

# **API Developer Notes**

## ***Seat Maps***

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## Overview

A nice addition to any booking site is the ability to review seat maps and select individual seats. Although it may take some work to produce the graphical seat display, obtaining the necessary data is fairly simple. However, there are several possibilities to consider when coding for seat maps:

- Not all air carriers support seat maps. Therefore, your code should anticipate an error response when requesting maps.
- Responses vary by carrier, with some carriers providing more details than others.
- Some carriers have a tendency to repeat attributes in rows, or to include row attributes in seat information.

**Note:** The EDIFACT Standards for Seat Characteristics (9825) can be found in the Galileo Web Services help. In the GWS help, see *XML Select Service > Return Code and Industry Code Reference > Industry Codes > EDIFACT Standards for Seating*.

# Seat Map Request

This section compares a simple seat map request and a seat map request with a passenger name.

## Simple Seat Map Request

A request for a seat map can be made outside of a session. A simple request requires only basic information for the flight segment:

```
<SeatMap_#>
  <SeatMapMods>
    <AirV>UA</AirV>
    <FltNum>0876</FltNum>
    <BIC>V</BIC>
    <StartDt>20050315</StartDt>
    <StartCity>SEA</StartCity>
    <EndCity>DEN</EndCity>
    <NumSeats>1</NumSeats>
  </SeatMapMods>
</SeatMap_#>
```

**Note:** When sending a request to United Airlines, include the <NumSeats> element to ensure United Airlines premier seating is returned.

## Seat Map Request With Name

The previous Simple Seat Map Request made no reference to the actual passenger. If the passenger is a frequent flyer with the carrier for the flight, the available seats can be different. To return seats reserved for different levels of frequent flyers, include the passenger's frequent flyer information in the request. For example:

```
<SeatMap_#>
  <SeatMapMods>
    <AirV>UA</AirV>
    <FltNum>0876</FltNum>
    <BIC>V</BIC>
    <StartDt>20050715</StartDt>
    <StartCity>SEA</StartCity>
    <EndCity>DEN</EndCity>
    <NumSeats>1</NumSeats>
```

```
<NameAry>
  <Name>
    <LName>SMITH</LName>
    <FNameAry>
      <FNameInfo>
        <FName>ROBERT</FName>
        <FreqFlierID>UA</FreqFlierID>
        <FreqFlierNum>01234567890</FreqFlierNum>
      </FNameInfo>
    </FNameAry>
  </Name>
</NameAry>
</SeatMapMods>
</SeatMap_#>
```

## Seat Map Response

The seat map response is specific to the requested class of service, and only seats for the requested class are returned. Seat maps can be returned in three different formats, which are indicated by the value of the <TypeDisp> element.

Value	Format	Returns:
A	<b>Available</b> seats only.	Seats that are available – all other seats are assumed to be occupied.
O	<b>Occupied</b> seats only.	Seats that are occupied – all other seats are assumed to be available.
D	<b>Detailed</b> , all seats.	Status for all seats.

The first part of the response echoes the flight segment information requested. The rest of the response is contained in the <SeatMapQual> element, and is organized into sections, rows, and seats. The <TypeDisp> element is located before the array of sections. For example:

```
<SeatMapQual>  
  <TypeDisp>O</TypeDisp>  
  <SectionsAry>  
    <Sections>
```

Format indicator

Sections are meant to indicate different physical parts of the airplane, but most responses include only one section (even when the response includes both upper and lower decks). The first line in the <Sections> element is a description of the seats in each row of the section:

```
<SeatMapQual>  
  <TypeDisp>O</TypeDisp>  
  <SectionsAry>  
    <Sections>  
      <ColLabel>AB=DEFG=JK</ColLabel>
```

Seat Configuration

The preceding example indicates that this section consists of two seats on the left side of the aircraft (A and B), then an aisle, four seats in the center of the row (D to G), another aisle, and finally, two seats on the right side of the aircraft (J and K).

Graphically, the seats might display:



Note that the seat names skip over the letters C, H, and I. Seat names are not always contiguous.

