ability to increase the number of price points within a cabin. The secondary RBD(s) is reserved strictly for use as a trigger class and is not used as a primary RBD.

4.5. Other use cases

Dual RBD Validation may currently be used for reward travel, cabin upsell, or other purposes. Any changes to RBD validation structure will need to take these possible use cases into consideration when implementing Dual RBD Validation for creating additional price points within the cabin.

5. Setup and Planning

Before implementation, use cases, stakeholders, scope, and impact must be determined.

For the next sections of this document, the following holds true:

1. When the **primary RBD** is shown as being standalone without indicating a secondary RBD, the primary RBD may refer to any of the following RBD field locations within the Automated Rules system:

    - Fare Class Application (Record 1) Prime RBD (bytes 108-123)
    - Fare Class Application (Record 1) Chart 1 Table 999 (bytes 127-129)
    - RBD Application Chart 1 (Record 6 Convention 2) Table 999
    - RBD Application Chart 2 (Record 6 Convention 1) Table 999
    - Record 3 Discounts (Category 19-22) RBD (Bytes 91-92)
    - Record 3 Fare by Rule (Category 25) Resulting Fare Prime RBD (Bytes 222-237)
    - Record 3 Fare by Rule (Category 25) Resulting Fare Table 999 (Bytes 238-245)

2. When a **primary RBD** is shown as requiring the availability of a secondary RBD, the primary RBD refers to the RBD field location of the:

    - Fare Class Application (Record 1) Table 999 data in bytes 127-129 with the **secondary RBD** requirement(s) being coded in the RBD field location of the Table 999 data in Bytes 115-116; or
    - Fare Class Application Chart 1 (Record 6 Convention 2), Table 999 data in Bytes 117-118, with the **secondary RBD** requirement(s) being coded in the RBD field location of the Record 6, Convention 2, Table 999 data in Bytes 115-116; or
    - Record 3 Fare by Rule (Category 25) Resulting Fare Table 999 in bytes 222-237, with the **secondary RBD** requirement(s) being coded in the RBD field location of the Table 999 data in Bytes 115-116

5.1. Use case 1: Lower cabin fare books into higher cabin (upsell)

5.1.1. Description

The airline offers a fare in a lower cabin where the passenger actually books into and sits in a higher cabin. The airline books the premium cabin based upon the availability of a lower cabin RBD. This validation requires the segment to be booked in the premium cabin RBD and then a secondary validation of availability of a lower cabin RBD is also performed. This is then ticketed, reported, and settled as the primary RBD with the corresponding fare basis code.

5.1.2. Why use this solution?

An airline could implement this solution when they want to offer an upsell fare product to a passenger. They can entice the passenger to purchase a lower cabin fare but sit in a higher cabin (for example, buy an economy class fare but sit in first class). This allows the airline to sell seats in the higher cabin based

on availability in the lower cabin. The airline can introduce multiple price points in the higher cabin by only using a single RBD.

5.1.3. Example

In the following example, the airline offers an Economy product using three primary RBDs (H, Q, V) and First using one primary RBD (A). The airline also offers upsell fares, higher than the standard economy fares, that book into First (A) using Dual RBD validation where the secondary (trigger) RBDs are Economy Class RBDs (H, Q, V). In this example, seven price points are defined across the two cabins, but only using four RBDs.

Fare Class Code	Fare Amount	Primary (booked) RBD	2nd/Trigger RBD	
A	$800	A	None	← books into First
HUP	$500	A	H	← books into First
H	$350	H	None	
QUP	$400	A	Q	← books into First
Q	$250	Q	None	
VUP	$300	A	V	← books into First
V	$150	V	None	

The system chooses the lowest A fare based on secondary availability. When a fare is booked in A, the system chooses the lowest A class fare based on secondary availability. If H and Q were both available, but V was not, the QUP fare would be the lowest. If H, Q and V are closed, and A is available, the A fare ($800) could be sold.

5.1.3.1. INVENTORY SETUP AND MANAGEMENT

Building on the example above, below is a potential model of how the airline might handle its inventory set up and management. This example is purely for illustrative purposes and does not reflect how an airline might actually maintain its inventory.

Initial allocation of available seats and fare values

	Economy		First
	Buckets	Limits	
Available Seats	$340	100	15
	$240	85	
	$140	70	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	H	$350	Y	A	$300 (VUP)	Y
	Q	$250	Y			
	V	$150	Y			

The data above indicates the airline has a total of 100 seats to sell in Economy. Out of these 100 seats, the maximum number of seats that can be sold in any one bucket are specified per bucket. The airline offers 15 seats to sell in First. The First price point is dependent on the Economy availability.

SCENARIO 1: ECONOMY SALE CHANGES THE PRICE OF FIRST

The airline sells 71 Economy seats.

Sold Seats	Economy	First
	71	0

Available Seats	Economy		First
	Buckets	Limits	
	$340	~~100~~ 69	15
	$240	~~85~~ 14	
	$140	~~70~~ 0	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	H	$350	Y	A	~~$300 (VUP)~~ $400 (QUP)	Y
	Q	$250	Y			
	V	$150	~~Y~~ N			

SCENARIO 2: THE AIRLINE SELLS FIRST SEATS

Building on the above scenarios, the airline sells 10 First seats.

Sold Seats	Economy	First
	71	10

Available Seats	Economy		First
	Buckets	Limits	
	$340	~~100~~ 69	~~15~~ 5
	$240	~~85~~ 14	
	$140	~~70~~ 0	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	H	$350	Y	A	~~$300 (VUP)~~ $400 (QUP)	Y
	Q	$250	Y			
	V	$150	~~Y~~ N			

SCENARIO 3: THE AIRLINE SELLS ALL ECONOMY SEATS, BUT FIRST IS STILL AVAILABLE

Building on the above scenarios, the airline sells the remaining 70 available Economy Seats.

Sold Seats	Economy	First
	100	10

Available Seats	Economy		First
	Buckets	Limits	
	$340	~~100~~ ~~69~~ 0	~~15~~ 5
	$240	~~85~~ 14 0	
	$140	~~70~~ 0	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	H	$350	~~Y~~ N	A	~~$300 (VUP)~~ ~~$400 (QUP)~~ $800 (A) with no dual RBD validation	Y
	Q	$250	~~Y~~ N			
	V	$150	~~Y~~ N			

5.2. Use case 2: Synchronized pricing within a cabin

5.2.1. Description

In this use case an airline can offer a premium or discounted product within a cabin based on availability of a “standard” product within the same cabin. Only one primary RBD is used for all price points in the premium product, and only one primary RBD is used for all price points in the discounted product. Dual RBD validation based on multiple secondary (trigger) RBDs controls the availability of each premium and discounted price point.

5.2.2. Why use this solution?

An airline could implement this solution when they want the availability of price points in a cabin(s) to move in tandem with the availability in another cabin. This solution allows an airline to ensure price alignment across products/brands across multiple cabins. This is a more efficient way for an airline to manage inventory across product/brands where the intention is that the prices move in lockstep (in tandem). Additionally, it may be beneficial for customer-friendly product displays.

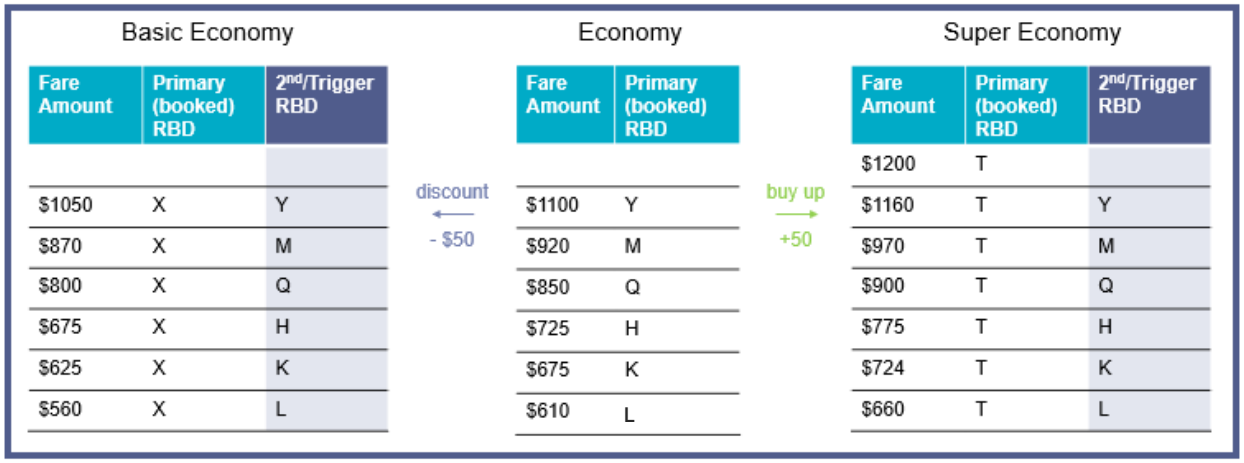
An airline could also implement this solution when they want to separate a limited number of seats within a cabin for a premium and/or discounted product and potentially treat these seats as a separate cabin. The availability of price points in the premium and discounted products move in tandem with the availability for the “standard” product. This solution allows any airline to ensure price alignment across products/brands within a cabin. This may be beneficial for customer-friendly product displays.

