

02

DYNAMIC PRICING

Adjusted Pricing via
Dynamic Pricing Engine (DPE)

IMPLEMENTATION GUIDE
FEBRUARY 2020





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INTRODUCTION

INTRODUCTION

1.0 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 definitions of these mechanisms are listed in the ATPCO Glossary of Terms.

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 and/or to increase the frequency and scale 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 describes the processing changes required to accurately process the dynamic pricing mechanism for any of the channels that an airline wishes to use.

These are the improvements in the mechanisms being pursued:

Optimized Pricing

- A. 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.
- B. Dynamic availability of fare products**, in which the flight availability, linked to fare products, could be adjusted for specific customers or in specific situations.
- C. Additional RBD capabilities**, which could increase the current limit of 26 possible price points available to airlines in each market.

Adjusted Pricing (Dynamic Fare Adjustment)

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

Continuous Pricing

- E. 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.
- F. 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.

1.1 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 DPE.

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.

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.

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

Refer to the *Dual RBD Implementation Guide* for further information.

Adjusted Pricing via DPE

The DPE solutions provide airlines 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 being returned to the customer.

Use this solution

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

ADJUSTED PRICING

This guide focuses on solutions supporting Adjusted Pricing (Dynamic Fare Adjustment) via a Dynamic Pricing Engine (DPE).

2.0 Adjusted Pricing via a DPE

A new pricing mechanism that has emerged from the ATPCO Dynamic Pricing Working Group (DPWG) is the Dynamic Pricing Engine (DPE). DPEs, which are airline or vendor-supplied and apply the unique business logic of each airline individually, work by applying dynamic price adjustments to the pre-filed prices that would ordinarily be offered by the airline. Since the amount of the adjustment could vary from transaction to transaction, the DPE is the first next-generation pricing mechanism that allows airlines to offer prices that are not necessarily pre-determined price points, thereby significantly enhancing pricing flexibility and better matching supply and demand, increasing output and competition overall.

The working group discussions focused on using a DPE to support Adjusted Pricing. Early discussions focused on interconnectivity standards and whether the price adjustment would occur to the base fare or the total fare (which includes taxes, fees and surcharges). Participants agreed that for the initial solution, the DPE will adjust the base fare and the pricing system will continue to be responsible for calculating the total fare. This resolves some regulatory concerns regarding total fare disclosure responsibilities that currently reside with the pricing systems and allows dynamic adjustments to flow within the existing processes and infrastructure.

2.1 Two DPE Solutions

Targeted workstreams and pilots explored multiple DPE approaches. Ultimately, the recommendations were to support two possible solutions. Both solutions are interoperable with existing infrastructure and processes, are defined to support the full end-to-end lifecycle, and are support interline solutions.

Solution 1

DPE Predefined Price. Airlines predefine and distribute all possible price points up front. These prices are only available when received in an applicable response from the airline's DPE.

This solution supports airlines who want to control the offer made by responding with a predetermined set of prices. This allows airlines to maintain control of the price while using existing fare distribution capabilities.

This solution works best with targeted products and/or when the airline pricing requirement is to introduce structured or incremental price points (such as in \$5 or \$10 increments as opposed to every dollar).

Solution 2

DPE Generated Price. The DPE generates (creates) the price at time of shopping/pricing (price points are not predefined). When the price is generated, the new "fare" would not have been distributed and therefore would not flow through existing processes dependent upon distributed fare data (e.g., settlement, fare management, revenue accounting). Therefore, ATPCO is introducing a new DPE Generated Price distribution product to allow airlines to distribute DPE prices at time of sale strictly for use in downline processes

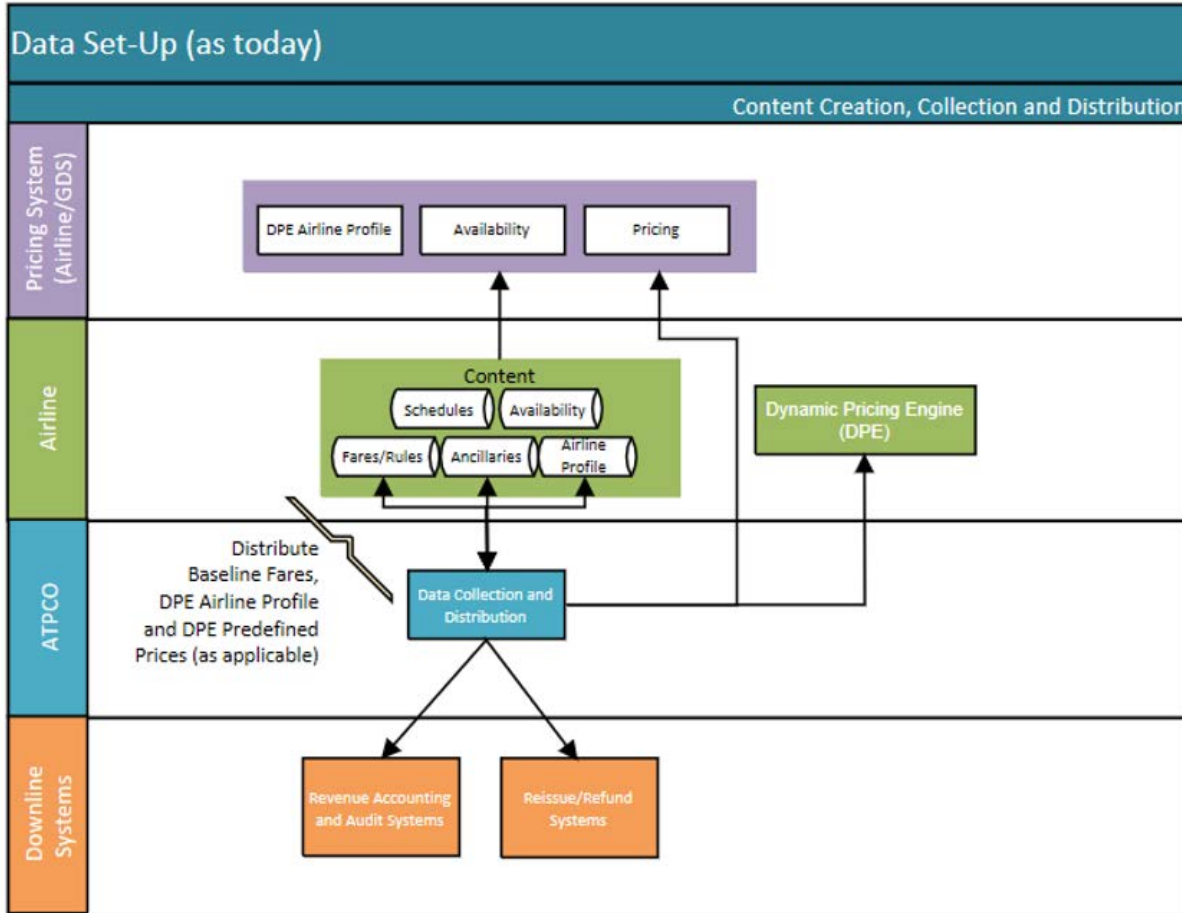
This solution supports airlines who want to implement complete flexibility when determining DPE pricing in response to market conditions.

The overall processing flows and DPE schema standards are the same for each solution. The differences lie in whether the DPE price is predefined (pre-distributed) up front or generated (created) at the time of shopping.

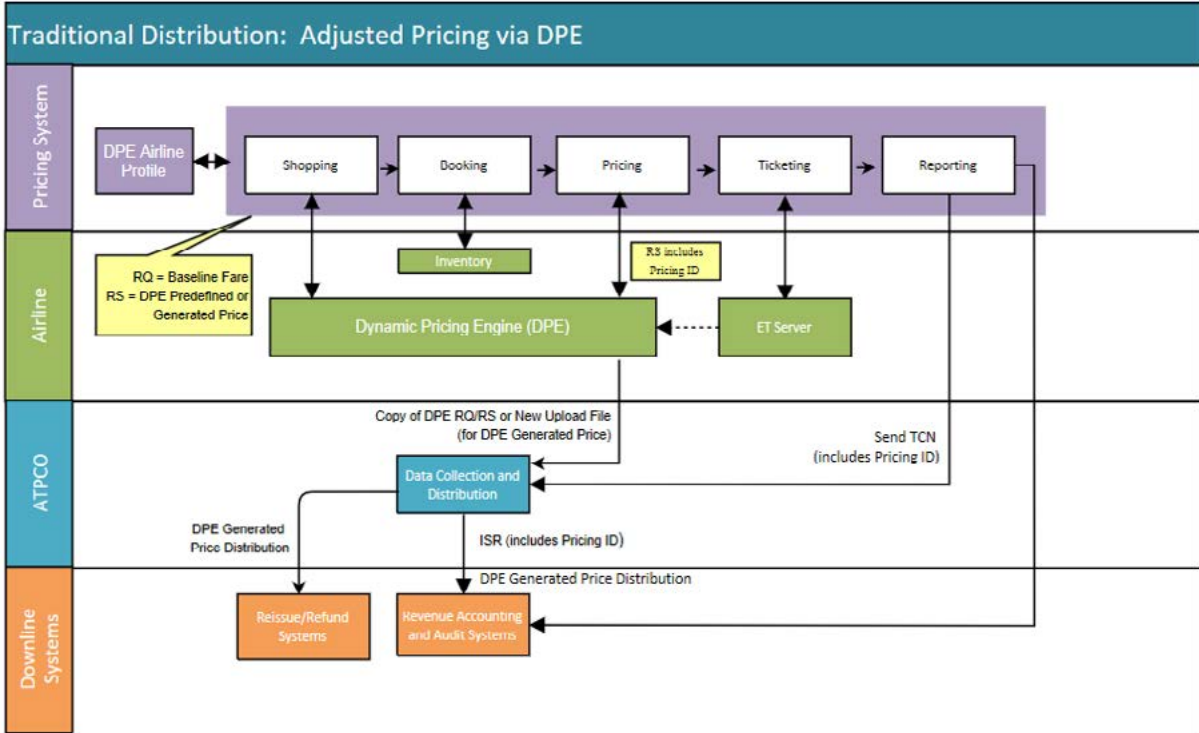
Ultimately, each airline wishing to implement adjusted pricing via a DPE will need to evaluate the pros and cons of each solution for that airline's internal business requirements and capabilities. This evaluation should be done not only for shopping and pricing, but also for all downline processes such as revenue accounting, historical fare analysis, and revenue modeling/forecasting processes. Each solution is detailed in the following sections.

2.2 High-level Processing Flows

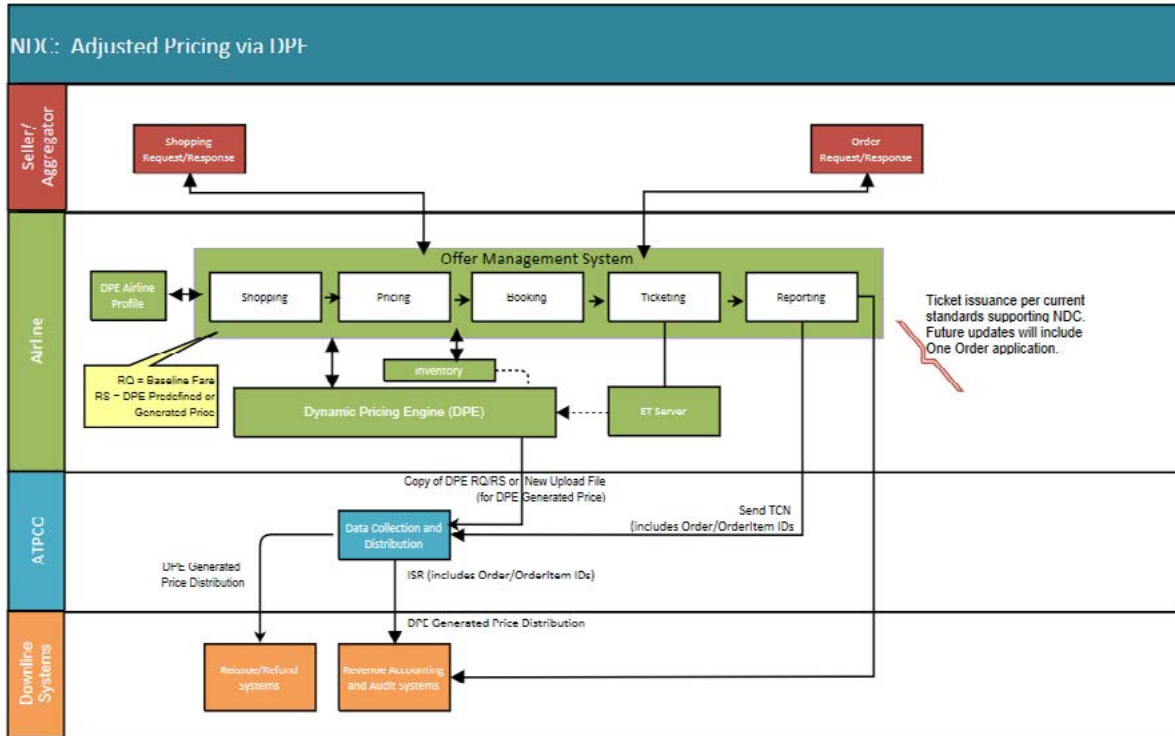
2.2.1 Content Creation, Collection, and Distribution (Data Set-up)



2.2.2 Traditional Distribution



2.2.3 New Distribution Capability (NDC)



2.3 DPE Predefined Price

In this solution, airlines predefine all possible price points up front and distribute them in separate, dedicated DPE public or private tariffs (refer to Section 6, Strategy and Planning). These predefined prices can only be sold or used when received in a response from the airline's DPE. At the time of shopping/pricing, the system (direct or indirect) will send a dynamic pricing request to the airline's DPE. The DPE will respond with a predefined price (as applicable), replacing the initially priced fare amount. Predefining the price points and distributing the fares up front allows the solution to flow through the current ecosystem because it supports all existing downline processing that depends on distributed fare data, with minimal to no impact.

A new ATPCO Airline Profile product, the DPE Airline Profile, allows the airline to identify eligible fares to be sent to the DPE for possible adjustment.

2.3.1 Solution Overview

This solution requires airlines to predefine (distribute) all possible prices (fare class codes and fare amounts) that could be returned by a Dynamic Pricing Engine (DPE) for dynamic pricing. Airlines will distribute potential "DPE fares" in dedicated DPE tariffs. These fares cannot be sold (used) unless received in a response from the airline's proprietary DPE.

The concept is that upon receipt of a shopping/pricing request, the shopping/pricing system (the airline's internal system or a third-party pricing system such as a GDS) will create potential offers using existing schedules, fares, and related data, as is done today. The system will identify potential DPE-eligible fares/offers using the new DPE Airline Profile and send these to the airline's DPE for possible adjustment. The DPE will determine the optimal price, based on predefined data, and return the adjusted offer (solution) with the applicable predefined price to the shopping/pricing system. The shopping/pricing system will validate the data, recalculate the total price (including taxes, fees, and surcharges), and return a shopping/pricing response to the customer.

