Staying in Sync

NDC Implementation Forum
May 2020
Staying in Sync
How do we stay up to date as our NDC orders change?
A quick introduction to Duffel👋
Why does keeping track of updates to our orders matter?
How can we track changes to orders today?
What can airlines do to make life easier for travel sellers?
A quick introduction to Duffel 🙋‍♀️
We started Duffel with a simple observation
Building a great flight booking experience is really hard
The infrastructure that powers our industry gets in the way
A new airline distribution platform for the 21st century
We power connections between airlines and where people book
With Duffel, travel sellers can access direct connect content from 20+ airlines through one platform.
With Duffel, building your integration takes days — not months per airline
We smooth over the differences between airlines, so travel sellers can turn on new carriers in one click
Why does keeping track of updates to our orders matter?
Order Q9VC74

Flight summary

Tue 7 Jul, 2020 — Sun 12 Jul, 2020

1. British Airways
   Euro Traveller · Airbus A319 · British Airways
   11:25 · Heathrow Airport (LHR)
   Journey duration: 03h 35m
   15:00 · Stockholm-Arlanda Airport (ARN)

2. British Airways
   Euro Traveller · Airbus A320neo · British Airways
   18:00 · Stockholm-Arlanda Airport (ARN)
   Journey duration: 01h 45m
   19:45 · Heathrow Airport (LHR)
This order can change
Itinerary changes
Other changes
The “source of truth” is the Offer Responsible Airline (ORA)
To get the latest state of an order, we should *always* go direct to the airline.
But travel sellers need to know about these changes as they happen
Keep the passenger up-to-date
Apply business rules
Flag bookings requiring manual intervention
Keep my local copy of the order up-to-date
I can’t rely on the original state of the order when I created it
I can’t query the airline’s system to filter based on the *latest state*
For NDC *at scale*, we need to be able to support these use cases
How can we track changes to orders today?
How are changes to bookings tracked in the GDS environment?
GDSs stay up to date on traditional bookings using Type B messages
Type B messages are pushed from the PSS to the GDS
The GDS uses this data to update its local copy of the booking.
The GDS adds updated bookings to queues, surfacing them to agents
The GDS adds updated bookings to queues, powering automations
What are our options in NDC?
We have a pull option: OrderRetrieve*

* There are actually two pull options - more on this later
The “source of truth” is the Offer Responsible Airline (ORA)
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To stay up to date, I have to “poll” an order
On the other hand, I have a push option, OrderChangeNotif
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So what are the advantages and disadvantages of these two approaches?
What are the differences between OrderChangeNotif and OrderRetrieve?

- How technically complex is the implementation for:
  - airlines?
  - travel sellers?
- How quickly do travel sellers know about changes?
- Is it possible to communicate any change to an order?
- Can the travel seller understand why a change happened?
What are the differences between OrderChangeNotif and OrderRetrieve?

• How technically complex is the implementation for:
  • airlines?
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• How quickly do travel sellers know about changes?

• Is it possible to communicate any change to an order?

• Can the travel seller understand why a change happened?
Delivering push notifications is more complex for the airline.
You need to know when changes have happened
You need some way of registering customers’ endpoints
You need some kind of message queue to deliver notifications
...including a way to handle notifications that can’t be delivered
OrderRetrieve means more load on airlines’ systems
What are the differences between OrderChangeNotif and OrderRetrieve?

- How technically complex is the implementation for:
  - airlines?
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- How quickly do travel sellers know about changes?

- Is it possible to communicate any change to an order?

- Can the travel seller understand why a change happened?
Receiving push notifications is more complex for the customer
You need to understand a new kind of message
Using OrderRetrieve is simple - you already need to be able to understand OrderViewRS
You need to have an open endpoint to receive notifications.
What are the differences between OrderChangeNotif and OrderRetrieve?

• How technically complex is the implementation for:
  • airlines?
  • travel sellers?

• **How quickly do travel sellers know about changes?**

• Is it possible to communicate any change to an order?

• Can the travel seller understand why a change happened?
OrderChangeNotify is fast
Usually, this won’t really matter
But sometimes, it does 🕒
Push is the foundation for rich real-time experiences
What are the differences between OrderChangeNotif and OrderRetrieve?