Only one RBD is used for the premium product and only one for the discounted product.

It is possible for the number of seats available may be decremented separately from the total available seats for the cabin. For example, an airline might offer extra legroom seats in the first several rows of the economy cabin where the number of available seats is not included in the total number of available seats for the cabin. It is also possible that the number of seats available may be included (and decremented from) the total number of available seats for the cabin. For example, an airline might offer a limited number of seats in the cabin for sale at a discounted price.

5.2.3. Example

In the following example, the airline offers an Economy product using six primary RBDs (Y, M, Q, H, K, L). The airline offers Basic Economy (discounted) and Super Economy (buy-up) options using Dual RBD validation where the secondary (trigger) RBDs are Economy RBDs. Nineteen price points are defined across the three cabins, but only using eight RBDs.



Basic Economy

Fare Amount	Primary (booked) RBD	2nd/Trigger RBD
$1050	X	Y
$870	X	M
$800	X	Q
$675	X	H
$625	X	K
$560	X	L

discount
- $50

Economy

Fare Amount	Primary (booked) RBD
$1100	Y
$920	M
$850	Q
$725	H
$675	K
$610	L

buy up
+50

Super Economy

Fare Amount	Primary (booked) RBD	2nd/Trigger RBD
$1200	T	
$1160	T	Y
$970	T	M
$900	T	Q
$775	T	H
$724	T	K
$660	T	L

Basic Economy: Books into X and uses dual RBD validation where the secondary (trigger) RBDs are the Economy RBDs. The fare amount is based on the lowest available RBD minus $50.

Economy: No dual RBD validation. Only the regularly booked economy RBDs drive the price point within the cabin.

Super Economy: Books into T and uses dual RBD validation where the secondary (trigger) RBDs are the Economy RBDs. The fare amount is based on the lowest available RBD plus $50. If Economy is not available, then Super Economy may still be available for $1200.

Note: For illustrative purposes, the discount and buy-up amounts are shown as a set specified amount of $50.00 The airline could choose to vary this amount and/or express the difference as a percentage calculation depending upon the airline's own internal business requirements.

5.2.3.1. INVENTORY SETUP AND MANAGEMENT

Building on the example above, assume the airline's Super Economy product represents a specific number of extra legroom seats at the front of the Economy Cabin. Super Economy is not included in the Economy seat limitations. Basic Economy is a discount product and its seats are included in the Economy seat limitations.

Below is a potential example of how the airline might handle its inventory set up and management. This example is purely for illustrative purposes and does not reflect how an airline might actually maintain its inventory.

Initial allocation of available seats and fare values

	Economy		Basic Economy Limit *	Super Economy Limit *
	Buckets	Limits		
Available Seats	$1000	100	15 Decrements from total Economy 100 seats	20 Separate (does not decrement) from total Economy 100 seats
	$900	85		
	$800	70		
	$700	55		
	$650	30		
	$600	15		

	Economy			Basic Economy			Super Economy		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price *	Avail?	RBD	Current Price **	Avail?
Estimated Fare Values	Y	$1100	Y	X	$560 Lowest available Econ - $50	Y	T	$660 Lowest available Econ + $50	Y
	M	$920	Y						
	Q	$850	Y						
	H	$725	Y						
	K	$675	Y						
	L	$610	Y						

The data above indicates the airline has a total of 100 seats to sell in Economy. Out of these 100 seats, the maximum number of seats that can be sold in any one bucket, or in Basic Economy, are specified per bucket. In addition to the 100 seats, 20 seats are available in Super Economy.

SCENARIO 1: ECONOMY SALE CHANGES THE PRICE OF BASIC ECONOMY AND SUPER ECONOMY

The airline sells 16 Economy seats:

	Economy Seats			Super Economy Sold
	Total Sold (Econ + Basic)	Economy Sold	Basic Economy Sold	
Sold Seats	16	16	0	0

	Economy		Basic Economy Limit *	Super Economy Limit *
	Buckets	Limits		
Available Seats	$1000	~~100~~ 84	15 Decrements from total Economy 100 seats	20 Separate (does not decrement) from total Economy 100 seats
	$900	~~85~~ 69		
	$800	~~70~~ 54		
	$700	~~55~~ 39		
	$650	~~30~~ 14		
	$600	~~15~~ 0		

	Economy			Basic Economy			Super Economy		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price *	Avail?	RBD	Current Price **	Avail?
Estimated Fare Values	Y	$1100	Y	X	~~$560~~ $625 Lowest available Econ - $50	Y	T	~~$660~~ $725 Lowest available Econ + $50	Y
	M	$920	Y						
	Q	$850	Y						
	H	$725	Y						
	K	$675	Y						
	L	$610	~~Y~~ N						

SCENARIO 2: SUPER ECONOMY SALE DOES NOT IMPACT ECONOMY BUCKETS

Building on Scenario 1, the airline sells 18 Super Economy seats:

	Economy Seats			Super Economy Sold
	Total Sold (Econ + Basic)	Economy Sold	Basic Economy Sold	
Sold Seats	16	16	0	18

	Economy		Basic Economy Limit *	Super Economy Limit *
	Buckets	Limits		
Available Seats	$1000	~~100~~ 84	15 Decrements from total Economy 100 seats	~~20~~ 2 Separate (does not decrement) from total Economy 100 seats
	$900	~~85~~ 69		
	$800	~~70~~ 54		
	$700	~~55~~ 39		
	$650	~~30~~ 14		
	$600	~~15~~ 0		

	Economy			Basic Economy			Super Economy		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price *	Avail?	RBD	Current Price **	Avail?
Estimated Fare Values	Y	$1100	Y	X	~~$560~~ $625 Lowest available Econ - $50	Y	T	~~$660~~ $725 Lowest available Econ + $50	Y
	M	$920	Y						
	Q	$850	Y						
	H	$725	Y						
	K	$675	Y						
	L	$610	~~Y~~ N						

SCENARIO 3: BASIC ECONOMY SALE CAUSES ECONOMY BUCKET TO CLOSE

Building on Scenarios 1 and 2, the airline sells 14 Basic Economy Seats

	Economy Seats			Super Economy Sold
Sold Seats	Total Sold (Econ + Basic)	Economy Sold	Basic Economy Sold	
	~~16~~ 30	16	~~0~~ 14	18

	Economy		Basic Economy Limit *	Super Economy Limit *
Available Seats	Buckets	Limits		
	$1000	~~100~~ ~~84~~ 70	~~15~~ 1 Decrements from total Economy 100 seats	~~20~~ 2 Separate (does not decrement) from total Economy 100 seats
	$900	~~85~~ ~~69~~ 55		
	$800	~~70~~ ~~54~~ 40		
	$700	~~55~~ ~~39~~ 25		
	$650	~~30~~ ~~14~~ 0		
	$600	~~15~~ 0		

	Economy			Basic Economy			Super Economy		
Estimated Fare Values	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price *	Avail?	RBD	Current Price **	Avail?
	Y	$1100	Y	X	~~$560~~ ~~$625~~ $675 Lowest available Econ - $50	Y	T	~~$660~~ ~~$725~~ $775 Lowest available Econ + $50	Y
	M	$920	Y						
	Q	$850	Y						
	H	$725	Y						
	K	$675	~~Y~~ N						
	L	$610	~~Y~~ N						

SCENARIO 4: THE AIRLINE SELLS ALL ECONOMY SEATS, BUT SUPER ECONOMY IS STILL AVAILABLE

Building on the above scenarios, the airline sells the remaining 70 available Economy Seats.

	Economy Seats			Super Economy Sold
Sold Seats	Total Sold (Econ + Basic)	Economy Sold	Basic Economy Sold	
	~~16~~ ~~30~~ 100	~~16~~ 86	~~0~~ 14	18

	Economy		Basic Economy Limit *	Super Economy Limit *
Available Seats	Buckets	Limits		
	$1000	~~100~~ ~~84~~ ~~70~~ 0	15 1 0 Decrements from total Economy 100 seats	~~20~~ 2 Separate (does not decrement) from total Economy 100 seats
	$900	~~85~~ ~~69~~ ~~55~~ 0		
	$800	~~70~~ ~~54~~ ~~40~~ 0		
	$700	~~55~~ ~~39~~ ~~25~~ 0		
	$650	~~30~~ ~~14~~ 0		
	$600	~~15~~ 0		

	Economy			Basic Economy			Super Economy		
Estimated Fare Values	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price *	Avail?	RBD	Current Price **	Avail?
	Y	$1100	~~Y~~ N	X	~~$560~~ ~~$625~~ ~~$675~~	N	T	~~$660~~ ~~$725~~ ~~$775~~ $1200 T fare with no dual RBD validation	Y
	M	$920	~~Y~~ N						
	Q	$850	~~Y~~ N						
	H	$725	~~Y~~ N						
	K	$675	~~Y~~ N						
	L	$610	~~Y~~ N						

5.3. Use case 3: Synchronized pricing across cabins

5.3.1. Description

An airline offers a cabin product based on availability in a lower cabin or higher cabin. Generally, the cabin with the largest demand or capacity will have multiple RBDs to reflect its price points with these RBDs used as secondary (trigger) RBDs to control the availability of price points in the other cabin(s). Only one primary RBD is used for all price points in the other cabin(s).