This proposal provides the benefit of maintaining existing processes and systems that are dependent upon ATPCO's current fare and related data standards (such as pricing, revenue accounting, interline settlement, reissues, and refunds), and allows the airline the flexibility to implement adjusted pricing within traditional and NDC distribution standards. Systems have the option to price with a traditionally distributed fare (non-DPE fare) until they have implemented messaging to/from a DPE for potential adjusted pricing.

An added benefit is that the solution supports corporate fares created via Fare by Rule (Category 25).

The solution is defined so the shopping/pricing system may be an external system, such as a global distribution system (GDS) or an internal airline system, such as the airline's offer management system.

2.3.2 Potential Use Case

One potential use case is an airline that wants to provide private, competitive fares that are presented only to specific channels and customers. For example, a travel management company (TMC) has special, pre-negotiated bundled pricing for specific fare classes that is only invoked when the customer comes through the preferred channel or chooses a specific product.

Another potential use case is an airline that wants to introduce additional price points for a specific product within a cabin where pricing is based on advanced availability controls that use two-position Reservation Booking Designators (RBDs). This method extends existing functionality (e.g., two-position RBD) that may not currently be supported in all shopping/pricing systems but can be supported in the DPE.

2.3.3 Example

Airline XX creates and distributes baseline fares (fares eligible for DPE adjustments) and DPE fares in the LON—NYC market as follows:

	Fare Class Code	Amount	Tariff	Rule	Distribution
"Traditional" distribution (baseline fare). May be public or private.	YABC	1000.00	001	5000	Public
	YABC1	950.00	New DPE-only tariff	2400	Private (GDS, DPE, XX)
DPE Fares can only be sold when received in a DPE response	YABC2	900.00	New DPE-only tariff	2400	Private (GDS, DPE, XX)
	YABC2	850.00	New DPE-only tariff	2400	Private (GDS, DPE, XX)

Processing

1. System receives shopping request
2. System request/receives availability (as today)
3. System creates possible pricing solutions (as today)
 - YABC fare for 1000.00
4. System queries Airline XX's DPE Airline Profile and determines YABC fare is eligible for adjustment
5. System sends a request (DPE RQ) to Airline XX's DPE
6. DPE determines optimal price
 - YABC2 fare for 900.00
7. DPE sends response (DPE RS) with the replacing (adjusted) fare
 - YABC2 for 900.00
8. System validates the DPE fare (includes all footnote, rule, and routing conditions for the YABC2 fare), re-validates combinations for the other fare(s) in the solution, and recalculates the total fare, applying taxes, fees and charges based on the adjusted amount
9. System responds to customer

Note

The ticket will reflect YABC2 fare for 900.00 (the DPE fare). The ticket will reflect the fare basis code as directed by the rule data applicable for the YABC2 fare class code.

2.3.4 Limitations

The solution is not yet defined to support dynamic fare adjustments to

- Constructed Fares (that is, specified fares with one or two add-on fares)
- Discount Fares (created via Discounts [Categories 19-22])
- Negotiated Fares with Display Type T (Net with specified Selling Amount) or C (Net with Selling Amount that requires update)

ATPCO will work with the industry to define solutions for the above types of fares, pending airline and system requirements and readiness.

2.4 DPE Generated Price

In this solution, airlines do not predefine and distribute all price points. Rather, the airline's DPE will generate the optimal price and adjust the fare at the time of shopping/pricing. To ensure the adjusted prices flow through the existing ecosystem, ATPCO is creating a new DPE Generated Price distribution product to distribute the prices (at time of sale) strictly for use in downline processing (such as revenue accounting).

The new DPE Airline Profile allows the airline to identify eligible fares to be sent to the DPE for possible adjustment.

2.4.1 Solution Overview

In this solution, the airline's DPE will determine the optimal price at time of shopping and adjust the potential offer (solution) accordingly before returning any offers to the customer.

The concept is that upon receipt of a shopping/pricing request, the shopping/pricing system (airline internal system or third party such as a GDS) will create potential offers using existing schedules, fares, and related data, as is done today. The system will identify potential DPE-eligible fares/offers using the DPE Airline Profile and send these to the airline's DPE for possible adjustment. The DPE will determine the optimal price and return the adjusted offer (solution) to the shopping/pricing system. The shopping/pricing system will recalculate the total price (including taxes, fees, and surcharges), and return a shopping/pricing response to the customer.

The DPE will send the adjusted fare (DPE fare) to ATPCO for distribution via the new DPE Generated Price distribution product. Data is transmitted to ATPCO either by sending a copy of the DPE RQ/RS messages, which include the baseline fare and adjusted amount, or by using the new upload functionality which specifies the DPE fare and adjusted amount. This new fare distribution product will be linked to the DPE response either via an Order Item ID (for NDC) or a Pricing ID (for traditional distribution). The new product allows airlines to maintain existing processes and systems, such as pricing, revenue accounting, interline settlement, and changes/refunds.

Systems (that is, internal airline pricing systems or external pricing systems) have the option to price with a traditionally distributed fare (non-DPE fare) until they have implemented messaging to/from a DPE for potential adjusted pricing..

The solution is defined so the shopping/pricing system may be an external system, such as a global distribution system (GDS) or an internal airline system, such as an airline's offer management system.

2.4.2 Potential Use Case

One potential use case is an airline that wants the flexibility to react to market demands in real time. For example, the airline detects an uncompetitive product and decides to remedy it in the short term, before the next fare load, by using a DPE rule to reset pricing to be competitive.

2.4.3 Example

Airline XX creates and distributes fares (as today) in LON—NYC market as follows:

Fare Class Code	Amount	Tariff	Rule	Distribution
YABC	1000.00	001	5000	Public

Processing

- System receives shopping request
- System request/receives availability (as today)
- System creates possible pricing solutions (as today)
 - YABC fare for 1000.00
- System queries Airline XX's DPE Airline Profile and determines YABC fare is eligible for adjustment
- System sends a request (DPE RQ) to Airline XX's DPE
- DPE determines optimal price
 - YABC fare for 900.00
- DPE sends response (DPE RS) with the (adjusted) fare
 - YABC fare for ~~1000.00~~ 900.00
- The airline sends the DPE fare to ATPCO for DPE Generated Price distribution product using one of the following options
 - DPE sends a copy of the RQ/RS to ATPCO
 - Airline sends an upload file (new upload functionality) to ATPCO
- recalculates the total fare, applying taxes, fees, and charges based on the adjusted amount
- System responds to customer

Note

The ticket will reflect YABC fare for 900.00 (DPE fare). (The ticket will reflect the Fare Basis Code as directed by the rule data applicable for YABC fare class code.)

2.4.4 Limitations

The solution is not yet defined to support dynamic fare adjustments to Negotiated Fares with Display Type T (Net with specified Selling Amount) or C (Net with Selling Amount that requires update).

ATPCO will work with the industry to define solutions for the above types of fares as soon as possible, pending airline and system readiness.

3.0 Stakeholders and Impact Summary

	Strategy and Planning	Implementation	Launch and Assess
Fare Management and Decision Support	<ul style="list-style-type: none"> • Use cases and goals • Fare management and decision support planning • Scope and structure of fares • Scope of markets 	<ul style="list-style-type: none"> • Identify baseline fares and markets • Identify DPE fares, markets, pricing, and public/private designation (for DPE Predefined Price solution) • Identify fare creation maintenance tools to use (uploads, mass updates, APIs, Fare Builder, etc.) 	
Content Creation, Collection and Distribution	<ul style="list-style-type: none"> • Scope of distribution (direct/indirect) • Identify DPE capabilities and whether to obtain or build a DPE • Identification of impacted areas and stakeholders 	<ul style="list-style-type: none"> • Set up DPE fare distribution controls (private, public, public with limited distribution) • Create and distribute DPE fares and related data (for DPE Predefined Price solution) • Create and distribute DPE Airline Profile 	<ul style="list-style-type: none"> • Documentation and training • Rollout management • Communications
Pricing and Distribution • Direct • Indirect	<ul style="list-style-type: none"> • Determine revenue impact of different modeling/scenarios • Identify “test and learn” framework (to determine whether an airline is ready for production) 	<ul style="list-style-type: none"> • Obtain/build and Implement a DPE • Distribution channel modifications to enable messaging to/from DPE • Validation of DPE fare solution (for DPE Predefined Price solution) 	<ul style="list-style-type: none"> • Assessment
Revenue Accounting and Audit	<ul style="list-style-type: none"> • Determine interline requirements (e.g., with partner airlines) 	<ul style="list-style-type: none"> • System modifications for accounting and audit 	
Support Services (Contact Centers/ Airports)		<ul style="list-style-type: none"> • System modifications for reissues/refunds 	

IMPLEMENTATION GUIDE

IMPLEMENTATION GUIDE

4.0 Definitions

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

Term	Definition
Baseline Fare	<p>The public or private fares distributed today and available for sale in the current itinerary shopping/pricing process.</p> <ul style="list-style-type: none"> For the DPE Predefined Price solution, these fares may be public or private specified fares or Fare by Rule resulting fares (where the base fare was not a DPE fare). Future iterations will support Constructed Fares, pending airline requirements. For the DPE Generated Price solution, these fares may be public or private specified fares or Constructed Fares (add-on constructed fares). (Note that baseline fares adjusted by a DPE can then be used for Fare by Rule calculation via Categories 19-22 and 25). <p>Baseline fares are fares that are eligible for adjustment via a DPE. They are identified as such in the new DPE Airline Profile.</p>
Base Fare	<p>The fare amount excluding taxes and other charges. Also refers to a fare used as a basis for calculating other fare amounts to create a resulting fare in Fare by Rule (Category 25).</p>
Dynamic Pricing Engine (DPE)	<p>An airline or vendor-supplied engine to calculate dynamic fare adjustments based on the airline's independent business logic and data sets.</p>
Dynamic Fare Adjustment	<p>An action performed by a Dynamic Pricing Engine (DPE) during the shopping (and subsequent pricing) process that changes the base fare amount of a filed or created fare. The decision to change the base fare is made individually by each airline, and the individual airline's logic used in determining the direction and magnitude of a dynamically adjusted fare remains proprietary.</p>
DPE Fare	<p>The definition of DPE fare depends on the Adjusted Pricing solution applied:</p> <ol style="list-style-type: none"> DPE Predefined Price solution: A DPE fare is a predefined fare as follows: <ul style="list-style-type: none"> Specified fare distributed via ATPCO in a dedicated DPE tariff; or A Fare by Rule resulting fare created via Category 25 where the base fare is in a dedicated DPE tariff (that is, the base fare is a DPE fare). Also referred to as a DPE-derived fare. <p>These fares can only be sold or used when received in a DPE response (DPE RS) from the fare owning airline's DPE where the predefined fare replaces the baseline fare.</p> DPE Generated Price solution. A DPE fare is an <i>adjusted</i> Baseline Fare where only the fare amount is adjusted by the DPE (there is no change to rules, footnotes, routings, taxes, fees, or charges). The adjusted fare is generated by the DPE and received in a DPE response (DPE RS) from the fare owning airline's DPE. This adjusted fare can only be used at that point in time for the associated DPE request (DPE RQ). The fare owning airline can optionally choose to distribute these fares (in a new DPE Generated Price distribution product) at the time of ticketing strictly for use in downline processes (such as revenue accounting), and not available for sale. Such fares by definition cannot be sold and are distributed, then immediately canceled.

DPE-Derived Fare	<p>A Fare by Rule resulting fare created via Category 25 where the base fare (specified in Base Fare Table 989) is in a dedicated DPE tariff (that is, the base fare is a predefined DPE fare). These resulting fares are created by the DPE and can only sold or used when received in a DPE response (DPE RS) from the fare owning airline's DPE.</p> <p>This term applies to the DPE Predefined Price solution only.</p>
DPE Tariff	<p>A tariff (public or private) identified in ATPCO's Tariff Cross Reference (G16) as "DPE-only" in the new DPE Indicator field (byte 48).</p> <p>This term applies to the DPE Predefined Price solution only.</p> <p>Note: For the initial implementation, all DPE tariffs are private. Future implementation will introduce public tariffs, pending airline and regulatory requirements.</p>
Shopping/Pricing System	<p>In this document, the shopping/pricing system refers to</p> <ul style="list-style-type: none">• Internal airline system, direct system. For example, NDC offer/order management system, airline website, airline reservation center• External or indirect system. For example, a global distribution system (GDS).



5.0 Use Cases

The following chart illustrates the possible use cases for fares that can be in the request to (DPE RQ) and response from (DPE RS) the fare owning airline's DPE.

Use Case	DPE RQ (Baseline Fare)	DPE RS
<i>DPE Predefined Price solution</i>		
1	Specified fare	Specified DPE fare (DPE Predefined Price)
2	Fare by Rule (Category 25) resulting fare where the base fare is not a DPE fare.	DPE-derived fare: Fare by Rule (Category 25) resulting fare where the base fare is a DPE fare (DPE Predefined Price)
3	Specified fare	DPE-derived fare: Fare by Rule (Category 25) resulting fare where the base fare is a DPE fare (DPE Predefined Price)
2	Fare by Rule (Category 25) resulting fare where the base fare is not a DPE fare.	Specified DPE fare (DPE Predefined Price)
<i>DPE Generated Price solution</i>		
5	Specified Fare	Adjusted Baseline Fare (DPE Generated Price)
6	Constructed Fare (specified fare plus one or two add-on fare amounts)	Adjusted Baseline Fare (DPE Generated Price)

Use Cases 1, 2, 5, and 6 are the most commonly expected scenarios and are defined below.

Note that the solution also supports Use Cases 3 and 4 which, as a mixture of Use Cases 1 and 2, would follow the same overall flow and requirements.

5.1 Use Case 1: Specified Fare - Replace Specified Baseline Fare with Specified DPE Fare

Principal Actors

- Airline: The airline that distributes the baseline fares, DPE fares, and DPE Airline Profile.
- DPE: The airline's DPE
- System: An external (GDS) or internal airline system performing shopping, pricing, and ticketing
- ATPCO
- Customer (traveler)

Pre-conditions/Assumptions

- The airline distributes baseline and DPE fares and a DPE Airline Profile via ATPCO
- The airline has implemented a DPE that can receive requests (DPE RQ), identify optimal fare amount and applicable DPE fare, and respond (DPE RS) with adjusted fare
- The airline is still dependent on existing ticketing, revenue accounting, audit and settlement processes
- The system can receive, store and process DPE fares and the DPE Airline Profile
- Customer has a travel plan, for example, to travel LON—DXB

Description

In this use case, an airline distributes (via ATPCO) all possible fare class codes and fare amounts that could be returned by a Dynamic Pricing Engine (DPE) for dynamic pricing. The airline's DPE Airline Profile identifies which fares are eligible to be sent to the DPE. Upon receipt of a shopping request, the system will create potential solutions (offers), identify DPE-eligible fares, and send a request to the airline's DPE for dynamic pricing. The DPE will respond with a DPE fare. The system will return the solution with the DPE generated price to the customer. The customer will select the solution with the DPE fare, and the system will execute the pricing, booking, and ticketing processes. The system will send to ATPCO the ticket number linked to the Order/Order Item IDs (for NDC) or Pricing ID (for traditional distribution), and ATPCO will distribute this for use in downline processing.