After the section is described, the row and seat definitions follow. Each row has a number and an attribute array:

```
<Row>  
  <Num>9</Num>  
  <AttribAry>  
    <Attrib>E</Attrib>
```

</AttribAry>

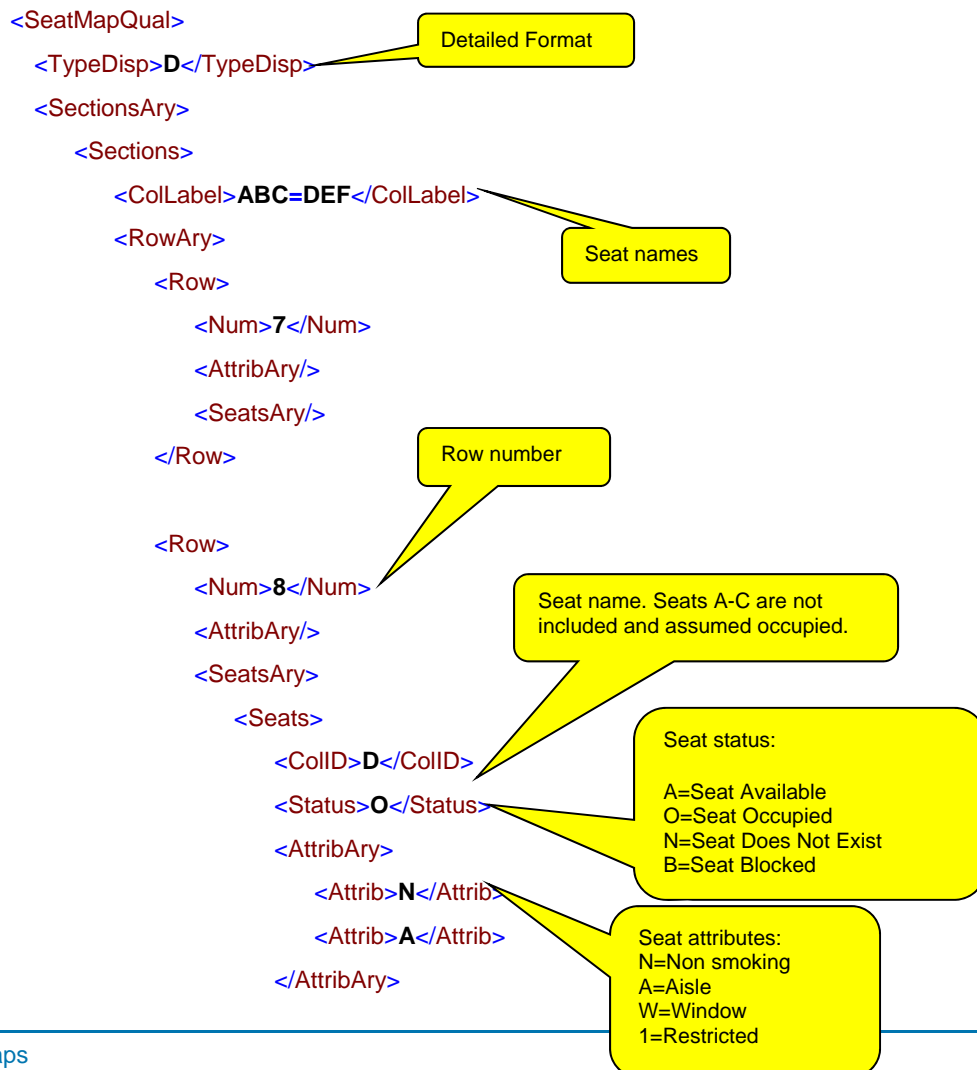
The attribute array may be (and often is) empty. Values that can be returned include:

Value	Attribute
E	Exit row
K	Bulkhead (wing)
O	Preferential seat
1	Restricted seat
U	Upper deck

Remember that a row can have more than one attribute. The most common combination is an exit row that is over a wing, with attributes of both *E* and *K*.

## Detailed Response Example

Within each <Row> element is an array of seats. If the response is in Detailed format, there will be one entry for each seat in the section. Seats that are not included in a Detailed response are assumed to be occupied. If the response is in Occupied or Available format, then some seats are not included in the array. These seats default to the response format (occupied or available). An example of the beginning of a Detailed response is:





```

</Seats>
<Seats>
  <ColID>E</ColID>
  <Status>O</Status>
  <AttribAry>
    <Attrib>N</Attrib>
  </AttribAry>
</Seats>
</SeatsAry>
</Row>
<Row>
  <Num>9</Num>
  <AttribAry>
    <Attrib>E</Attrib>
  </AttribAry>
  <SeatsAry>
    <Seats>
      <ColID>A</ColID>
      <Status>O</Status>
      <AttribAry>
        <Attrib>N</Attrib>
      </AttribAry>
    </Seats>
    <Seats>
      <ColID>B</ColID>
      <Status>O</Status>
      <AttribAry>
        <Attrib>N</Attrib>
      </AttribAry>
    </Seats>
    <Seats>
      <ColID>C</ColID>
      <Status>O</Status>
      <AttribAry>
        <Attrib>N</Attrib>
        <Attrib>A</Attrib>
      </AttribAry>
    </Seats>
    <Seats>
      <ColID>D</ColID>