5.3.2. Why use this solution?

An airline could implement this solution when they want the availability of price points in a cabin(s) to move in tandem with the availability in another cabin. This allows an airline to synchronize pricing and better control price differentiation across cabins. This solution is a more efficient way for an airline to manage inventory across products/brands in differing cabins where the intention is that the prices move in lockstep (in tandem). Additionally, it may be beneficial for customer-friendly product/brand displays in that it could offer some transparency for the customer.

This solution allows an airline to introduce multiple price points in a premium/different cabin by **only using a single RBD.**

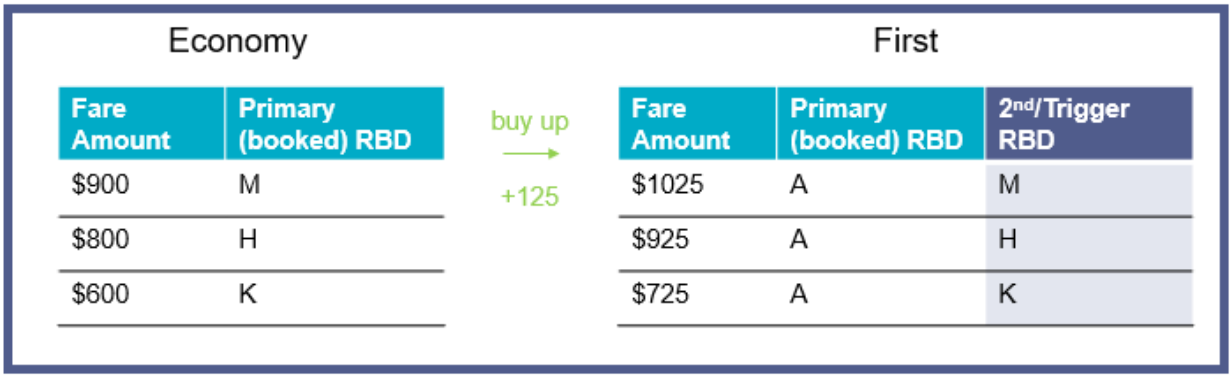
An airline can use this solution in one or more of the following scenarios:

- To offer products in a higher (premium) cabin based on availability in a lower cabin
- To offer products in more than one higher (premium) cabin based on availability in a lower cabin
- To offer a lower cabin product based on availability in a higher (premium) cabin

Examples for each of these scenarios are provided below.

5.3.3. Example A: Higher (premium) cabin based on availability in a lower cabin

In the following example, the airline offers an Economy product using three primary RBDs (M, H, K). The airline offers a First class product using Dual RBD validation where the secondary (trigger) RBDs are Economy Class RBDs (M, H, K). First books into A dependent on the availability of the economy RBDs. Six price points are defined across the two cabins, but only using four RBDs.



First: Books into A and uses dual RBD validation where the secondary (trigger) RBDs are the Economy RBDs. The fare amount is based on the lowest available Economy RBD plus $125.

Economy: No dual RBD validation. Only the regularly booked economy RBDs drive the price point within the cabin.

Note: For illustrative purposes, the buy-up amount is shown as a set specified amount of $125.00. The airline could choose to vary this amount and/or express the difference as a percentage calculation depending upon the airline's own internal business requirements.

5.3.3.1. INVENTORY SETUP AND MANAGEMENT (EXAMPLE A)

Building on the example above, below is a potential example of how the airline might handle its inventory set up and management. This example is purely for illustrative purposes and does not reflect how an airline might actually maintain its inventory.

Initial allocation of available seats and fare values

	Economy		First
	Buckets	Limits	
Available Seats	$880	100	15
	$780	85	
	$650	70	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	M	$900	Y	A	$725 Lowest available Econ + $125	Y
	H	$800	Y			
	K	$600	Y			

The data above indicates the airline has a total of 100 seats to sell in Economy. Out of these 100 seats, the maximum number of seats that can be sold in any one bucket are specified per bucket. The airline offers 15 seats to sell in First. The First price point is dependent on the Economy availability.

SCENARIO 1: ECONOMY SALE CHANGES THE PRICE OF FIRST

The airline sells 80 Economy seats.

Sold Seats	Economy	First
	80	0

Available Seats	Economy		First
	Buckets	Limits	
	$880	~~100~~ 20	15
	$780	~~85~~ 5	
	$650	~~70~~ 0	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	M	$900	Y	A	~~$725~~ $925 Lowest available Econ + $125	Y
	H	$800	Y			
	K	$600	~~Y~~ N			

SCENARIO 2: THE AIRLINE SELLS FIRST SEATS

Building on the above scenarios, the airline sells 10 First seats.

Sold Seats	Economy	First
	80	10

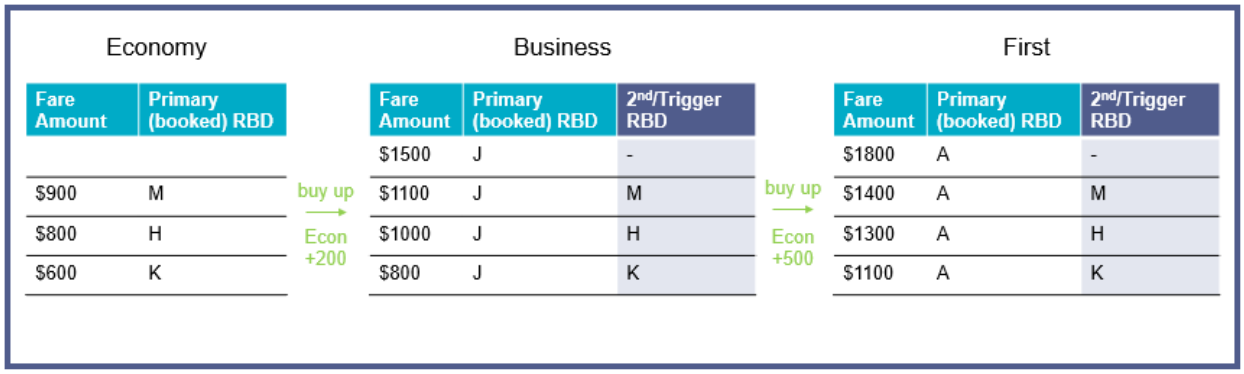
Available Seats	Economy		First
	Buckets	Limits	
	$880	~~100~~ 20	~~15~~ 5
	$780	~~85~~ 5	
	$650	~~70~~ 0	

Estimated Fare Values	Economy			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	M	$900	Y	A	~~$725~~ $925 Lowest available Econ + $125	Y
	H	$800	Y			
	K	$600	~~Y~~ N			

5.3.4. Example B: More than one higher (premium) cabin based on availability in a lower cabin

This example is similar to Example A above except that the prices move in lockstep across three cabins (Economy, Business and First) as opposed to the two cabins in Example A (Economy and First).

In the following example, the airline offers an Economy product using three primary RBDs (M, H, K). The airline offers Business and First products using Dual RBD validation where the secondary (trigger) RBDs are Economy RBDs. Nine price points are defined across the three cabins, but only using five RBDs.



Economy: No dual RBD validation. Only the regularly booked Economy RBDs drive the price point within the cabin.

Business: Books into J and uses dual RBD validation where the secondary (trigger) RBDs are the Economy RBDs. The fare amount is based on the lowest available Economy RBD plus $200. If Economy is not available, then Business may still be available for $1500.

First: Books into A and uses dual RBD validation where the secondary (trigger) RBDs are the Economy RBDs. The fare amount is based on the lowest available Economy RBD plus $500. If Economy is not available, then First may still be available for $1800.

Note: For illustrative purposes, the buy-up amounts are shown as set specified amounts of $200 (to Business) or $500 (to First). The airline could choose to vary these amounts and/or express the difference as a percentage calculation depending upon the airline's own internal business requirements.

5.3.4.1. INVENTORY SETUP AND MANAGEMENT (EXAMPLE B)

Building on the example above, below is a potential example of how the airline might handle its inventory set up and management. This example is purely for illustrative purposes and does not reflect how an airline might actually maintain its inventory.

Initial allocation of available seats and fare values

	Economy		Business	First
	Buckets	Limits		
Available Seats	$880	100	50	15
	$780	85		
	$650	70		

	Economy			Business			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?	RBD	Current Price	Avail?
Estimated Fare Values	M	$900	Y	J	$800 Lowest available Econ + $200	Y	A	$1100 Lowest available Econ + $500	Y
	H	$800	Y						
	K	$600	Y						

The data above indicates the airline has a total of 100 seats to sell in Economy. Out of these 100 seats, the maximum number of seats that can be sold in any one bucket are specified per bucket. The airline offers 50 seats to sell in Business and 15 seats to sell in First. The Business and First price points are dependent on the Economy availability.