Processing Steps

1. Airline creates baseline and DPE fares and related data (e.g., Footnotes, Rules, Routings) using existing ATPCO data standards.
 - a. Airline specifies the baseline fares in an existing tariff. These fares are eligible to be sent to all subscribers.

Note 1: Baseline and DPE fares may be public or private per internal airline requirements. For private tariffs, the airline authorizes distribution (to pricing systems, revenue accounting systems, etc.). This occurs as today, with no change to current distribution rules and methods.

Note 2: The DPE fares and DPE-derived fares must result in the same priced (to be booked) RBD, same Brand, and same reissue/refund (Category 31/33) as the Baseline Fare. Refer to DPE Data Application Overview for further information.

Airline XX's fares in LON—DXB market.

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	1	1000 GBP
<i>DPE Fares</i>						
YDPE 1	037	5000	-	1234	1	975 GBP
YDPE2	037	5000	-	1234	1	925 GBP

Note 1: Assume these are Adult fares (Passenger Type Code is Blank for all fares).

Note 2: Tariff 037 is a new, dedicated DPE Tariff.

2. Airline creates DPE Airline Profile data.
 - a. Airline indicates the YABC Baseline Fare is eligible to be sent to the DPE for possible fare adjustment.
3. Using Data Distribution Control (DDC) (as today), the airline identifies subscribers (pricing systems, revenue accounting systems, etc.) who can receive the:
 - a. Baseline fares
 - b. DPE Airline Profile
 - c. DPE fares
4. ATPCO distributes fare products and Airline Profile data (as today) to the system as directed by the airline.
5. System receives and loads fare products and profile data (as today).
 - a. System recognizes that fares in DPE Tariffs cannot be sold or used unless received in DPE response.
6. System receives a shopping request from the customer for travel from LON to DXB.
7. System request/receives availability (as today).
8. System creates possible pricing solutions (as today), pulling in schedules, fares (baseline fares), rules, taxes, and fees.

XX's YABC LON–DXB fare for 1000.00 GBP
9. System evaluates Airline XX's DPE Airline Profile and determines the YABC Baseline Fare is eligible to be sent to the DPE for possible dynamic fare adjustment.
10. System sends a shopping request (DPE RQ) to Airline XX's DPE for possible dynamic fare adjustment. The request includes the fare products data (tariff, rule, fare class code, etc.) for the baseline fare, potential pricing solutions, information included in the initial shopping request (that is, "who is asking"), and identification of which fares are DPE-eligible fares according to the Airline Profile. (Refer to the DPE RQ/RS Schema for a full list of elements).

The request includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1000.00 GBP
Rule Tariff	022
Rule Number	72AE
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	Blank (adult)

11. The airline's DPE receives the request, determines the product price, and responds with a DPE fare. The response will include enough information for the system to resolve and validate the DPE fare.

XX determines the optimal fare is YDPE1 for 975.00 GBP.

The response includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YDPE1
Amount	975.00 GBP
Rule Tariff	037
Rule Number	5000
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	Blank (ADT)

Note: The DPE will not change the priced (to be booked) class of the baseline fare, the brand of the baseline fare (when the baseline fare is branded), the pricing solution (fare combination) created and sent by the system, or the validating carrier identified by the system. Refer to DPE Data Application Overview for further information.

12. System receives the response and validates the fare and fare-related data (Footnotes, Routings, Rules) of the DPE fare to
 - a. Ensure the DPE fare is valid for use (passes all requirements).

Validate all fare and related data (Footnotes, Rules, Routings, etc.) for the YDPE1 fare
 - b. Process Combinations (Category 10) to validate that the DPE fare can be used in the pricing solution

- c. Ensure there is no change to the priced (to be booked) RBD, brand, and applicable Voluntary Changes/Refunds (Categories 31/33) data between the baseline and DPE fare.

YDPE1 passes validation of all the above.

Note: If the DPE fare fails any of the above validations, then it is not a viable fare to return in the solution (Offer), and the system will revert to the Baseline Fare in the solution.

- 13. System recalculates the total fare (that is, taxes/fees/charges based on adjusted amount).
- 14. System responds to the customer with potential solutions (offers), including a solution with a DPE fare.
 - One solution in the response is XX's YDPE1 LON—DXB fare for 975.00 GBP
- 15. Customer selects a solution that includes a DPE fare.
 - Customer selects XX's YDPE1 LON—DXB fare for 975.00 GBP
- 16. System sends a pricing request (DPE RQ) to Airline XX's DPE (this second request to the DPE is not necessary upon the implementation of stateful processing, that is, with NDC).

Open Item: At this step, some systems may price by fare basis code (or priced fare class code), in which case they are pricing the DPE fare (that is, sending the DPE fare in the pricing request as opposed to sending the baseline fare). Will systems continue to price by priced fare basis code (DPE fare), or will they re-evaluate the baseline fare? This step needs to be evaluated by pricing systems so that they can determine how to fit this into their current processes.

- 17. The airline's DPE receives the request and confirms the DPE fare. The response will include enough information for the system to resolve and validate the DPE fare.

XX determines the optimal fare is YDPE1 for 975.00 GBP. The response includes the following information:

DPE RS - Element	Value
Pricing ID	DPXX123ABC
Publishing Carrier	XX
Fare Class Code	YDPE1
Amount	975.00 GBP
Rule Tariff	037
Rule Number	5000
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	Blank (ADT)

Note: The DPE will not change the priced (to be booked) booking class of the baseline fare, the brand of the baseline fare (when the baseline fare is branded), the pricing solution (fare combination) created and sent by the system, or the validating carrier identified by the system. Refer to DPE Data Application Overview for further information.

- 18. System receives the response and validates fare and fare-related data (Footnotes, Routings, Rules) of the DPE fare (as described above).
- 19. System recalculates the total price (that is, taxes/fees/charges based on adjusted amount).
- 20. System collects payment information and issues a ticket.
 - Issue Ticket Number 9991234567 with LON DXB YDPE1 975.00 GBP
- 21. System sends a message to ATPCO including the Ticket Number and ID (Order Item ID or Pricing ID). This can be included in the TCN data or in a new (future) message, pending industry requirements.
 - TCN includes Ticket Number 9991234567 + Order Item or Pricing ID DPXX123ABC (where the ID is included at the fare component level)

Note: This is an optional step based on airline requirements. It may not be required for all airlines and/or may not be necessary when ONE Order is implemented.
- 22. ATPCO distributes the Ticket Number + ID to revenue accounting system via the ISR (new elements) or in a new message, depending on subscriber requirements.
 - ISR includes Ticket Number 9991234567 + Pricing ID DPXX123ABC (where Pricing ID is included at the fare component level)

Note: This is an optional step based on airline requirements. It may not be required for all airlines or may not be necessary when ONE Order is implemented.

Post Conditions

The customer possesses an accountable document that includes a DPE fare. Revenue Accounting/Audit systems have received the Ticket Number linked to the ID (to apply as needed in internal processes).

5.2 Use Case 2: Fare by Rule – Replace Baseline Fare by Rule Resulting Fare with DPE Fare by Rule Resulting Fare

Principal Actors

- Airline: The airline that distributes the baseline fares, DPE fares, and DPE Airline Profile.
- DPE: The airline's DPE
- System: An external (GDS) or internal airline system performing shopping, pricing, and ticketing
- ATPCO
- Customer (traveler)

Pre-conditions/Assumptions

- The airline distributes baseline and DPE fares, Fare by Rule (Category 25) data, and a DPE Airline Profile via ATPCO
- The airline has implemented a DPE that can receive requests (DPE RQ), identify optimal fare amount and applicable DPE and DPE-derived fares, and respond (DPE RS) with adjusted fare
- The airline is still dependent on existing ticketing, revenue accounting, audit and settlement processes
- The system can receive, store, and process DPE fares and the DPE Airline Profile
- Customer has a travel plan for example, travel LON–DXB

Description

In this use case, an airline distributes (via ATPCO) all possible fare class codes and fare amounts that could be returned by a Dynamic Pricing Engine (DPE) for dynamic pricing along with Fare by Rule (Category 25) data that includes baseline and DPE fares as base fares (in Category 25 Base Fare Table 989). The airline's DPE Airline Profile identifies which fares are eligible to be sent to the DPE. Upon receipt of a shopping request from a customer, the system will create potential Fare by Rule solutions, identify the resulting fare(s) as DPE-eligible, and send a request to the airline's DPE for dynamic pricing. The DPE will respond with a DPE-derived Fare (Fare by Rule resulting fare). The system will return the solution with the DPE-derived fare to the customer. The customer will select the solution with the DPE-derived fare and the system will execute the pricing, booking, and ticketing processes. The system will send to ATPCO the ticket number linked to the Order/Order Item IDs (for NDC) or Pricing ID (for traditional distribution), and ATPCO will distribute it for use in downline processing.

Processing Steps

1. Airline creates baseline and DPE fares and related data (Footnotes, Rules, Routings) and Fare by Rule fares (in Record 8 and Category 25) using existing ATPCO data standards.

- a. Airline specifies the baseline fares in an existing tariff. These fares are eligible to be sent to all subscribers.
- b. Airline specifies the DPE fares in a new private DPE tariff.
- c. Airline specifies the Fare by Rule (FBR) in an existing private tariff. The Base Fare Table includes the baseline fares and the DPE fares.

Note 1: Baseline and DPE fares and Fare by Rule data may be public or private per internal airline requirements. For private tariffs, the airline authorizes distribution (to pricing systems, revenue accounting systems, etc.). This occurs as today, with no change to current distribution rules and methods.

Note 2: The DPE fares and DPE-derived fares must result in the same priced (to be booked) RBD, same brand, and same reissue/refund restrictions (Categories 31/33) as the baseline fare. Refer to DPE Data Application Overview for further information.

Airline XX's fares in LON–DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	1	1000 GBP
<i>DPE Fares</i>						
YDPE 1	037	5000	-	1234	1	975 GBP
YDPE2	037	5000	-	1234	1	925 GBP

Note 1: Assume these are Adult fares (Passenger Type Code is Blank for all fares).

Note 2: Tariff 037 is a new, dedicated DPE Tariff.

XX determines the optimal fare is YDPE1 for 975.00 GBP. The response includes the following information:

Passenger Type Code (PTC)	Calculation	Resulting Fare	Base Fare Table
JCB	95% of Base Fare	Same as Base Fare	Tariff 022 YABC
			Tariff 037 YDPE1
			Tariff 037 YDPE2

2. Airline creates DPE Airline Profile data.
 - a. Airline indicates that the YABC specified (baseline) fare and YABC FBR resulting (baseline) fare are eligible to be sent to the DPE for possible fare adjustment.
3. Using Data Distribution Control (DDC) (as today), the airline identifies subscribers (pricing systems, revenue accounting systems, etc.) who can receive the

- a. Baseline fares
 - b. Fare by Rule data
 - c. DPE Airline Profile
 - d. DPE fares
4. ATPCO distributes fare products and DPE Airline Profile data (as today) to the system as directed by the airline.
 5. System receives and loads fare products and profile data (as today).
 - a. System recognizes that fares in DPE Tariffs cannot be sold/used unless received in DPE response.
 6. System receives a shopping request from the customer for JCB passenger type for travel from LON to DXB.
 7. System request/receives availability (as today).
 8. System creates possible pricing solutions (as today), pulling in schedules, fares (baseline fares), rules, taxes, and fees.
 - XX's FBR Resulting Fare
YABC LON–DXB 950.00 GBP (95% of 1000.00)
 9. System evaluates Airline XX's DPE Airline Profile and determines the YABC Resulting Fare is eligible to be sent to the DPE for possible dynamic fare adjustment.
 10. System sends a shopping request (DPE RQ) to Airline XX's DPE for possible dynamic fare adjustment. The request includes the fare products data (tariff, rule, fare class code, etc.) for the baseline fare, potential pricing solutions, information included in the initial shopping request (that is "who is asking"), and identification of which fares (FBR resulting fares) are DPE-eligible fares per the Airline Profile. (Refer to the DPE RQ/RS Schema for a full list of elements.)

The request includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	950.00 GBP
Rule Tariff	849
Rule Number	2340
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	JCB

11. The airline's DPE receives the request, determines the product price, and responds with a DPE-derived fare. The response will include enough information for the system to resolve and validate the DPE fare.

XX determines the optimal fare is YDPE2 for 878.75 GBP (95% of 925.00). The response includes the following information:

DPE RS - Element	Value
Resulting Fare - Publishing Carrier	XX
Resulting Fare - Fare Class Code	YDPE2
Resulting Fare - Amount	878.75 GBP
Resulting Fare - Rule Tariff	849
Resulting Fare - Rule Number	2340
Resulting Fare - Footnote	2
Resulting Fare - Routing	1234
Resulting Fare - OW/RT	1
Resulting Fare - Passenger Type	JCB
Base Fare - Publishing Carrier	XX
Base Fare - Fare Class Code	YDPE2
Base Fare - Amount	925.00 GBP
Base Fare - Rule Tariff	037
Base Fare - Rule Number	5000
Base Fare - Footnote	2
Base Fare - Routing	1234
Base Fare - OW/RT	1
Base Fare - Passenger Type	Blank (ADT)

Note: The DPE will not change the priced (to be booked) class of the baseline fare, the brand of the baseline fare (when the baseline fare is branded), the pricing solution (fare combination) created and sent by the system, or the validating carrier identified by the system. Refer to *DPE Data Application Overview* for further information.

12. System receives the response and validates fare and fare-related data (Footnotes, Routings, Rules) of the DPE fare to
 - a. Ensure the DPE fare is valid for use (passes all requirements).
 - Validate all Fare and related data (Footnotes, Rules, Routings, etc.) for the YDPE2 resulting fare
 - b. Process Combinations (Category 10) to validate that the DPE fare can be used in the pricing solution
 - c. Ensure there is no change to the priced (to be booked) RBD, brand, and applicable Voluntary Changes/Refunds (Categories 31/33) data between the baseline and DPE fare.
 - Assume YDPE12 passes validation of all of the above.

Note: If the DPE fare fails any of the above validations, then it is not a viable fare to return in the solution (Offer), and the system will revert to the Baseline Fare in the solution.

13. System recalculates the total fare, applying taxes, fees, and charges based on the adjusted amount.
14. System responds to the customer with potential solutions (offers), including a solution with a DPE fare.
 - One solution in the response is Airline XX's YDPE2 LON—DXB fare for 878.75 GBP
15. Customer selects a solution that includes a DPE fare.
 - Customer selects Airline XX's YDPE2 LON—DXB fare for 878.75 GBP
16. System sends a pricing request (DPE RQ) to Airline XX's DPE. This second request to the DPE is not necessary upon the implementation of stateful processing, that is, with NDC.

Open Item: At this step, some systems may price by fare basis code in which case they are pricing the DPE fare. Will systems continue to price by fare basis code, or will they re-evaluate the baseline fare? This step needs to be evaluated by pricing systems so that they can determine how to fit this into their current processes.

17. The airline's DPE receives the request and confirms the DPE fare. The response will include enough information for the system to resolve and validate the DPE fare.