```

Exit row

```

        <Status>O</Status>
        <AttribAry>
            <Attrib>N</Attrib>
            <Attrib>A</Attrib>
        </AttribAry>
    </Seats>
    <Seats>
        <ColID>E</ColID>
        <Status>O</Status>
        <AttribAry>
            <Attrib>N</Attrib>
        </AttribAry>
    </Seats>
    <Seats>
        <ColID>F</ColID>
        <Status>O</Status>
        <AttribAry>
            <Attrib>N</Attrib>
        </AttribAry>
    </Seats>
</SeatsAry>
</Row>

```

Graphically, this portion of the seat descriptions would display:



A row that is over a wing generally returns:

```

<Row>
    <Num>13</Num>
    <AttribAry>
        <Attrib>K</Attrib>
    </AttribAry>
    <SeatsAry>
        <Seats>
            <ColID>A</ColID>
            <Status>O</Status>

```

Bulkhead (wing) row

```

        <AttribAry>
            <Attrib>N</Attrib>
        </AttribAry>
    </Seats>

```

## Occupied Response Example

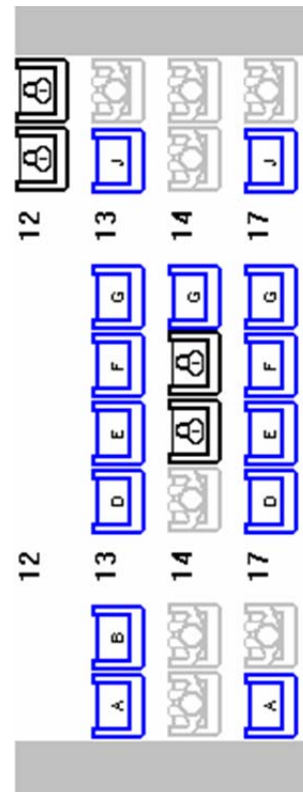
An Occupied response looks much the same as a Detailed response. An annotated portion of an Occupied response follows, with a graphical representation at the side for reference.

```

<SeatMapQual>
    <TypeDisp>O</TypeDisp>
    <SectionsAry>
        <Sections>
            <ColLabel>AB=DEFG=JK</ColLabel>
            <RowAry>
                <Row>
                    <Num>12</Num>
                    <AttribAry/>
                    <SeatsAry>
                        <Seats>
                            <ColID>A</ColID>
                            <Status>N</Status>
                            <AttribAry/>
                        </Seats>
                        <Seats>
                            <ColID>B</ColID>
                            <Status>N</Status>
                            <AttribAry/>
                        </Seats>
                        <Seats>
                            <ColID>D</ColID>
                            <Status>N</Status>
                            <AttribAry/>
                        </Seats>
                        <Seats>
                            <ColID>E</ColID>
                            <Status>N</Status>
                            <AttribAry/>
                        </Seats>
                        <Seats>
                            <ColID>F</ColID>

```

Non-existent  
seat



```

        <Status>N</Status>
        <AttribAry/>
    </Seats>
    <Seats>
        <ColID>G</ColID>
        <Status>N</Status>
        <AttribAry/>
    </Seats>
    <Seats>
        <ColID>J</ColID>
        <Status>A</Status>
        <AttribAry>
            <Attrib>1</Attrib>
        </AttribAry>
    </Seats>
    <Seats>
        <ColID>K</ColID>
        <Status>A</Status>
        <AttribAry>
            <Attrib>1</Attrib>
        </AttribAry>
    </Seats>
</SeatsAry>
</Row>

```

First physical seat

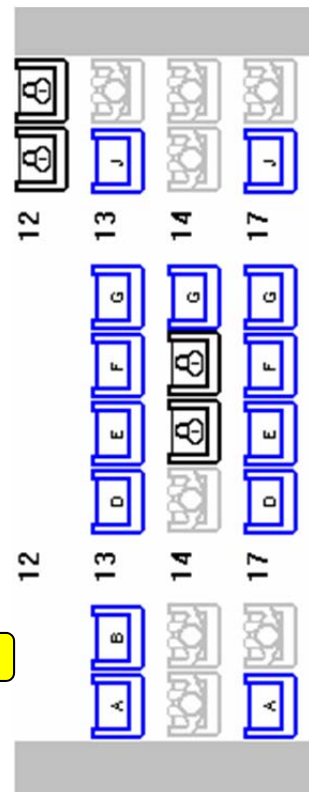
Indicates a restricted seat

```

<Row>
    <Num>13</Num>
    <AttribAry/>
    <SeatsAry>
        <Seats>
            <ColID>A</ColID>
            <Status>A</Status>
            <AttribAry>
                <Attrib>N</Attrib>
                <Attrib>W</Attrib>
                <Attrib>J</Attrib>
            </AttribAry>
        </Seats>
    </SeatsAry>
</Row>