SCENARIO 1: ECONOMY SALE CHANGES THE PRICE OF BUSINESS AND FIRST

The airline sells 80 Economy seats

Sold Seats	Economy	Business	First
	80	0	0

Available Seats	Economy		Business	First
	Buckets	Limits		
	$880	~~100~~ 20	50	15
	$780	~~85~~ 5		
	$650	~~70~~ 0		

Estimated Fare Values	Economy			Business			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?	RBD	Current Price	Avail?
	M	$900	Y	J	~~$800~~ $1000 Lowest available Econ + $200	Y	A	~~$1100~~ $1300 Lowest available Econ + $500	Y
	H	$800	Y						
	K	$600	~~Y~~ N						

SCENARIO 2: BUSINESS SALE WITH NO IMPACT TO ECONOMY OR FIRST

Building on the above scenario, the airline sells 25 Business seats.

Sold Seats	Economy	Business	First
	80	25	0

Available Seats	Economy		Business	First
	Buckets	Limits		
	$880	~~100~~ 20	~~50~~ 25	15
	$780	~~85~~ 5		
	$650	~~70~~ 0		

Estimated Fare Values	Economy			Business			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?	RBD	Current Price	Avail?
	M	$900	Y	J	~~$800~~ $1000 Lowest available Econ + $200	Y	A	~~$1100~~ $1300 Lowest available Econ + $500	Y
	H	$800	Y						
	K	$600	~~Y~~ N						

SCENARIO 3: ECONOMY AND FIRST SOLD OUT, BUSINESS STILL AVAILABLE

Building on the above scenarios, the airline sells all Economy seats and all First seats.

Sold Seats	Economy	Business	First
	100	25	15

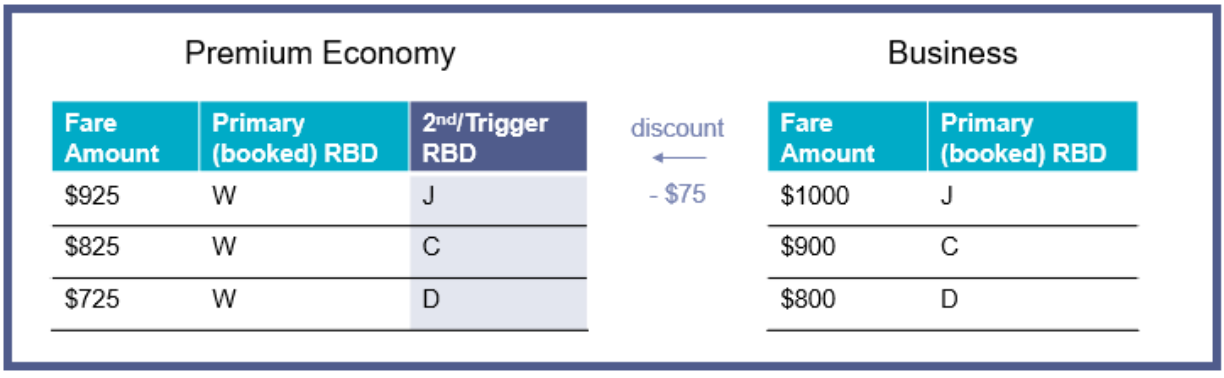
Available Seats	Economy		Business	First
	Buckets	Limits		
	$880	~~100~~ ~~20~~ 0	~~50~~ 25	~~15~~ 0
	$780	~~85~~ ~~5~~ 0		
	$650	~~70~~ 0		

Estimated Fare Values	Economy			Business			First		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?	RBD	Current Price	Avail?
	M	$900	~~Y~~ N	J	~~$800~~ ~~$1000~~ $1500 A fare, no dual RBD validation	Y	A	~~$1100~~ ~~$1300~~	~~Y~~ N
	H	$800	~~Y~~ N						
	K	$600	~~Y~~ N						

5.3.5. Example C: Lower cabin based on availability in a higher (premium) cabin

This is a less common use case, but it is still implemented by some airlines.

In the following example, the airline offers a Business product using three primary RBDs (J, C, D). The airline offers a Premium Economy product using Dual RBD validation where the secondary (trigger) RBDs are Business RBDs. Six price points are defined across the two cabins, but only using four RBDs.



Business: No dual RBD validation. Only the regularly booked business RBDs drive the price point within the cabin.

Premium2: Books into W and uses dual RBD validation where the secondary (trigger) RBDs are the business RBDs. The fare amount is based on the lowest available business RBD minus $75.

Note: For illustrative purposes, the discount amount is shown as a set specified amount of $75.00. The airline could choose to vary this amount and/or express the difference as a percentage calculation depending upon an airline's own internal business requirements.

5.3.5.1. INVENTORY SETUP AND MANAGEMENT (EXAMPLE C)

Building on the example above, below is a potential example of how the airline might handle its inventory set up and management. This example is purely for illustrative purposes and does not reflect how an airline might actually maintain its inventory.

Initial allocation of available seats and fare values

	Business		Premium Economy
	Buckets	Limits	
Available Seats	$950	50	15
	$875	35	
	$775	20	

	Business			Premium Economy		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
Estimated Fare Values	J	$1000	Y	W	$725 Lowest available Business - $75	Y
	C	$900	Y			
	D	$800	Y			

The data above indicates the airline has a total of 50 seats to sell in Business. Out of these 50 seats, the maximum number of seats that can be sold in any one bucket are specified per bucket. The airline offers 15 seats to sell in Premium Economy. The Premium Economy price point is dependent on the Business availability.

SCENARIO 1: BUSINESS SALE CHANGES THE PRICE OF PREMIUM ECONOMY

The airline sells 30 Business seats.

Sold Seats	Business	Premium Economy
	30	0

Available Seats	Business		Premium Economy
	Buckets	Limits	
	$950	~~50~~ 20	15
	$875	~~35~~ 5	
	~~$775~~	~~20~~ 0	

Estimated Fare Values	Business			Premium Economy		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	J	$1000	Y	W	~~$725~~ $825 Lowest available Business - $75	Y
	C	$900	Y			
	D	$800	~~Y~~ N			

SCENARIO 2: PREMIUM ECONOMY SALE (NO IMPACT TO BUSINESS)

Building on the above scenario, the airline sells 10 Premium Economy seats.

Sold Seats	Business	Premium Economy
	30	10

Available Seats	Business		Premium Economy
	Buckets	Limits	
	$950	~~50~~ 20	~~15~~ 5
	$875	~~35~~ 5	
	~~$775~~	~~20~~ 0	

Estimated Fare Values	Business			Premium Economy		
	RBD	Estimated Value (Fare)	Avail?	RBD	Current Price	Avail?
	J	$1000	Y	W	~~$725~~ $825 Lowest available Business - $75	Y
	C	$900	Y			
	D	$800	~~Y~~ N			

5.4. Use case 4: Additional price points within cabin, trigger class is reserved

5.4.1. Description

The airline creates additional price points within the same cabin by requiring that inventory be available in two RBDs, the primary RBD where the booking is made and a secondary (trigger) RBD. The airline selects one or more RBDs to be reserved as secondary (trigger) RBDs, and these secondary RBD(s) cannot be booked. Because the secondary (trigger) RBDs do not actually represent a seat or a fare value, they do not function as a true RBD. Instead, they are used to offer more price points within the primary RBD.

5.4.2. Why use this solution?

This solution offers the ability to create the greatest number of new price points (as compared to the other use cases). An airline could implement this solution when they want to increase the number of price points within a cabin, but they do not want the price points to move in tandem as occurs within the previous use cases.

5.4.3. Example

In the following example, the airline uses five primary RBDs (M, H, Q, K, V) and one secondary RBD (X), reserved specifically for the purpose of validation and not bookable as a standalone RBD. This would result in ten fare levels, utilizing only the above six RBDs.

5.4.3.1. BUILDING THE SOLUTION

LAYER 1: STARTING WITH BASIC DUAL RBD VALIDATION:

Fare Class	Primary RBD	Secondary RBD
MFULL	M	
MLOW	M	X
HFULL	H	
HLOW	H	X
QFULL	Q	
QLOW	Q	X
KFULL	K	
KLOW	K	X
VFULL	V	
VLOW	V	X

A fare class would be available if the primary RBD is available as well as the secondary RBD where specified. For example, the fare class QLOW would be available only if RBDs Q and X were both available.

LAYER 2: ASSUME RBDS ARE HIERARCHICAL

In addition, if a primary RBD higher than the lowest available primary RBD is booked (for example to gain features that are only allowed with a higher RBD), the RBDs should be considered hierarchal and the data can be created to support the lower level fare of the higher RBD. This would be specified as follows:

Fare Class	Primary RBD	Secondary RBD
MFULL	M	
MLOW	M	X or H
HFULL	H	
HLOW	H	X or Q
QFULL	Q	
QLOW	Q	X or K
KFULL	K	
KLOW	K	X or V
VFULL	V	
VLOW	V	X

This would mean that if M, H, Q, K were all available and V and X were not, then a segment booked in Q would price QLOW even though X is zero because K was available.