Airline XX confirms the optimal fare is YDPE2 for 878.75 GBP (95% of 925.00). The response includes the following information:

DPE RS - Element	Value
Pricing ID (for traditional distribution)	DPXX123ABC
Resulting Fare - Publishing Carrier	XX
Resulting Fare - Fare Class Code	YDPE2
Resulting Fare - Amount	878.75 GBP
Resulting Fare - Rule Tariff	849
Resulting Fare - Rule Number	2340
Resulting Fare - Footnote	2
Resulting Fare - Routing	1234
Resulting Fare - OW/RT	1
Resulting Fare - Passenger Type	JCB
Base Fare - Publishing Carrier	XX
Base Fare - Fare Class Code	YDPE2
Base Fare - Amount	925.00 GBP
Base Fare - Rule Tariff	037
Base Fare - Rule Number	5000
Base Fare - Footnote	2

Base Fare - Routing	1234
Base Fare - OW/RT	1
Base Fare - Passenger Type	Blank (ADT)

- Note:** The DPE will not change the priced (to be booked) class of the baseline fare, the brand of the baseline fare (when the baseline fare is branded), the pricing solution (fare combination) created and sent by the system, or the validating carrier identified by the system. Refer to *DPE Data Application Overview* for further information.
18. System receives the response and validates fare and fare-related data (Footnotes, Routings, Rules) of the DPE-derived fare (as described above).
 19. System recalculates the total fare (that is, taxes/fees/charges based on adjusted amount).
 20. System collect payment information and issues a ticket.
 - Issue Ticket Number 9991234567
with LON DXB YDEP2 878.75 GBP
 21. System sends a message to ATPCO including the Ticket Number and ID (Order Item ID or Pricing ID). This can be included in the TCN data or in a new (future) message, pending industry requirements.
 - TCN includes Ticket Number 9991234567
+ Order Item or Pricing ID DPXX123ABC
(where the ID is included at the fare component level)
- Note:** This is an optional step based on airline requirements. It may not be required for all airlines or may not be necessary when ONE Order is implemented.
22. ATPCO distributes the Ticket Number + ID to revenue accounting systems via the ISR (new elements), or these could be included in a new (future) message, pending industry requirements.
 - ISR includes Ticket Number 9991234567
+ Pricing ID DPXX123ABC
(where Pricing ID is included at the fare component level)
- Note:** This is an optional step based on airline requirements. It may not be required for all airlines and/or may not be necessary when ONE Order is implemented.

Post Conditions

The customer possesses an accountable document that includes a DPE-derived fare for a corporate passenger. Revenue Accounting/Audit systems have received the Ticket Number linked to Order Item or Pricing ID (to apply as needed in internal processes).

5.3 Use Case 5A: Traditional Distribution—Specified Fare with DPE Generated Adjustment

Principal Actors

- Airline: The airline that distributes the baseline fares and DPE Airline Profile.
- DPE: The airline's DPE
- System: An external (GDS) or internal airline system performing shopping, pricing, and ticketing
- ATPCO
- Customer (traveler)

Pre-conditions/Assumptions

- The airline distributes baseline fares and a DPE Airline Profile via ATPCO
- The airline has implemented a DPE that can receive requests (DPE RQ), identify optimal fare amount, and respond (DPE RS) with the adjusted fare
- The airline is still dependent on existing ticketing, revenue accounting, audit and settlement processes
- The system can receive, store, and process the DPE Airline Profile
- Customer has a travel plan, for example, to travel LON—DXB

Description

In this use case an airline distributes (via ATPCO) baseline fares (as today). The airline's DPE Airline Profile identifies which fares are eligible to be sent to the DPE. Upon receipt of a shopping request, the system will create potential solutions (offers), identify DPE-eligible fares, and send a request to the airline's DPE for dynamic pricing. The DPE will respond with a DPE generated price (adjusted price). The system will return the solution with the DPE generated price to the customer. The customer selects the solution with the DPE generated price, and the system will execute the pricing, booking, and ticketing processes. The system will send the ticket number linked to the Pricing ID in the TCN data to ATPCO for distribution via the ISR. The airline will send the DPE fare (DPE generated price) to ATPCO for distribution, and ATPCO will distribute the DPE fare (DPE generated price) for use in downline processing.

Processing Steps

1. Airline creates baseline fares and related data (Footnotes, Rules, Routings) using existing ATPCO data standards.

Airline XX's fares in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	1	1000 GBP

Note: Assume these are Adult fares (Passenger Type Code is Blank for all fares).

2. Airline creates DPE Airline Profile data.
 - a. Airline indicates the YABC Baseline Fare is eligible to be sent to the DPE for possible fare adjustment.
3. Using Data Distribution Control (DDC) records (as today), the airline identifies subscribers (pricing systems, revenue accounting systems, etc.) who can receive the:
 - a. Baseline fares
 - b. DPE Airline Profile
4. ATPCO distributes fare products and Airline Profile data (as today) to the system as directed by the airline.
5. System receives and loads fare products and profile data (as today).
6. System receives a shopping request from the customer for travel from LON to DXB.
7. System request/receives availability (as today).
8. System creates possible pricing solutions (as today), pulling in schedules, fares (baseline fares), rules, taxes, and fees.

XX's YABC LON—DXB fare for 1000.00 GBP
9. System evaluates Airline XX's DPE Airline Profile and determines the YABC Baseline Fare is eligible to be sent to the DPE for possible dynamic fare adjustment.
10. System sends a shopping request (DPE RQ) to Airline XX's DPE for possible dynamic fare adjustment. The request includes the fare products data (tariff, rule, fare class code, etc.) for the Baseline Fare, potential pricing solutions, information included in the initial shopping request (that is, "who is asking"), and identification of which fares are DPE-eligible fares per the Airline Profile. (Refer to the DPE RQ/RS Schema for a full list of elements.)

The request includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1000.00 GBP
Rule Tariff	022
Rule Number	72AE
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	Blank (adult)

- The airline's DPE receives the request, determines product price, and responds with an adjusted fare.

XX determines the optimal fare is YABC for 975.00 GBP. The response includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1000.00 975.00 GBP

- System receives the response and recalculates the total fare, applying taxes, fees, and charges based on the adjusted amount.
- System responds to the customer with potential solutions (offers), including a solution with a DPE fare.

One solution in the response is XX's YABC LON-DXB fare for 975.00 GBP

- Customer selects a solution that includes a DPE fare
Customer selects XX's YABC LON-DXB fare for 975.00 GBP
- System sends a pricing request (DPE RQ) to the XX's DPE. (This second request to the DPE is not necessary upon implementation of stateful processing, that is, with NDC).
- The Airline's DPE receives the request and confirms the DPE fare.

XX confirms the YABC fare for 975.00 GBP. The response includes the following information:

DPE RQ - Element	Value
Pricing ID	DPXX123ABC
Publishing Carrier	XX
Fare Class Code	YABC
Amount	975.00 GBP

- System receives the response and recalculates the total fare (that is, taxes/fees/charges based on adjusted amount).

- System collects payment information and issues a ticket.
Issue Ticket Number 9991234567 with LON DXB YABC 975.00 GBP
- System sends a message to ATPCO including the Ticket Number and ID (Order Item ID or Pricing ID). This can be included in the TCN data or in a new (future) message, pending industry requirements.
TCN includes Ticket Number 9991234567 + Order Item ID or Pricing ID DPXX123ABC (where ID is included at the fare component level)
- ATPCO distributes the Ticket Number and ID (Order Item ID or Pricing ID) via the ISR (new elements), or these could be included in a new (future) message pending industry requirements.
ISR includes Ticket Number 9991234567 + Order Item or Pricing ID DPXX123ABC (where ID is included at the fare component level)

DPE Generated Price Distribution

- The airline sends the DPE fare to ATPCO for price distribution using one of the following options:
Option A (Copy of DPE RQ/RS)
 - The DPE sends a copy of the RQ/RS (including original baseline fare, adjusted fare, and ID) to ATPCO for price distribution
 - ATPCO compares the Ticket Data (including ID) to the DPE RQ/RS data. If there is a match, then ATPCO distributes the DPE Generated Fare (only distributes the fare upon confirmation it was sold and ticketed)
- Option B (New Upload File)
 - The airline sends a new upload fare file (new functionality) to ATPCO for price distribution.
- ATPCO distributes the DPE Generated Price (DPE Fare). The DPE fare has the same data as the baseline fare (such as the same tariff, fare class code, OW/RT, footnote, routing, rule), but the fare amount differs, and the record includes the Pricing ID (for traditional distribution).

ATPCO distributes Airline XX's DPE Generated Price (DPE fare) in LON-DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount	Pricing ID
YABC	022	72AE	2	1234	1	975.00 GBP	DPXX123ABC

Post Conditions

The customer possesses an accountable document that includes a DPE fare. Revenue Accounting/Audit systems have received the Ticket Number linked to ID and the DPE Generated Price (DPE fare) to apply as needed in internal processes.



5.4 Use Case 5B: NDC— Specified Fare with DPE Generated Adjustment

Principal Actors

- Airline: The Offer Responsible Airline (ORA) and the airline that distributes the baseline fares and DPE Airline Profile.
- DPE: The airline's DPE
- System: Airline's offer management system performing shopping, pricing, and ticketing
- ATPCO
- Customer (traveler)

Pre-conditions/Assumptions

- The airline distributes baseline fares, Fare by Rule (Category 25), and a DPE Airline Profile via ATPCO
- The airline has implemented an offer management system that is capable of interacting with the airline's DPE to receive requests (DPE RQ), identify optimal fare amount, and respond (DPE RS) with the adjusted fare
- The airline is still dependent on existing ticketing, revenue accounting, audit, and settlement processes
- The system can receive, store, and process the DPE Airline Profile
- Customer has a travel plan, for example, to travel LON—DXB

Description

In this use case, an airline distributes (via ATPCO) baseline fares (as today). The airline's DPE Airline Profile identifies which fares are eligible to be sent to the DPE. Upon receipt of a shopping request, the airline's offer management system will create potential solutions (offers), identify DPE-eligible fares, and send a request to the airline's DPE for dynamic pricing. The DPE will respond with a DPE generated price (adjusted price). The system will return an Offer(s) that includes the DPE generated price to the customer. The customer selects an Offer with the DPE generated price, and the system will execute the pricing, booking, and ticketing processes. The system will send the ticket number linked to the Order/Order Item ID (for NDC) to ATPCO for distribution via the ISR. The airline will send the DPE fare (DPE generated price) to ATPCO for distribution, and ATPCO will distribute the DPE fare (DPE generated price) for use in downline processing.

Processing Steps

1. Airline creates baseline fares and related data (Footnotes, Rules, Routings) using existing ATPCO data standards.

Airline XX's fares in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	1	1000 GBP

Note: Assume these are Adult fares (Passenger Type Code is Blank for all fares).

2. Airline creates DPE Airline Profile data.
 - a. Airline indicates the YABC Baseline Fare is eligible to be sent to the DPE for possible fare adjustment.
3. Using Data Distribution Control (DDC) records (as today), the airline identifies subscribers (pricing systems, revenue accounting systems, etc.) who can receive the:
 - a. Baseline fares
 - b. DPE Airline Profile
4. ATPCO distributes fare products and Airline Profile data (as today) to the system as directed by the airline.
5. System receives and loads fare products and profile data (as today).
6. System receives a shopping request from the customer for travel from LON to DXB.
7. The airline's Offer Management System interacts with the airline inventory management system to determine availability.
8. System creates possible pricing solutions (as today), pulling in schedules, fares (baseline fares), rules, taxes, and fees.

XX's YABC LON—DXB fare for 1000.00 GBP
9. System evaluates Airline XX's DPE Airline Profile and determines the YABC Baseline Fare is eligible to be sent to the DPE for possible dynamic fare adjustment.
10. System sends an adjustment request (DPE RQ) to Airline XX's DPE for possible dynamic fare adjustment. The request includes the fare products data (tariff, rule, fare class code, etc.) for the Baseline Fare, potential pricing solutions, information included in the initial shopping request (that is, "who is asking"), and identification of which fares are DPE-eligible fares per the Airline Profile. (Refer to the DPE RQ/RS Schema for a full list of elements.)

The request includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1000.00 GBP
Rule Tariff	022
Rule Number	72AE
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	Blank (adult)

- The airline's DPE receives the request, determines product price, and responds with an adjusted fare.

XX determines the optimal fare is YABC for 975.00 GBP. The response includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1000.00 975.00 GBP

The Airline's Offer Management System or DPE assigns an Offer Item ID to the DPE Fare.
Offer Item ID = DPXX123ABC

- System receives the response and recalculates the total fare, applying taxes, fees, and charges based on the adjusted amount.
- System creates (assembles) Offers, including Offer IDs, Offer Item IDs, Service IDs (all components of the Offer) and responds to the Customer with potential Offers, including a solution with a DPE fare.

One Offer includes XX's YABC LON—DXB fare for 975.50 GBP (Offer Item ID DPXX123ABC)

- Customer selects an Offer that includes a DPE fare and sends an Order Create request.

Customer selects XX's Offer with YABC LON—DXB fare for 975.00 GBP (with Offer Item ID DPXX123ABC)

- Airline receives the request and validates the Offer (for example, validates the Offer is within time limits, confirms inventory, and confirms price).
- System converts the Offer to an Order. This includes converting Offer IDs and Offer Item IDs to Order IDs and Order Item IDs.

Offer Item ID DPXX123ABC is converted to Order Item ID ZDPXX123ABC

- The airline sends an order view response.

- The airline collects payment information, performs payment authorization, and creates the accountable document (that is, an electronic ticket until ONE Order is implemented) using NDC interim ticketing standards (e.g., FCMI 3, 4 or 5, /OP, OP) per airline requirements.

Issue Ticket Number 9991234567

- System sends a message to ATPCO including the Ticket Number and ID (Order Item ID or Pricing ID). This can be included in the TCN data or in a new (future) message, pending industry requirements.

TCN includes Ticket Number 9991234567 + Order Item ID ZDPXX123ABC (where ID is included at the fare component level)

- ATPCO distributes the Ticket Number and ID (Order Item ID or Pricing ID) via the ISR (new elements), or these could be included in a new (future) message pending industry requirements.

ISR includes Ticket Number 9991234567 + Order Item ZDPXX123ABC (where ID is included at the fare component level)

DPE Generated Price Distribution

- The airline sends the DPE fare to ATPCO for price distribution using one of the following options:
Option A (Copy of DPE RQ/RS)

- The DPE sends a copy of the RQ/RS (including original baseline fare, adjusted fare, and ID) to ATPCO for price distribution
- ATPCO compares the Ticket Data (including ID) to the DPE RQ/RS data. If there is a match, then ATPCO distributes the DPE Generated Fare (only distributes the fare upon confirmation it was sold and ticketed)

Option B (New Upload File)

- The airline sends a new upload fare file (new functionality) to ATPCO for price distribution

- ATPCO distributes the DPE Generated Price (DPE Fare). The DPE fare has the same data as the baseline fare (such as the same tariff, fare class code, OW/RT, footnote, routing, rule), but the fare amount differs, and the record includes the Order Item ID (for NDC).