```

Window seat



```

    <CollID>B</CollID>
    <Status>A</Status>
    <AttribAry>
      <Attrib>A</Attrib>
      <Attrib>K</Attrib>
      <Attrib>N</Attrib>
    </AttribAry>
  </Seats>
  <Seats>
    <CollID>D</CollID>
    <Status>A</Status>
    <AttribAry>
      <Attrib>A</Attrib>
      <Attrib>K</Attrib>
      <Attrib>N</Attrib>
    </AttribAry>
  </Seats>
  <Seats>
    <CollID>E</CollID>
    <Status>A</Status>
    <AttribAry>
      <Attrib>N</Attrib>
      <Attrib>J</Attrib>
    </AttribAry>
  </Seats>
  <Seats>
    <CollID>F</CollID>
    <Status>A</Status>
    <AttribAry>
      <Attrib>N</Attrib>
      <Attrib>J</Attrib>
    </AttribAry>
  </Seats>
  <Seats>
    <CollID>G</CollID>
    <Status>A</Status>
    <AttribAry>
      <Attrib>A</Attrib>
      <Attrib>K</Attrib>
      <Attrib>N</Attrib>

```

Aisle seat

```

        </AttribAry>
    </Seats>
    <Seats>
        <ColID>J</ColID>
        <Status>A</Status>
        <AttribAry>
            <Attrib>A</Attrib>
            <Attrib>N</Attrib>
        </AttribAry>
    </Seats>
</SeatsAry>
</Row>

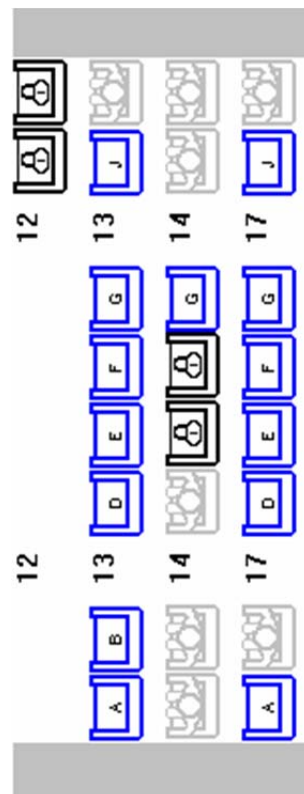
<Row>
    <Num>14</Num>
    <AttribAry/>
    <SeatsAry>
        <Seats>
            <ColID>E</ColID>
            <Status>A</Status>
            <AttribAry>
                <Attrib>1</Attrib>
            </AttribAry>
        </Seats>
        <Seats>
            <ColID>F</ColID>
            <Status>A</Status>
            <AttribAry>
                <Attrib>1</Attrib>
            </AttribAry>
        </Seats>
        <Seats>
            <ColID>G</ColID>
            <Status>A</Status>
            <AttribAry>
                <Attrib>A</Attrib>
                <Attrib>N</Attrib>
            </AttribAry>
        </Seats>
    </SeatsAry>
</Row>

```

Seat K not included,  
assume occupied.

Notice that rows 15  
and 16 do not exist.

Seats A, B & D not included,  
assume occupied.



```

        </SeatsAry>
    </Row>
    <Row>
        <Num>17</Num>
        <AttribAry/>
        <SeatsAry>
            <Seats>
                <ColID>A</ColID>
                <Status>A</Status>
                <AttribAry>
                    <Attrib>N</Attrib>
                    <Attrib>W</Attrib>
                    <Attrib>J</Attrib>
                </AttribAry>
            </Seats>
            <Seats>
                <ColID>D</ColID>
                <Status>A</Status>
                <AttribAry>
                    <Attrib>A</Attrib>
                    <Attrib>K</Attrib>
                    <Attrib>N</Attrib>
                </AttribAry>
            </Seats>
            <Seats>
                <ColID>E</ColID>
                <Status>A</Status>
                <AttribAry>
                    <Attrib>N</Attrib>
                    <Attrib>J</Attrib>
                </AttribAry>
            </Seats>
            <Seats>
                <ColID>F</ColID>
                <Status>A</Status>
                <AttribAry>
                    <Attrib>N</Attrib>
                    <Attrib>J</Attrib>
                </AttribAry>
            </Seats>
        </SeatsAry>
    </Row>