For example, if the revenue management system determines the bid price is $600, it would return M, H, Q, K as available and have V and X closed. If for some reason KFULL is not selected, QLOW could be considered because Q was available and K is available as well.

Fare Class	Fare	Primary RBD	Secondary RBD	Result
MFULL	$900	M		Books in M
MLOW	$850	M	X or H	Books in M when X or H are available
HFULL	$800	H		Books in H
HLOW	$750	H	X or Q	Books in H when X or Q are available
QFULL	$700	Q		Books in Q
QLOW	$650	Q	X or K	Books in Q when X or K are available
KFULL	$600	K		Books in K
KLOW	$550	K	X or V	Books in K when X or V is available
VFULL	$500	V		Books in V
VLOW	$450	V	X	Books in V when X is available

Yellow Shading indicates Available	Green Indicates Selected Fare Level	Light Green Indicates Alternative Fare Level

5.4.4. Incorporation with other Use Cases

If an airline uses dual validation across cabins to have upsell fares based on economy availability, they could continue to do this and integrate the fares into their single cabin dual validation fare structure as follows (where RBD A is in the first class cabin.)

Fare Class	Primary RBD	Secondary RBD
MFIRST	A	M
MFULL	M	
MLOW	M	X or H
HFIRST	A	H
HFULL	H	
HLOW	H	X or Q
QFIRST	A	Q
QFULL	Q	
QLOW	Q	X or K
KFIRST	A	K
KFULL	K	
KLOW	K	X or V
VFIRST	A	V
VFULL	V	
VLOW	V	X

Continuing the prior example where the airline's bid price was $600 for economy and the airline showed availability in M, H, Q, and K but not V, and had A seats available, they would be selling a fare booked into A as the lowest of MFIRST, HFIRST, QFIRST, or KFIRST (presumably KFIRST), but would not sell VFIRST.

5.4.5. Inventory setup and management

The following is an example of the status of the primary RBDs (V, K, Q) and three secondary RBDs (L, M, H) as inventory is decremented. Each line shows the number of seats sold on the left, with the resulting inventory to the right. Purely for illustrative purpose, as seats are sold, inventory is depicted as being decremented from right to left with the secondary RBDs decrementing in the order of "L, M, H."

5.4.5.1. INVENTORY ALLOCATION AND FORECASTING

In this example, inventory is allocated evenly between the three secondary RBDs; however, how inventory is to be allocated between secondary RBDs needs to be determined. Revenue Management will need to determine the forecasting impact of multiple price points and observations and how to allocate inventory to the secondary RBD and determine the opening/closing of the secondary RBD.

	Q	L	M	H	K	L	M	H	V	L	M	H
Starting Availability State	9	3	3	3	9	3	3	3	9	3	3	3
Sell 1 seat	9	2	3	3	9	2	3	3	8	2	3	3
Sell 1 seat	9	1	3	3	9	1	3	3	7	1	3	3
Sell 2 seat	9	0	2	3	9	0	2	3	5	0	2	3
Sell 6 seats	9	2	3	3	8	2	3	3				
Sell 3 seats	9	0	2	3	5	0	2	3				
Sell 1 seat	9	0	1	3	4	0	1	3				
Sell 4 seats	9	3	3	3								
Sell 2 seats	7	1	3	3								

5.5. Assumptions and Pre-Conditions

The following are the assumptions and pre-conditions required for successful Dual RBD Validation. Each should be tested and confirmed before implementation.

1. Shopping, Pricing, and Order Management systems are capable of processing Dual RBD Validation with existing functionality
2. Inventory management systems support additional price points and can determine RBD availability based upon the proposed structures
3. A hierarchical fare structure is implemented and Dual RBD Validation provides the opportunity to create intermediate fare levels within an RBD

5.6. Identification of Stakeholders

The following have been identified as general areas where the implementation of Dual RBD may have an impact. It is recommended these areas be contacted for impact analysis and then inclusion in the project planning and implementation.

- Fare Management/Decision Support (Revenue Management, Yield Management, Operational Research, Inventory, Pricing)
- Content Collection and Distribution
- Pricing/Shopping/Order Management (Direct and Indirect)
- Revenue Accounting/Auditing
- Customer Service – Voluntary/Involuntary Changes
- Government Filing/Regulatory
- Information Technology
- Not all areas in all organizations will be impacted, and additional research should be done to identify any other areas that may be affected.

5.7. Fare Management and Decision Support Planning

5.7.1. Impact Analysis and Determination of Scope

Dual RBD Validation can be implemented for target markets/segments to control level of effort and impacts on or limitations of current systems. The following should be considered in any Impact Analysis and Scope Determination:

Area/Segments	Considerations	Possible Resolutions
Itinerary Types	Codeshare and interline itineraries may be limited by other airline constraints.	Limit or exclude use of Dual RBD Validation for interline utilizing Flight Application (Category 4).
Cabin Classes	Depending upon the use case(s) being implemented (e.g., Use Case 4), markets with multiple cabins have a reduced opportunity to add price points and may also be further limited by the current RBDs in use in each class. When synchronizing prices for products/brands within or across cabins (Use Cases 2 and 3), it is possible only one RBD will be needed for all price points in a particular product/brand.	Identify RBDs that can be used as secondary RBDs by market and cabin. Determine where Dual RBD Validation provides the most benefit considering current structure.
Fare Management	The airline should determine how they will identify and manage fares and products that have with dual inventory requirements. This needs to be considered for the airline's own fares as well as other airlines' fares for competitive monitoring.	Implement a fare class taxonomy to identify dual inventory fares. For example, a specific position and character in a fare class code may be used by an airline to identify, and implement and maintain, the strategy for their own dual inventory fares. An airline may choose to implement proprietary business rules to automatically respond (match batch) to competitor actions. This represents fare implementation and maintenance according to internal, proprietary strategy.
Upsell and Reward	Combining Use Case 4 with other use cases may impose further limitations on the RBDs that are available for use as Secondary RBDs.	Identify RBDs that can be used as secondary RBDs by market and cabin. Determine where Dual RBD Validation provides the most benefit considering current structure.
Fare Types	An airline could choose to implement dual validation through the publications of types of fares: Public Specified Fares Private Specified Fares Private Fare by Rule (Category 25) Fares	The airline would file the fares and FBR fares with RBD Chart 1 provisions that specify the primary and secondary RBDs. Pricing and shopping will determine the fares availability through current processing and validation of the Reservation Booking Designator Table 999 to ensure the primary RBD is booked and the secondary RBD is available.

Area/Segments	Considerations	Possible Resolutions
Channels	Channels can include: Direct NDC Indirect	Fare rule provisions specifying the desired point of sale would be associated with the fares using Sales Restrictions (Category 15) or Negotiated Fares (Category 35).
Discounts	Determine whether these fares are valid for further discounts	Categories 19-22 and 25
Alliances	Determine whether new fare structure impacts alliance/JV fares	As with interline itineraries, the use of dual validation may be limited within alliances.

6. Implementation

6.1. Content Creation, Collection and Distribution

6.1.1. Schedules

No changes to schedule filing are necessary, and RBDs will be communicated to systems in the same way they are today.

6.1.2. Inventory Setup and Management

Refer to inventory setup and management examples included in each of the use cases in the previous section.

6.1.2.1. INVENTORY ALLOCATION AND FORECASTING

Refer to inventory setup and management examples included in each of the use cases in the previous section.

How inventory is to be allocated needs to be determined. Revenue Management will need to determine the forecasting impact of multiple price points and observations and how to allocate inventory to the primary and secondary RBD.

6.1.2.2. AVAILABILITY MESSAGING

No changes are proposed for availability messages.

6.1.2.3. INVENTORY SYSTEMS

Identify inventory system modifications required to manage the opening and closing of primary and secondary RBDs to communicate the value that will be received with the sale of the segment/segments requested.

6.1.3. Fares and Rules

6.1.3.1. FARE CREATION

Once the fare structure has been determined in the planning stage, fares will need to be filed to reflect the new fare classes and fare amounts.

An airline may choose to internally define a position in the 8-character fare class code that identifies whether the fare is subject to Dual RBD validation. This can help the airline manage and maintain the fare data.