ATPCO distributes Airline XX's DPE Generated Price (DPE fare) in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount	Pricing ID
YABC	022	72AE	2	1234	1	975.00 GBP	ZDPXX123ABC

Post Conditions

The customer possesses an accountable document that includes a DPE fare. Revenue Accounting/Audit systems have received the Ticket Number linked to ID and the DPE Generated Price (DPE fare) to apply as needed in internal processes.

5.5 Use Case 5C: NDC—Specified Fare with DPE Generated Adjustment used as Fare by Rule (Category 25) Base Fare

Principal Actors

- Airline: The Offer Responsible Airline (ORA) and the airline that distributes the baseline fares and DPE Airline Profile
- DPE: The airline's DPE
- System: Airline's offer management system performing shopping, pricing, and ticketing
- ATPCO
- Customer (traveler)

Pre-conditions/Assumptions

- The airline distributes baseline fares, Fare by Rule (Category 25), and a DPE Airline Profile via ATPCO
- The airline has implemented an offer management system that is capable of interacting with the airline's DPE to receive requests (DPE RQ), identify optimal fare amount, and respond (DPE RS) with the adjusted fare
- The airline is still dependent on existing ticketing, revenue accounting, audit, and settlement processes
- The system can receive, store, and process the DPE Airline Profile
- Customer has a travel plan, for example, to travel LON—DXB

Description

In this use case, an airline distributes (via ATPCO) baseline fares (as today). The airline's DPE Airline Profile identifies which fares are eligible to be sent to the DPE. Upon receipt of a shopping request, the airline's offer management system will create potential solutions (offers), identify DPE-eligible fares, and send a request to the airline's DPE for dynamic pricing. The DPE will respond with a DPE generated price (adjusted price) that creates a DPE fare. The system will use the DPE fare as a Base Fare for Fare by Rule (Category 25) calculation. The system will return Offers that include a Fare by Rule resulting fare calculated from a DPE fare. The customer selects the Offer with the Fare by Rule Resulting Fare (calculated from a DPE Fare), and the system will execute the pricing, booking, and ticketing processes. The system will send the ticket number linked to the Order/Order Item ID to ATPCO for distribution via the ISR. The airline will send the DPE fare (DPE generated price) to ATPCO for distribution, and ATPCO will distribute the DPE fare (DPE generated price) for use in downline processing.

Processing Steps

1. Airline creates baseline fares and related data (Footnotes, Rules, Routings) using existing ATPCO data standards.

Airline XX's fares in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	1	1000 GBP

Note: Assume these are Adult fares (Passenger Type Code is Blank for all fares).

Airline XX's Fare by Rule (Category 25) Tariff 849 Rule 2340 for LON—DXB

Passenger Type Code (PTC)	Calculation	Resulting Fare	Base Fare Table
JCB	75% of Base Fare	Ticket Designator = X12	YABC

2. Airline creates DPE Airline Profile data.
 - a. Airline indicates the YABC LON—DXB Baseline Fare is eligible to be sent to the DPE for possible fare adjustment.
3. Using Data Distribution Control (DDC) records (as today), the airline identifies subscribers (pricing systems, revenue accounting systems, etc.) who can receive the:
 - a. Baseline fares
 - b. Fare by Rule (Category 25) data
 - c. DPE Airline Profile
4. ATPCO distributes fare products and Airline Profile data (as today) to the system as directed by the airline.
5. System receives and loads fare products and profile data (as today).
6. Airline receives an NDC shopping request for a JCB customer for travel from LON to DXB.
7. Airline's Offer Management System interacts with the airline inventory management system to determine availability).
8. System creates possible pricing solutions (as today), pulling in schedules, fares (baseline fares), rules, taxes, and fees

XX's YABC LON—DXB fare for 1000.00 GBP ←YABC Baseline Fare

XX's YABC/X12 LON—DXB fare for 750.00 GBP
(1000.00 YABC base fare x 0.75)

9. System evaluates Airline XX's DPE Airline Profile and determines the YABC 1000.00 Baseline Fare is eligible to be sent to the DPE for possible dynamic fare adjustment.
10. System sends an adjustment request (DPE RQ) to Airline XX's DPE for possible dynamic fare adjustment. The request includes the fare products data (tariff, rule, fare class code, etc.) for the Baseline Fare, potential pricing solutions, information included in the initial shopping request (that is, "who is asking"), and identification of which fares are DPE-eligible fares per the Airline Profile. (Refer to the DPE RQ/RS Schema for a full list of elements.

The request includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1000.00
Rule Tariff	022
Rule Number	72AE
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	ADT

11. The airline's DPE receives the request, determines product price, and responds with an adjusted fare.

XX determines the optimal fare is YABC for 930.00 GBP. The response includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	930.00 GBP
Rule Tariff	022
Rule Number	72AE
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	ADT

The Airline's Offer Management System or DPE assigns an Offer Item ID to the DPE Fare.

Offer Item ID = DPXX123ABC

12. System receives the response, and (re)applies Fare by Rule (Category 25) calculation using the YABC 930.00 GBP DPE Fare.

XX's YABC/X12 LON-DXB fare for 697.50 GBP
(930.00 YABC base fare x 0.75)

13. System (re)calculates the total fare (taxes/fees/charges based on adjusted amount).
14. System creates (assembles) Offers, including Offer IDs, Offer Item IDs, Service IDs (all components of the Offer) and responds to the customer with potential Offers, including a solution with a Fare by Rule (Category 25) Resulting Fare calculated off the DPE fare.

One Offer includes XX's YABC/X12 LON-DXB fare for 697.50 GBP (Offer Item ID DPXX123ABC)
15. Customer selects an Offer that includes a Fare by Rule (Category 25) Resulting Fare calculated off the DPE fare and sends an Order Create request.

Customer selects XX's YABC/X12 LON-DXB fare for 697.50 GBP (with Offer Item ID DPXX123ABC)
16. Airline receives the request and validates the Offer (for example, validates the Offer is within time limits, confirms inventory, and confirms price).
17. System converts the Offer to an Order. This includes converting Offer IDs and Offer Item IDs to Order IDs and Order Item IDs.

Offer Item ID DPXX123ABC is converted to Order Item ID ZDPXX123ABC
18. The airline sends an order view response.
19. The airline collects payment information, performs payment authorization, and creates the accountable document (that is, electronic ticket until ONE Order is implemented) using NDC interim ticketing standards (e.g., FCMI 3, 4 or 5, /OP, OP) per airline requirements.

Issue Ticket Number 9991234567
20. Airline/system sends a message to ATPCO including the Ticket Number and Order Item ID. This can be included in the TCN data or in a new (future) message, pending industry requirements.

TCN includes Ticket Number 9991234567 + Order Item ZDPXX123ABC (where ID is included at the fare component level)
21. ATPCO distributes the Ticket Number and ID (Order Item ID or Pricing ID) via the ISR (new elements), or these could be included or a new (future) message, pending industry requirements.

ISR includes Ticket Number 9991234567 + Order Item ZDPXX123ABC
(where ID is included at the fare component level)

DPE Generated Price Distribution

22. The airline sends the DPE fare to ATPCO for price distribution using one of the following options:

Option A (Copy of DPE RQ/RS)

- a. The DPE sends a copy of the RQ/RS (including original baseline specified and add-on fare data, adjusted fare, and ID) to ATPCO for price distribution
- b. ATPCO compares the Ticket Data (including ID) to the DPE RQ/RS data. If there is a match, then ATPCO distributes the DPE Generated Fare (only distributes the fare upon confirmation it was sold and ticketed)

Option B (New Upload File)

- a. The airline sends a new upload fare file (new functionality) to ATPCO for price distribution.

23. ATPCO distributes the DPE Generated Price (DPE Fare). Only Specified DPE fares are distributed; therefore, an adjusted Base Fare will be distributed where the amount reflects the adjusted amount (DPE-valued amount).

- a. The DPE fare has the same data as the specified fare by rule base fare (such as the same tariff, fare class code, OW/RT, footnote, routing, rule), but the fare amount differ, and the record includes the Order Item ID (for NDC) or Pricing ID (for traditional distribution).

ATPCO distributes Airline XX's DPE Generated Price (DPE fare) in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount	Pricing ID
YABC	022	72AE	2	1234	1	930.00 GBP	ZDPXX123ABC

Note: Downline systems (such as revenue accounting) will be in receipt of a ticket with LON—DXB YABC/X12 697.50 GBP fare. They will use existing logic to process distributed fare data to identify the component parts of the ticketed fare:

- Specified Fare: LON—DXB 930.00 (DPE Generated Fare distribution)
- Fare by Rule: Calculate 75% of the Base Fare and append Ticket Designator X12
- Resulting Fare: LON—DXB YABC/X12 697.50 ← matches the fare on the ticket

Post Conditions

The customer possesses an accountable document that includes a Fare by Rule calculated off a DPE fare. Revenue Accounting/Audit systems have received the Ticket Number linked to ID and the DPE Generated Price (DPE fare) to apply as needed in internal processes.

5.6 Use Case 6: NDC—Constructed Fare with DPE Generated Adjustment

Principal Actors

- Airline: The Offer Responsible Airline (ORA) and the airline that distributes the baseline fares and DPE Airline Profile
- DPE: The airline's DPE
- System: Airline's offer management system performing shopping, pricing, and ticketing
- ATPCO
- Customer (traveler)

Pre-conditions/Assumptions

- The airline distributes baseline fares, Fare by Rule (Category 25), and a DPE Airline Profile via ATPCO
- The airline has implemented an offer management system that is capable of interacting with the airline's DPE to receive requests (DPE RQ), identify optimal fare amount, and respond (DPE RS) with the adjusted fare
- The airline is still dependent on existing ticketing, revenue accounting, audit, and settlement processes
- The system can receive, store, and process the DPE Airline Profile
- Customer has a travel plan, for example, to travel MAN—DXB

Description

In this use case, an airline distributes (via ATPCO) baseline fares (as today). The airline's DPE Airline Profile identifies which fares are eligible to be sent to the DPE. Upon receipt of a shopping request, the airline's offer management system will create potential solutions (offers) that include a constructed fare (specified fare plus add-on), identify DPE-eligible fares, and send a request to the airline's DPE for dynamic pricing. The DPE will respond with a DPE generated price (adjusted price) for the constructed fare. The system will return offers to the customer that include a DPE generated price. The customer selects an offer that includes a DPE generated price, and the system will execute the pricing, booking, and ticketing processes. The system will send the ticket number linked to the Order/Order Item ID to ATPCO for distribution via the ISR. The airline will send the DPE fare (DPE generated price) to ATPCO for distribution, and ATPCO will distribute the DPE fare (DPE generated price) for use in downline processing.

Processing Steps

1. Airline creates baseline fares and related data (Footnotes, Rules, Routings) using existing ATPCO data standards.

Airline XX's specified fares in LON–DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	1	1000 GBP

Note: Assume these are Adult fares (Passenger Type Code is Blank for all fares).

Airline XX's LON–MAN add-on fares

Fare Class Code	Tariff	Amount
Y*****	924	20.00 GBP

2. Airline creates DPE Airline Profile data.
 - a. Airline indicates the YABC MAN–DXB Baseline Fare (constructed fare) is eligible to be sent to the DPE for possible fare adjustment.
3. Using Data Distribution Control (DDC) records (as today), the airline identifies subscribers (pricing systems, revenue accounting systems, etc.) who can receive the:
 - a. Baseline fares
 - b. DPE Airline Profile
4. ATPCO distributes fare products and Airline Profile data (as today) to the system as directed by the airline.
5. System receives and loads fare products and profile data (as today).
6. Airline receives an NDC shopping request for a customer for travel from MAN to DXB.
7. Airline's Offer Management System interacts with the airline inventory management system to determine availability).
8. System creates possible pricing solutions (as today), pulling in schedules, fares (baseline fares), rules, taxes, and fees

XX's YABC MAN–DXB fare for 1020.00 GBP (LON–DXB 1000.00 Specified fare + LON–MAN 20.00 Add-on)
9. System evaluates Airline XX's DPE Airline Profile and determines the YABC LON–DXB Baseline Fare is eligible to be sent to the DPE for possible dynamic fare adjustment.

10. System sends an adjustment request (DPE RQ) to Airline XX's DPE for possible dynamic fare adjustment. The request includes the fare products data (tariff, rule, fare class code, etc.) for the Baseline Fare, potential pricing solutions, information included in the initial shopping request (that is, "who is asking"), and identification of which fares are DPE-eligible fares per the Airline Profile. (Refer to the DPE RQ/RS Schema for a full list of elements.

The request includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1020.00 GBP
Rule Tariff	022
Rule Number	72AE
Footnote	2
Routing	1234
OW/RT	1
Passenger Type	Blank (adult)
Origin Add-on Fare Class Code	Y*****
Origin Add-on Origin (gateway)	LON
Add-on Destination	MAN
Add-on Amount	20.00 GBP

11. Airline's DPE receives the request, determines product price, and responds with an adjusted fare.

XX determines the optimal fare is YABC for 975.00 GBP. The response includes the following information:

DPE RQ - Element	Value
Publishing Carrier	XX
Fare Class Code	YABC
Amount	1020.00 975.00 GBP

The Airline's Offer Management System or DPE assigns an Offer Item ID to the DPE Fare.

Offer Item ID = DPXX123ABC

12. System receives the response and recalculates the total fare, applying taxes, fees, and charges based on the adjusted amount.
13. System creates (assembles) Offers, including Offer IDs, Offer Item IDs, Service IDs (all components of the Offer) and responds to the Customer with potential Offers, including a DPE fare.

One Offer includes XX's YABC MAN–DXB fare for 975.00 GBP (Offer Item ID DPXX123ABC)

- 14. Customer selects an Offer that includes a DPE fare and sends an Order Create request.

Customer selects an Offer with XX's YABC MAN–DXB fare for 975.50 GBP (with Offer Item ID DPXX123ABC)

- 15. Airline receives the request and validates the Offer (for example, validates the Offer is within time limits, confirms inventory, and confirms price).
- 16. System converts the Offer to an Order. This includes converting Offer IDs and Offer Item IDs to Order IDs and Order Item IDs.

Offer Item ID DPXX123ABC is converted to Order Item ID ZDPXX123ABC

- 17. Airline sends an order view response.
- 18. Airline collects payment information, performs payment authorization and creates the accountable document (that is, electronic ticket until ONE Order is implemented) using NDC interim ticketing standards (e.g., FCMI 3, 4 or 5, /OP, OP) per airline requirements

Issue Ticket Number 9991234567

- 19. Airline/system sends a message to ATPCO including the Ticket Number and ID (Order Item ID or Pricing ID). This can be included in the TCN data or a new (future) message, pending industry requirements.

TCN includes Ticket Number 9991234567 + Order Item ID ZDPXX123ABC (where ID is included at the fare component level)

- 20. ATPCO distributes the Ticket Number and ID (Order Item ID or Pricing ID) via the ISR (new elements) or a new (future) message, pending industry requirements.