```

```

<Seats>
  <ColID>G</ColID>
  <Status>A</Status>
  <AttribAry>
    <Attrib>A</Attrib>
    <Attrib>K</Attrib>
    <Attrib>N</Attrib>
  </AttribAry>
</Seats>
<Seats>
  <ColID>J</ColID>
  <Status>A</Status>
  <AttribAry>
    <Attrib>A</Attrib>
    <Attrib>K</Attrib>
    <Attrib>N</Attrib>
  </AttribAry>
</Seats>
</SeatsAry>
</Row>

```

## Exceptions

Because seat map content is provided by the vendor, responses can vary depending on the carrier. When working with seat maps, there are several possible exceptions and anomalies that can be noted, including:

- Not all airlines support seat maps.
- Not all flights are supported, even for airlines that do support seat maps.
- Inaccurate responses from the vendor are possible.  
In the previous example, some seats have attributes of *J* or *K*. According to the EDIFACT standards organization, which has established the standard indicators for seat maps, an attribute of *J* indicates a rear-facing seat, and an attribute of *K* indicates a bulkhead seat. However, a rear-facing seat on a 747 is unlikely, and a bulkhead seat in the middle of a row that is not a bulkhead row is a contradiction. Therefore, it is safe to conclude that some carriers return seat attributes that are incorrect.
- Limited responses from the vendor are possible.  
Some carriers seem to indicate both aisle and window seats, and some carriers indicate only aisle or window seats.

Therefore, be selective about the attributes you use. If you present a graphical representation of the seats, it is usually obvious which seats are on the aisle or by the window. It is a good idea to use the restricted attribute to indicate that a seat is not available. Users should only be able to select seats that are available.



## Reserving a Seat

If seat maps are not available, or have not been implemented, you can still make a generic seat selection. A generic selection specifies either a window or aisle preference. This type of seat request is generally for the primary passenger. Other passengers in the same PNR are seated as close as possible.

Before a seat selection can be requested:

- Passenger names must be added to the PNR.
- The air segments corresponding to the seats must be sold.

Both of those tasks are accomplished using the PNRBFManagement transaction. Seat requests also use this transaction. The seat request can be:

- Included in the same transaction that enters the primary information and sell the air segments, OR
- A stand-alone request within a session where the PNR has been created or retrieved.

The section added to the PNRBFManagement transaction is:

<SeatSellMods>

<ReqAry>

<ReqInfo>

<ID>R</ID>

<Num>00</Num>

<AirV>UA</AirV>

<FltNum> 0044</FltNum>

<OpSuf/>

<Dt>20051201</Dt>

<StartAir>HNL</StartAir>

<EndAir>DEN </EndAir>

<BIC>W </BIC>

<ReqType>G</ReqType>

<AttribQual>

<AttribAry>

<Attrib><![CDATA[W]]></Attrib>

</AttribAry>

</AttribQual>

</ReqInfo>

</ReqAry>

</SeatSellMods>

00 if one seat is being requested. Number each request for multiple requests.

W for window seat, A for aisle seat, empty for any seat.

Because many flights have more than one leg, be sure to allow for seat assignments for each leg of each flight.

If seats have been selected from a seat map, they can be reserved using a specific seat request. The request type is set to S and the specific seat is contained in a <SeatQual> section. Multiple seats can be selected in one request. The seats are assigned in the same order as the passengers in the PNR. Remember that if one passenger has an assigned seat, all passengers must have assigned seats.

The request looks like:

```

<SeatSellMods>
  <ReqAry>
    <ReqInfo>
      <ID>R</ID>
      <Num>00</Num>
      <AirV>UA</AirV>
      <FltNum> 0044</FltNum>
      <OpSuf/>
      <Dt>20051201</Dt>
      <StartAirp>HNL</StartAirp>
      <EndAirp>DEN </EndAirp>
      <BIC>W </BIC>
      <ReqType>S</ReqType>
      <SeatQual>
        <SeatAry>
          <Seat><![CDATA[ 03A]]></Seat>
          <Seat><![CDATA[ 03B]]></Seat>
        </SeatAry>
      </SeatQual>
    </ReqInfo>
  </ReqAry>
</SeatSellMods>

```

Specific seat selection must total 5 characters.

Seat selection for passenger 1

Seat selection for passenger 2

Note that seat assignments must be in the CDATA format shown above, for a total of five characters:

1. Two blanks.
2. Two digits (zero fill if necessary).
3. One character between A and L, except for I).