6.1.3.2. RESERVATION BOOKING DESIGNATOR CHART 1

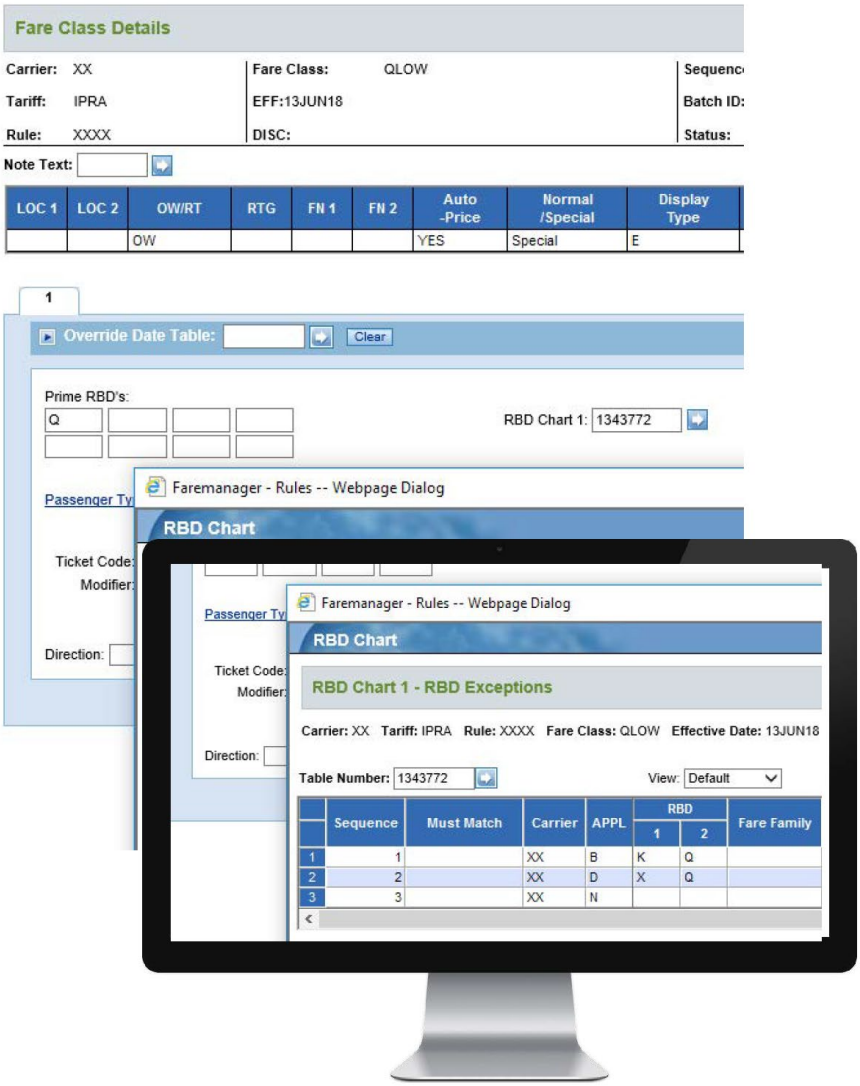
Dual RBD validation is communicated using an airline's RBD Chart 1. Chart 1 information applies only for the fare owning airline's primary and secondary sectors and for secondary airlines where the airline is a concurring airline and permits the fare owning airline to specify information on their behalf.

Note: Currently Dual RBD Validation is available wherever an airline's RBD Chart 1 information may be coded. This includes Fare Class Application (Record 1), RBD Application (Record 6) Convention 2, and Fare by Rule (Category 25).

The Restriction Tag (byte 114 in Chart 1 RBD Table 999) has values which instruct systems to validate multiple RBDs in order to pass the fare. This value is processed in conjunction with the two RBDs supplied in RBD1 (bytes 115-116) and RBD2 (bytes 117-118). These values are applicable to dual validation:

B	If RBD1 is Available then RBD2 is Permitted	If RBD1 in bytes 115-116 is available then RBD2 in bytes 117-118 is permitted. Processing will check availability to determine if the RBD in bytes 115-116 is available for sale for the sector being validated. 1. If RBD1 is available: If the sector being validated is booked in RBD2, pass RBD validation for the sector. If the sector being validated is not booked in RBD2, continue processing to the next sequence. 2. If RBD1 is not available, continue processing to the next sequence.
D	If RBD1 is Available then RBD2 Required	If RBD1 in bytes 115-116 is available then RBD2 in bytes 117-118 is required. Processing will check availability to determine if the RBD in bytes 115-116 is available for sale for the sector being validated. 1. If RBD1 is available: If the sector being validated is booked in RBD2, pass RBD validation for the sector.

		If the sector being validated is not booked in RBD2, fail RBD validation for the sector. 2. If RBD1 is not available, continue processing to the next sequence.
N	No RBD Applies	Fail RBD validation. Do not continue processing to another sequence.



Here is an example of how Airline XX could provide their information for the QLOW fare. The value B is the secondary validation of availability of K allowing you to book into Q. The value D is the secondary validation requiring booking into Q if X is available. If neither X nor K is available, N specifies the fare will fail validation.

6.1.3.3. RBD MAINTENANCE EFFICIENCIES

A new option in FareManager Rules Query helps any airline more easily find and modify RBD data within the rule-level Chart 1 and Chart 2. You can find and modify or add sequences that have one or two segments only, or find data that is in any segment. The most-used data elements have been added to this query. Like other queries in Rules, you can find a sequence and add one or more sequences that will have the same information as the “find” sequence except what you indicate to change.

The query results will identify the table number that was matched for the modification and the new resulting table number. From the Results screen, you can view the text or directly access the RBD table and search for your user ID and other criteria to find sequences that were modified or added by the query. FareManager Help details how to use this functionality (search “Query RBD Chart 1 or 2 Data”).

This new option will help you manage your RBD data, including segments with dual validation.

6.1.4. Optional Services

Each airline has multiple options for managing the availability and sale of Optional Services including travel, passenger, and fare-related information such as Fare Class and/or RBD. In the current implementation of Optional Services, if RBD is specified, the system will validate the RBD of the booked sector(s) where the service is being offered. With dual validation, the primary RBD that the segment(s) is booked in will be checked when an Optional Service is based on RBD. For example, if a fare is booked in A but requires that K also be available, Optional Services would only validate the A when matching the optional service provisions associated with an RBD. It would not be able to also validate that K was available.

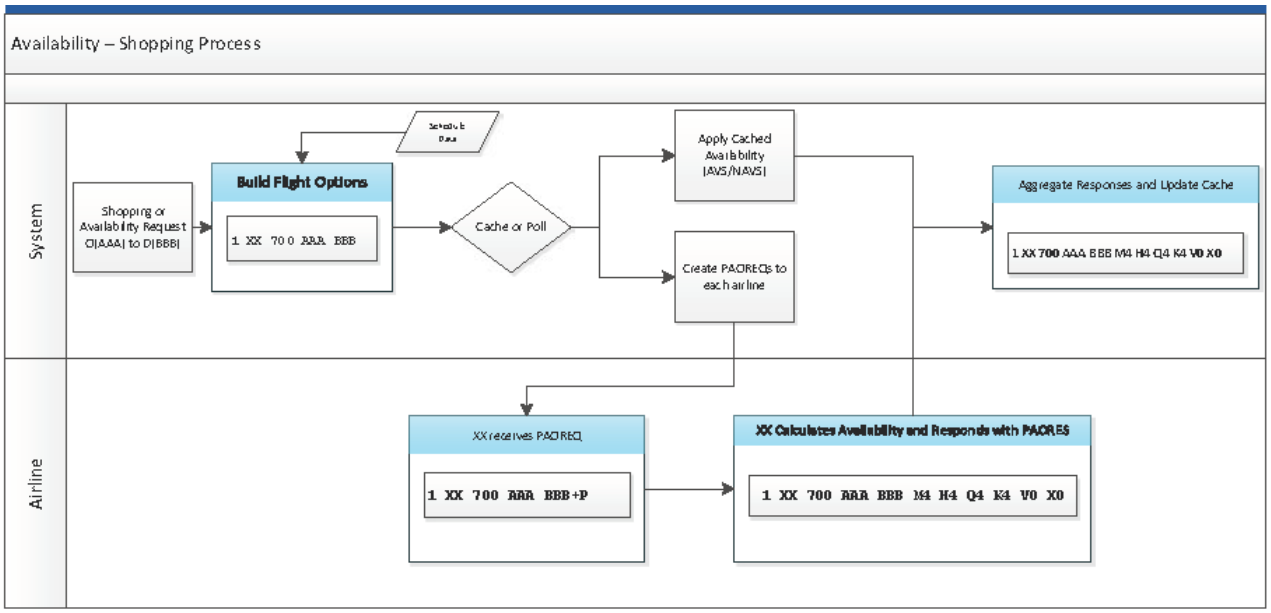
If the optional service specified that the service and related charge applied when you were booked in the primary RBD, it would apply to fares booked in the primary RBD since it cannot validate the secondary RBD. In order to vary the application of a service or a charge that differs according to the secondary RBD, the optional service should be associated to the fare class or fare family. For example, an airline can specify by fare class or fare family that QHIGH receives a service at no charge, QMEDIUM pays a fee for the same service, and that for QLOW the service was not available.