ISR includes Ticket Number 9991234567 + Order Item ZDPXX123ABC (where ID is included at the fare component level)

DPE Generated Price Distribution

- 21. The airline sends the DPE fare to ATPCO for price distribution using one of the following options:

Option A (Copy of DPE RQ/RS)

- a. The DPE sends a copy of the RQ/RS (including original baseline specified and add-on fare data, adjusted fare, and ID) to ATPCO for price distribution
- b. ATPCO compares the Ticket Data (including ID) to the DPE RQ/RS data. If there is a match, then ATPCO distributes the DPE Generated Fare (only distributes the fare upon confirmation it was sold and ticketed)

Option B (New Upload File)

- a. The airline sends a new upload fare file (new functionality) to ATPCO for price distribution.
- 22. ATPCO distributes the DPE Generated Price (DPE Fare). Only Specified DPE fares are distributed; therefore, the amount will reflect the adjusted amount (DPE-valued amount) minus the add-on amount(s).
 - a. The DPE fare has the same data as the specified baseline fare (such as the same tariff, fare class code, OW/RT, footnote, routing, rule), but the fare amount differs, and the record includes the Order Item ID (for NDC).

ATPCO distributes Airline XX's DPE Generated Price (DPE fare) in LON–DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount	Pricing ID
YABC	022	72AE	2	1234	1	955.00 GBP	ZDPXX123ABC

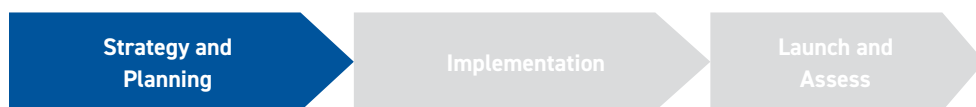
Note: The DPE Fare amount for LON–DXB is 955.00 which is calculated as the total DPE generated amount for MAN–LON (975.00) minus LON–MAN Add-on amount (20.00). Downline systems (such as revenue accounting) will be in receipt of a ticket with MAN–DXB YABC 975.00. They will use existing logic to process distributed fare data to identify the component parts of the ticketed fare:

- Specified Fare: LON–DXB 955.00 (DPE Generated Fare distribution)
- Add-on Fare: LON–MAN 20.00
- Constructed fare: MAN–DXB YABC 975.00 ← matches the DPE generated fare on the ticket

Post Conditions

The customer possesses an accountable document that includes a DPE fare. Revenue Accounting/Audit systems have received the Ticket Number linked to ID and the DPE Generated Price (DPE fare) to apply as needed in internal processes.

6.0 Strategy and Planning



Before implementation, the optimal solution needs to be identified along with use cases, stakeholders, scope, and impact.

Airlines need to internally determine whether they will implement adjusted pricing via a DPE, and if so, which DPE solution is the best fit: DPE Predefined Price or DPE Generated Price.

6.1 Comparing the Two DPE Solutions

6.1.1 Current Processes and Functionality

The following table illustrates whether the specified **current** processes or capabilities are supported.

Supported Process/Capability	Solution 1: DPE Predefined Price	Solution 2: DPE Generated Price
Public fares	Yes	Yes
Private fares	Yes	Yes
Fare by Rule	Yes	Yes
Constructed Fares (specified fare + one or more add-on)	(future development)	Yes
Negotiated Fares Display Type T (Net with specified Selling Amount) or C (Net with Selling Amount that requires update)	(future development)	(future development)
Fare management	Yes	Yes*
Revenue accounting	Yes	Yes*
Interline settlement	Yes	Yes*
Interoperability	Yes	Yes*
Voluntary Changes/Refunds	Yes	Yes*
Traditional distribution	Yes	Yes
NDC	Yes	Yes

* Supported provided the DPE Generated Price is distributed for use in downline processes.

6.1.2 Benefits and Challenges

The following table illustrates the benefits and challenges between the two solutions.

Solution	Solution 1: DPE Predefined Price	Solution 2: DPE Generated Price
Benefits	<ul style="list-style-type: none"> • Transparency • Works within existing infrastructure (little to no changes) • All content managed together, better analytics for internal systems • Uses already built pricing engine to determine price (existing logic) 	<ul style="list-style-type: none"> • Less fare maintenance • Works within existing infrastructure (minimal changes)* • Greater flexibility with price determination (not dependent on predefined prices)
Challenges	<ul style="list-style-type: none"> • Data maintenance (increased number of fares and related data) • Fare class code and related data alignment (between baseline and DPE fares) • DPE Price (fare) validation dependent upon pricing system or sophisticated DPE • Processing-heavy for the shopping/pricing system 	<ul style="list-style-type: none"> • Must build DPE business rules and new functionality • Can be more closely tied to inventory calculations done today • Bulk price change (e.g., system-wide increase or sale) requires DPE amendment • Transparency <p>If the DPE Generated price is not distributed, then challenges with interoperability, revenue accounting, servicing</p>

* Supported provided the DPE Generated Price is distributed for use in downline processes.

6.2 Building the Solution

This section identifies strategic and planning decisions to be made by an airline in preparation for implementing dynamic pricing.

Following is a starting list of items/actions to be considered:

1. Which markets are in scope?
2. What are the baseline fares (what fares are eligible to be sent to the DPE for adjustment)?
3. For the DPE Predefined Price solution, how will you maintain alignment between the baseline fares and the DPE fares (product alignment in terms of brand, voluntary change/refund conditions, etc.)?
4. What are the distribution requirements for DPE fares (public, private, or public with limited distribution)?
5. What challenges/exposures are there to the current ecosystem and how can they be resolved?
6. What criteria will be used to determine and differentiate price (outside existing fare and rule restrictions); for example, frequent flyer status, customer segmentation criteria, network strength at point of origin, browsing history, purchasing history, geography, or load factor?
7. Who is building and running your DPE, and what is your strategy? How sophisticated will the DPE be? Can it process fare and related data (for the DPE Predefined Price solution)? Can it handle changing business rules (for the DPE Generated Price solution)?
8. What are the impacts and expectations for partner airlines (for example, for ATI partners, will you be aligned in DPE business rules or will you defer to a partner's DPE)?
9. For the DPE Generated Price solution, will you distribute the price to support downline processing? If so, then how will you send the data to ATPCO (the copy of the DPE RQ/RS, new upload functionality, etc.) and at what stage in the process (Offer Creation, Order Creation, ticket issue, etc.)? This may depend upon which downline processes require support (for example, to support servicing, the price needs to be distributed prior to ticket issuance, but if the requirement is only to support revenue accounting then it may be sufficient to distribute the price upon

ticket issuance). If not, then what are the impacts (on, for example, fare management, revenue accounting, settlement, and servicing processes dependent on distributed fare data)?

10. How global will your implementation be (direct, all channels, etc.)?

6.2.1 Dynamic Pricing Engine (DPE)

The airline first needs to determine the required features of its DPE. What are the internal business rules and required capabilities of its DPE? Once this is determined, the airline can set up its data according to what the DPE will support.

Following are some requirements to be considered:

- **Receive and respond to requests.** The DPE must be able to receive and respond to a shopping/pricing request as defined in the DPE RQ and DPE RS schemas.
- **Optimal Fare Determination.** How will the DPE determine the optimal fare and the corresponding DPE fare to return in its response (as applicable)? This determination can be based on any number of factors, such as frequent flyer status, customer segmentation criteria, network strength at point of origin, browsing history, purchasing history, geography, load factor, who is asking, and so on, but ultimately this will be based on internal, proprietary airline business rules.
- **ID Creation.** For traditional distribution, the DPE must include an ID (the Pricing ID) in its pricing responses. This ID will apply to the pricing unit encompassing the fare components being adjusted and will be passed through the life cycle, linked to the DPE Fare, to support downline processes. The ID is unique to each pricing response and can apply to all adjusted fare components in the response. The ID is alphanumeric, and its structure and length is based on the airline's requirements. For NDC, the airline will apply the NDC standards using Offer/Order ID and OfferItem/OrderItem ID. It is anticipated the Offer/Order Item ID will be linked to the DPE generated fare (see the Pricing ID and OfferItem/OrderItem ID section of this document).

6.3 DPE Fare Distribution

• DPE Predefined Solution

- **Fare and Loading/Maintenance.** The DPE needs to be able to store and maintain applicable DPE fares, at minimum including the Fare Record data.
- **Fare Validation Capability.** Ultimately, the pricing system is responsible for validating the DPE fare returned in the response (validating all fare, rule, routing, and RBD data), passing combination data, and verifying the minimum assumptions are met. Any failure will result in the system discarding the DPE fare and reverting to the baseline fare. For some airlines this may be sufficient. Other airlines may want a DPE that performs some or all of this validation to better ensure a successful DPE fare is returned to a customer. The airline will need to decide how much (if any) fare validation occurs in the DPE.
- **Corporate/Fare by Rule Fares.** Are corporate Fare by Rule fares (as in Use Case 2) in scope? If so, then the DPE will need to be able to process Fare by Rule data (Record 8, Category 25, etc.) to calculate the resulting DPE-derived fare.
- **Historical Fares Pricing.** During a voluntary change transaction, will the DPE accept and respond to requests (for DPE-eligible fares) when re-pricing with historical fares? It is possible Voluntary Changes (Category 31) will direct processing to use historical fares when re-pricing; in this case, the airline will need to determine whether the DPE can accept and respond with historical fares. This DPE application can be indicated in the DPE Airline Profile.

The airline needs to determine fare distribution requirements for the DPE fares.

6.3.1 DPE Predefined Price

For the DPE Predefined Price solution, the supporting fares will be defined and distributed up front (pre-filed fares using dedicated DPE tariffs).

6.3.2 DPE Generated Price

For the DPE Generated Price solution, the DPE creates (generates) the fare at time of shopping/pricing. This DPE Fare is subsequently distributed (at or after the shopping response is created) to downline systems (such as revenue accounting), thus supporting the full end-to-end process.

The airline must determine when it will distribute the fare (at what stage in the process) and how it will distribute the fare (which proposed distribution solution).

When will the DPE fare be distributed?

When will the airline distribute the fare (during what stage of the process)? Will the fare be distributed at time of shopping or Offer Creation, at time of Order Creation, or not until sale or ticket issuance? This may depend on the airline's individual requirements for the processes the fare will support. If the fare is only intended to support revenue accounting and settlement processes, then it may be sufficient to wait to distribute the fare at (or soon after) the time of ticket issuance. If the fare is also intended to support changes/refund processing, then it will need to be distributed prior to ticketing (that is, at time of Order Creation).

How will the DPE fare be distributed?

ATPCO is flexible in how the airline sends the data to ATPCO for distribution. The underlying requirement is that the airline provide the standard key data elements required to identify and distribute a fare record (ATPCO Tariff number, fare owning airline, Origin-Destination, Fare Class Code, Currency, Routing, Footnote, OW/RT), along with the (new) adjusted fare amount and the associated Order Item ID (for NDC) or Pricing ID (for traditional distribution).

To date, two fare distribution options are defined:

- Option 1: Copy of DPE RQ/RS. The airline will send ATPCO a copy of the DPE RQ/RS (where the request/response includes all key fare record elements) with a predefined instruction to ATPCO to either:
- Immediately distribute the DPE Fare upon receipt of the DPE RQ/RS copy; or
 - Only distribute upon confirmation that the fare

ticketed. To accomplish this, ATPCO will compare the Order Item ID or Pricing ID in the DPE RQ/RS to the Order Item ID or Pricing ID in the TCN data provided to ATPCO. If there is a match, then the fare will be distributed. If there is no match, then ATPCO will not distribute the fare and will store it for historical/analytical purposes. Note that waiting to distribute until ticketing is sufficient to support revenue accounting and settlement requirements, but will not support change/refund requirements.

Option 2: New Upload Functionality. ATPCO has created new Fares Upload records to be used for uploading and distributing DPE Generated Prices. This solution aligns with current fare maintenance/upload processes and allows the airline complete control and flexibility for determining when (at what stage of the process) to distribute the DPE fare.

6.3.3 Public, Private or Public with Limited Distribution

For both solutions, when the DPE fare is distributed, the airline needs to determine whether the fare is public, private, or public with limited distribution.

Public

Public fare distribution is the same as today.

Private

Private fare distribution is the same as today. The airline will use Data Distribution Control (DDC) to specify data subscribers authorized to receive the data. Additionally, the airline will specify applicable security data in Sales Restrictions (Category 15) or Negotiated Fares (Category 35), as today.

Public with limited distribution

This is a new feature to enable airlines to create and distribute public fares and fare-related data that is available to passengers to view and purchase (subject to the specified restrictions contained in Rules and Footnotes data), but that can only be displayed and sold by specific data subscribers (specific locations). For example, an airline may publish a public fare enabling any passenger to purchase and travel on the fare, but this fare may only be sold in the airline direct or NDC channel. To ensure that these fares are fully integrated into all airline internal systems and industry processes, these fares will be published in a public tariff.

Airlines that require this functionality must contact ATPCO so that the applicable Data Distribution Control (DDC) functionality can be initiated as necessary.

This new functionality is analogous to existing functionality for private data. Each airline's data distribution limitations may be based on its specific tariffs and rules. Edits will ensure that public data is being distributed to at least one subscribing system that will make the fare available for sale in the marketplace.

It is expected that the point of sale restrictions will be reflected in applicable subscription data, such as Sales Restrictions (Category 15). ATPCO will remove edits to allow the Negotiated Fares (Category 35) security function to be filed on a public fare (provided the tariff for that fare is identified by the airline as a public tariff with limited distribution). This allows airlines to use Category 35 to specify where and how locations are permitted to use the fare (such as for reissues).

6.4 Identification of Stakeholders

The following have been identified as general areas where the implementation of DPE pricing 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 (in the event the DPE fares are public fares)
- Information Technology

Not all areas in all organizations will be affected, and additional research should be done to identify any other areas that may be affected.

6.5 Fare Management and Decision Support Planning

6.5.1 Impact Analysis and Determination of Scope

A DPE solution can be implemented for target markets/segments to control the 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 carrier constraints.	DPE Airline Profile (in future) can allow an airline to defer to a partner airline's DPE.
Cabin Classes	Airlines may want to limit the scope of implementation to specific cabins (these may be traditional cabins such as first, business, premium economy, and/or economy) and/or a subset of a cabin (classes in the economy cabin).	Identify eligible RBDs in the DPE Airline Profile.
Fare Types	<p>Airlines can choose to implement based on types of fares:</p> <ul style="list-style-type: none"> • Baseline public or private fares, specified, constructed, or calculated via Fare by Rule (Category 25). • DPE public or private fares, specified or calculated via Fare by Rule (Category 25). Public fare distribution requires further evaluation of government filing and regulatory requirements. 	<p>Airlines will identify eligible baseline fares (specified or FBR resulting fares) via applicable data in the DPE Airline Profile.</p> <p>Airlines will distribute DPE fares in public or private tariffs depending on internal business needs and government filing and regulatory requirements.</p>
Channels	<p>Channels can include</p> <ul style="list-style-type: none"> • Direct • NDC • Indirect 	<p>Fare rule provisions specifying the desired point of sale would be associated with the fares, for example, using Sales Restrictions (Category 15).</p> <p>Private tariff distribution requirements will be specified (as today) to indicate subscribers authorized to receive the baseline and DPE fares.</p> <p>The DPE Airline Profile will specify points of sale that are eligible to send a request to the DPE for potential dynamic pricing.</p>
Alliances	Determine whether implementation of dynamic pricing using DPE fares impacts alliance/JV fares. Do JV airlines need to align the DPE fares? Further, the current scope requires processing to send the baseline fare to the fare owning airlines DPE. If JV partners each have fares in a given JV market where the fares are aligned ("same fares"), these would be sent to separate DPEs (sent to each fare owner's DPE). This could result in different DPE fares being returned.	Future capabilities (such as DPE Airline Profile) may allow JV partners to designate a single airline's DPE to apply for JV markets and fares. This concept is under discussion and pending airline requirements.