• How technically complex is the implementation for:
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Today, airlines’ implementations of OrderChangeNotif are limited
They only support schedule changes
Ideally, airlines would be able to push any change to an order
...for example, itinerary changes that aren’t schedule changes
...or changes to service statuses
Knowing when something has changed in the PSS isn’t necessarily easy
Communicating a full range of changes in a structured way isn’t simple either
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“Services” are the way to do this - but they are hard to use with the PNR underneath
Just using OrderRetrieve doesn’t have these problems
What are the differences between OrderChangeNotif and OrderRetrieve?

- How technically complex is the implementation for:
  - airlines?
  - travel sellers?

- How quickly do travel sellers know about changes?

- Is it possible to communicate any change to an order?

- Can the travel seller understand why a change happened?
Voluntary or involuntary?
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What are the differences between OrderChangeNotif and OrderRetrieve?

- How technically complex is the implementation for:
  - airlines?
  - travel sellers?

- How quickly do travel sellers know about changes?

- Is it possible to communicate any change to an order?

- Can the travel seller understand why a change happened?
There is a danger of “missing” changes
#1
Initial booking
BA0778 07JUL
01JAN 09:00

#2
IRROPS
BA0778 07JUL
07JUL 08:00

#3
Rebooked w/ BA
BA0779 07JUL
07JUL 08:05
“Polling” with OrderRetrieve
#1
Initial booking
BA0778 07JUL

01JAN 09:00

#2
IRROPS
BA0778 07JUL

07JUL 08:00

#3
Rebooked w/ BA
BA0779 07JUL

07JUL 08:05
Waiting for an OrderChangeNotification
#1
Initial booking
BA0778 07JUL
01JAN 09:00

#2
IRROPS
BA0778 07JUL
07JUL 08:00

#3
Rebooked w/ BA
BA0779 07JUL
07JUL 08:05
Now you understand the challenges
What does Duffel do?
We need to provide a rich, consistent experience across airlines
We want help sellers understand what has changed and why
We join together data from OrderRetrieve and OrderChangeNotif
“Snapshots” of an order’s state over time
A series of “events”, showing what changed and when
What can airlines do to make life easier for travel sellers?
We have a pull option: OrderRetrieve*

* There are actually two pull options - more on this later
OrderHistory
This has been raised as a blocker by TMCs
None Available

No message samples currently available for this message pair
OrderHistory is a way to communicate an order’s previous states
Orders have a version number: OrderVersion
A ChangeOperation gives lots of flexibility to explain the change
You can explain *what* the change is with a `ChangeTypeCode`, *New state* and *Old state*
You can explain why a change happened with a ReasonCode
What are the differences between OrderChangeNotif and OrderRetrieve?

- How technically complex is the implementation for:
  - airlines?
  - travel sellers?

- How quickly do travel sellers know about changes?

- Is it possible to communicate any change to an order?

- Can the travel seller understand why a change happened?
There’s no danger of “missing” changes
In NDC 19.2, OrderHistory and OrderChangeNotif are aligned to make this easy
The ideal solution is OrderChangeNotif + OrderHistory
Turn OrderHistory from schema to reality
Can you find a way to communicate more changes than just schedule changes?
Can you communicate why something has changed?
Can you include information about the “next steps” in your notifs?
If you can, for these messages, make the switch to V19.2
If you can, start to invest in Order Management
Travel sellers need to be able to stay *in sync* with their NDC bookings
Keep the passenger up-to-date
Apply business rules
Flag bookings requiring manual intervention
Keep my local copy of the order up-to-date
OrderRetrieve vs OrderChangeNotification

✅ Simple implementation for airline
✅ Simple implementation for travel sellers
✅ Able to detect any change (as long as it can be modelled in NDC)
❌ More load on airline systems
❌ Delayed notification of changes
❌ Danger of missing changes
❌ Can’t tell why a change happened

✅ Less load on airline systems
✅ Immediate notification as soon as a change happens
✅ Can tell where a change came from
❌ Harder implementation for airlines
❌ Harder implementation for travel sellers
❌ Danger of missing changes
❌ Unable to communicate all changes
Airlines can make life easier for travel sellers with the latest versions of OrderHistory and OrderChangeNotif
Tim Rogers
Head of Flights
tim@duffel.com