6.2. Shopping, Pricing, and Order Management

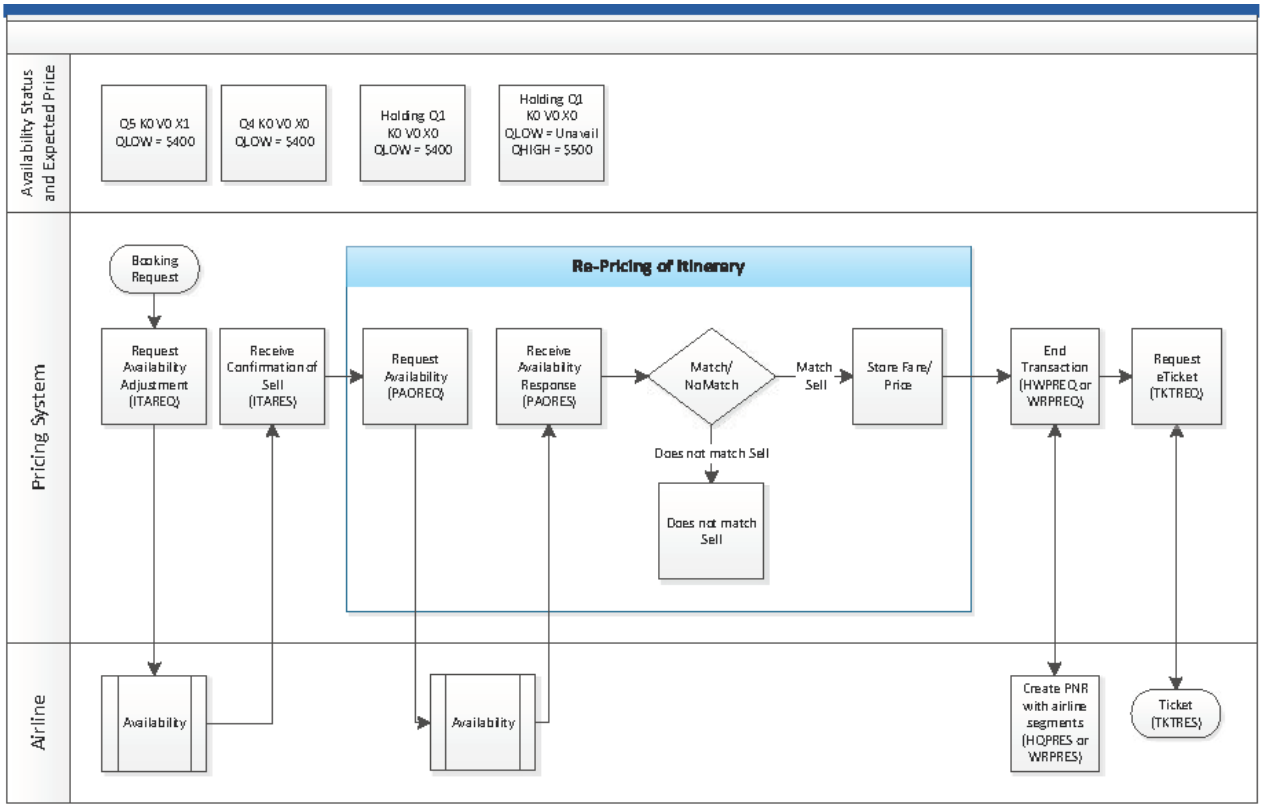
6.2.1. Availability in current processing flow

The following diagrams show the current high-level processing flow for availability request and response in the Shopping and Sell processes.

6.2.1.1. SHOPPING



6.2.1.2. SELL



6.2.2. Last Seat Availability during Shopping/Pricing process

Today, most systems cannot store/recall a shopping response and link it to pricing (this current situation is stateless processing). Stateless processing results in multiple challenges, including issues with handling last seat availability, that only increase with Dual RBD validation.

With the implementation of Dual RBD Validation, two scenarios could exist because of nested inventory:

1. Itinerary pricing after sell prices higher than expected

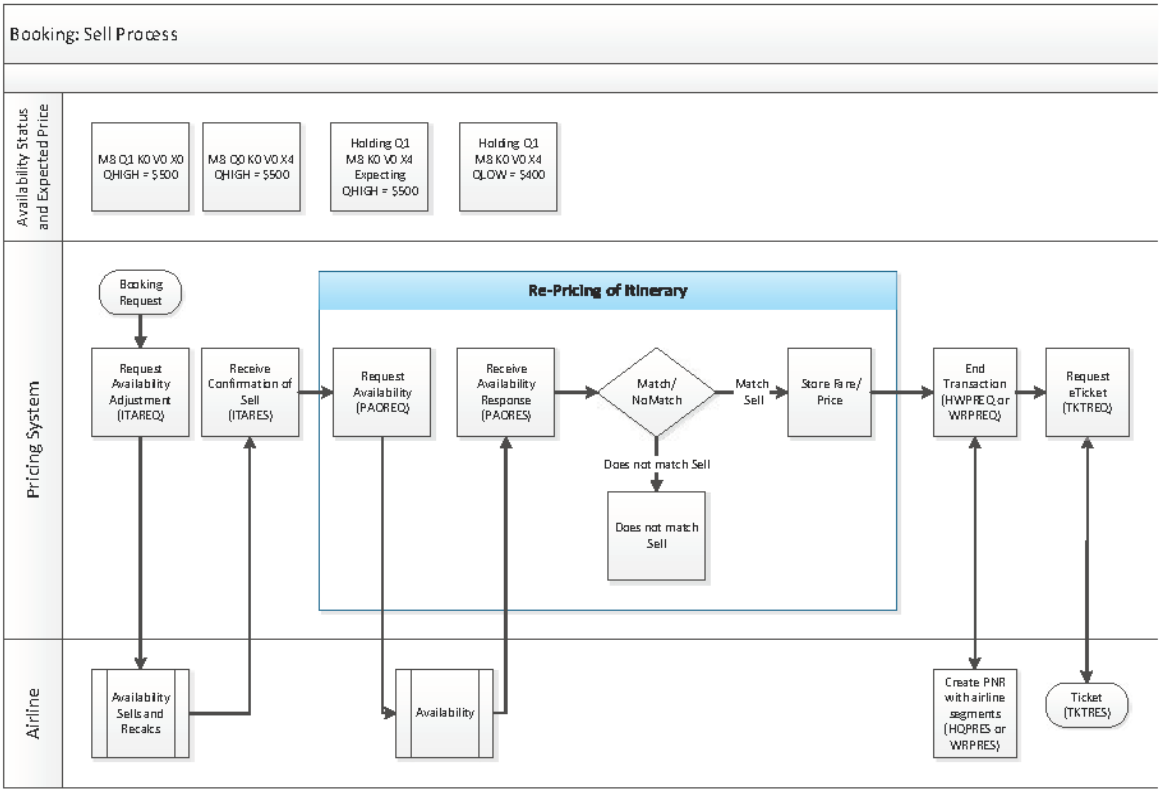
   Shopping quotes the lower fare based on Availability, but itinerary pricing that occurs after the sell prices higher than the expected price because the sell transaction caused the inventory to adjust and removes the last seat available for the secondary RBD.

   QHIGH $500 => book Q
   QLOW $400 => book Q (Q and V or Q and X must be available)
   V $300 => book V

   1. Availability before booking Q:
      Q5 K0 V0 X1
   2. Shopping returns the QLOW fare at $400

3. The fare is selected and X is removed from inventory
4. Availability after booking Q:
   Q4 K0 V0 X0
5. Itinerary Pricing returns the QHIGH fare at $500 due to X = 0 seats available

EXAMPLE



2. Itinerary pricing after the sell prices lower than the airline intended

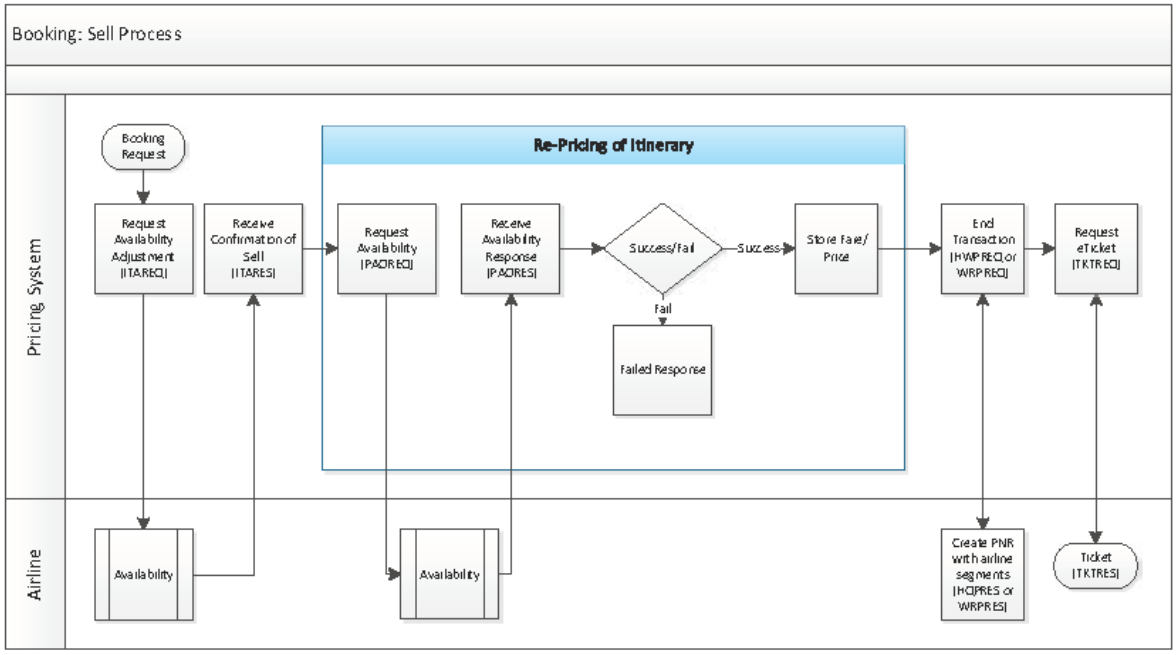
   Shopping quotes the fare based on Availability, but itinerary pricing that occurs after the sell prices lower than the expected price because the sell transaction caused the inventory to adjust and the secondary RBD to be opened.