7.0 Implementation



Once the airline identifies the DPE capabilities and features, it can use them as a guide to set up the data accordingly.

7.1 Schedules

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

7.2 Inventory Setup and Management

DPE Predefined Price solution

For the DPE Predefined Price solution, the assumption is that the DPE fares must result in the same priced RBD as the baseline fare. It is possible the DPE fare may have differing secondary RBD data (such as Dual RBD Validation), a two-position RBD, or both.

Example

Fare Class Code	RBD1	RBD2	Amount
<i>Baseline Fare</i>			
WABC	W		1000.00
<i>DPE Fares</i>			
WDPE1	X	WM	990.00
WDPE2	Y	WQ	980.00
WDPE3	Z	WK	970.00

In this example, the DPE fares will book into W (and the ticket will reflect W).

- The secondary RBDs (X, Y, and Z) are used for dual RBD validation.
- The two-position RBD2 (WM, WQ, WK) are used internally by the DPE to identify the optimal fare and price. Pricing systems will ignore the second position and apply only W.

It is up to each airline internally to determine whether to use Dual RBD Validation and/or a two-position RBD. (Refer to the *Optimized Pricing: Dual RBD Implementation Guide* for further information.)

7.2.1 Availability Messaging

No changes are proposed for availability messages.

7.2.2 Inventory Systems

No changes are proposed for availability messages.

7.3 Fares and Rules

Data setup for fares and rules depends on DPE capabilities and features (including which DPE solution is being implemented).

7.4 DPE Airline Profile

The Airline Profile products are designed to allow each airline to filter/control the volume and types of direct shopping/pricing requests (messages) that it can accommodate.

ATPCO currently offers two Airline Profile products:

1. **NDC Airline Profile** (existing), supporting New Distribution Capability (NDC) requests

This profile provides the ability for an airline to define the types of NDC offers that are available to requestors (aggregators, travel agencies, etc.). It allows an airline to control the conditions under which it would like to receive NDC requests.

2. **DPE Airline Profile** (new), supporting Dynamic Pricing Engine (DPE) requests.

The DPE Airline Profile provides the ability for an airline to filter DPE requests. Airlines use the profile to identify fares that are eligible to be sent to a DPE for possible fare adjustment during the shopping/pricing process, re-shopping/re-pricing process, or both. In general, these filters are based on the fare, the passenger, and/or the market/itinerary. For example, an airline might only consider receiving dynamic pricing requests for fares for specific types of passengers.

Note: While the current functionality only supports fare filters, future enhancements may support optional services and/or baggage.

Both Airline Profile types may be used concurrently by any given airline. Systems will need to interrogate both profiles depending on the types of requests being considered. For example, an airline may be NDC-capable for pre-reserved seats and DPE-capable for fares. In this case, a system would need to interrogate both profiles and potentially send an NDC request to the airline for seats and a DPE request for fares.

7.5 Shopping, Pricing, and Order Management

7.5.1 Availability

There are no changes to the current availability request-and-response processing in the shopping and sell processes. It is possible airlines may implement new functionality depending on the DPE price-determination capabilities.

7.5.2 Shopping/Pricing

Until the system implements stateful processing (e.g., NDC), the system will message to/from the DPE at the time of shopping and again at the time of pricing. Two calls are made to the DPE because there is no current functionality to store/recall a shopping response and link it to pricing (the current situation is a stateless processing).

To minimize the possibility of the system receiving a different adjusted fare and amount at shopping versus pricing, the message requirements are that the same data sent to the DPE at time of shopping will also be sent at the time of pricing.

Many systems are working toward implementation of stateful processing to support NDC as well as traditional distribution. Once this is implemented, it will only be necessary to message the DPE one time.

Open Item: ATPCO, airlines, and systems will need to address challenges of stateless (traditional distribution) processing as the DPE solution is executed.



7.6 Offer/Order Item or Pricing ID (End-to-End Solution)

Until an airline fully implements ONE Order (both online and in conjunction with interline partners), it is expected the DPE Fare (adjusted fare) must be integrated into the current ecosystem and supported through current ticketing, servicing, revenue accounting, and settlement processes. This integration will be achieved by assigning an ID as a link to the DPE Fare (DPE response) and persisting this ID through the life cycle to support downline processing. The creation and application of the ID depend upon whether the adjusted pricing is implemented in traditional distribution or NDC, as defined below.

7.6.1 Traditional Distribution (Pricing ID)

During the pricing process in a traditional distribution scenario, the DPE will create and respond with an alphanumeric ID (the Pricing ID). This Pricing ID applies at the fare component level for each fare component where the baseline fare is adjusted/replaced with a DPE fare. This ID may be the same for all fare components in a given solution or may differ across fare components (per individual airline requirements). The ID itself is created by the airline (by the airline's DPE) and is not created by an external shopping/pricing system. The length and format of the ID is at the discretion of the airline.

When a pricing solution is eventually ticketed (sent to ticketing):

- The shopping/pricing system must send the Pricing ID to the ticketing system (along with all other itinerary and payment data that is sent to the ticketing system) so it may be linked to the Ticket Number.
- The Pricing ID is not specified in the ticketing record. Rather, the ticketing system will include this ID (at the fare component level) in the Transaction Control Number (TCN) records sent to ATPCO. Refer to new proposed TCN records supporting a Dynamic Pricing ID.
- ATPCO will then send this data to Revenue Accounting systems via the Industry Sales Record (ISR) transmission. Refer to proposed ISR records supporting a Dynamic Pricing ID.

Example 1: DPE Predefined Price solution

Airline XX's distributes fares in LON–DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	2	1000.00 GBP
YDEF	022	72AE	2	1234	2	1200.00 GBP
<i>DPE Fares</i>						
YABCDP	037	5000	-	1234	2	900.00 GBP
YDEFDP	037	5000	-	1234	2	1100.00 GBP

Note: Tariff 037 is a new, dedicated DPE Tariff.

- The system receives a request for travel LON–DXB round trip.
- The system creates the following potential solution and sends a DPE RQ to Airline XX's DPE:
- The system responds to the customer with the above solution.
- The customer selects the above solution and transmits payment.
- Upon ticketing, the system ensures the Pricing ID is sent to the ticketing system
- Upon issuance ticket issuance, the ticketing system sends Transaction Control Number (TCN) records to ATPCO and includes the Pricing ID at the fare component level for adjusted fare components. The following illustrates the element data and level included in the TCN data:

Pricing Solution: LON–DXB–LON RT

XX LON DXB YABC 500.00 GBP

XX DXB LON YDEF 600.00 GBP

- Airline XX determines the optimal fare, and (at time of pricing) creates a Pricing ID (DPXX123) applicable to the response. Airline XX sends the following DPE RS to the system:

Pricing Solution: LON–DXB–LON RT

Pricing ID: **DPXX123**

XX LON DXB ~~YABC 500.00~~ **YABCDP 450.00** GBP

XX DXB LON ~~YDEF 600.00~~ **YDEFDP 550.00** GBP

Ticket Number 99912345678

XX LON DXB YABCDP 450.00 GBP **DPXX123**

XX DXB LON YDEFDP 550.00 GBP **DPXX123**

Example 2: DPE Generated Price solution

Airline XX's distributes fares in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fare</i>						
YABC	022	72AE	2	1234	2	1000.00 GBP
YDEF	022	72AE	2	1234	2	1200.00 GBP

1. The system receives a request for travel LON—DXB round trip.
2. The system creates the following potential solution and sends a DPE RQ to Airline XX's DPE:

Pricing Solution: LON—DXB—LON RT

XX LON DXB YABC 500.00 GBP

XX DXB LON YDEF 600.00 GBP

3. Airline XX determines the optimal fare, and (at time of pricing) creates a Pricing ID (DPXX123) applicable to the response. Airline XX sends the following DPE RS to the system:

Pricing Solution: LON—DXB—LON RT

Pricing ID: DPXX123

XX LON DXB YABC ~~500.00~~ 450.00 GBP

XX DXB LON YDEF ~~600.00~~ 550.00 GBP

4. The system responds to the customer with the above solution.
5. The customer selects the above solution and transmits payment.
6. Upon ticketing, the system ensures the Pricing ID is sent to the ticketing system
7. Upon issuance ticket issuance, the ticketing system sends Transaction Control Number (TCN) records to ATPCO and includes the Pricing ID at the fare component level for adjusted fare components. The following illustrates the element data and level included in the TCN data:

Ticket Number 99912345678

XX LON DXB YABC 450.00 GBP DPXX123

XX DXB LON YDEF 550.00 GBP DPXX123

8. ATPCO will transmit the ID and other data via the Industry Sales Record (ISR).
9. ATPCO will distribute the DPE fares (post-filing, upon the airline's instruction), and the new DPE Generated Price distribution product will contain the Pricing ID (DPXX123) on the fare record (in a new fare record element).

Airline XX's DPE fares in LON—DXB market (by definition, only distributed to support servicing and downline processing and not available for sale)

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount	Pricing ID
YABC	022	72AE	2	1234	2	900.00 GBP	DPXX123
YDEF	022	72AE	2	1234	2	1100.00 GBP	DPXX123

7.6.2 New Distribution Capability

In an NDC scenario, airlines will create Offer/Order IDs, OfferItem/OrderItem IDs, and Service IDs based on the NDC standards. The recommendation is that the DPE adjusted/replaced fare (in the DPE RS) be linked to an OfferItem ID (and subsequent Order Item ID upon Order creation) and persisted through the life cycle. It is ultimately the airline's decision in how and when this ID is assigned and applied.

The following solution is recommended:

1. The Offer Item ID contain the letters "DP" to indicate the associated flight service (fare) is dynamically priced.
2. Order Item ID maintain the integrity of the Offer Item ID (for example, the Offer Item ID could match the Order Item ID, or the Offer Item ID could be appended to the Order Item ID preceded by a hyphen).

Note: The airline must determine which option/methodology for persisting the Pricing ID best works within its online and interline processes.

When an accountable document is issued for an Order (sent to ticketing):

- Ticketing will occur as specified in existing Ticketing Resolutions (FCMI 3, 4, or 5 and applicable "OP" in the fare calculation or total). Refer to Ticketing Resolutions for further information.
- The ticketing system will include all order data (including Order Item IDs and Service IDs) in the Transaction Control Number (TCN) records sent to ATPCO. The Pricing ID will have been appended to the Order Item ID applicable to order item(s) containing the DPE fare. Refer to existing and proposed TCN records supporting NDC Orders.
- ATPCO will then send this data to Revenue Accounting systems via the Industry Sales Record (ISR) transmission. Refer to existing and proposed ISR records supporting NDC Orders. Distributing the Order data helps maintains current industry processes until ONE Order is implemented.
- For the DPE Generated Price solution, ATPCO will distribute the DPE fare (upon airline instruction), and the new DPE Generated Price distribution product will contain the Order Item ID on the fare record itself (new fare record element). Refer to the new DPE Fare Record layout and descriptions. These records will support current servicing, revenue accounting and settlement processes dependent upon distributed data.

Example 1: DPE Predefined Price

Airline XX's distributes fares in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fares</i>						
YABC	022	72AE	2	1234	2	1000.00 GBP
YDEF	022	72AE	2	1234	2	1200.00 GBP
<i>DPE Fares</i>						
YABCDP	037	5000	-	1234	2	900.00 GBP
YDEFDP	037	5000	-	1234	2	1100.00 GBP

Note: Tariff 037 is a new, dedicated DPE Tariff.

- Airline XX receives an NDC shopping request from a customer for LON—DXB round trip travel.
- Airline XX's offer management system (OMS) creates offers.
 - The following potential offer (potential solution) is created and sent to Airline XX's DPE via DPE RQ message:
 - Airline XX's DPE determines the optimal fare for each Service and sends the following response via DPE RS message.

Offer ID: 999NDC123456

Offer Item ID: YXXGBME Price 1100.00 GBP

Service ID (Fare Basis Code) YABC 500.00 GBP
LON DXB flight service

Service ID (Fare Basis Code) YDEF 600.00 GBP
DXB LON flight service

Offer ID: 999NDC123456

Offer Item ID: YXXGBME Price **1000.00 GBP**

Service ID (Fare Basis Code) YABC **YABCDP**
~~500.00~~ **450.00** GBP
LON DXB flight service

Service ID (Fare Basis Code) YDEF **YDEFDP**
~~600.00~~ **550.00** GBP
DXB LON flight service

3. The DPE or the OMS (per internal airline requirements) will amend/assign the Offer Item ID to identify DPE adjusted pricing (e.g., DPXX123).
4. Airline XX's OMS responds to the customer with an NDC shopping response. The response includes the following offer (the amended Offer Item ID reflects DPE adjusted pricing):



5. The customer selects the above offer; sends an order request, and payment.

6. Airline XX creates and responds to the customer with the following order (the Order Item ID reflects the DPE adjusted pricing):



7. Airline XX issues the accountable document (ticket) based on the ticketing standards supporting NDC (e.g., FCMI 3, 4, or 5 and /OP in the fare calculation).
8. Airline XX will ensure the ticketing system receives the order data above for inclusion in the Transaction Control Number (TCN) records to be sent to ATPCO.
9. ATPCO will transmit the ID and other data via the Industry Sales Record (ISR).

Note: Refer to applicable TCN and ISR record layouts for details on NDC elements in the records.

Example 2: DPE Generated Price

Airline XX's distributes fares in LON—DXB market

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount
<i>Baseline Fares</i>						
YABC	022	72AE	2	1234	2	1000.00 GBP
YDEF	022	72AE	2	1234	2	1200.00 GBP

1. Airline XX receives an NDC shopping request from a customer for LON—DXB round trip travel.
2. Airline XX's offer management system (OMS) creates offers.
 - a. The following potential offer (potential solution) is created and sent to Airline XX's DPE via DPE RQ message:
- b. Airline XX's DPE determines the optimal fare for each service and sends the following response via DPE RS message:

Offer ID: 999NDC123456

Offer Item ID: YXXGBME Price 1100.00 GBP

Service ID (Fare Basis Code) YABC 500.00 GBP
LON DXB flight service

Service ID (Fare Basis Code) YDEF 600.00 GBP
DXB LON flight service

Offer ID: 999NDC123456

Offer Item ID: YXXGBME Price 1000.00 GBP

Service ID (Fare Basis Code) YABC
~~500.00~~ 450.00 GBP
LON DXB flight service

Service ID (Fare Basis Code) YDEF
~~600.00~~ 550.00 GBP
DXB LON flight service

3. The DPE or the OMS (per internal airline requirements) will amend/assign the Offer Item ID to identify DPE adjusted pricing (e.g., DPXX123).
4. Airline XX's OMS responds to the customer with an NDC shopping response. The response includes the following offer (the amended Offer Item ID reflects DPE adjusted pricing):



6. Airline XX creates and responds to the customer with the following order (the Order Item ID reflects the DPE adjusted pricing):



5. The customer selects the above offer; sends an order request, and payment.

7. Airline XX issues the accountable document (ticket) based on the ticketing standards supporting NDC (e.g., FCMI 3, 4, or 5 and /OP in the fare calculation).
8. Airline XX will ensure the ticketing system receives the order data above for inclusion in the Transaction Control Number (TCN) records to be sent to ATPCO.
9. ATPCO will transmit the IDs and other data via the Industry Sales Record (ISR).
10. ATPCO will distribute the DPE fares (post-filing, upon the airline's instruction), and the new DPE Generated Price distribution product will contain the Order Item ID (YXXGBME87-DPXX123) on the fare record (new fare record element).

Airline XX's DPE fares in LON—DXB market
(by definition, only distributed to support servicing and downline processing and not available for sale)

Fare Class Code	Tariff	Rule	Footnote	Routing	OW/RT	Amount	Order Item ID
YABC	022	72AE	2	1234	2	900.00 GBP	YXXGBME87-DPXX123
YDEF	022	72AE	2	1234	2	1100.00 GBP	YXXGBME87-DPXX123

7.7 Revenue Accounting and Audit

When a DPE fare is returned in a pricing response, sold, and ticketed, the Order/Order Item IDs (NDC) or Pricing ID (traditional distribution) will be linked to the ticket number and passed to ATPCO via the Transaction Control Number (TCN) records. ATPCO will then send this data to revenue accounting systems via the Industry Sales Record (ISR) transmission.

For traditional distribution, the Pricing ID is transmitted at the fare component level. For NDC, the Order Item ID is transmitted as created for the airline's Order.

Revenue Accounting systems will

1. Recognize the ticket contains a DPE fare based on the ID supplied in the ISR.
2. Resolve to the DPE (or DPE-derived) fare via the applicable ATPCO fare and fare-related subscription data (as today)
3. (In future) Implement a bridge between the IDs, the Offer Management System and the DPE historical response data (as needed pending airline requirements)

Note: Refer to applicable TCN and ISR record layouts for details on the Pricing ID and applicable NDC elements in the records.

7.8 Voluntary Changes and Refunds (Categories 31/33)

7.8.1 Same Data for Baseline and DPE (or DPE-derived fares)

Upon receipt of a DPE Response (DPE RS), the shopping/pricing system will validate all Rules and General Rule data to ensure the DPE fare or DPE-derived fare and the baseline fare have the same Category 31/33 data. The DPE fare must resolve to a Categories 31 and 33 Record 2 with the same data table string (including relational indicators, Record 3 table number/s, directional indicators, and outbound/inbound indicators) as the baseline fare. It is possible the DPE fare will resolve to a different Record 2 sequence than the baseline fare (for example, because the DPE resides in a different tariff/rule); however, the data table string must be the same. If the DPE fare (or DPE-derived fare) fails validation or results in differing Category 31/33 data than the baseline fare, then processing will fail the solution with the DPE (or DPE-derived fare) and revert to the baseline fare solution.

Airlines must ensure the intended DPE fare (or DPE-derived fare) has the same Category 31 and Category 33 data as the corresponding baseline fare. It is recommended the airline specify Category 31 and 33 data in General Rules and then ensure the baseline fare and corresponding DPE (or DPE-derived) fare point to the same General Rule. This will ensure the application remains aligned across the fares.

7.8.2 Applying Category 31 and 33 Data

Category 31 and 33 data applicable for the DPE (or DPE-derived) fare will be specified in applicable Fare Rules or General Rules data and distributed to systems (subscribers) as today (per airline instruction).

When a ticket with a DPE (or DPE-derived) fare is presented for voluntary change or refund, processing will resolve to (and apply) Voluntary Changes (Category 31) and/or Voluntary Refunds (Category 33) data applicable for each fare on the ticket, as today.

As today, airlines must ensure the system(s) that will be performing the voluntary change/refund transactions are in receipt of the ticketed fares (e.g., DPE fare) and the associated rule conditions.

Unless otherwise specified below, there is no change to existing Category 31 and 33 data application.

7.8.2.1 Resolving to the Ticketed Fare's Category 31 and 33 Data

Processing will continue to work backwards from the ticket to the original fare rules using current methods and practices (as today). When a DPE is ticketed, using traditional distribution, the Pricing ID, linked to Ticket Number, will have been supplied in the Industry Sales Record (ISR), alerting receiving systems to the fact that the ticket was priced with a DPE fare(s). For NDC, the structure of the Order Item ID (for example, containing "DP") may alert systems to the fact the ticket contains a DPE fare, but this is dependent upon how the airline assigns and utilizes ID.

7.8.2.2 When to Call the DPE (for Re-Pricing)

When a ticket is presented for voluntary change, processing will resolve to the Category 31 data for all fares on the ticket and will create possible re-price solutions, processing and applying Category 31 data and all fare and fare-related data as today in a voluntary change scenario. Processing must apply and pass all Category 31 and/or 33 data.

Airlines (as today) will specify data elements in Category 31 indicating requirements for re-pricing flown and unflown portions of an itinerary (using Process Tags). Upon application and validation of Category 31 data, processing will determine whether each fare component must be re-priced by keeping the fare or using historical or current fares. Potential re-price solutions will be eligible to be sent to the fare owning airline's DPE for possible adjustment dependent upon:

- Data in the fare owning airline's DPE (for the fare component being re-priced); and
- Whether the resulting re-pricing (based on current Category 31 and Process Tag application, including resolution of conflicting process tag applications sometimes referred to as "war of the tags") specifies to re-price the fare component by keeping the fares, using historical fares, or using current fares.

These re-pricing options are defined below:

Keep the Fare

Never message the DPE.

Processing never calls the DPE in a "keep the fare" scenario. When Category 31 data application directs systems to "keep the fare," and all Category 31 "keep the fare" requirements are met (including "Expand Keep," see below), then it is assumed

that the fare can be "kept" without messaging to/from the DPE. This applies whether the originally ticketed fare is a DPE fare, DPE-derived fare, or a non-DPE fare.

In the strictest terms, "keep the fare" means processing is re-pricing with a fare which has the same fare owning airline, rule, tariff, fare basis code, and amount as the previously ticketed fare. Category 31 provides functionality to lessen this requirement by allowing a different fare basis code, provided the difference is only in seasonal or day of week indicators or that the re-pricing fare is governed by the same tariff/rule. This is defined as "Expand Keep." Fares that meet the "Expand Keep" application are considered a "keep the fare" scenario and processing will not message the DPE.

Historical Fares

Message the DPE for DPE-eligible fares, provided the DPE accepts historical fare requests.

Processing will validate the DPE Airline Profile for the fare owning carrier of the historical fare being used in the re-pricing solution. If processing matches applicable profile data indicating the fare is DPE-eligible and the airline accepts DPE requests for historical fares, then processing will message the DPE for possible adjustment.

Current Fares

Message the DPE for DPE-eligible fares.

Processing will validate the DPE Airline Profile for the fare owning carrier of the current fare being used in the re-pricing solution. If processing matches applicable profile data indicating the fare is DPE-eligible, then processing will message the DPE for possible adjustment.

Example

The following unused (unflown) ticket is presented for change. The passenger requests to change the departure data for the inbound (DXB—LON) fare component.

Departure Date	Fare Component	Airline	Fare Basis Code	Amount	OrderItem or Pricing ID
01 Aug 2019	LON DXB	XX	YXDP1	450.00	XXABC123
16 Aug 2019	DXB LON	XX	YDP2	550.00	XXABC123

YXDP1 and YDP2 are DPE fares.

1. Processing resolves to applicable Category 31 data for each fare component.
2. Processing applies the Category 31 data, including Process Tags, and creates potential re-price solutions.
3. One potential re-price solution is:

Departure Date	Fare Component	Airline	Fare Class Code	Amount	Pricing Tag Application
01 Aug 2019	LON DXB	XX	YXDP1	450.00	KEEP
20 Aug 2019	DXB LON	XX	YXEE	600.00	HISTORICAL

4. For the YXDP1 re-price fare: This is a Keep the Fare. Therefore, processing will use this fare in the solution and will not query Airline XX's DPE Airline Profile or message Airline XX's DPE.
5. For the YXEE re-price fare: This is a Historical (baseline) Fare. Processing will query Airline XX's DPE Airline Profile to determine if the fare is eligible to be sent to the DPE for potential dynamic adjustment.

Refer to Data Application Category 31 and/or for the DPE Airline Profile for further information.

7.8.2.3 Application of Category 31/33 Fare Amount Requirements

When the ticket presented for reissue/refund contains a DPE fare or is being re-priced with a DPE fare, processing will use the DPE fare amount (the amount the passenger actually paid or will pay) to validate fare amount data in Categories 31 and 33. This applies to add-collect/refund processing, equal or higher ticket requirements, and equal or higher fare requirements.

When validating equal or higher ticket requirements, if the pricing solution containing the DPE fare fails equal or higher requirements, processing will discard this DPE solution and revert to the solution with the baseline fare.

When validating equal or higher fare requirements, if the DPE fare fails equal or higher requirements, processing will discard this DPE solution and revert to the solution with the baseline fare.

Example

The following unused (unflown) ticket is presented for change. The passenger requests to change the departure dates for the outbound and inbound fare components.

Departure Date	Fare Component	Airline	Fare Basis Code	Amount	OrderItem or Pricing ID
01 Aug 2019	LON DXB	XX	YXDP1	450.00	XXABC123
16 Aug 2019	DXB LON	XX	YDP2	550.00	XXABC123

Total fare amount = 900.00

YDPE1 is a DPE fare.

Category 31 indicates the new ticket must be equal or higher (Equal or Higher byte 208).

Potential re-price solution is:

Departure Date	Fare Component	Airline	Fare Class Code	Amount	Process Tag Application
05 Aug 2019	LON DXB	XX	YXDP1	450.00	KEEP
24 Aug 2019	DXB LON	XX	Y2	500.00	CURRENT

Total fare amount = 950.00 (passes equal or higher requirements)

Assume Y2 is eligible to be sent to the DPE.

Scenario 1 (Fail Equal or Higher)

- Y2 is sent to the DPE and the DPE responds with an adjusted fare.

Departure Date	Fare Component	Airline	Fare Class Code	Amount
05 Aug 2019	LON DXB	XX	YXDP1	450.00
24 Aug 2019	DXB LON	XX	Y2 YDPABC	500.00 425.00

Total fare amount = 875.00

- The system validates the new solution and determines the new amount fails the equal or higher requirement.
- The system will discard the DPE fare solution and revert to the original re-price solution with the Y2 fare for 500.00 (total 950.00).

Scenario 2 (Pass Equal or Higher)

- Y2 is sent to the DPE and the DPE responds with an adjusted fare

Departure Date	Fare Component	Airline	Fare Class Code	Amount
05 Aug 2019	LON DXB	XX	YXDP1	450.00
24 Aug 2019	DXB LON	XX	Y2 YDP2	500.00 475.00

Total fare amount = 925.00

- The system validates the new solution and determines the new amount passes the equal or higher requirement. This is a valid re-price solution (assume all other fare validation data is passed).

7.9 Government Filing/Regulatory

DPE tariffs are private tariffs for the initial implementation. These tariffs can be public tariffs pending airline requirements and adherence to all government filing and regulatory requirements.

Open Item: Enable DPE fares to be distributed in public tariffs. Airlines and ATPCO will need to work together to ensure all government filing and regulatory requirements are satisfied.

8.0 Launch and Assess



For a successful implementation, the following areas should be addressed. The impact on these areas will depend on current system and process capabilities.

8.1 Documentation and Training

Any documentation regarding fare filing may require updates for any changes to current processing.

Training needs should be assessed based on the impact.

8.2 Implementation Rollout

8.2.1 Staged Rollout

Depending on the determined scope and impact assessment, plans may include rollout to specific fares, pricing systems, and points of sale. The following areas would require multiple implementation steps to accommodate a staged rollout:

1. Content creation, collection, and distribution
 - a. Fares and Rules
 - b. DPE Airline Profile
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.

8.3 Communications

In addition to areas directly involved in implementation, the following areas would require notification of implementation.

- Customer Service
- Distribution/Pricing partners

8.4 Assessment

All areas should be included in an assessment of impact as rollout happens. It is advisable to limit the scope of the initial implementation in order to be able to assess impact and effectiveness.

8.4.1 DPE Effectiveness

Airlines will need to assess the effectiveness of the DPE itself. Historical records of all DPE requests and responses should be maintained to develop core metrics of how well the DPE is doing:

- Identify how many fares have been adjusted, as well as the original baseline fare and adjusted amount
- How many and which adjusted offers were converted to orders
- Markets, points of sale, and customer information on adjusted fares offered and converted to orders or not converted to orders

The background of the page is a monochromatic blue-tinted photograph of sand dunes. The dunes are rolling and have a fine, rippled texture. The lighting creates soft shadows and highlights, giving a sense of depth and movement. The overall mood is serene and expansive.

IMPLEMENTATION CHECKLIST

IMPLEMENTATION CHECKLIST

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

Responsible: The area responsible for getting the job done
Accountable: The area can be accountable for each task (only one)

Consulted: The area who is consulted for expertise
Informed: The areas who are kept up-to-date on progress

PM = Project Management
 RM = Revenue Management
 DE = Distribution/Ecommerce

RA = Revenue Accounting and Audit
 CS = Customer Service
 IT = Information Technology

When	Accountable Organization	Description	Airline						System	
			PM	RM	DE	RA	CS	IT	PM	IT
Strategy 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
Implementation	Fare Management/ Decision Support	Create intermediate fare levels between baseline fare price points and associate them to DPE fares	I	R	I	I	I			
	Content Collection and Distribution	Distribute baseline and DPE fares	I	R					I	I
		Distribute DPE Airline Profile	I	R						
	Shopping/Pricing/ Order Management (Direct and Indirect)	Implement Dynamic Pricing Engine (DPE)	I	R		I	I	R	I	I
	Revenue Accounting/ Auditing	Implement enhanced TCN/ISR data (with Pricing ID)	I	I		R		I	R	R
	Customer Service – Voluntary Changes	Policies and procedures updates for refunds and re-issues	R	C/I	C/I	C/I	R/I	C		
	Government Filing/ Regulatory	Future: Identify requirements and implement solution to support public DPE fare distribution	I	R	I	I	I	I		
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:

- All data and price points will not be made public or viewable until such time 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.

We work with the industry to build tomorrow's sophisticated platforms for your customized offers.

Solving problems together

Airline, system, industry body, and academic representatives are meeting periodically to create solutions that work for all.

Pooling our resources

We're taking your input and doing the foundation work so you can save your energy for your own projects that will use these common functions.

Building it right

When you provide your requirements and knowledge in pilot programs and working groups, you can be confident that you'll be able to implement your solutions faster.



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**DYNAMIC PRICING CAN BE EASIER THAN YOU THINK.
WE'LL HELP YOU GET STARTED.**

letsconnect@atpco.net