   MHIGH $700 => book M
   MLOW $600 => book M (M and X or M and Q must be available)
   QHIGH $500 => book Q
   QLOW $400 => book Q (Q and X or Q and V must be available)
   V $300 => book V

   1. Availability before booking Q: M8 Q1 K0 V0 X0 Shopping returns QHIGH fare at $500
   2. The fare is selected and Q is removed from inventory

3. After the sell, the airline recalculates inventory availability which results in M8 Q0 K0 V0 X4
4. Itinerary pricing checks availability after the sell and prices QLOW $400 (lower than the airline's intended price) because X inventory has been reopened and the system is holding the Q segment. But the airline reopened X for the MLOW, not the QLOW fare.

EXAMPLE



This outstanding issue of last seat availability should be coordinated with system providers to ensure that shopping and pricing requests are aligned. Depending on the procedures determined to resolve last seat availability issues, there may be an impact on the booking process for both direct and indirect channels that will need to be addressed.

The implementation of stateful processing (link between shopping and pricing), such as NDC, should reduce the last seat availability challenges.

6.3. Revenue Accounting and Audit

Today Revenue Accounting and Audit use the booked RBD as well as the fare basis code on each coupon to drive their respective processes. No changes are anticipated to these processes because they correctly process today with existing dual validation.

6.4. Customer Care – Voluntary/Involuntary Changes

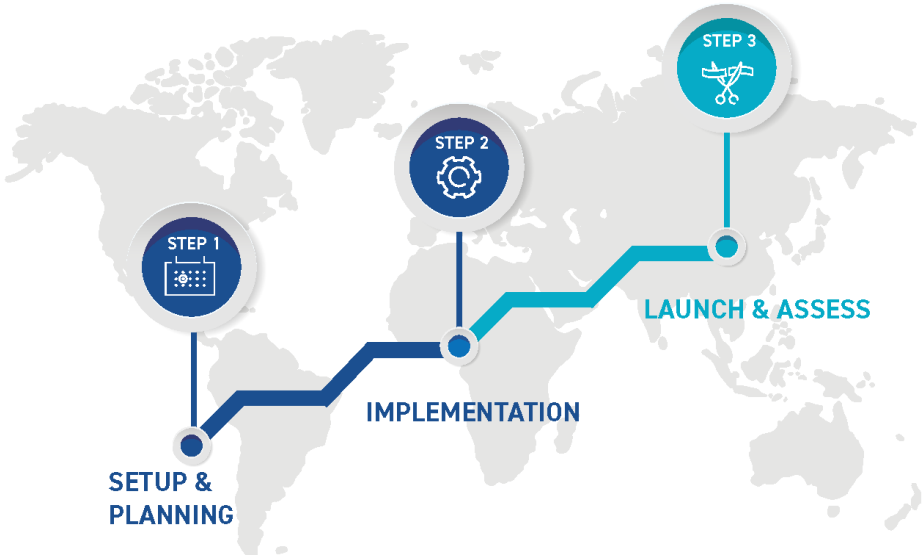
Voluntary/Involuntary changes today are fare rule–driven processes. The systems determine the rules on how to process a refund/reissue based upon the fare sold. Rules can reference RBD or require RBD processing to find current or historical fares. When this occurs, the systems must be able to determine not only the primary booked RBD but also any secondary RBD that would have been available based on the RBD requirements of the fare being processed.

According to industry standards for applying Voluntary Changes (Category 31), processing applies an RBD hierarchy for partially or fully flown fare components in a reprice solution where the fare break points have changed. When building the dynamic hierarchy, the starting point is based on the Prime RBD for the previous fare (e.g., originally ticketed fare). Secondary (trigger) RBDs are not considered in the hierarchy.

6.5. Government Filing/Regulatory

The implementation of Dual RBD Validation has no known or new impact on government filings or regulatory requirements. All regulations regarding full fare disclosure and related requirements continue to apply. As with any new business practice, change may invite regulatory scrutiny.

7. Launch and Assess



For a successful implementation of Dual RBD Validation for additional price points, the following areas should be addressed. The impact on these areas will depend on current system and process capabilities.

7.1. Documentation and Training

Any documentation regarding RBD validation may require updates for any changes to current processing.

Training needs should be assessed based on the impact.

7.2. Implementation Rollout

7.2.1. Staged rollout

Depending on the determined scope and impact assessment, each airline's plan may include rollout to specific markets or fares. The following areas would require multiple implementation steps to accommodate a staged rollout:

1. Content Creation, Collection and Distribution
    a. Fares and Rules
    b. Availability/Inventory
2. Documentation and Training

All other areas would require full implementation of processes and systems, regardless of whether it is rolled out in stages or as a single implementation.

7.3. Communications

In addition to areas directly involved in implementation, the following areas would require notification of implementation and/or expansion of Dual RBD validation.

- Revenue Account and Audit
- Customer Service
- Distribution/Pricing partners

7.4. Assessment

All areas should be included in an assessment of impact as rollout happens. It may be advisable for an airline to limit their scope of the initial implementation in order to be able to assess the technical and business impacts and effectiveness.

Implementation Checklist

Implementation checklist

Following is a list of implementation requirements with RACI (a responsibility assignment matrix).

When	Accountable Organization	Description	Airline						System	
			PM	RM	DE	RA	CS	IT	PM	IT
Setup and Planning	Executive Sponsorship	Secure executive sponsorship	A	A	A	A	A	A	A	A
	Project Management	Identify and engage stakeholders	R	C	C	C	C	C	C	C
	All Groups	Review current capabilities	R	R	R	R	R	R	R	R
		Analyze impact	R	R	R	R	R	R	R	R
		Determine structure and scope	R	R	R	R	R	R	R	R

When	Accountable Organization	Description	Airline						System	
			PM	RM	DE	RA	CS	IT	PM	IT
Implementa-tion	Fare Management/Decision Support	Identify and implement inventory systems modifications for opening and closing primary and secondary RBDs	I	R				R		
		Create intermediate fare levels between primary price points and associate them to the primary and secondary RBDs that will permit the lower level fares be sold without dropping to the next lower primary RBD	I	R	I	I	I			
	Content Collection and Distribution	Modification of RBD Chart 1	I	R						
		Update of any Rules categories that are not part of the scope, such as Categories 19-22 or 25	I	R						
		Update Optional Services filing using Fare Class or Fare Family if required	I	R						
	Shopping/ Pricing/Order Management (Direct and Indirect)	Identify and implement inventory systems modifications for opening and closing primary and secondary RBDs	I	R				R		
		Determine process for aligning shopping and pricing requests in direct, indirect, and NDC channels, considering last seat availability situations.	I	R	R	I	I	I		
	Revenue Accounting/ Auditing	No impact is anticipated.	I	I	I	I	I	I		
	Customer Service – Voluntary/ Involuntary Changes	Ensure that systems are able to determine not only the primary booked RBD but also any secondary RBD that would have been available based on the RBD requirements of the fare being processed.	R	C	I	I	R	R		
		Policies and procedures updates for refunds and re-issues.	R	C/I	C/I	C/I	R/I	C		
	Government Filing/ Regulatory	No impact.								
Launch/ Rollout/ Assessment	All Groups	Documentation and training as required.	R	R	R	R	R	R	R	R
	All Groups	Communications	R	R	I	I	I	I	R	I
	All Groups	Assessment	R	R	R	R	R	R	R	R

DISCLAIMER

To facilitate compliance with applicable competition laws, ATPCO will adhere to the following principles and best practices with respect to dynamic fare capabilities:

- In the initial phase, this will be “private” data for downline processing only; in later phases, this may change but only insofar as the fares are live, commercial fares available for sale. That is, all dynamically adjusted fares must be available for sale in at least one distribution channel before the fares can be observed by competitors.
- All business logic used to determine the direction and magnitude of a dynamic fare adjustment shall remain confidential to each airline and determined independently by each airline. The system should publish the end amounts and not how they were calculated.
- Every pricing decision by an airline continues to be made unilaterally.
- It is recommended that the dynamic pricing focus on generating discounts. The use of dynamic fare adjustment markups could introduce some complications, including, among potentially other things, that U.S. DOT-required customer service plans require airlines to disclose to customers that lower fares may be available through another channel.